

## DEPARTMENT OF TRANSPORTATION

## NOTICE OF PROPOSED REPEALER

- 1) Heading of the Part: Minimum Safety Standards for Construction of Type I School Buses
- 2) Code Citation: 92 Ill. Adm. Code 440
- 3) 

<u>Section Numbers:</u>	<u>Proposed Actions:</u>
440.10	Repealed
440.20	Repealed
440.30	Repealed
440.110	Repealed
440.120	Repealed
440.130	Repealed
440.140	Repealed
440.150	Repealed
440.160	Repealed
440.205	Repealed
440.210	Repealed
440.220	Repealed
440.305	Repealed
440.310	Repealed
440.320	Repealed
440.405	Repealed
440.420	Repealed
440.505	Repealed
440.520	Repealed
440.ILLUSTRATION B	Repealed
440.ILLUSTRATION C	Repealed
- 4) Statutory Authority: Implementing Article VIII of Chapter 12 of the Illinois Vehicle Code [625 ILCS 5/Ch. 12, Art. VIII] and Section 14-3(m) of the Criminal Code of 1961 [720 ILCS 5/14-3(m)] and authorized by Section 12-812 of the Illinois Vehicle Code [625 ILCS 5/12-812].
- 5) A Complete Description of the Subjects and Issues Involved: This Part consists of the construction standards for type I school buses manufactured for use in Illinois. The Department is proposing to repeal this entire part and simultaneously recreate the Part with new Section numbers in an attempt to reorganize the rules and to incorporate 92 Ill. Adm. Code 442. The new Part will have additional changes that will be detailed in the Notice of Proposed Rules filed in conjunction with this Notice.

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- 6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: None
- 7) Will this rulemaking replace any emergency rule currently in effect? No
- 8) Does this rulemaking contain an automatic repeal date? No
- 9) Does this rulemaking contain incorporations by reference? Yes
- 10) Are there any other rulemakings pending on this Part? Yes. Part 440 is being repealed and new rules will be proposed simultaneously through another rulemaking.
- 11) Statement of Statewide Policy Objective: These proposed amendments affect units of local government (i.e., school districts) that own or operate school buses.
- 12) Time, Place and Manner in which interested persons may comment on this proposed rulemaking: Any interested party may submit written comments or arguments concerning these proposed amendments. Written submissions shall be filed with:

Greg Stucka, Rules Manager  
Illinois Department of Transportation  
Office of Chief Counsel  
2300 South Dirksen Parkway, Room 317  
Springfield IL 62764

Comments received within 45 days after the date of publication of this *Illinois Register* will be considered. Comments received after that time will be considered, time permitting.

- 13) Initial Regulatory Flexibility Analysis:
  - A) Types of small businesses, small municipalities and not-for-profit corporations affected: These proposed amendments affect small businesses that manufacture school buses registered for use in Illinois. These proposed amendments also affect small businesses, small municipalities, and not-for-profit corporations that own or operate school buses.

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- B) Reporting, bookkeeping or other procedures required for compliance: No impact is anticipated.
  - C) Types of professional skills necessary for compliance: No impact is anticipated.
- 14) Regulatory Agenda on which this rulemaking was summarized: July 2017

The full text of the Proposed Repealer begins on the next page:

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TITLE 92: TRANSPORTATION  
CHAPTER I: DEPARTMENT OF TRANSPORTATION  
SUBCHAPTER e: TRAFFIC SAFETY (EXCEPT HAZARDOUS MATERIALS)

PART 440  
MINIMUM SAFETY STANDARDS FOR CONSTRUCTION  
OF TYPE I SCHOOL BUSES (REPEALED)

SUBPART A: INTRODUCTION

Section	
440.10	Order
440.20	Guidelines
440.30	Responsibilities

SUBPART B: GENERAL

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440.120	Scope
440.130	Applicability
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440.160	Incorporation by Reference

SUBPART C: DEFINITIONS

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SUBPART D: CERTIFICATION

Section	
440.305	Certification by Manufacturer
440.310	Federal Standards
440.320	State Standards

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## SUBPART E: BODY REQUIREMENTS

## Section

- 440.405 Conformance to the Requirements  
440.410 Incorporation by Reference of Federal Motor Vehicle Safety Standards  
(Repealed)  
440.420 State Requirements

## SUBPART F: CHASSIS REQUIREMENTS

## Section

- 440.505 Conformance to the Requirements  
440.510 Incorporation by Reference of Federal Motor Vehicle Safety Standards  
(Repealed)  
440.520 State Requirements
- 440.ILLUSTRATION A Hexagon Shaped Stop Signal Arm (Repealed)  
440.ILLUSTRATION B Octagon Shaped Stop Signal Arm Panel  
440.ILLUSTRATION C Exhaust Discharge Prohibited Zones  
440.APPENDIX A Federal Motor Vehicle Safety Standards (FMVSS) and Related  
Regulations (Repealed)  
440.APPENDIX B First Aid Kit Requirements (Referred to in Section 440.420(l))  
(Repealed)  
440.APPENDIX C Specification Sheet Reflective Material – Encapsulated Lens  
(Based on FHWA Notice N 5040.17, June 15, 1976) (Repealed)

**AUTHORITY:** Implementing Article VIII of Chapter 12 of the Illinois Vehicle Code [625 ILCS 5/Ch. 12, Art. VIII] and Section 14-3(m) of the Criminal Code of 1961 [720 ILCS 5/14-3(m)] and authorized by Section 12-812 of the Illinois Vehicle Code [625 ILCS 5/12-812].

**SOURCE:** Filed June 20, 1977; amended at 6 Ill. Reg. 7147, effective June 2, 1982; codified at 8 Ill. Reg. 15502; amended at 11 Ill. Reg. 15947, effective September 21, 1987; amended at 12 Ill. Reg. 8463, effective May 3, 1988; amended at 16 Ill. Reg. 1655, effective January 14, 1992; amended at 17 Ill. Reg. 3530, effective March 2, 1993; amended at 18 Ill. Reg. 14764, effective September 20, 1994; amended at 22 Ill. Reg. 19354, effective October 15, 1998; expedited correction at 23 Ill. Reg. 5918, effective October 15, 1998; emergency amendment at 24 Ill. Reg. 4993, effective March 10, 2000, for a maximum of 150 days; amended at 24 Ill. Reg. 12111, effective July 31, 2000; emergency amendment at 24 Ill. Reg. 16391, effective October 20, 2000, for a maximum of 150 days; amended at 25 Ill. Reg. 3307, effective February 20, 2001; amended

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at 26 Ill. Reg. 3219, effective February 19, 2002; amended at 31 Ill. Reg. 1881, effective January 8, 2007; amended at 32 Ill. Reg. 17983, effective November 10, 2008; repealed at 41 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_.

## SUBPART A: INTRODUCTION

**Section 440.10 Order**

The Department, through its Division of Traffic Safety, has the responsibility to ensure that the public and private agencies engaged in the transportation of passengers on school buses are cognizant of and meet minimum safety standards related to vehicle construction.

**Section 440.20 Guidelines**

This Part provides:

- a) General information on the appropriate portions of the Illinois Vehicle Code [625 ILCS 5], the applicability of the standards to public and private agencies, the purpose of the standards and the scope of the standards.
- b) Definitions of terms used in this Part.
- c) Requirements for manufacturer's certification related to federal and State standards.
- d) Federal and State standards applicable to the bodies of school buses.
- e) Federal and State standards applicable to the chassis of school buses.

**Section 440.30 Responsibilities**

The Bureau of Safety Programs, Division of Traffic Safety, is responsible for enforcement of these standards.

## SUBPART B: GENERAL

**Section 440.110 Purpose**

These standards are intended to heighten the safety of school bus passengers in compliance with

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the oft-expressed desires of parents and other promoters of school bus safety features.

**Section 440.120 Scope**

These standards show the basic federal motor vehicle safety standards that must be met and in addition set forth certain minimum requirements established by the State to govern aspects not governed by the federal motor vehicle safety standards. In compliance with the desires of school bus owners and operators, some of the State requirements relate to bus traffic characteristics and to durability and maintenance rather than to safety.

**Section 440.130 Applicability**

These standards apply to the construction of any new Type I School Bus obtained by a person or organization for operation on the public roads in Illinois. Requirements for body and chassis are stated separately, in order to facilitate application of the standards to the commonly used body-on-chassis bus. In the case of an integral type bus the body and chassis requirements (Subpart E & F) should be read together as one set of requirements. In any case, these standards apply to the completed bus.

**Section 440.140 Effective Date**

These standards become effective July 1, 1977, on each incomplete vehicle manufactured on or after April 1, 1977, and on each component either assembled to or altered on such incomplete vehicle so as to construct a school bus; provided, however, a new school bus constructed of an incomplete vehicle manufactured before April 1, 1977, may not be sold or used in Illinois if its final stage of manufacture is completed after October 1, 1977.

**Section 440.150 Quantified Requirements**

Nearly all quantified requirements are stated in SI (metric) units as well as U.S. customary units. Where a requirement stated in U.S. customary units is not identical to the requirement stated in SI units, the SI requirement shall prevail.

**Section 440.160 Incorporation by Reference**

- a) Each bus body and chassis must conform to the applicable provisions of the Federal Motor Vehicle Safety Standards (FMVSS) (49 CFR 571.1 through 571.404). Those applicable provisions of the FMVSS are incorporated by

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reference as that part of the FMVSS was in effect on October 1, 2007. No later amendments to or editions of 49 CFR 571 are incorporated.

