

Department of Motor Vehicles

---

Wheel housings . . . . . 14-275a-80

Window openings . . . . . 14-275a-81

Windshields . . . . . 14-275a-82

Windshield wipers . . . . . 14-275a-83

Windshield washer . . . . . 14-275a-84

Warning devices for disabled vehicles . . . . . 14-275a-85

Wiring . . . . . 14-275a-86

Interpretation. . . . . 14-275a-87



## Minimum Requirements for Type II (Type 2) School Bus Construction and Equipment

### **Secs. 14-275a-1—14-275a-20.**

Repealed, May 2, 2007.

## **Minimum Requirements for School Bus Construction and Equipment**

### **Sec. 14-275a-21. Scope**

Section 14-275a of the Regulations of Connecticut State Agencies specifies minimum standards for the construction and equipment of school buses, as defined in subdivision (74) of subsection (a) of section 14-1 and section 14-275 of the Connecticut General Statutes. No school bus shall be registered for use on any public highway, nor shall it pass any inspection required and conducted by the Department of Motor Vehicles (“Department”) unless it conforms to the standards set forth in section 14-275a of the Regulations of Connecticut State Agencies.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-22. Definitions**

As used in sections 14-275a-21 to 14-275a-87, inclusive, of the Regulations of Connecticut State Agencies, the following words and phrases shall have the following meanings:

1. “ANSI” means American National Standards Institute;
2. “FMVSR” means the Federal Motor Vehicle Safety Regulations or, if indicated by the context, one such Regulation, as contained in Title 49, Parts 40, 325, 350 and 355 to 399, of the Code of Federal Regulations;
3. “FMVSS” means the Federal Motor Vehicle Safety Standards or, if indicated by the context, one such Standard, as contained in Title 49, Parts 400 to 999, inclusive, of the Code of Federal Regulations;
4. “5<sup>th</sup> Percentile Adult Female” means a person possessing the dimensions and weight of the 5<sup>th</sup> percentile adult female specified for the total age group in Public Health Service Publication No. 100, Series 11, No. 8, “Weight, Height and Selected Body Dimensions of Adults”;
5. “GVWR” means gross vehicle weight rating as defined in subdivision (32) of subsection (a) of section 14-1 of the Connecticut General Statutes;
6. “National School Bus Yellow” means, the color formerly known as “National School Bus Chrome”;
7. “95<sup>th</sup> Percentile Adult Male” means a person possessing the dimensions and weight of the 95<sup>th</sup> percentile adult male specified for the total age group in Public Health Service Publication No 1000, Series 11, No. 8, “Weight, Height and Selected Body Dimensions of Adults”;
8. “SAE” means Society of Automotive Engineers;
9. “SBMTC” means School Bus Manufacturers Technical Committee;
10. “Specially equipped” refers to a school bus designed, equipped, or modified to accommodate students with special needs;
11. “Type A school bus” or “Type A” means a bus constructed utilizing a cutaway front-section vehicle with a left side driver’s door. A Type A-1 school bus has a Gross Vehicle Weight (GVWR) of 14,500 pounds or less, a Type A-2 school bus has a GVWR greater than 14,500 pounds and less than or equal to 21,500 pounds;
12. “Type B school bus” or “Type B” means a bus constructed utilizing a stripped chassis. The entrance door is behind the front wheels. A Type B-1 school

bus has a GVWR of 10,000 pounds or less, and a Type B-2 has a GVWR greater than 10,000 pounds;

13. “Type C school bus” or “Type C” means a school bus constructed utilizing a chassis with a hood and front fender assembly. The entrance door of a Type C school bus, also known as a conventional school bus, is behind the front wheels. This type of bus also includes a cutaway truck chassis or truck chassis cab with or without a left side door; and

14. “Type D school bus” or “Type D” means a bus constructed utilizing a stripped chassis. The entrance door of a Type D, also known as a transit-style school bus or forward-control bus, is ahead of the front wheels.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-23. General requirements**

Every school bus shall be constructed and equipped in compliance with the FMVSS in effect on the date that such bus was manufactured. Every school bus shall be equipped and maintained in accordance with all applicable provisions of the FMVSR, as the same may be amended from time to time.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-24. Dimensions**

(a) Each school bus shall have an outside body width that does not exceed one hundred and two (102) inches and an overall maximum length that does not exceed forty-five (45) feet.

(b) The minimum inside body height of each school bus, as measured from the aisle floor surface to the ceiling shall, for Types A-2, B, C and D be seventy-two (72) inches, and for Type A-1, sixty-two (62) inches. The measurement of height shall exclude any air conditioning unit that meets the requirements of section 14-275a-26 of the Regulations of Connecticut State Agencies.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-25. Air filter**

(a) Each school bus engine shall be equipped with a dry element type air filter.

(b) 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.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-26. Air conditioning**

(a) An optional air conditioning (A/C) unit shall be installed at the center rear or sides of the roof. The configuration of any A/C unit mounted on the bus shall be securely installed so as to minimize the potential for injuries during a rollover accident and shall be equipped with a high impact plastic cover with rounded corners. No portion of any A/C unit may project into the effective space surrounding any emergency exit. No A/C unit may extend outward or downward to such an extent that it would detract from the safe and efficient evacuation of persons by means of the use of an emergency exit.

(b) Evaporator cases, lines and ducting (as equipped) shall be designed in such a manner that all condensation is effectively drained to the exterior of the bus below the floor level under all conditions of vehicle movement and without leakage onto any interior portion of the bus.

(c) On specially equipped school buses, the evaporator and ducting (if used) shall be placed at sufficient height so as not to obstruct occupant securement shoulder strap upper attachment points. Such clearance shall be provided along the entire length of the passenger area on both sides of the interior, in order to allow for potential retrofitting of new wheelchair positions and occupant securement devices.

(d) The body may be equipped with insulation, including sidewalls, roof, firewall, rear, inside body bows and plywood or composite floor insulation to aid in heat dissipation and reflection.

(e) All glass (windshield, service and emergency doors, side and rear windows) may be equipped with maximum integral tinting allowed by federal, state or ANSI standards for the respective locations, except that windows rear of the driver's compartment, if tinted, shall have twenty-eight (28) per cent light transmission, plus or minus three (3) per cent.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-27. Axles**

The front and rear axle and suspension systems shall have gross axle weight ratings (GAWR) at ground commensurate with the respective front and rear weight loads that will be imposed by the bus.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-28. Battery**

The storage batteries shall have minimum cold cranking capacity rating (cold cranking amps) equal to the cranking current required for 30 seconds at 0 degrees Fahrenheit and a minimum reserve capacity rating of 120 minutes at 25 amps. Higher capacities may be required, depending upon optional equipment and local environmental conditions.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-29. Battery carrier**

When the mounting of the battery or batteries is outside of the engine compartment, the batteries shall be securely attached in a closed, drained and vented compartment in the body skirt, which shall restrict the movement of the battery during upset or rollover of the vehicle. The battery shall be accessible from the outside for convenient servicing. Any battery compartment door or cover shall be secured by an adequate and conveniently operated latch or other type fastener. The cables to the battery shall not be spliced in any manner to extend their length; however, splices utilized by the chassis manufacturer to provide an alternate current path are permitted. Notwithstanding the provisions of this section, a battery compartment shall not be required on any Type A-1 bus. The battery may be mounted according to the manufacturer's standard configuration.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-30. Body structure**

Construction shall provide a reasonably dust-proof, weather-tight and fume-proof body unit. Openings and access panels between the chassis and passenger compartment shall be tightly sealed to prevent any liquid or gas from entering the bus body and shall comply with all applicable FMVSS.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-31. Brakes**

(a) The chassis brake system shall conform to the provisions of FMVSS Nos. 105, 106 and 121, as applicable.