- b) Each bus body and chassis must conform to the applicable provisions of 49 CFR 567, Certification, and 49 CFR 568, Vehicles Manufactured in Two or More Stages, that were in effect on the first day of the month in which the chassis manufacturer completed the last manufacturing operation on the incomplete bus. Those applicable provisions are incorporated by reference as they were in effect on October 1, 2007. No later amendments to or editions of 49 CFR 567 and 49 CFR 568 are incorporated.
- c) Each school bus must conform to the applicable Standards and Recommended Practices of the Society of Automotive Engineers Handbook (Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale PA 15096-0001, (724)776-4841). Those applicable provisions of the SAE Standards and Recommended Practices are incorporated by reference as of the 2005 edition date. No later amendments to or editions of the SAE Standards and Recommended Practices are incorporated.
- d) Copies of the above materials incorporated by reference are available for inspection at the Division of Traffic Safety, 3215 Executive Park Drive, 3<sup>rd</sup> Floor, Springfield, Illinois 62703 or by calling (217)785-1181. The federal standards are available on the National Archives and Records Administration's website at <http://ecfr.gpoaccess.gov>. The Division of Traffic Safety's rules are available on the Department's website at <http://www.dot.il.gov/safety.html>.

## SUBPART C: DEFINITIONS

**Section 440.205 Dictionary Used**

Words and terms are used in the appropriate meaning defined in Webster's Third New International Dictionary of the English Language unless a different meaning is referred to or stated herein below.

**Section 440.210 Federal Definitions**

Terms are used as defined in 49 CFR 567, 568, or 571.

**Section 440.220 State Definitions**



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The terms referred to in Section 440.210 are applicable to this Section unless any definitions are displaced either by a statutory definition in 625 ILCS 5 or by a definition found in this Section:

"ANSI" means the American National Standards Institute (11 West 42<sup>nd</sup> Street, New York NY 10036).

"Body" means the portion of a bus that encloses the occupant and cargo spaces and separates those spaces from the chassis frame, engine compartment, driveline, and other chassis components, except certain chassis controls used by the driver.

"Body-on-Chassis" means a completed vehicle consisting of a passenger seating body mounted on a truck type chassis (or other separate chassis) so that the body and chassis are separate entities, although one may reinforce or brace the other.

"Child Check System" means an optional mechanical or electronic monitoring system used for ensuring that no passengers remain on the school bus at the end of a route, a work shift, or the work day. The system shall require the school bus driver to walk to the rear of the bus to deactivate the system before the driver leaves the bus. The vehicle's interior lights must illuminate when the ignition is turned off to assist the driver in seeing in and under the seats during a visual sweep of the bus. (See P.A. 95-0260, effective August 17, 2007.)

"Code" means the Illinois Vehicle Code [625 ILCS 5].

"Driver" means *every person who drives or is in actual physical control of a vehicle.* (Section 1-116 of the Code)

"Empty Weight" means the unloaded vehicle weight; i.e., the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle but without cargo or occupant (49 CFR 571.3), plus 350 lbs allowance for driver and equipment.

"FMVSS" means the Rules and Standards set forth in 49 CFR 571 and known as the Federal Motor Vehicle Safety Standards.

"Forward Control" means a configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length (49 CFR 571.3) –

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includes mid-engine and rear-engine "pusher" buses.

*"Gross Vehicle Weight Rating" or "GVWR" means the value specified by the manufacturer as the loaded weight of the school bus. (See Section 1-124.5 of the Code.)*

"Incomplete Vehicle" means an assemblage consisting, as a minimum, of frame and chassis structure, power train, steering system, suspension system, and braking system, to the extent that those systems are to be part of the completed vehicle, that requires further manufacturing operations (other than the addition of readily attachable components such as mirrors or tire and rim assemblies or minor finishing operations, such as painting) to become a completed school bus for use in Illinois. (Based on 49 CFR 568.3)

"Integral Type" bus means a completed vehicle either without separate body and chassis or with body and chassis joined into one unit.

"m", following a numeral, means either "meter" or "meters."

"mm", following a numeral, means either "millimeter" or "millimeters."

"Manufacturer" (unless otherwise indicated at the point of use) means the person or organization whose name follows "MANUFACTURED BY" OR "MFD BY" on the label required in Section 440.310.

"Multiple Glazed Unit" means two or more sheets of safety glazing material separated by air spaces and assembled in a common mounting (ANSI Z26.1-1996).

"Passenger" means every bus occupant who is not the driver.

"SAE" means the Society of Automotive Engineers (400 Commonwealth Drive, Warrendale PA 15096).

*"School Bus" –*

*Every motor vehicle, except as provided below, owned or operated by or for any of the following entities for the transportation of persons regularly enrolled as students in grade 12 or below in connection with any activity*

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*of such entity:*

*Any public or private primary or secondary school;*

*Any primary or secondary school operated by a religious institution; or*

*Any public, private or religious nursery school.*

*This definition shall not include the following:*

*A bus operated by a public utility, municipal corporation or common carrier authorized to conduct local or interurban transportation of passengers when such bus is not traveling a specific school bus route but is:*

*On a regularly scheduled route for the transportation of other fare paying passengers;*

*Furnishing charter service for the transportation of groups on field trips or other special trips or in connection with other special events; or*

*Being used for shuttle service between attendance centers or other educational facilities.*

*A motor vehicle of the first division.*

*A motor vehicle designed for the transportation of not less than 7 nor more than 16 persons that is operated by or for a public or private primary or secondary school, including any primary or secondary school operated by a religious institution, for the purpose of transporting not more than 15 students to and from interscholastic athletic or other interscholastic or school sponsored activities. (Section 1-182 of the Code)*

"SI" means Systeme International d'Unites (International System of Units); officially abbreviated SI in all languages; the modernized metric system defined in ANSI IEEE-ASTM-SI-10-1997.

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The symbol ", following a numeral, means either "inch" or "inches."

"Type I School Bus" means *a school bus with a GVWR of more than 10,000 pounds.* (Section 1-213.4 of the Code)

"Type I-A School Bus" means a term commonly used by school bus manufacturers to classify a certain type of school bus that is a conversion or body constructed upon a van-type or cutaway front-section vehicle with a left side driver's door, designed for carrying more than 10 persons. The Type I-A school bus has a GVWR of more than 10,000 pounds.

"Type II School Bus" *means a school bus with a GVWR of 10,000 pounds or less.* (Section 1-213.5 of the Code)

## SUBPART D: CERTIFICATION

**Section 440.305 Certification by Manufacturer**

The manufacturer shall certify the bus conforms to the applicable federal standards in effect on the first day of the month shown in the statement, "This Vehicle Conforms To All Applicable Federal Motor Vehicle Safety Standards In Effect in (month, year)" on the label required under Section 440.310. The manufacturer must also certify that the bus conforms to all applicable State standards. (See Section 440.320.) The certification shall be present in the bus when delivered to the purchaser as well as when submitted to the safety test conducted under provisions of Section 13-109 of the Code [625 ILCS 5/13-109].

**Section 440.310 Federal Standards**

The manufacturer, and all incomplete vehicle and intermediate manufacturers, shall comply with the applicable provisions of Part 567, "Certification", and Part 568, "Vehicles Manufactured in Two or More Stages", in Title 49 of the Code of Federal Regulations (49 CFR 567 & 568), including the permanent affixing of a label in conformance with the above mentioned federal regulations. This label shall constitute the manufacturer's certification to the People of the State of Illinois that the bus conforms to all applicable provisions of the Federal Motor Vehicle Safety Standards (49 CFR 571).

**Section 440.320 State Standards**

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The manufacturer shall prepare a certification bearing his name, identifying the bus by Vehicle Identification Number (VIN), and stating the bus conforms to all applicable provisions of "Illinois Minimum Safety Standards For Construction of Type I School Buses" in effect on the first day of (month and year appearing in the statement quoted in Section 440.305, above or a later month). This certification shall be in the form of an additional label manufactured, lettered, and affixed in the same manner and location as the label required in Section 440.310, above.

## SUBPART E: BODY REQUIREMENTS

**Section 440.405 Conformance to the Requirements**

At the time of the safety test conducted under provisions of Section 13-109 of the Code [625 ILCS 5/13-109], and when delivered to the purchaser, the body of each Type I School Bus shall conform to the requirements stated or referred to in this Subpart. Some chassis requirements also applicable to the body are stated or referred to herein.

**Section 440.410 Incorporation by Reference of Federal Motor Vehicle Safety Standards (Repealed)****Section 440.420 State Requirements**

*Except for mirrors, which may project 153 mm (6") beyond each side of the bus, a school bus shall not exceed 2.44 m (8 feet) in width, 4.12 m (13 feet 6 inches) in height, nor 12.81 m (42 feet) in length.* (Sections 15-102, 15-103 and 15-107 of the Code) Each bus body shall be constructed so as to preclude road splash, road dust, or the bus engine's fumes or gas entering either the driver, passenger, or service entrance space through any joint, crack, hole, or opening other than an opened door or window. In addition, various portions of the bus body shall conform to the requirements set forth under the following subsections.

- a) Aisle. An aisle, easily negotiated ("easily negotiated" means that an aisle meets the dimension requirements set forth in this subsection from front of bus to back of bus) and free of tripping hazards ("tripping hazards" are tears, wrinkles and other imperfections in the floor covering material, or the floor itself causing the walking surface to be uneven), shall extend from the forward edge of the service entrance stairway to the emergency door in the rear of the bus or, when such door is absent, to the forward edge of the rearmost seat. This aisle shall be no less than 305 mm (12") wide at every location between floor covering and the top of each seat cushion and, in a bus manufactured in July 1987 or later, shall be no less than 380 mm (15") wide at and above a level 50 mm (2") below the top of any seat

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back. At least 1.75m (68.9") floor-to-ceiling height shall be provided above the entire required width of this aisle between the forward edge of the rearmost seat and the forward edge of the service entrance stairway. A dedicated aisle that conforms to 49 CFR 571.217 may be adjacent to any side emergency door.

- b) Barriers, Guard. A restraining guard barrier shall be installed in front of the right and left front passenger seats. (See 92 Ill. Adm. Code 444 for exceptions for special education school buses.)
  - 1) Barriers shall be constructed to guard passengers from being thrown into the stairwell, dash, windshield or driver's compartment. Barriers shall be padded to give knee and head impact protection. Barriers shall conform to S5.2 through S5.2.3 of FMVSS 222.
  - 2) The vertical distance from the floor covering to the top of a barrier positioned in front of a student's seat shall measure not less than the vertical distance from the floor covering to the top of the seat back on the seat back installed behind that barrier.
- c) Battery. Either one battery or two or more suitably connected batteries may be installed.
  - 1) When rated in conformance with SAE Standard J537 (September 2000) the batteries shall provide a current flow for engine cranking no less than the engine manufacturer's recommended Cold Cranking Current (amperes for 30 seconds) at -18° C (0° F) or, at the purchaser's option, at -29° C (-20° F).
  - 2) When rated in conformance with SAE Standard J537 (September 2000) the batteries shall provide a Reserve Capacity (duration of 25 ampere current flow) at 27° C (80° F) no less than 135 minutes.
- d) Battery Carrier. When the battery is mounted outside the engine compartment it shall be attached securely in a closed, weather-tight, and vented compartment that is located and arranged so as to provide for convenient routine servicing. The battery compartment door, or cover, shall be secured by an adequate manually operated latches or other fasteners. Each electrical cable connecting the batteries in this carrier to the body or chassis shall be one-piece between the battery terminal connector and the first body or chassis terminal connector.

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- e) Bumper, Rear. The rear bumper shall be of channel type cross section with the top edge at least 225 mm (8.9") above the bottom edge, shall be formed from rolled steel at least 4.55 mm (.18") thick, and shall wrap around the rear corners of the body to a point at least 300 mm (11.8") forward of the rearmost point of the body at floor line. The rear bumper shall be attached to the chassis frame with provisions for removal by means of commonly available hand tools and the prevention of hitching-to or riding thereon. The rear bumper shall be of sufficient strength to permit the bus being pushed by another vehicle without permanent distortion.
- f) Capacity, Passenger. *The vehicle maximum passenger capacity recommended by the manufacturer of the bus shall be based upon a provision for 13 inches of seating space for each passenger, exclusive of the driver.* (Section 12-802 of the Code) Examples: A seat 990 mm (39") in width provides 3 passenger spaces; A seat 985 mm (38.8") in width provides 2 passenger spaces; A device resembling a seat but less than 330 mm (13") in width would not provide a passenger space. Neither a space not conforming to FMVSS 222 nor the driver's space shall be counted as a passenger space. However, any space used for transporting an orthopedically challenged passenger shall be counted as a passenger space when computing passenger capacity to be displayed on the exterior of the bus as required in subsection (v)(7).
- g) Certificate and Registration Card Holder. At least 1 card holder with a transparent face no less than 150 mm by 100 mm (5.9" by 3.9") shall be securely affixed to the interior header panel out of the students' easy reach.
- h) Child Check System (Optional). If a mechanical or electronic child check system is installed, the system must illuminate the interior lights on the bus when the ignition is turned off. (See P.A. 95-0260, effective August 17, 2007.)
- i) Color and Paint, Exterior. *The exterior of each school bus shall be national school bus glossy yellow except as indicated in subsections (i)(1)-(6):*
- 1) *The rooftop may be white.* Optional white roof shall terminate at any point from top of drip rail to 6" above drip rail. The front and rear roof caps shall remain national school bus glossy yellow.
  - 2) *Body trim, rub rails, lettering other than on a stop signal arm and*

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*bumpers shall be glossy black* (Federal Standard No. 595a, glossy black enamel No. 170381).

- 3) *Lettering on a stop signal arm shall be white on a red background.*
- 4) *The hood and upper cowl may be lusterless black (595a, 37038) or lusterless school bus yellow.*
- 5) *Grilles on the front, lamp trim and hubcaps may be a bright finish.*  
Wheels and rims may be black or gray.
- 6) *The name or emblem of a manufacturer may be colorless or any color.*
- 7) *The exterior paint of any school bus shall match the central value, hue and chroma set forth in this Part. (Section 12-801 of the Code)*
- 8) Each opening for a required emergency exit window or door must be outlined around its exterior perimeter with, at a minimum, 1 inch (2.54 cm) wide yellow retroreflective tape. All retroreflective tape must be on the exterior surface of the bus and conform to all requirements of 49 CFR 571.217. Emergency roof exits may be outlined in either yellow or white retroreflective tape.
- 9) Yellow retroreflective tape can be located on the rear bumper or rub rail provided the space under the emergency exit door or emergency exit window is not adequate to accommodate the tape, or, provided rivets are present that prohibit the tape from being applied properly.

AGENCY NOTE: To be certain of glare reduction, a purchaser should specify a lusterless paint.

j) Crossing Control Arm:

- 1) Must meet or exceed the wiring requirements of SAE Recommended Practice J1133 (November 2004).
- 2) Must be capable of full operation between, and including, the temperatures -40° F and 160° F.



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- 3) The arm, when activated, must extend a minimum of five feet from the front face of the bumper.
  - 4) The arm must be mounted on the far right side (entry side) of the front bumper.
  - 5) Appropriate brackets shall be used to attach the arm to the front bumper for proper operation and storage.
  - 6) All component parts must meet or exceed any applicable federal motor vehicle safety standards in effect at the time of manufacture.
  - 7) The arm must extend at the same time the stop arm panel extends. An independent "on/off" switch is prohibited.
  - 8) If the driver can stop the arm from extending with the use of an optional override switch, the arm sequence must automatically reset once the service door is closed.
  - 9) Red lights and/or red reflectors are prohibited.
- k) Defrosters. Defrosting equipment shall be installed so as to help keep the window to the left of the driver and the glass in the service door clear of fog or frost. This defrosting equipment shall conform to those FMVSS 103 (49 CFR 571.103) performance requirements that are applicable to school bus windshields.
- l) Emergency Exits. All emergency exits shall conform to the applicable requirements of FMVSS 217 (49 CFR 571.217).
- 1) Each emergency exit shall be equipped with an interior opening device that may be quickly released but that is designed to offer protection against accidental release. Each exterior release handle must be nonhitchable.

AGENCY NOTE: "Nonhitchable" is defined as the rear of the bus being designed and maintained to prevent or discourage riding or grasping rear of bus so as to "hitch" rides.

- 2) Each opening for a required emergency exit window or door must be

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outlined around its exterior perimeter with, at a minimum, 1 inch (2.54 cm) wide yellow retroreflective tape. All retroreflective tape must be on the exterior surface of the bus and conform to all requirements of 49 CFR 571.217. Yellow retroreflective tape can be located on the rear bumper or rub rail provided the space under the emergency exit door or emergency exit window is not adequate to accommodate the tape, or, provided rivets are present that prohibit the tape from being applied properly. Emergency roof exits may be outlined in either yellow or white retroreflective tape.

- 3) Both audible and visible alarms shall alert the driver when the engine is running and any emergency exit door either:
    - A) Is not fully latched, or
    - B) Is locked and not readily operated manually.
  - 4) An audible alarm shall alert the driver when the engine is running and any emergency exit window either:
    - A) Is not fully latched, or
    - B) Is locked and not readily operated manually.
  - 5) The engine starting system shall not operate while any emergency exit door or window (optional or required) is locked from either inside or outside the bus. "Locked" means that the release mechanism cannot be activated and the exit cannot be opened by a person at the exit without a special device such as a key or special information such as a combination.
  - 6) An alarm cut-off or "squelch" control is prohibited.
  - 7) Exception: No alarm is required for roof hatches.
- m) Fire Extinguisher.

AGENCY NOTE: A fire extinguisher is required to be carried on each school bus transporting pupils. The manufacturer may elect to install the fire extinguisher at the time the school bus is manufactured; however, a fire extinguisher can also be installed by the owner after the school bus is purchased.

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The fire extinguisher shall be of the dry chemical type, with pressure gauge, mounted in a quick-release bracket of automotive type located in view of and readily accessible to the driver, except when carried in the locked compartment authorized under subsection (w). The fire extinguisher shall be of a type approved by the Underwriters' Laboratories, Inc., with a rating not less than 10-BC. The operating mechanism shall be sealed with a type of seal that will not interfere with the use of the fire extinguisher. Halon fire extinguishers (10-BC) are approved.

## n) First-Aid Kit.

AGENCY NOTE: A first aid kit is required to be carried on each school bus transporting pupils. The manufacturer may elect to install the first aid kit at the time the school bus is manufactured; however, a first aid kit can also be installed by the owner after the school bus is purchased.

- 1) The first aid kit must be readily identifiable and readily accessible to the driver. The kit must be dust tight and substantially constructed of durable material. If the kit is not carried in the locked compartment as authorized in subsection (w)(2), it must be in view of the driver.
- 2) The first aid kit must include, but is not limited to, the following:
  - A) 4" bandage compress – 2 packages
  - B) 2" bandage compress – 2 packages
  - C) 1" bandage or adhesive compress – 1 package
  - D) 40" triangle bandage with two safety pins – 1
  - E) Splint, wire or wood – 1
- 3) A tourniquet or any type of ointment, antiseptic or other medicine cannot be included.

## o) Floor Covering.

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- 1) All portions of the floor that come in contact with passengers' or driver's footwear shall be covered with a waterproof material. This floor covering shall not crack when subjected to sudden temperature change and shall be bonded securely to the floor with a waterproof substance. All seams and openings shall be filled with a waterproof sealer.
- 2) The floor covering in the aisles and entrance area shall be of non-skid, wear-resistance type material commonly used in commercial passenger transportation vehicles.
- p) Fuel System. The fuel system shall conform to all applicable provisions of FMVSS 301 (49 CFR 571.301).
- q) Glazing Materials.
  - 1) The following applies to glazing on Type I school buses:
    - A) Laminated safety glass is optional on Type I school buses. All applicable provisions of FMVSS 205 (49 CFR 571.205) apply to the optional laminated safety glass and also to any plastic material used in multiple-glazed unit, including meeting the pertinent tests indicated below, that are specified in ANSI Standard Z26.1-1996, Z26.1a-1996, and are grouped in Table No. 1 of that Standard. Glazing shall be identified as shown below.