(b) The anti-lock brake system (ABS), provided in accordance with FMVSS Nos. 105 or 121 shall provide wheel speed sensors for each front wheel and for each wheel on at least one rear axle. Such systems shall provide anti-lock braking performance for each wheel equipped with sensors (also known as a four-channel system.)

(c) All brake systems shall be designed to permit visual inspection of brake lining wear without removal of any chassis component(s).

(d) The brake lines, booster-assist lines, and control cables shall be protected from excessive heat, vibration and corrosion and installed in a manner which prevents chafing.

(e) The parking brake system for either air or hydraulic service brake systems may be of a power assisted design. The power parking brake actuator should be a push-pull device located on the instrument panel within seated reach of a 5<sup>th</sup> percentile female driver. As an option, the parking brake may be set by placing the automatic transmission shift control mechanism in the "park" position.

(f) The power-operated parking brake system may be interlocked to the engine key switch. Once the parking brake has been set and the ignition switch turned to the "off" position, the parking brake cannot be released until the key switch is turned back to the "on" position.

(g) Buses using a hydraulic-assist brake shall be equipped with visible warning signals that provide a continuous warning to the driver of a loss of fluid flow from the primary source and of a failure of the back-up pump system.

(Adoptive effective May 2, 2007)

#### **Sec. 14-275a-32. Front bumper**

(a) School buses shall be equipped with a front bumper. The front bumper shall be furnished by the chassis manufacturer unless there is a specific agreement between the chassis manufacturer and body manufacturer regarding the installation of such front bumper.

(b) Except for any Type A bus with a GVWR of 14,500 pounds or less, the front bumper shall be of pressed steel channel or equivalent material at least three sixteenths (3/16) inches thick and not less than eight (8) inches wide (high). The front bumper for a Type A bus as described herein may be supplied by the original equipment manufacturer. It shall extend beyond the forward most part of the body, grille, hood and fenders and shall extend to the outer edges of the fenders at the bumper's top line.

(c) The front bumper, except breakaway bumper ends, shall be of sufficient strength to permit pushing a vehicle of equal gross vehicle weight without permanent distortion to the bumper, chassis or body.

(d) Optional tow eyes, hooks or other devices may be furnished by the manufacturer. Tow eyes, hooks or other devices furnished on the rear, shall be installed in accordance with the chassis manufacturer's specifications and shall not project beyond the rear bumper.

(Adoptive effective May 2, 2007)

#### **Sec. 14-275a-33. Rear bumper**

(a) The bumper shall be pressed steel channel at least three-sixteenths (3/16) inches thick or equivalent strength material (except for Type A buses). A type A-1 bus bumper shall be a minimum of eight (8) inches wide (high) and Type A-2, B, C and D bus bumpers shall be a minimum of nine and one half (9<sup>1</sup>/<sub>2</sub>) inches wide (high). The bumper shall be of sufficient strength to permit being pushed by another vehicle without permanent distortion.

(b) The bumper shall be wrapped around the back corners of the bus. It shall extend forward at least twelve (12) inches, measured from the rear-most point of the body at the floor-line, and shall be flush-mounted to the body sides or protected with an end panel.

(c) The bumper shall be attached to the chassis frame in such a manner that it may be easily removed. It shall be so braced as to resist deformation resulting from impact from the rear or the side. It shall be so attached as to discourage hitching of rides by an individual.

(d) The bumper shall extend at least one (1) inch beyond the rear-most part of the body surface measured at the floor-line.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-34. Ceiling**

The ceiling shall be thermally insulated with a fire-resistant material listed by Underwriters' Laboratories, Inc. There shall be no projections that might cause injury.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-35. Clutch**

(a) Clutch torque capacity shall be equal to or greater than the engine torque output.

(b) A starter interlock shall be installed to prevent actuation of the starter if the clutch is not depressed.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-36. School bus body color**

(a) Buses shall be National School Bus Yellow, in accordance with the 2005 national standard for school transportation, except that the background behind the word school bus may be retro-reflective yellow sheeting, the hood, excluding the portion over the tires on a tilt hood, shall be lusterless black, and the roof may be painted white extending down to a longitudinal continuous straight line along the roof-to-sidewall interface. The white painted area of a roof shall terminate at any point from the top of the drip rail to six (6) inches above the drip rail. The front and rear roof caps and any portion of the front and rear of the bus shall remain National School Bus Yellow on a bus with a white roof.

(b) Bumpers shall be black. Trim on the exterior of the body shall be black. For purposes of this regulation, "trim" means:

1. All required lettering;
2. Emergency exit arrow;
3. Manufacturer's logo and stripe, with stripe not to exceed six (6) inches in width and logo to fit within a twelve inch by twelve-inch (12 inch x 12 inch) square; one logo per side;
4. Company logo (not to exceed one hundred (100) square inches in size); one logo per side only;
5. Rub rails, pilasters and service entrance doors, which may be either black or National School Bus Yellow; and
6. Mirror housings.

(c) Up to three (3) alphanumeric characters no more than six inches (6 inches) in height may appear on one side of the front and/or rear bumper(s) within a horizontal span of no more than eighteen (18) inches along the bumper. Such characters shall be colored National School Bus Yellow.

(Adopted effective May 2, 2007)

**Sec. 14-275a-37. School bus chassis color**

- (a) Chassis, including wheels and front bumper shall be black.
  - (b) Demountable rims, if used, may be silver, gray, white, yellow or black (chrome or polished not allowed.)
- (Adopted effective May 2, 2007)

**Sec. 14-275a-38- see DMV Web site**

**Sec. 14-275a-39. Defrosters**

- (a) Defrosting and defogging equipment shall direct a sufficient flow of heated air onto the windshield, the window to the left of the driver and the glass in the viewing area directly to the right of the driver to eliminate frost, fog and snow.
  - (b) The defrosting system shall conform to SAE J381 and SAE J382.
  - (c) The defroster and defogging system shall be capable of furnishing heated, outside ambient air, except that the part of the system furnishing additional air to the windshield, entrance door and step well may be of the re-circulating air type.
  - (d) Auxiliary fans are not considered defrosting or defogging systems.
  - (e) Portable heaters shall not be used.
- (Adopted effective May 2, 2007)

**Sec. 14-275a-40. Drive shaft**

Each segment of the drive shaft shall be equipped with a suitable guard to prevent accident or injury in the event of its failure or disconnection.

(Adopted effective May 2, 2007)

**Sec. 14-275a-41. Emergency door requirements**

- (a) All emergency doors shall comply with FMVSS 217 applicable to that type of exit regardless of whether or not that exit is required by FMVSS 217.
- (b) There shall be a head bumper pad installed on the inside at the top of each emergency door. The pad shall extend across the opening of the door, and shall be designed and positioned to protect the heads of passengers using such door. The passage to the rear emergency door shall be free of obstructions.
- (c) The upper and lower portion of the rear emergency door shall be equipped with approved safety glazing, the exposed area of which shall be not less than four

hundred (400) square inches in the upper portion and not less than three hundred fifty (350) square inches in the lower portion on Type A-2, B, C and D vehicles. The left side emergency door shall be equipped with safety glazing in the upper portion, and the lower portion shall be of at least the same gauge metal as the body outer panels.