Glazing installed in:	Shall meet tests grouped in Z26.1 Table No. 1 under:	Shall bear one of the following identification markings:
Windshield	Item 1, either laminated glass or multiple glazed unit.	AS 1 Glass;
Window or door forward of rearmost location of driver's seat back		AS 1 Glass; or AS 2 Glass
All Other locations		AS 1 Glass, or AS 2

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Glass, or AS 3 Glass

- B) In addition, any exposed plastic layer of a multiple glazed unit shall be identified in conformance with FMVSS 205 (49 CFR 571.205).
- 2) All glazing shall be installed so the identification markings are legible.
- 3) All glazing in the rear of the bus, except a rear emergency exit window, shall be the fixed type.
- r) Heaters.
- 1) An interior temperature of not less than 10° Celsius (50° F) shall be maintained throughout the bus while the bus is moving at 75 kilometers per hour (46.6 miles per hour) in calm air at the average minimum January temperature, as established by the Weather Bureau, U.S. Department of Commerce, for the area in which the bus is to be operated.
- 2) Each heater shall bear a nameplate that shall identify the heater manufacturer and state the heater capacity rating when tested as recommended in SAE Recommended Practice J638 (November 1998), or when tested in accordance with other nationally recognized standard or code. The recommended practice, standard, or code under which the heater is rated shall be identified on the nameplate. Such nameplate shall constitute certification by the heater manufacturer that the heater performance is as shown on the plate.
- 3) Heater hoses shall be supported so as to prevent wear due to vibration. The hoses shall not dangle or rub against the chassis or sharp edges and shall neither interfere with nor restrict the operation of any engine function (such as an emission or ignition control mechanism). Heater hoses shall be protected or baffled between the point at which they enter the passenger compartment and the point of attachment to the heater so that, in the event of hose rupture or disconnection, passengers and/or driver will not be subject to hot water burns.
- 4) Auxiliary fuel-fired heating systems are permitted, provided they comply with the following:

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- A) The auxiliary heating system fuel shall utilize the same type of fuel as specified for the vehicle engine;
  - B) The heater or heaters may be direct hot air or connected to the engine's coolant system;
  - C) An auxiliary heating system, when connected to the engine's coolant system, may be used to preheat the engine coolant or preheat and add supplementary heat to the bus's heating system;
  - D) Auxiliary heating systems must be installed pursuant to the manufacturer's recommendations and shall not direct exhaust in such a manner that will endanger bus passengers. The auxiliary heating system must not direct exhaust into any portion of the prohibited zone as shown in Illustration C of this Part;
  - E) Auxiliary heating systems that operate on diesel fuel shall be capable of operating on:
    - i) a hot water and/or combustion type heater; or
    - ii) if only one heater is used, a fresh-air or combination fresh-air and recirculation type heater; or
    - iii) blended diesel fuel without the need for system adjustment; and
  - F) The auxiliary heating system shall be low voltage.
- s) Heater Hose Connections at Engine. Each heater hose connection to the engine shall include a shutoff valve located as close to the engine as practical. Such connection and valve shall not interfere with any engine function whether closed, partially open, or fully open, with heater hoses installed properly.
- t) Interior.
- 1) Thermal and acoustic materials shall be installed in the ceiling and the sides of the body to reduce heat transfer and the interior noise level.

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- 2) The passenger compartment of the bus, including the ceiling, shall be free of any visible or concealed projections likely to cause injury. Exposed lapped joints shall be connected and/or treated to reduce likelihood of injury from exposed edges. Materials or components in the passenger compartment located within 59 inches from the floor shall be free of any sharp corner or projections or shall be padded so as to make injury unlikely.
- u) Lamps and Signals. Light Emitting Diode (LED) lamps that meet applicable FMVSS or SAE Standards or SAE Recommended Practices are acceptable.
- 1) Alternately Flashing Signal Lamps. Each bus shall be equipped with an eight lamp alternately flashing signal system that conforms to S5.1.4(b) of FMVSS 108 (49 CFR 571.108) and Section 12-805 of the Code. A separate circuit breaker and a master switch shall be provided for this signal system. When in its "off" position, this master switch shall prevent operation of the eight lamp system; shall prevent operation of any lamps mounted on the stop signal arm panel required under subsection (hh); and shall prevent operation of any electrically controlled mechanism that would cause the stop signal arm panel to extend. The controls for the eight lamp flashing signals, the stop signal arm panel, and the service entrance door shall be arranged so as to provide for the following sequence of operations while the engine is running:
    - A) Place the alternately flashing signal system master switch in its "off" position. Close and secure the service entrance door. Actuate the alternately flashing signal system hand or foot control. The alternately flashing signal lamps of either yellow (amber) or red color shall not go on.
    - B) With the master switch "off" and the hand or foot control actuated, open the service door. The alternately flashing signals of either color shall not go on and the stop signal arm panel shall not extend.
    - C) Deactivate the hand or foot control. Place the alternately flashing signal system master switch in its "on" position. Close and secure the service door. Then open the service door. The alternately flashing signal lamps of either color shall not go on and the stop

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signal arm panel shall not extend.

- D) Close and secure the service door. Actuate the alternately flashing signal system by hand or foot control. A yellow pilot lamp in the view of the driver and the yellow alternately flashing signals shall go on.
  - E) Desecure but do not open the service door. The yellow pilot and the yellow alternately flashing signals shall go off. A red pilot lamp in the view of the driver and the red alternately flashing signals shall go on. The stop signal arm panel shall extend.
  - F) Fully open the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.
  - G) Close but do not secure the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.
  - H) Open the service door. The red pilot and red signals shall remain on and the stop arm shall remain extended.
  - I) Close and secure the service door. The red pilot and red signals shall go off and the stop arm shall retract.
  - J) Open the service door. Alternately flashing signals of either color shall not go on and the stop arm shall not extend.
- 2) Interior Lighting. At least the white nosings of the service entrance steps (subsection (gg)(3)), the floor around the stepwell, the entire aisle, and each emergency door and emergency exit shall be illuminated by lamps emitting a white light. For buses designed to transport 33 or more passengers, at least two interior illumination lamps shall be installed. At least the nosings of the service entrance steps and the floor around the stepwell shall be illuminated automatically by opening of the service door. No lamp shall be installed at or near the eye level of a pupil moving through the service entranceway to the aisle unless such lamp does not shine directly into the eyes of any such pupil.
- 3) Rear Turn Signals. Yellow turn signal lamps shall be mounted on the rear



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as far apart as practical and as high as practical but below the rear window. The effective projected illuminated area of these turn signal lamps shall be no less than required for the yellow alternately flashing signal lamps required under subsection (u)(1); i.e., .0122 m<sup>2</sup> (19 in<sup>2</sup>).

- 4) Side Turn Signals. Two yellow side turn signal lamps conforming to SAE Standard J914 (July 2003) shall be installed on each bus designed to transport 33 or more passengers. Except as provided in this subsection, this SAE Standard shall be read as setting forth mandatory requirements. The lamps shall be "armored" and mounted on the body between the rub rails required under subsection (dd). The right lamp shall be within 1 m (39.4") of the rear of the service entrance but, on a forward control bus, not forward of the front axle. The left lamp shall be approximately the same distance from the front bumper as the right lamp.
- 5) Stop Signals. Red stop lamps shall be mounted on the rear as far apart as practical but closer to the vertical centerline of the bus than the rear turn signal lamps required under subsection (u)(3), and at the same height as those turn signal lamps. The effective projected illuminated area of these stop lamps shall be no less than required for the red alternately flashing signal lamps required under subsection (u)(1); i.e., .0122 m<sup>2</sup> (19 in<sup>2</sup>).
- 6) Strobe.
  - A) *One per bus;*
  - B) *Shall emit white or bluish-white light;*
  - C) *Shall be visible from any direction;*
  - D) *Shall flash 60 to 120 times per minute;*
  - E) *Shall be visible in normal sunlight;*
  - F) *Mounted at or behind center of rooftop and equal distance from each side. Distance from rear will be calculated by measuring height of filament and multiplying same by 30 inches (i.e., filament height measured from the base of the strobe x 30 = distance from rear of bus where lamp is to be located). (Section 12-815 of the*

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Code)

- G) If a roof exit, air conditioner, or the size of the bus interferes with the placement of a strobe as required by (u)(6)(F), the strobe can be placed to the rear of the roof exit or air conditioner as near as practicable above the rear axle, horizontally centered between the rear tires.
- v) Lettering.
- 1) General. Except where otherwise required or allowed, lettering on the exterior of the body shall be black against a national school bus glossy yellow background. All required letters and numerals shall conform to Series "B", or heavier series, of the Standard Alphabets for Highway Signs issued by the Federal Highway Administration, Washington, D.C. 20591. Decals may be used instead of paint. Signs, numbers, or letterings, other than those either required by Section 12-802 of the Code or required or permitted by this Part shall not be affixed permanently on either the exterior or the interior of the bus. Interior lettering shall contrast with its background.
  - 2) The words "SCHOOL BUS" shall be displayed against a national school bus glossy yellow background as high as practical and approximately centered on the front and rear of the bus body, in letters at least 200 mm (8") high (see Section 12-802 of the Code). These words may be painted on or applied to the bus body or displayed on a sign firmly attached to or built into the body. The background of an illuminated sign shall approximate the national school bus glossy yellow color as closely as feasible.
  - 3) A school bus identification number, supplied by the purchaser, shall be displayed as high as practical on the front and rear of the bus in numerals not less than 100 mm (4") high. Such number may be displayed on the sides of the bus as specified by the purchaser. As an option, identification numbers may also be located on the rooftop.
  - 4) *Either the owner's name or the school district number or both must be displayed on both sides of the bus at least four inches high, approximately centered and as high as practicable below the window line. (Section 12-*

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802 of the Code) The lettering must be located on one line.

- 5) The body and/or chassis manufacturer's name, emblem, or other identification may be displayed, colorless or in any color, on any unglazed surface of the bus so as not to be mistaken for the name required in subsection (v)(4), and so as not to interfere with any required letters or numerals.
- 6) The words "EMPTY WEIGHT", or the abbreviation "EMPTY WT.", or the letters "E.W.", followed by the empty weight of the bus, as defined in Section 440.220, stated in pounds, shall be displayed on the exterior of the body near the rear edge of the service entrance in numerals and letters at least 50 mm (2") high (see Section 12-802 of the Code).