(d) The outside handle shall be non-detachable and mounted vertically. Any handle requiring special tools, other than a screwdriver, for attachment will be considered non-detachable. The following requirements shall also apply:

1. Each emergency door shall be equipped with a latch that shall extend into or overlap the doorframe no less than three-quarters (3/4) inch. If a vertical slide bar latch system is used, it must simultaneously engage latch plates in both the floor and overhead opening side of the door(s).

2. Type A-1 buses. Each emergency door shall be equipped with a fastening device that may be quickly released but so designed to offer protection against accidental release. Split or bi-parting type emergency doors shall be modified as necessary to prevent jamming when both doors are pushed at the same time after releasing the primary latch.

3. Lettering meeting the requirements of FMVSS-217 shall appear on both the inside and outside of the emergency door. It shall include latch operating instructions on the inside and an arrow on the outside. The words "Emergency Door" or "Emergency Exit" shall appear on both the inside and outside, either at the top of or directly above the emergency door. In the absence of adequate space, such lettering may appear at the top of the glass.

(e) The engine starting system shall not operate if any emergency door is locked from either inside or outside of the bus. The term locked does not include normal door latching for which instructions are provided in accordance with FMVSS-217.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-42. Emergency windows and roof exits**

(a) All school buses must be equipped with the minimum amount of emergency exits required by FMVSS-217 as determined by the vehicle seating capacity. Non-required emergency exits shall conform to the requirements of FMVSS-217 for required emergency exits.

(b) On Type D rear-engine buses, the rear window shall be designed so as to be opened from either the inside or the outside. It shall be hinged at the top and be equipped with a linkage or mechanism that shall automatically hold the opened window against the force of gravity at a minimum hinge opening angle of sixty (60) degrees (+ or - 5°) measured from the closed window position. Such linkage or mechanism shall not prevent the window from opening a full ninety (90) degrees due to gravitational forces should the bus be inverted. The outside handle shall be non-detachable and designed to discourage hitching. A gas spring or mechanism shall provide a counterbalancing force sufficient to reduce the effort necessary to open the window to ten (10) pounds or less out to the full sixty (60) degree opening position.

(c) All school buses equipped with emergency roof exits shall have a minimum opening of 22x23 inches and shall not cause any roof bows to be cut or manufactured discontinuously.

(d) Lettering meeting the requirements of FMVSS 217 shall appear on both the inside and outside of the emergency exits. It shall include latch operating instructions on the inside. The words "Emergency Exit" shall appear on both the inside and outside of emergency windows, either at the top of, directly above or at the bottom

of the emergency window. The designation for roof exits shall be located on the inside surface. In the absence of adequate space, such lettering may appear at the top of the glass.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-43. Exhaust system and muffler**

(a) The exhaust system shall include all piping leading from the exhaust manifold, to and including the muffler(s) and tailpipe and all gaskets, seals and hangers. The system shall not extend into the body and shall be attached to the chassis. The exhaust system pipes shall be continuously formed manufacturer's standard sixteen (16) gauge steel or equivalent strength material. The complete exhaust system shall be tight and free from leaks and shall be properly insulated from the electrical wiring or any combustible part of the bus. The size of the pipes in the exhaust system shall not be reduced below that at the engine manifold. The exhaust system pipes shall not extend more than one (1) inch beyond the limit of the rear bumper or its wraparound and shall not exit out to the right side.

(b) The exhaust system on a chassis shall be adequately insulated from the fuel system, and shall not exit beneath the fuel door.

(c) A left side exhaust shall terminate to the rear of the rearmost tire and rearward of the rearmost operable window.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-44. Fire extinguishers**

(a) The bus shall be equipped with at least one pressurized, dry chemical-type fire extinguisher, mounted and secured in a bracket, and located in the driver's compartment in full view and readily accessible. A pressure gauge shall be so mounted on the extinguisher as to be easily read without removing the extinguisher from its mounted position.

(b) The fire extinguisher shall be of a type listed by the Underwriters' Laboratories, Inc., with a rating of not less than 10-B.C. The operating mechanism shall be sealed with a type of seal that will not interfere with the use of the fire extinguisher.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-45. First aid kits**

(a) The bus shall carry a removable first-aid kit in a readily identifiable and accessible location in the driver's area.

(b) The contents of the first-aid kit shall include but not be limited to the following:

- |  |                 |
|--|-----------------|
| 1. four inch (4") bandage compress                                 | four (4) each   |
| 2. two inch (2") bandage compress                                  | six (6) each    |
| 3. one inch (1") adhesive bandages                                 | thirty-two (32) |
| 4. forty inch (40") triangular bandage<br>with two (2) safety pins | one (1) package |

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-46. Floor covering**

(a) The floor in the under-seat area, including tops of wheel housings, driver's compartment and toe board, shall be covered with rubber floor covering or equivalent, having a minimum overall thickness of point one hundred twenty-five (.125) inch. The driver's area in all Type A buses may be manufacturer's standard flooring and floor covering.

(b) The floor covering in the aisles shall be of aisle-type rubber or equivalent, having a minimum overall thickness of point one hundred twenty-five (.125) inch, wear-resistant and ribbed. Minimum overall thickness shall be point one hundred eighty-seven (.187) inch measured from tops of ribs.

(c) The floor covering must be permanently bonded to the floor and must not crack when subjected to sudden changes in temperature. Bonding or adhesive material shall be waterproof and shall be of a type recommended by manufacturer of floor covering material. All seams must be sealed with waterproof sealer.

(d) On Types B, C and D buses, a flush mounted, screw down plate that is secured and sealed shall be provided to access the fuel tank sending unit. The cover shall be of a non-skid material and flush with the floor.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-47. Frame**

(a) The frame (or equivalent) shall be of such design and strength characteristics as to correspond at least to standard practices for trucks of the same general load capacities which are used for highway service.

(b) Any secondary manufacturer that modifies the original chassis frame shall guarantee the performance of workmanship and materials resulting from such modification.

(c) Frames shall not be modified for the purpose of extending the wheelbase.

(d) Holes in top or bottom flanges or side units of the frame, and welding to the frame, shall not be permitted except as provided or accepted by chassis manufacturer.

(e) Frame lengths shall be established in accordance with the design criteria for the complete vehicle.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-48. Fuel system and tank(s)**

(a) The fuel system shall comply with FMVSS No. 301. Type B, C and D buses. Fuel tank (or tanks) having a minimum thirty (30) gallon capacity shall be provided by the chassis manufacturer. Type A buses shall utilize the fuel tank supplied by chassis manufacturer. The tank shall be filled and vented to the outside of the body and the fuel filler should be placed in a location where accidental fuel spillage will not drip or drain on any part of the exhaust system.

(b) Fuel lines shall be mounted to the chassis frame in such a manner that the frame provides the maximum possible protection from damage.

(c) Fuel tank(s) may be mounted between the chassis frame rails or outboard of the frame rails on either the left or right side of the vehicle.