Examples: EMPTY WEIGHT      16,800 lb      E.W. 16,800 lb

- 7) The word "CAPACITY", or the abbreviation "CAP.", and the rated passenger capacity (see subsection (f) of this Section) followed by the word "PASSENGERS", or the abbreviation "PASS.", shall be displayed on the exterior of the body near the rear edge of the service entranceway, and on the interior above the right portion of the windshield, in numerals and letters at least 50 mm (2") high (see Section 12-802 of the Code).
- 8) The words "NO STANDEES" shall be displayed only on the interior above the windshield, approximately opposite the aisle but to the right of the mirror and sun visor, in letters at least 50 mm (2") high.
- 9) The words "EMERGENCY DOOR" or "EMERGENCY EXIT" in letters at least 5 cm high must be displayed on the interior and exterior of the bus. "EMERGENCY DOOR" must be displayed at the top of, or directly above, any emergency exit door. "EMERGENCY EXIT" must be displayed at the top of, or directly above, or at the bottom of, any emergency exit window. They may be displayed on a separate colorless background (such as white, aluminum, or silver) that extends no more than 15 mm (.6") above or below the words and no more than 25 mm (1") to the right or left of the words.
- 10) A black arrow, curved or straight, at least 150 mm (5.9") in length and 15 mm (.6") in width, showing the direction each exterior emergency exit

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release mechanism is to be moved to open the emergency exit, shall be painted or permanently affixed on the exterior yellow portion of the bus within 150 mm (5.9") of each release mechanism.

- 11) An arrow showing the direction each interior emergency exit release mechanism is to be moved to open the emergency exit shall be painted or permanently affixed on the interior of the bus within 150 mm (5.9") of each emergency exit release mechanism. Each interior arrow shall contrast with its background and, where suitable space is limited, may be smaller than the exterior arrows but must be conspicuous.
- 12) Alternate Fuel
  - A) *If the bus uses alternate fuel (e.g., propane, CNG), the vehicle must be marked with an identifying decal. Such decal shall be diamond shaped with white or silver scotchlite letters one inch in height and a stroke of the brush at least 1/4 inch wide on a black background with a white or silver scotchlite border bearing either the words or letters:*

*"PROPANE" = If propelled by liquefied petroleum gas other than liquefied natural gas; or*

*"CNG" = If propelled by compressed natural gas. The sign or decal shall be maintained in good legible condition.*
  - B) *The alternate fuel decal shall be displayed near the rear bumper and visible from the rear of the vehicle. (Section 12-704.3 of the Code)*
- 13) The vehicle's length (rounded up to nearest whole foot) must be displayed on or adjacent to the interior bulkhead clearly within the driver's view. (For example: vehicle length of 39.1 feet will be displayed as 40 feet.) Each letter or numeral must be at least two inches high and black in color. The measurement must be taken from the front bumper to the rear bumper.
- 14) A "Stop Line" in contrasting color is required between 5.9 and 6.1 inches below the top of each side window opening. The line shall be located between each window that slides downward.

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- 15) The decal described in this subsection (v)(15) is required to be displayed on every school bus registered in Illinois. The school bus manufacturer may elect to apply the decal at the time the school bus is manufactured or the decal may be applied by the school bus owner after the school bus is purchased. A white decal with black lettering and numerals that measure one inch high must be displayed on the rear of the bus. The decal must display the words TO REPORT ERRATIC DRIVING followed by the area code and phone number of the bus owner. The decal shall be located on the rear window glazing below the rear seat back, on the bus body below the window line, or on the rear bumper. The decal must be visible to the motoring public from the rear of the bus and cannot obstruct any required lettering or numerals. The decal cannot be located on any emergency door glazing or any emergency window glazing. Magnetic signs are not allowed. (See P.A. 95-0176, effective January 1, 2008.)
  - 16) The decals described in this subsection (v)(16) are required to be displayed on every school bus registered in Illinois if an audio and/or visual recording will be made of the interior of the school bus. The school bus manufacturer may elect to apply the decals at the time the school bus is manufactured or the decals may be applied by the school bus owner after the school bus is purchased. Two white decals with black lettering measuring one inch high shall be displayed, one on the exterior of the service (e.g., entrance) door or on the bus body adjacent to the service door if the door is not adequate to accommodate the decal and a second on the front interior bulkhead. The decals shall serve as a notice of audio and/or visual recordings. The exterior decal must not be located on any service door glazing and the interior decal must not obstruct any other required lettering on the bulkhead. Magnetic signs are not allowed. (See P.A. 95-0352, effective August 23, 2007.)
- w) Locked Compartment (Optional). If specified by the purchaser, a lockable compartment may be installed for storage of fire extinguisher, first-aid kit, warning devices, wheel chocks, or other items.
- 1) The compartment locking device shall be connected with an automatic audible and visible alarm that will alert the driver when the engine is running and the compartment is locked. No alarm disconnect, "squelch control", or other alarm defeating mechanism shall be installed.

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- 2) A red cross, formed of five equal squares, and the words "FIRST-AID KIT" shall be displayed on the compartment door, or cover, if the first-aid kit is to be carried in the locked compartment.
  - 3) The words "FIRE EXTINGUISHER" shall be displayed on the compartment door, or cover, if the fire extinguisher is to be carried in the locked compartment.
- x) Metal Treatment.
- 1) Unless excluded below, all steel or iron used in construction of the bus body and attached equipment shall be either resistant to atmospheric corrosion, or zinc coated, or treated by equivalent process. Particular attention shall be given to each fastener or attaching device, lapped surface, welded connection or fastening, cut edge, punched or drilled hole, surface subjected to abrasion, closed or box section, and any unvented or undrained area or space. The number of unvented or undrained areas or spaces is to be minimized. Excluded are door handles, grab handles, and interior decorative parts.
  - 2) As evidence that above requirements have been met, a sample of fastener, material, or section of body, coated or finished as installed in the bus, when subjected to a 1,000-hour salt spray test in accordance with American Society for Testing and Materials (ASTM) Standard B-117-1997 "Method of Salt Spray (Fog) Testing" shall not exhibit more than 10 percent reduction in weight after all adherent corrosion products are removed.
- y) Mirrors.
- 1) Interior Mirror – A mirror that measures at least 6 inches x 30 inches overall shall be located inside the bus. The mirror shall afford the operator a good view of the bus interior and portions of the roadway to the rear. It shall be firmly supported, constructed of clear-view safety glass and securely backed and framed. It shall have rounded corners. Edges shall be padded to reduce danger of injury upon impact. Exception: For buses that meet the definition of a Type I-A school bus, as defined in Section 440.220, the interior mirror may meet manufacturer's specifications.

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- 2) All exterior mirror systems shall conform to the applicable requirements of FMVSS 111 (49 CFR 571.111).
  - 3) More convex mirrors than required above may be installed, if specified by the purchaser.
  - 4) The reflecting surface on the backside of each mirror glass shall be protected from abrasion, scratching, and atmospheric corrosion.
- z) Mounting of Body. This subsection does not apply to an integral type bus.
- 1) After the date of manufacture of the incomplete vehicle, the chassis frame shall not be altered so as to extend the wheelbase. Other extensions of the chassis frame may be accomplished only by the incomplete vehicle, intermediate, or final-stage manufacturer or by an agent of such manufacturer properly instructed and authorized by such manufacturer to make such extensions.
  - 2) Insulating material shall be placed at all mounting points between the body and chassis frame. This material shall be at least 5 mm (.2") thick, may have the quality of the sidewall of an automobile tire, and shall be so secured that it will not move, vibrate, or "crawl" out of place during normal operations.
  - 3) The body front shall be attached and sealed to the chassis cowl so as to prevent the entry of water, dust, or fumes through the joint between the chassis cowl and the body.
- aa) Radio Noise. Radio/stereo speakers must be located at least four feet behind the rearmost position of the driver's seat.
- AGENCY NOTE: Two-way communication radios are allowed.
- bb) Rack, Book. Not permissible.
- cc) Reflectors.
- 1) Front

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- A) *Two yellow rigid or sheet type (tape) front reflex reflectors shall be attached securely and as far forward as practicable.* (Section 12-202 of the Code) They shall be located between 15 and 60 inches above the roadway at either fender, cowl, or body and installed so as to mark the outer edge of the maximum width of the bus. No part of the required reflecting material may be obscured by a lamp, mirror, bracket, or any other portion of the bus. No part of the required reflecting material may be more than 11.8 inches (300 mm) inboard of the outer edge of the nearest rub rail. The reflector may be any shape (e.g., square, rectangle, circle, oval, etc.). A rigid type reflex reflector may be any size if permanently marked either DOT, SAE A, or SAE J 594; otherwise, it shall display at least seven square inches of reflecting material (about three inch diameter if a solid circle).
- B) A sheet type (tape) reflex reflector which conforms to FMVSS 108 (49 CFR 571.108 (S5.7.1.2)) may be used but its forward projected reflecting area shall be at least eight square inches.
- 2) *Left Side. One amber no more than 12 inches from the front and one red no more than 12 inches from the rear. Mounted at a height not less than 15 inches and not more than 60 inches above the surface of the road.* (Section 12-202 of the Code) On buses 20 feet or more in length, one amber reflector as near center as practicable must also be provided. The reflector must measure a minimum of three inches in diameter.
- 3) *Right Side. One amber no more than 12 inches from the front and one red no more than 12 inches from the rear. Mounted at a height not less than 15 inches and not more than 60 inches above the surface of the road.* (Section 12-202 of the Code) On buses 20 feet or more in length, one amber reflector as near center as practicable must also be provided. The reflector must measure a minimum of three inches in diameter.
- 4) *Rear. Two red reflectors on rear body within 12 inches of lower right and lower left corners.* (Section 12-202 of the Code) The reflectors must measure a minimum of three inches in diameter.
- dd) Rub Rails.