(d) The actual draw capacity of each fuel tank shall be a minimum of eighty-three (83) percent of the tank capacity.

(e) Pressurized Flammable Gas (PFG) – Notwithstanding the provisions of subsection (a) through (b) of this section, the Commissioner may permit registration and operation of a school bus as defined in the Connecticut General Statutes, section 14-275, which is powered by PFG, provided that each of the following criteria is met:

1. The school bus is new and has been equipped by the manufacturer of the chassis with a PFG system approved by the commissioner.

2. The manufacturer of the school bus chassis, upon written request by the commissioner, provides test documentation confirming that the fuel system is in full compliance with FMVSS # 301, including barrier testing and the appropriate National Fire Protection Association (NFPA) standard for the type of fuel used.

3. The school bus passes a safety inspection by the Department of Motor Vehicles prior to its registration and operation as a school bus.

4. The owner or operator of a school bus powered by PFG shall obtain written approval from each school district where such bus will be operated under the provisions of subsection (e), and shall provide a copy of such document to the commissioner upon request.

5. Each school bus powered by PFG shall be clearly marked in a manner approved by the commissioner to indicate that PFG powers the bus.

(Adopted effective May 2, 2007)

**Sec. 14-275a-49. Generator or alternator**

(a) Type A-2 and Type B buses with a GVWR of 15,000 lbs. or less shall have a minimum 130 ampere alternator.

(b) Type A-2 and Type B buses with a GVWR over 15,000 lbs. and all Type C and Type D buses shall be equipped with a heavy duty truck or bus type alternator having a minimum output rating of 130 amps or higher sufficient to maintain a full battery charge with all electrical equipment and accessories, except starter motor, operating simultaneously.

(c) Buses equipped with an electrically powered wheelchair lift, air conditioning or other accessories may be equipped with a device that monitors the electrical system voltage and advances the engine idle speed when the voltage drops to, or below, a preset level.

(d) A belt alternator drive shall be capable of handling the rated capacity of the alternator with no detrimental effect on any other driven components.

(e) A direct drive alternator is permissible in lieu of a belt driven alternator.

(Adopted effective May 2, 2007)

**Sec. 14-275a-50. Glazing, safety**

(a) All glazing shall conform to FMVSS 205 and be installed so that the required identification mark is legible.

(b) Optional tinted and/or frost free glazing may be installed in all doors, windows and windshields consistent with federal, state and local regulations.

(Adopted effective May 2, 2007)

**Sec. 14-275a-51. Heaters**

(a) Each school bus must be equipped with a heating system capable of maintaining the interior temperatures as specified in SAE test procedure J2233.

(b) All heaters installed by the body manufacturer shall bear a name plate which shall indicate the heater rating in accordance with the SBMTC-001, said plate to be affixed by the heater manufacturer which shall constitute certification that the heater performance is as shown on the plate. Exhaust heaters shall not be used.

(c) Heater hoses shall be adequately supported to guard against excessive wear due to vibration. The hoses shall not dangle or rub against the chassis or sharp edges and shall not interfere with or restrict the operation of any engine function. Heater hoses shall conform to standard SAE J20c. Driver and passengers shall be shielded from heater lines inside the passenger compartment to prevent accidental contact.

(d) Auxiliary fuel fired heating systems are permitted, provided they comply with the following:

1. The auxiliary heating system fuel shall utilize the same type fuel as specified for the vehicle engine;

2. The heater(s) may be direct hot air or connected to the engine's coolant system;  
 3. 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;

4. 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;

5. Auxiliary heating systems which operate on diesel fuel shall be capable of operating on #1, #2 or blended diesel fuel without the need for system adjustment;

6. The auxiliary heating system shall be low voltage;

7. Auxiliary heating systems shall comply with all applicable FMVSS, including FMVSS No. 301, as well as with SAE test procedures.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-52. Heater connections**

Each heater system shall include a shut off valve on both the supply and return line. The valve shall be securely mounted in an accessible location in the engine compartment, except that on Type A and B buses, the valves may be installed in another location.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-53. Horn**

A horn capable of producing complex sound in the bands of audio frequencies between 250 and 2000 cycles per second and tested in accordance with SAE J377 MAR 85 at no less than 92dB(A) shall be conveniently controlled from the driver's seated position.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-54. Identification**

(a) Signs or lettering, other than required or permitted by this regulation shall not appear on the front, back, or sides of the bus including any form of advertising other than the manufacturer's logo.

(b) The wording "No Standees" and the seating capacity shall be displayed in black on the body to the left of the service door in letters not less than two (2) inches high. The owner's name shall be displayed on both sides in black letters no less than four (4) inches or more than six (6) inches high. The words "School Bus" shall be displayed in black on the front and rear of the bus in letters at least eight inches (8 inches) in height and conforming to "Series B" of the standard alphabets for highway and such words shall be placed as high as practicable, be on a reflective yellow or backlighted background, and be plainly legible. Lettering to identify fuel type shall be displayed in two (2) inch letters adjacent to fuel filler opening. Lettering to identify location of batteries shall be displayed in two (2) inches letters near battery compartment. DOT markings, when required, shall be displayed and comply with FMCSR 390.21.

(c) The following means of identification may be displayed on the bus in black.

1. Company number on the front, rear, and sides of the bus in figures not to exceed six (6) inches in height.

2. The trip number in figures not to exceed eight (8) inches in height.

3. Lettering to identify emergency fuel shut off for a PFG fueled vehicle.

(d) Manufacturer's emblems – Manufacturer's emblems limited to seventy-two (72) square inches may be displayed on the rear of the vehicle (except bumper), to

the left of the service entrance below window line and above floor level rail. A hood emblem may be located on the face of the grill but not to protrude above the highest point of the hood. Model designation emblems limited to thirty-six (36) square inches may appear on cowl or side of hood on both sides.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-55. Ignition lock**

A lock, key or other device to prevent the vehicle's engine from being started by unauthorized persons shall be provided.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-56. Instruments**

(a) The bus shall be equipped with the following non-glare illuminated instruments and gauges maintained in good working order, mounted for easy maintenance and repair and in such a manner that each is clearly visible to the seated driver;

1. Speedometer;
2. Fuel Gauge;
3. Oil Pressure Gauge or warning light;
4. Water Temperature Gauge;
5. Ammeter or voltmeter with graduated charge and discharge;
6. Upper Beam Headlamp Indicator;
7. Air Pressure or Vacuum Gauge where an air or vacuum source is the primary medium actuating the brakes;

8. If hydraulic brakes are used, a warning light that indicates failure of the wheel brake activation hydraulic system; and

9. An odometer capable of displaying both accrued mileage to seven (7) digits and a readout in tenths of a mile, or an odometer capable of displaying accrued mileage to seven (7) digits and a trip meter with a readout in tenths of a mile;

(b) Multi-function gauge (MFG)

1. The driver must be able to manually select any displayable function of the gauge on a MFG whenever desired.

2. Whenever an out-of-limits condition that would be displayed on one or more functions of a MFG occurs, the MFG controller should automatically display this condition on the instrument cluster. This should be in the form of an illuminated telltale warning lamp as well as having the MFG automatically display the out-of-limits indications. Should two (2) or more functions displayed on the MFG go out of limits simultaneously, then the MFG should sequence automatically between those functions continuously until the condition(s) are corrected.