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- 1) Each rub rail shall be 4" or more in width in its finished form, shall be constructed of 16-gauge steel or suitable material of equivalent strength and shall be constructed in corrugated or ribbed fashion.
  - 2) There shall be one rub rail located approximately at seat level that shall extend from the rear of the service entrance completely around the exterior of the bus body without interruption, except at a rear emergency door or a rear compartment, to a point of curvature near the front of the body on the left side.
  - 3) There shall be one rub rail on each side located approximately at floor line that shall extend over the same longitudinal distance as the rub rail required under subsection (dd)(2), except:
    - A) This rub rail need not extend across a wheel housing, and
    - B) This rub rail may terminate at the radii of the right and left rear corners of the body.
  - 4) More than two rub rails may be installed on a side and/or the rear of a bus.
- ee) Seating. Each seat and each barrier are required to conform to FMVSS 222 (49 CFR 571.222).
- 1) Seat, Driver's. The driver's seat shall be rigidly positioned, and shall afford both vertical and fore-and-aft adjustments of not less than 100 mm (3.9"), without the use of a tool or other non-attached device. The shortest distance between the steering wheel and the back rest of the operator's seat shall be no less than 280 mm (11").
  - 2) Seats, Students'.
    - A) Each seat (except as provided in subsection (ee)(2)(E)) shall be constructed so that the shortest straight-line distance from the top of the seat back to the empty seat cushion is 28" when measured near the transverse center of the seat at the front of the seat back and along the angle of rearward inclination of the seat back. Since the height of a seat back is difficult to measure precisely on a

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repeated basis, a measurement of 27.5" or more is deemed acceptable.

- B) Each seat shall be forward facing (except as provided in subsection (ee)(2)(E)).
- C) A flip-up seat may be located only immediately adjacent to any side emergency door. The flip-up seat must conform to the following:
  - i) The seat must be designed so that, when in the folded position, the seat cushion is flat against the seat back to prevent a child's limb from becoming lodged between the seat cushion and seat back.
  - ii) The seat must be designed to discourage a child from standing on the seat cushion when in the folded position.
  - iii) The working mechanism under the seat must be covered to eliminate any tripping hazard.
  - iv) All sharp metal edges on the seat must be padded to prevent any snagging hazard.
  - v) No portion of the door latch mechanism can be obstructed by a seat.
  - vi) There must be at least 11.7 inches (30 cm) measured from the door opening to the seat back in front.
- D) Optional seat safety belts must be installed according to specifications provided by the bus body manufacturer. This may include reinforced seats and seat frames.
- E) In the case of a seat to be occupied by a student with special needs, seating requirements shall be changed only as necessary to meet the needs of the student with special needs (e.g., seat missing to accommodate wheelchair, hard surfaced stretcher installed to accommodate child who is not capable of sitting in an upright

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position) (see 92 Ill. Adm. Code 444).

- ff) Safety Belt, Driver's.
- 1) Each driver's safety belt assembly shall be arranged so that all portions of the assembly remain above the floor when not in use. If retractors are installed, they shall be the emergency locking type.
  - 2) Buses must be equipped with a lap belt/shoulder harness design for the driver.
- gg) Service Entrance and Door.
- 1) The service entrance shall be located on the right side near the front, in unobstructed and convenient view of the driver. The service entrance shall have a minimum vertical opening of 1.7 m (67") and a minimum horizontal opening of 610 mm (24").
  - 2) A steel grab handle not less than 250 mm (9.8") in length shall be firmly attached in an unobstructed location on the left side of the entranceway as a person enters the bus. An optional grab handle can also be located on the right side of the entranceway.
  - 3) The bottom step in the entranceway shall not extend beyond the exterior of the body. With all seats empty, the bottom step shall be not less than 300 mm (11.8") and not more than 400 mm (15.7") from the roadway. At least two steps shall be provided. The steps shall be enclosed. Risers shall be approximately equal. Each step, including the floor at the top riser, shall be surfaced with a nonskid material with a 40 mm (1.6") to 80 mm (3.1") white nosing as an integral piece.
  - 4) The service door shall be either manually or power operated by the seated driver. When in the closed and secured position, the door operating mechanism shall prevent accidental opening but shall afford prompt release and opening by the driver. No exposed parts of a door operating mechanism shall come together so as to shear or crush fingers. The vertical closing edges of a service door shall be padded to lessen chance of injury.

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- 5) A power operated door shall be equipped for emergency manual operation in case of power failure. Instructions for emergency operation of a power operated door shall be affixed permanently on the interior of the door in letters at least 12 mm (.5") high.
- 6) A single-section service door shall be hinged at the front of the service entrance.
- 7) Glazed panels shall be installed in the service door to afford the driver a view of small children outside the door, traffic signs, and intersecting roadways. The bottom of each lower glass panel shall not be more than 10 inches from the top surface of the bottom step. The top of each upper glass panel when viewed from the interior shall be not more than 3 inches below the interior door control cover or header pad.
- 8) Service Door Lock (Optional). If ordered by the purchaser, a lock may be installed on or at the service door. Any type service door locking system installed in the bus shall conform to at least one of the following requirements.
  - A) Requirement 1: A locking system shall not be capable of preventing the driver from easily and quickly opening the service door; or
  - B) Requirement 2: A locking system that is capable of preventing the driver from easily and quickly opening the service door shall include an audible and visible alarm to alert the driver when the engine is running and the service door is locked. No alarm disconnect, "squench control", or other alarm defeating or attenuating device shall be installed; or
  - C) Requirement 3: A locking system shall not be capable of preventing the driver from easily and quickly opening the service door except when, and only when, a person outside the bus uses a key that is not capable of locking more than one of at least 1000 of the door manufacturer's key locking systems.
- hh) Steering Wheel Clearance. The rim grip of the steering wheel shall have at least 50 mm (2") clearance in all directions, except at the spokes.

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- ii) Steps, Body Front. On each side at the front of the body at least one grab handle and recessed foothold or folding stirrup step shall be installed so as to provide easy access to the windshield for cleaning purposes. Exception: Type I-A school buses are exempt.
  
- jj) Stop Signal Arm Panel.
  - 1) A stop signal arm panel must be installed on the left side of the bus that conforms to 49 CFR 571.131. Decals may be used in lieu of painting. Strobe lamps are acceptable on stop signal arm panels.
  - 2) Section 440.Illustration B depicts the octagon shaped semaphore required in subsection (jj)(1).
  - 3) Additional stop signal arm panels may be added at the purchaser's request. Additional panels must be located on the left side of the bus. Additional panels must operate in conjunction with the required panel and meet all stop arm panel requirements except as follows. The additional panel must not contain any marking or reflective material on the front side of the panel. The additional panel must be located in the rear half of the bus adjacent to the rearmost window.
  
- kk) Storage Compartments (Optional).
  - 1) If installed, the storage compartments shall be fire-resistant and of adequate strength and capacity for the storage of the items to be carried, such as tire chains, tow chains, tools for roadside or minor repairs, school activity equipment, etc. The compartments shall provide reasonable security for the contents and shall be constructed and installed so as to preclude passenger injury due to the compartments or the contents becoming dislodged when the bus is subjected to the maximum possible braking force and to minimize chances of such injury when the bus is subjected to a collision impact.
  - 2) If a relatively small storage compartment is located inside the passenger compartment, seat cushions alone may not serve as the cover for the compartment.

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- ll) Sun Visor. An interior, adjustable, transparent, tinted sun visor not less than 150 mm (5.9") high by 760 mm (29.9") wide shall be so installed that it can be turned up and will remain up when not in use. It may be supported so that it can be moved for use on the driver's left, but when used in front of the driver and in a position approximately parallel to the windshield it shall be supported at or near each of its ends so as to minimize its vibration. Exception: For school buses that meet the definition of a Type I-A school bus, as defined in Section 440.220, the sun visor may meet manufacturer's specifications.
- mm) Tow Hook, Rear (Optional). Any tow hooks installed on the rear shall be attached or braced to the chassis frame, or to an equivalent structural member of an integral type bus. A tow hook may not extend beyond the rear face of the rear bumper.
- nn) Undercoating. The underside of the body, including floor members and the side panels below the floor, shall be coated with a fire-resistant undercoating material applied by the spray method so as to seal, insulate, reduce corrosion, and reduce interior noise. Non-metallic components need not be coated.
- oo) Ventilation. The body shall be equipped with a controlled ventilation system of sufficient capacity to maintain a satisfactory ratio of outside to inside air under cool and cold operating conditions without opening of windows. With a powered ventilation system, air outlet openings shall be located, sized, and manufactured so that, with doors and windows closed, a positive pressure is maintained in the driver and passenger spaces, to lessen chances of dangerous gas entering such spaces. Fresh air inlets shall be located so as to minimize entrance of either dangerous engine gas or obnoxious engine fumes.
- pp) Warning Devices.

AGENCY NOTE: Warning devices are required to be carried on each school bus transporting pupils. The manufacturer may elect to install the warning devices at the time the school bus is manufactured; however, warning devices can also be installed by the owner after the school bus is purchased.

- 1) *Emergency warning devices are required to be carried on school buses weighing more than 8,000 pounds and operated upon any highway outside an urban district. The warning devices must be securely stored. The warning devices required for use when lighted lamps are required (see*

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Section 12-201(b) of the Code) *shall consist of:*

- A) At least three liquid-burning flares and three red-burning 15-minute fuses; or
  - B) Three red electric lanterns; or
  - C) Three portable red emergency reflectors that meet FMVSS No. 125.
- 2) In addition, the following warning devices are also required for use when lighted lamps are not required (see Section 12-201(b) of the Code):
- A) Two red cloth flags (not less than 12 inches square with standards to support flags); or
  - B) Two portable emergency reflectors that meet FMVSS No. 125. (The reflectors in subsection (pp)(1)(c) qualify for this option.) (See Section 12-702(a) and (c) of the Code.)
- qq) Weight Distribution and Gross Weight. Storage or cargo spaces, if installed, and seats shall be located so that when the bus is fully loaded as specified or advertised by the manufacturer the loads exerted on the roadway will exceed neither a tire load rating, nor a gross axle weight rating, nor the gross vehicle weight rating indicated by the data displayed on the label permanently affixed in compliance with Section 440.310.
- rr) Wheel Housings.
- 1) Each wheel housing opening shall allow for unimpeded wheel and tire service or removal.
  - 2) Each rear wheel housing shall provide the clearance recommended in SAE Information Report J683 (August 1985) for installation and use of tire chains on the dual or single tires installed on the rear wheels.
- ss) Windows or Glazed Panels, Rear. Glazed panels, or windows, shall be installed in the rear of the bus so as to afford the seated driver a reflected view through the rear of the bus as wide and as high as practical without unduly weakening or

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increasing the cost of the body structure. Such view shall be as low as allowed by the backs of the rear seats except that, when the aisle required under subsection (a), extends to a rear emergency door, an additional lower glazed panel shall be installed to afford the driver an additional view through such panel at least the width of the required aisle and as low and high as practical.