3. The use of a MFG does not relieve the need for audible warning devices, where required.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-57. Interior**

(a) The body shall be thermally insulated between the inner and outer panels with a fire-resistant material listed by the Underwriters' Laboratories, Inc. This material shall also serve to reduce the noise level and vibrations.

(b) The interior of the bus, including the ceiling, shall be free of all unnecessary projections likely to cause injury, and an inner lining shall be provided on ceiling and walls. Rearward metal or equivalent components shall be lapped over forward components except for any panel joints rearward of a line seventeen (17) inches

forward of the rearmost seat back cushion to reduce likelihood of injury in the event of separation.

(c) All emergency doors shall be accessible by a twelve (12) inch minimum aisle. The aisle shall remain unobstructed at all times by any barrier, seat, wheel chair, or tiedown, unless a flip seat is installed and unoccupied. A flip seat in the unoccupied position shall not obstruct the twelve (12) inch minimum aisle width to any side emergency door.

(d) Exposed edges shall be beaded, hemmed or flanged. Side mounted air conditioning units may be installed provided that they meet the requirements of section 14-275a-26.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-58. Lamps and signals**

(a) Each school bus shall be equipped with the following stop and tail lamps:

1. Two (2) red, stop lamps, with a minimum diameter of seven (7) inches, or if a shape other than round, a minimum of 38 square inches of illuminated area, shall be mounted on the rear at a height of no less than fifteen (15) inches nor more than seventy-two (72) inches above the level surface upon which the loaded bus rests, with centers as far apart laterally as is practical. They shall be activated upon application of the service brake pedal. In lieu of the seven inch stop lamps, combination stop and tail lamps, with a minimum diameter of seven (7) inches, or if a shape other than round, a minimum of 38 square inches of illuminated area, may be used; and

2. Two combination stop and tail lamps, with a minimum of four (4) inches, or if a shape other than round, a minimum of twelve (12) square inches of illuminated area, shall be placed on the rear of the body between the belt line and the floor line. Stop lamps shall be activated by the service brakes and shall emit a steady light when illuminated. Type A-1 buses, with bodies supplied by chassis manufacturer, may be equipped with the manufacturer's standard stop and tail lamps.

(b) A stop semaphore and eight lamp warning system shall be provided as follows:

1. The stop semaphore shall be of the type with two (2) flashing red lamps and have an override in the rearward direction. The flashing red lamps shall be of the same design lamp as those used in the eight (8) lamp warning system, including the flash type, unless a more prominent type lamp is available.

2. The eight (8) lamp warning system shall consist of four (4) red warning lamps and four (4) amber warning lamps installed as follows:

(A) A black hood or hoods may be provided for each lamp or pair of lamps respectively of the eight (8) lamp warning system and shall project outward from the bus body no less than four (4) inches. Hoods shall be securely fastened to the lamp housing or bus body. The area around the lens of the eight (8) lamp warning system shall be black extending outward approximately one (1) inch, when such room is available, but in no case less than point fifty (0.50) inches, applied on the body or the roof area against which the signal lamps are seen.

(B) The eight (8) lamp warning system shall be equipped with a visual indication that each warning lamp is functioning properly or improperly. The visual indication shall allow the driver to determine specifically which individual lamp or lamps are not functioning properly without leaving the driver's seat.

(C) The eight (8) lamp warning system shall operate as follows:

(i) With the master switch on and entrance door closed, activation of the foot or hand switch shall cause the amber signals and operational indicator light to function.

(ii) Operational indicator light and amber signal lamps shall go off and operational indicator light and red signal lamps shall go on automatically with the opening of the door or by means of an override switch. Stop arm, if air, vacuum or electrically powered, shall automatically extend simultaneously. Buses with power doors shall have an override switch to activate the red signal lamps to stop traffic before the door is opened. Such override switch shall be operable by the driver without removing both hands from the steering wheel.

(iii) Operational indicator light and signal lamps shall cancel automatically by closing the door or by other means and stop arm, if air, vacuum or electrically powered, shall automatically retract.

(iv) With master switch activated, opening the entrance door, without first activation the amber light switch, shall cause the red signal lamps and stop semaphore to function.

(v) With master switch off, depressing hand or foot switch will not activate the amber signal system, nor will opening entrance door actuate the red signal system and stop arm.

(c) Two (2) red clearance lamps on the rear and two (2) amber clearance lamps on the front shall be mounted as high as practical on the permanent structure of the bus to indicate its extreme width. Two (2) side marker lamps, amber at the front and red at the rear shall be mounted on each side of the bus. Three (3) red identification lamps shall be mounted on the same level not more than eight inches (8 inches) apart in the center rear of the body as high as practical, and three (3) amber identification lamps shall be likewise mounted in the center front of the body.

(d) The rear registration number plate shall be illuminated by a white lamp so as to be plainly legible at fifty (50) feet during periods of darkness. The registration plate lamp shall be so wired as to be lighted whenever the headlamps are lighted. The rear license plate lamp may be combined with one of the four (4) inch combination stop and tail lamps, as required in subsection (a)(2) of this section.

(e) Interior lamps shall adequately illuminate the entire aisle, emergency passage-way and step well.

(f) Class A turn signal lamps shall be provided. Flush mounted "armored" type amber lamps with a minimum of four (4) candlepower each shall be mounted on the sides of the body at approximately seat level rub rail height just to the rear of the service door on the right side, and approximately opposite the driver's seat on the left side. They are to be connected to function with the regular turn signal lamps.

(g) Back up lamps shall be provided.

(h) Parking lamps shall be provided.

(i) Flashing white strobe lamps;

1. An optional white flashing strobe lamp may be installed on the roof of a school bus near the rear not to exceed four (4) feet forward of the rear roof edge.

2. The lamp assembly shall have a single clear lens emitting light three hundred sixty (360) degrees around its vertical axis and may not extend above the roof more than six (6) inches.

3. A clearly labeled manual switch and pilot light shall be installed in the driver's compartment to indicate when the strobe light is in operation.

4. The strobe lamp assembly shall comply with SAE J575, SAE J578, and SAE J1318 for a white light. The flash frequency shall be between sixty (60) and ninety (90) flashes per minute and the period between flashes shall all be equal.

5. If installed, the strobe lamp shall be deactivated whenever there are no students on the bus, except that it may be activated prior to receiving the first student.

(Adopted effective May 2, 2007)

**Sec. 14-275a-59. Locked compartment**

The first-aid kit, body fluids cleanup kit, if required, warning devices, and wheel chocks may be stored under lock and key provided that the locking device is connected with an automatic audible warning signal or will prevent the bus from starting, giving notice to the driver that the locked compartment is not secured, when the ignition is turned on. The locked compartment door shall be labeled so to indicate if the first-aid kit is inside.

(Adopted effective May 2, 2007)

**Sec. 14-275a-60. Mirrors**

(a) The interior mirror shall be clear view laminated glass or clear view glass bonded to a backing which retains the glass in the event of breakage. The mirror shall have rounded corners and protected edges. All Type A-1 buses shall have a minimum of a six by sixteen (6 x16) inch mirror and Type A-2, B, C and D buses shall have a minimum of a six by thirty (6x30) inch mirror.

(b) Each school bus shall be equipped with exterior mirrors meeting the requirements of FMVSS No. 111. Mirrors shall be easily adjustable but shall be rigidly braced so as to reduce vibration.

(c) Heated external mirrors may be used.

(Adopted effective May 2, 2007)

**Sec. 14-275a-61. Mounting**

(a) The chassis frame shall support the rear body cross member. The bus body shall be attached to the chassis frame at each main floor sill, to prevent shifting or separation of the body from the chassis under severe operating conditions, except where chassis components interfere.

(b) Isolators shall be installed at all contact points between the body and the chassis frame on Types A-2, B, C and D buses, and shall be secured by positive means to the chassis frame or body to prevent shifting, separation or displacement of the isolators under severe operating conditions.

(Adopted effective May 2, 2007)

**Sec. 14-275a-62. Reflectors**

(a) Required reflectors shall be marked with an SAE or Department of Transportation designation.

(b) Any school bus may have reflectorized tape, otherwise known as retro-reflective sheeting, applied to the sides and rear, if such tape complies with and is installed in accordance with the following requirements:

1. Approved reflective tape or sheeting shall reflect a yellow color with a reflectivity meeting the requirements of 49 CFR 571.131 Table 1 and shall have a daytime color of National School Bus Yellow. Approved reflective tape shall be no less than three quarters (3/4) inch nor more than two (2) inches in width.

2. The rear of the bus body may have the perimeter outlined with strips of approved reflective tape. The perimeter shall be considered as strips applied horizontally above the rear windows and above the rear bumper, extending from the rear emergency exit perimeter marking (if present), outward to the left and right rear corners of the bus; and vertical strips applied at the corners connecting the horizontal strips.

3. All emergency exits should be marked and outlined with reflective tape as prescribed per FMVSS 217.

4. The sides of the bus body may be marked with approved reflective tape extending horizontally the length of the bus body and located vertically between the floor-line and the belt-line.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-63. Restraining barriers**

(a) A padded restraining barrier the same height as the seat backs shall be placed between the driver's seat and the left front seat so as not to interfere with the fore and aft adjustment of the driver's seat and shall extend the width of the left front seat back. The bottom of the restraining barrier padding shall be no more than fourteen (14) inches above the floor.

(b) A padded restraining barrier the same height as the seat backs shall be installed with a kick panel ahead of the right front seat. The kick panel shall not restrict the entrance passageway to less than twenty-two (22) inches measured eighteen (18) inches above the floor. The panel shall extend from the barrier to within two (2) inches of the floor and shall cover the entire area adjacent to the step well. The kick panel shall be positioned or flanged to avoid having its lower edge extended over the stepwell, and may be fastened to the floor.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-64. Reverse direction alarm**

An automatic audible alarm shall be installed behind the rear axle and shall comply with the published Backup Alarm Standards (SAE J994B), providing a minimum of 112 dbA.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-65. Rub rails**

(a) There shall be one (1) rub rail located on each side of the bus at seat cushion level which extends from the rear side of the entrance door completely around the bus body (except the emergency door or any maintenance access door) to the point of curvature near the outside cowl on the left side.

(b) There shall be one (1) additional rub rail located on each side at, or no more than ten (10) inches above, the floor-line. The rub rail shall cover the same longitudinal area as the upper rub rail, except at the wheel housings, and it shall extend only to the radii of the right and left rear corners.

(c) Both rub rails shall be attached at each body post and at all other upright structural members. The joints shall overlap and be permanently attached to the upright.

(d) Each rub rail shall be four inches (4 inches) or more in width in their finished form, shall be constructed of sixteen (16) gauge steel or suitable material of equivalent strength and shall be constructed in corrugated or ribbed fashion.

(e) Both rub rails shall be applied outside the body or outside the body posts. (Pressed-in or snap-on rub rails do not satisfy this requirement.) For Type A-1 vehicles using the body provided by the chassis manufacturer or for Types A-2, B, C and D buses using the rear luggage or the rear engine compartment, rub rail need not extend around the rear corners.

(f) There shall be a rub rail or equivalent bracing horizontally at the bottom edge of the body side skirts.

(Adopted effective May 2, 2007)

**Sec. 14-275a-66. Seating****(a) Passenger Seating**

1. All seats shall have a minimum cushion depth of fifteen (15) inches and must comply with all requirements of FMVSS No. 222.

2. Each seat leg shall be secured to the floor by a minimum of two (2) bolts, washers and nuts. Flange-head nuts may be used in lieu of nuts and washers, or seats may be track-mounted in conformance with FMVSS No.222. If track seating is installed, the manufacturer shall supply minimum seat spacing dimensions applicable to the bus, which comply with FMVSS No. 222. This information shall be on a label permanently affixed to the bus.

3. All seat frames attached to the seat rail shall be fastened with two (2) bolts, washers and nuts or flange-head nuts.

4. All school buses (including Type A) shall be equipped with restraining barriers, which conform to FMVSS No. 222.

5. A flip-up seat may be installed at any side emergency door, provided that, it conforms with FMVSS No. 222 and aisle clearance requirements of FMVSS 217. The flip-up seat shall be free of sharp projections on the underside of the seat bottom. The underside of the flip-up seat bottom shall be padded or contoured to reduce the possibility of clothing being snagged or personal injury during use. Flip-up seats shall be constructed to prevent passenger limbs from becoming entrapped between the seat back and the seat cushion when the seat is in the upright position. The seat cushion shall be designed to rise to and be secured in its vertical position when it is not occupied.

(b) Pre-School Age Seating when installed, all passenger seats designed to accommodate a child or infant carrier seat shall comply with FMVSS No. 225. These seats shall be in compliance with The National Highway Traffic Safety Administration's "Guideline for the Safe Transportation of Pre-school Age Children in School Buses."

**(c) Driver Seat**

1. The driver's seat supplied by the body company shall be a high back seat with a minimum seat back adjustable to fifteen (15) degrees, without requiring the use of tools, and a head restraint to accommodate a 95<sup>th</sup> percentile adult male, as defined in FMVSS No. 208. The driver's seat shall be secured with nuts, bolts and washers or flanged-head nuts.

2. Type A buses may utilize the standard driver's seat provided by the chassis manufacturer.

**(d) Driver Restraint System**

A Type 2 lap/shoulder belt shall be provided for the driver. The assembly shall be equipped with an emergency locking retractor for the continuous belt system. On all buses except Type A equipped with a standard chassis manufacturers driver's seat, the lap/shoulder belt shall be designed to allow for easy adjustment in order to fit properly and to effectively protect drivers varying in size from 5<sup>th</sup> percentile adult female to 95<sup>th</sup> percentile adult male.

(Adopted effective May 2, 2007)

**Sec. 14-275a-67. Service entrance****(a) The Service Door**

1. The service door shall be in the driver's control, designed to afford easy release and to provide a positive latching device on manual operating doors to prevent accidental opening. When a hand lever is used, no part shall come together that

will shear or crush fingers. Manual door controls shall not require more than twenty-five (25) pounds of force to operate at any point throughout the range of operation, as tested on a ten (10) percent grade both uphill and downhill.

2. The service door shall be located on the right side of the bus, opposite and within direct view of the driver.

3. The service door shall have a minimum horizontal opening of twenty-four (24) inches and a minimum vertical opening of sixty-eight (68) inches.

4. Service door shall be a split-type that divides and opens inward or outward, or jackknife-type. If one section of a split-type door opens inward and one opens outward then the front door section shall open outward.