- tt) Window Openings, Side. This subsection does not apply to a window or glazed panel installed forward of a front passenger seat, and is optional for a window installed either beside a rear passenger seat, special service door, or in a side emergency exit.
- 1) All side windows shall open from the top only and shall operate freely.
  - 2) There shall be one vertical opening side window for each seat.
  - 3) Each side window shall provide an unobstructed emergency egress opening at least 9" high and 22" wide. The opening may extend to 18" above the unoccupied passenger seat cushion but no closer (to the seat cushion).
  - 4) A stop line for the window opening shall be applied 6" from the top of the window opening.
  - 5) The side windows may be split sash.
  - 6) The window latches shall be recessed.

AGENCY NOTE: See Section 440.420(q) for glazing material requirements.

- uu) Windshield.
- 1) The windshield shall be large enough to permit the operator to see the highway clearly, and shall be curved or slanted to reduce glare. The front cornerposts and other supports shall be shaped and located so as to cause as little obstruction to the driver's view of the highway as practical.
  - 2) The windshield shall have a graduated glazing shade band across the top. The definition and boundary of this shade band shall be as recommended in SAE Recommended Practice J100 (November 1999).



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- vv) Windshield Wipers. See the FMVSS for requirements (49 CFR 571.104).
- ww) Windshield Washer. See the FMVSS for requirements (49 CFR 571.104).
- xx) Wiring.
  - 1) All wiring for lamps and other electrical devices shall be as recommended for automobiles, motor coaches, and heavy duty starting motor circuits in SAE Recommended Practices J1292 (October 1981) and J541a (October 1996) and in other practices or standards referenced therein, unless preempted by FMVSS. (See the FMVSS (49 CFR 571) for requirements.)
  - 2) All circuits, except those for the alternately flashing signal lamps and the stop signal arm lamps, may be divided into independent circuits. Whenever feasible, all other electrical functions (sanders, windshield wipers, heaters, defrosters, etc.) shall be provided with independent and properly protected circuits.
  - 3) Each body circuit shall be coded either by numerals and/or letters at approximately 100 mm (3.9") intervals, or by color and numerals and/or letters, or by colors only. The codes shall appear on a diagram of the circuits in a readily accessible location.
  - 4) A separate fuse, circuit breaker, or electronic circuit protection shall be provided for all circuits, except that components of the engine starter and ignition circuits may be protected by other means.
  - 5) Wires not enclosed within the body shall be fastened securely at intervals of not more than 460 mm (18.1").
  - 6) All terminals and splice clips shall be accessible.
  - 7) The chassis manufacturer shall install a readily accessible electrical terminal so that the net body and chassis electrical current flow can be indicated through a chassis ammeter without dismantling or disassembling the chassis component. The chassis wiring to this terminal shall have a current carrying capacity at least equal to the maximum generator output.

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- 8) All school buses manufactured on or after January 1, 2006 must be manufactured with a noise suppression switch that is capable of turning off noise producing accessories, including, but not limited to, heater blowers, defroster fans, auxiliary fans and radios. (See Section 12-815.2 of the Code.)

## SUBPART F: CHASSIS REQUIREMENTS

**Section 440.505 Conformance to the Requirements**

At the time of the safety test conducted under provision of Section 13-109 of the Code, and when delivered to the purchaser, the chassis of each Type I School Bus shall conform to the requirements stated or referred to in this Subpart. Some body requirements also applicable to the chassis are repeated or referred to herein.

**Section 440.510 Incorporation by Reference of Federal Motor Vehicle Safety Standards (Repealed)****Section 440.520 State Requirements**

*Except for mirrors, which may project 152 mm (6 inches), a school bus shall not exceed 2.625 m (8 feet) in width, 4.429 m (13 feet 6 inches) in height, nor 13.78 m (42 feet) in length (Sections 15-102 and 15-107 of the Code). Exceptions to the above are shown in Section 440.420 of this Part. Various portions of the bus chassis shall conform to the requirements set forth under the following subsections.*

- a) Air Cleaner.
  - 1) A dry element type air cleaner shall be provided.
  - 2) All diesel engine air filters shall include a latch-type restriction indicator that retains the maximum restriction developed during operation of the engine. The indicator should include a reset control so the indicator can be returned to zero when desired. Diesel-powered school buses that meet the definition of a Type I-A school bus, as defined in Section 440.220, are exempt from the restriction indicator requirement.
- b) Axles. Must meet federal chassis requirements as indicated on the federal certification label as required by 49 CFR 567 and 49 CFR 568.

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- c) Battery. See Section 440.420(c) of this Part.
- d) Brakes. See the FMVSS for requirements (49 CFR 571.105).
- e) Bumper, Front. The front bumper shall be of channel type cross section, shall be formed from rolled steel at least 4.5 mm (.177 inches) thick, shall have not less than a 200 mm (7.9 inches) vertical face, and shall extend to protect the outer edges of the fenders, or the body of a forward control bus. The bumper shall be of sufficient strength to permit pushing another vehicle of equal gross weight without permanent distortion. Exception: For school buses that meet the definition of a Type I-A school bus, as defined in Section 440.220, the bumper may meet manufacturer's specifications when the Type I-A school bus is equipped with a driver side air bag.
- f) Clutch. A bus having a manual shift transmission shall be equipped with the type and size of clutch recommended by the incomplete vehicle manufacturer for heavy duty service between the engine and transmission installed in the bus.
- g) Color and Paint. See Section 440.420(i) of this Part.
- h) Drive Shaft. A suitable guard shall be provided for each segment of the drive shaft to prevent accident or injury if the shaft breaks or becomes disconnected.
- i) Engine. Type and displacement may be specified by the purchaser.
- j) Exhaust System.
  - 1) The exhaust pipe, muffler and tail pipe shall be outside the bus body and attached to the chassis.

AGENCY NOTE: As mandated by the United States Environmental Protection Agency (USEPA), diesel-powered engines manufactured after December 31, 2006 are required to meet stricter standards that will reduce emissions of particulate matter and nitrogen oxides into the atmosphere. School bus manufacturers may be required to modify exhaust systems to meet the USEPA requirements, e.g., mufflers may be replaced with after-treatment devices that significantly reduce toxins released into the atmosphere. Modifications to exhaust systems made in compliance with

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the USEPA requirements are acceptable provided they do not impact the safe operation of the school bus.

- 2) The exhaust system shall be insulated from any insulated wire, flammable material, brake hose or line, or fuel system component by a securely attached metal shield at any point where the exhaust system is 11.8 inches (300 mm) or less (four inches (101.6 mm) or less if diesel powered engine) from the components listed in this subsection (j)(2).
  - 3) The tail pipe shall be extended to exit the exhaust gases either to the right or left side, or rear of the bus, except for prohibited zones as shown in Illustration C of this Part.
  - 4) The tail pipe shall extend out to but not more than 1 inch (25.4 mm) beyond the perimeter of the body or the bumper.
  - 5) The shielding of engine compartment components shall be governed by the chassis manufacturer's standards.
  - 6) Each gas conducting component that is not of stainless steel shall be of commercial heat and corrosion resistant exhaust system material and shall be nonflexible.
  - 7) For school buses that meet the definition of a Type I-A school bus, as defined in Section 440.220, the tail pipe may meet the chassis manufacturer's standard configuration. However, the tail pipe shall not exit beneath any fuel filler location or beneath any emergency exit door.
- k) Frame. See Section 440.420(z)(1) of this Part.
- l) Generating System. The generating system may utilize either mechanical rectification (commutator type) or diode rectification (alternator type).
- 1) The generator output shall be regulated automatically so as to provide for efficient battery charging without causing damaging potentials or currents in any part of the electrical system. Automatic means shall be provided to prevent battery discharge through the generator while the generator is not delivering current.

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- 2) The generator in a nominal 12 volt system shall be able to deliver a continuous current of 60 amperes, or more, while its automatic regulating devices are connected and functioning properly and the engine is running no faster than the speed at which it delivers its maximum net torque at the engine flywheel.
- 3) The generator in a nominal 12 volt system shall be able to deliver a continuous current of 20 amperes, or more, while its automatic regulating devices are connected and functioning properly and the engine is running no faster than the curb idle speed recommended by the engine manufacturer.
- 4) The generator in a nominal voltage system higher or lower than 12 volts shall be able to deliver at least the same continuous power (watts) as indicated under subsections (1)(2) and(3) of this Section, at the engine speeds indicated therein.

AGENCY NOTE: Where a bus must operate under adverse conditions such as low engine speeds, frequent periods of engine idle, and/or with high electrical load (frequent use of signals and interior lamps, high heater/defroster loads, etc.) for prolonged periods of time, the purchaser should specify a larger generator commensurate with operating conditions.

- m) Horns.
  - 1) At least one horn shall be installed giving an audible warning at a distance of 200 feet. The horns shall be controlled conveniently by the seated driver and tested in accordance with SAE Standard J377 (March 2001).
  - 2) A siren, whistle, or bell may not be installed to attract attention of pedestrians or drivers outside the bus (Section 12-601(b) of the Code). This prohibition shall not be interpreted to prohibit use of such devices inside the bus body to provide warnings to the bus driver.
- n) Instruments. The bus shall be equipped with at least the following nonglare illuminated instruments and gauges mounted for easy maintenance and repair and in such a manner that each is clearly visible to the seated driver:
  - 1) Ampere meter or volt meter, with "charge" and "discharge" indications,

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provisions for 100 ampere, or more, continuous current indication, and arranged so as to remain unharmed by any ampere meter current flow resulting from the installed generator operating at its maximum output;

- 2) Gauge, Air Pressure or Vacuum (where air pressure or vacuum is utilized either to apply or to assist in applying the service brakes);
  - 3) Gauge, Engine Coolant Temperature;
  - 4) Gauge, Engine Oil Pressure;
  - 5) Gauge, Fuel;
  - 6) Odometer (may be combined with speedometer; may indicate kilometers traveled if such indication is shown, clearly and conspicuously);
  - 7) Speedometer, with both miles per hour and kilometers per hour scales that are easily readable.
- o) Lamps and Signals. See Section 440.420(u) of this Part.
  - p) Oil Filter. A "full flow" type engine oil filter of approximately 1 liter (1 quart) capacity shall be installed. The purchaser may specify additional "full flow" or "by-pass" type filters, or oil treatment devices.
  - q) Shock Absorbers. Two front and two rear double-acting shock absorbers of adequate capacity shall be installed.
  - r) Spare Tire (Optional). The spare tire and rim, if supplied, shall be of the same size designation and load rating as the largest tire and rim installed on the bus. Each spare tire and rim shall be suitably mounted in an accessible location outside the passenger compartment.
  - s) Springs and Suspension. Each spring and other component in any of the suspension systems shall be capable of supporting its share of the rated gross axle weight during normal operations. Where spring failure could result in total loss of control of the bus, suitable means shall be provided to make such total loss most unlikely.

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- t) **Steering Mechanism.** Power steering is optional. The steering mechanisms shall provide safe and accurate performance at maximum load and speed and shall be adjustable while installed on the completed bus. After the date of manufacture of the incomplete vehicle, the steering mechanisms shall not be modified unless such modification is done with the concurrence of the incomplete vehicle manufacturer and in accordance with the incomplete vehicle manufacturer's instructions.
- u) **Tow Hooks, Front (Optional).** A front tow hook may not extend beyond the front of the front bumper. Each front tow hook not fastened securely to the chassis frame shall be connected to the frame by suitable braces.
- v) **Transmission.** Unless otherwise specified by the purchaser, the transmission shall be manual-shift.
  - 1) A manual-shift transmission shall provide not less than 4 forward gear ratios and 1 reverse gear ratio. A synchromesh shifting mechanism shall be provided for each forward gear ratio except for the highest ratio; i.e., "first gear" or "low gear". (Synchromesh may be specified for "first" or "reverse" gears at the purchaser's option.)
  - 2) An automatic transmission may be specified by the purchaser. Such transmission shall provide not less than 3 forward gear ratios and 1 reverse gear ratio.
- w) **Undercoating.** The entire underside of front fenders or wheel wells shall be coated with a fire-resistant undercoating material in order to seal joints and to reduce corrosion and noise. Nonmetallic components need not be coated.
- x) **Wiring.** See Section 440.420(xx) of this Part.

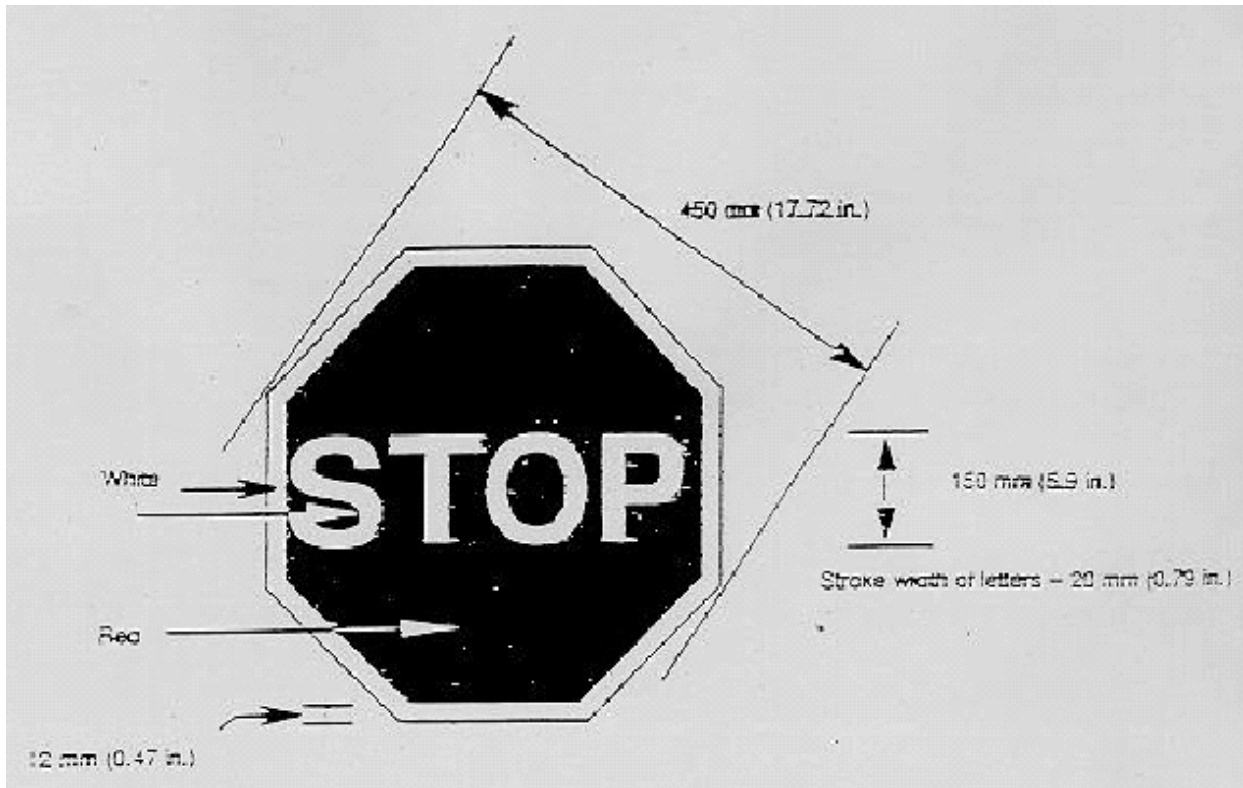
**Section 440.APPENDIX A Federal Motor Vehicle Safety Standards (FMVSS) and Related Regulations (Repealed)****Section 440.APPENDIX B First Aid Kit Requirements (Referred to in Section 440.420(l) (Repealed)****Section 440.APPENDIX C Specification Sheet Reflective Material -- Encapsulated Lens (Based on FHWA Notice N 5040.17, June 15, 1976) (Repealed)**

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**Section 440.ILLUSTRATION A Hexagon Shaped Stop Signal Arm (Repealed)**

**Section 440.ILLUSTRATION B Octagon Shaped Stop Signal Arm Panel**

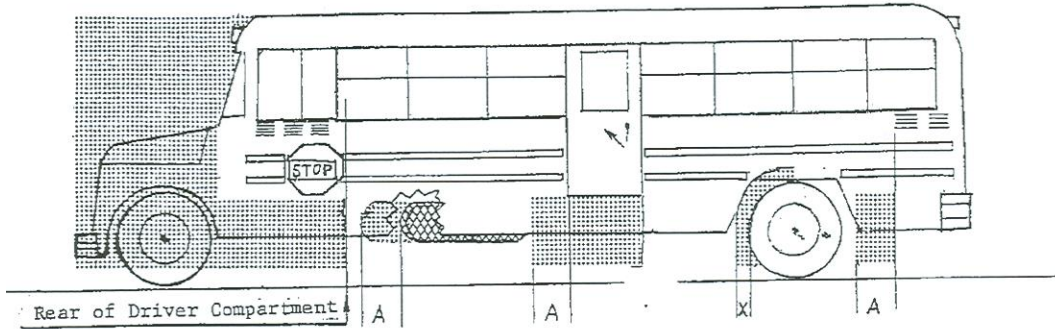


**Section 440.ILLUSTRATION C Exhaust Discharge Prohibited Zones**

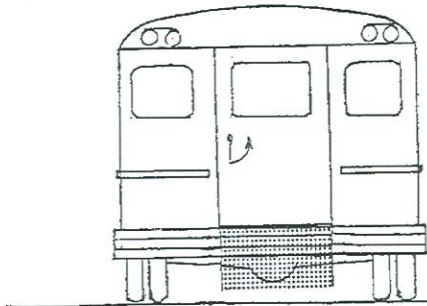
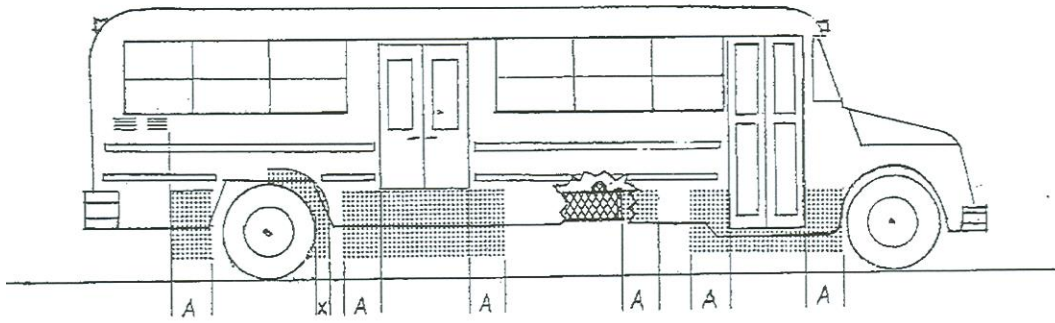


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NOT TO SCALE



Distance A = 1 meter (39 3/8")

Distance x = 150 millimeters (5 7/8")

 Prohibited Zone

 Ventilating Air Intake  
(anywhere on side).

 Fuel Tank

Heat shield between tank & discharge  
eliminates prohibited zone at tank.