5. Lower, as well as upper, door panels shall be of approved safety glass. The bottom of each lower glass panel shall not be more than ten (10) inches from the top surface of the bottom step. The top of each upper glass panel shall not be more than three (3) inches from the top of the door.

6. Vertical closing edges on split-type or folding type entrance doors shall be equipped with flexible material to protect children's fingers.

7. There shall be no door to the left of the driver on Type B, C or D vehicles. All Type A may be equipped with the chassis manufacturer's standard left-side door.

8. All doors shall be equipped with padding at the top edge of each door opening. Padding shall be at least three (3) inches wide and one (1) inch thick and extend across the full width of the door opening.

9. On power operated service doors, the emergency release valve, switch or device to release the service door must be placed above or to the immediate left or right of the service door and clearly labeled with one-half (1/2) inch letters.

**(b) Handrail**

A minimum of one handrail of stainless steel or equivalent strength stainless, corrosion resistant material shall be properly secured in an unobstructed location inside the doorway and shall pass the drawstring test, as recommended by the National Highway Traffic Safety Administration string and nut test. Grab handle lengths shall be as follows, Type A bus, grab handles shall be at least ten inches (10 inches) in length. Type B, C and D buses, grab handles shall be at least twenty inches (20 inches) in length.

**(c) Steps**

1. The first step at service door shall be not less than ten (10) inches and not more than fourteen (14) inches from the ground when measured from the top surface of the step to the ground, based on standard chassis specifications, except that on Type D buses, the first step at the service door shall be twelve (12) inches to sixteen (16) inches from the ground. On chassis modifications which may result in increased ground clearance (such as four-wheel-drive) an auxiliary step may be provided to compensate for the increase in ground to first step clearance. The auxiliary step is not required to be enclosed.

2. Step risers shall not exceed a height of ten (10) inches. When plywood is used on a steel floor or step, the riser height may be increased by the thickness of the plywood.

3. Steps shall be enclosed to prevent the accumulation of ice and snow.

4. Steps shall not protrude beyond the side of the body line.

**(d) Step treads**

1. All steps, including the floor-line platform area, shall be covered with one hundred eighty-seven thousandths (0.187) inch rubber floor covering or other materials equal in wear and abrasion resistance to top grade rubber.

2. The metal or polymer back of the tread shall be permanently bonded to the step tread material.

3. Steps, including the floor-line platform area, shall have a one and one half (1<sup>1/2</sup>) inch nosing that contrasts in color by at least seventy (70) percent measured in accordance with the contrasting color specifications in 36 CFR, part 1192 ADA, "Accessibility Guidelines for Transportation Vehicles."

4. Step treads shall have the following characteristics:

(A) Special compounding for good abrasion resistance and coefficient of friction of at least point six (.6) for the step surface, and point eight (.8) for the step nosing; and

(B) Flexibility to resist breaking, cracking or crazing when exposed to extreme warm or cold temperatures over a period of time.

(e) The step well shall be adequately illuminated by at least one (1) lamp providing a white lamp actuated automatically by the opening of the door.

(f) A head bumper pad shall be installed on the inside at the top of the service door. The pad shall extend across the opening of the exit and shall be designed and positioned to protect the heads of passengers using the exit.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-68. Shock absorbers**

The bus shall be equipped with double-action shock absorbers compatible with manufacturer's rated axle capacity at each wheel location.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-69. Steering gear**

(a) The steering gear shall be approved by the chassis manufacturer and designed to ensure safe and accurate performance under all load and speed conditions.

(b) If external adjustments are required, steering mechanism shall be accessible to make such adjustments.

(c) No changes shall be made in the steering apparatus which are not approved by the chassis manufacturer.

(d) Power steering is required and shall be of the integral type with integral valves.

(e) The steering system shall be designed to provide a means for lubrication of all wear-points, which are not permanently lubricated.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-70. Steering wheel**

There shall be clearance of at least two (2) inches between the steering wheel and cowl, instrument panel, windshield, or any other surface.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-71. Stirrup steps**

If the windshield and lamps are not easily accessible from the ground, there shall be at least one folding stirrup step or recessed foothold and suitable located handles on each side of the front of the body for easy accessibility for cleaning. This shall not apply to Type A-1 buses. Steps are permitted in or on the front bumper in lieu of the stirrup steps if the windshield and lamps are easily accessible for cleaning from that position.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-72. Storage compartment**

A storage container for tools, tire, and/or tow chains may be located either inside or outside the passenger compartment. If inside, it shall have a cover capable of

being securely latched and fastened to the floor, convenient to either the service door or the emergency door. (The seat cushion may not serve this purpose.)

(Adopted effective May 2, 2007)

**Sec. 14-275a-73. Sun visor**

(a) An interior adjustable sun visor, with a finished edge and not less than six (6) inches by thirty (30) inches for Types A-2, B, C and D buses, shall be installed in a position convenient for use by the driver.

(b) On all Type A-1 buses, the sun visor shall be installed according to the manufacturer's standard.

(Adopted effective May 2, 2007)

**Sec. 14-275a-74. Tires**

(a) Tubeless radial tires of good quality and proper size and ply rating commensurate with chassis manufacturer's gross vehicle weight rating shall be provided.

(b) Recapped, regrooved, remolded or retreaded tires shall not be used on the steering axle of a bus.

(c) On buses with single rear wheels, recapped, retreaded, remolded or regrooved tires shall not be used.

(Adopted effective May 2, 2007)

**Sec. 14-275a-75. Traction assist devices**

(a) Each school bus shall carry a full set of tire chains or other traction assist devices approved by the commissioner for installation on at least one (1) rear tire on each side of the bus whenever weather or highway conditions require such use.

(b) In lieu of the traction assist devices of subsection (a) of this section, each school bus may use tires designed to prevent skidding on all drive wheels, provided such tires have a minimum tread depth of at least four thirty-seconds (4/32) of an inch. Tires designed to prevent skidding shall comply with the requirements of subsection (c).

(c) A tire designed to prevent skidding means:

1. Any studded snow tire with a minimum of six (6) studs per fifty (50) square inches of tread surface;

2. Any snow tire that has microspikes, as hereinafter defined, to a minimum depth of four thirty seconds (4/32) of an inch;

3. Any snow tire having an aggressive tread design providing equivalent stopping traction on ice and starting traction on medium pack snow to that of a tire meeting the standards of subdivision (2) of this subsection and included on a list maintained by the Commissioner of Motor Vehicles and made available upon request; or

4. Any tire equivalent in traction to tires meeting the requirements of subdivision 1, 2 or 3 as certified under penalty of false statement by the superintendent of schools or other person responsible for school transportation. Such certification shall be on file at the location where such school buses are normally inspected by an Inspector of the Department of Motor Vehicles, and shall be made available at the request of the commissioner.

(d) A microspike means a cut entirely across the outside of the tread of a tire at intervals of not less than three-eighths (3/8) of an inch and not more than one (1) inch apart around the entire circumference of such tire.

(Adopted effective May 2, 2007)

**Sec. 14-275a-76. Undercoating**

The entire underside of the body, including the front fenders, floor member, and side panels below the floor level, shall be coated with a fire-resistant undercoating material.

(Adopted effective May 2, 2007)

**Sec. 14-275a-77. Ventilation**

(a) Auxiliary fans shall meet the following requirements:

1. Fans for left and right sides shall be placed in a location where they can be adjusted for maximum effectiveness and where they do not obstruct vision to any mirror. Note: Type A buses may be equipped with one (1) fan.

2. Fans shall be of six (6) inch nominal diameter.

3. Fan blades shall be covered with a protective cage. Each fan shall be controlled by a separate switch.

(b) The bus body shall be equipped with a suitably controlled ventilating system of sufficient capacity to maintain proper quantity of air under operating conditions without having to open windows except in extremely warm weather.

(c) Static type, non closeable exhaust ventilation shall be installed in a low pressure area of the roof.

(d) Roof hatches designed to provide ventilation in all types of exterior weather conditions may be provided.

(Adopted effective May 2, 2007)

**Sec. 14-275a-78. Video cameras**

An optional video camera may be installed provided that it complies with the following:

(a) The camera must be installed inside a non-flammable rigid container with corners rounded to not less than three-eighths (3/8) of an inch.

(b) The container shall be mounted at the forwardmost position at the center front or right front of the bus interior, depending on style of bus, such that its size and installation location does not encroach on the headroom of the entrance or aisle pathway for students nor may it limit the ingress or egress by the driver to or from his or her seat, such that he or she would readily bump his or her head.

(c) The attachment of the container to the bus shall be secure for the weight supported and any attachment brackets shall be kept as close as practicable to the container with corners rounded if extending beyond the container. The container shall be held firmly closed with a positive latching mechanism.

(d) The outermost glazing material of the container must be safety glass or plastic material unless mounted within an existing compartment with its own safety glazing.

(Adopted effective May 2, 2007)

**Sec. 14-275a-79. Weight distribution and gross weight**

The gross weight of the loaded vehicle shall at no time exceed the chassis manufacturer's maximum gross vehicle weight rating, nor the individual axle weight ratings.

(Adopted effective May 2, 2007)

**Sec. 14-275a-80. Wheel housings**

(a) The wheel housing opening shall allow easy access for tire removal and service.

(b) Wheel housings shall be attached to the floor sheets in such a manner so as to prevent any dust, water or fumes from entering the body. Wheel housings shall be constructed of at least sixteen (16) gauge steel.

(c) The inside height of the wheel housing above the floor-line shall not exceed twelve inches (12 inches).

(d) The wheel housing shall provide clearance for installation and use of tire chains on single and dual (if so equipped) power driving wheels.

(e) No part of a raised wheel housing shall extend into the emergency door opening.  
(Adopted effective May 2, 2007)

#### **Sec. 14-275a-81. Window openings**

All side windows shall operate freely, and with the exception of the driver's, shall open a maximum of five (5) inches, shall open from the top only and shall be equipped with no latches other than those of the recessed type. All exposed edges of glass shall be banded. Windows shall be free of window guards or bars either on the inside or outside.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-82. Windshields**

(a) The windshield shall be large enough to permit the driver to see the highway clearly, shall be slanted to reduce glare, and shall be installed between front corner posts that are so designed and located as to afford a minimum of obstruction to the driver's view of the highway.

(b) The windshield shall have a horizontal gradient band starting slightly above the line of the driver's vision and gradually decreasing in the light transmission to twenty (20) percent or less at the top of the windshield or shall be a fully tinted windshield with a transmissibility of between seventy (70) percent and seventy five (75) percent and a solid tint band starting slightly above the driver's line of vision. The driver's line of vision shall be established in accordance with SAE J100.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-83. Windshield wipers**

A two-speed windshield wiping system shall be used with non-reflective wiper arms and blades.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-84. Windshield washer**

A windshield washer that will effectively clean the entire area covered by both windshield wipers shall be provided.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-85. Warning devices for disabled vehicles**

At least three (3) warning devices, which conform to FMVSS-125 for use in warning traffic in event of prolonged stops on the highway, shall be provided.

(Adopted effective May 2, 2007)

#### **Sec. 14-275a-86. Wiring**

(a) All wiring shall conform to current SAE Standard J1292.

##### **(b) Circuits**

1. Wiring shall be arranged in circuits, as required by SAE Standard J1292, with each circuit protected by a fuse, circuit breaker or electronic protection device. A system of color and number coding shall be used and an appropriate identifying diagram shall be provided to the end user, along with the wiring diagram provided by the chassis manufacturer. The wiring diagrams shall be specific to the bus model supplied and shall include any changes to wiring made by the body manufacturer.

Chassis wiring diagrams shall be supplied to the end user by the chassis manufacturer. A system of color and number coding shall be used on buses.

The follow body interconnecting circuits shall be color coded as noted:

FUNCTION	COLOR
Left Rear Directional Lamp	Yellow
Right Rear Directional Lamp	Dark Green
Stop Lamps	Red
Back-up Lamps	Blue
Tail Lamps	Brown
Ground	White
Ignition Feed, Primary Feed	Black

The color of the cables shall correspond to SAE J1128.

2. Wiring shall be arranged in at least six (6) regular circuits as follows:

- (A) Head, tail, stop (brake) and instrument panel lamps;
- (B) Step well lamps shall be actuated when the service door is open;
- (C) Dome lamps;
- (D) Ignition and emergency door signal;
- (E) Turn signal lamps; and
- (F) Alternately flashing signal lamps

3. Any of the above combination circuits may be subdivided into additional independent circuits.

4. Heaters and defrosters shall be wired on an independent circuit.

5. Whenever possible, all other electrical functions (such as sanders and electric type windshield wipers) shall be provided with independent and properly protected circuits.

6. Each body circuit shall be coded by number or letter on a diagram of circuits and shall be attached to the body in a readily accessible location.

(c) The entire electrical system of the body shall be designed for the same voltage as the chassis on which the body is mounted.

(d) All wiring shall have an amperage capacity exceeding the design load by at least twenty-five (25) percent. All wiring splices are to be done at an accessible location and noted as splices on the wiring diagram.

(e) A body wiring diagram of a size that can easily be read shall be furnished with each bus body or affixed in an area convenient to the electrical accessory control panel.

(f) The body power wire shall be attached to a special terminal on the chassis.

(g) All wires not enclosed within the body shall be fastened securely at intervals of not more than eighteen (18) inches. All joints shall be soldered or joined by equally effective connectors, which shall be water resistant and corrosion resistant.

(h) All wires passing through metal openings shall be protected by a grommet.

(Adopted effective May 2, 2007)

### **Sec. 14-275a-87. Interpretation**

(a) Any references in sections 14-275a-21 to 14-275a-87, inclusive, of the Regulations of Connecticut State Agencies to any Federal Motor Vehicle Safety Standard, SAE Standard, procedure or recommended practice, American Society for Testing Material Procedure, Code of Federal Regulations or other nationally accepted standard, procedure or regulation shall be deemed to include any revision to such standard, procedure or regulation as may be subsequently adopted. Any dimensions specified in sections 14-275a-x1 to 14-275a-x65, inclusive, of the Regulations of Connecticut State Agencies shall comply within the following limits:

1. Measurements specified in whole numbers with no decimal point specified shall be rounded either up or down to the next whole number in accordance with standard engineering practice.

2. Measurements specified as decimals or whole numbers with a decimal shall be rounded to the least significant digit specified.

3. Tolerances specifically noted in the references mentioned in subsection (a) of this section shall prevail.

(Adopted effective May 2, 2007)