

School Vehicle Specifications

PUPIL TRANSPORTATION OFFICE
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 CLARKSVILLE PIKE ELLICOTT CITY, MD 21042

SCHOOL VEHICLE SPECIFICATIONS

Chapter 1 Type I Vehicles

Chapter 2 Type II Vehicles

FOR NEW VEHICLES ORDERED AFTER JANUARY 1, 2020

Updated

11/2020 – Three point restraints, Type II Vehicles

2/14/2020 – Back-up Camera, Electrical Panel, Placard, Removed Internal Camera

11/21/2019 – Special Needs Equipment

11/2/2018 – 64 to 72 Passenger

3/26/2018 – Bus Lift

10/21/2017 – Camera System

11/3/2016 – no changes

11/12/2015 – initial revision

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FORWARD

This document is not intended to be all inclusive of the vehicle specifications that may be required for use in the Howard County Public School System. The purpose is to provide one comprehensive document that combines the chassis and body construction standards promulgated by the Maryland Motor Vehicle Administration (MVA), Maryland State Department of Education Code of Maryland Regulations (COMAR), and the Pupil Transportation Office of the Howard County Public School System (HCPSS). It should be fully recognized that regulations adopted by the MVA and COMAR may change at any time and need to be verified before any purchase is made. Therefore, it is the responsibility of the contractor to ensure that the specifications contained within are current. This can be accomplished by contacting the Pupil Transportation Office.

It should also be understood that school bus contracts are awarded by the Board of Education of Howard County through a competitive bidding process. This process may include this document, by reference, and/or include additional vehicle specifications designed to meet the specific needs of the school system for which specific bus requirements are developed.

As noted above this document is a combination of chassis and body construction standards promulgated by three (3) agencies. To assist the reader in knowing which specifications are from which agencies, a key (see below) has been developed. All specifications in **black letters** are those of the MVA, specifications in **orange letters** are COMAR, and in **blue letters** are specific to the HCPSS.

Key:

Black Letters = MVA specifications

Orange Letters = COMAR

Blue Letters = HCPSS

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.00 General.

A. Vehicles used to transport students on regular routes shall be:

(1) New; or

(2) Previously registered school vehicles originally used to transport Maryland public school students.

B. Spare Vehicles.

(1) Spare vehicles shall be available during the time route vehicles are in operation.

(2) Spare vehicles shall be:

(a) New;

(b) Previously registered regular route vehicles; or

(c) Vehicles purchased new and verified in writing by the Motor Vehicle Administration as originally used in Maryland to transport private or parochial school students.

C. All school vehicles shall meet these specifications which includes those promulgated by the Federal Department of Transportation, Maryland State Motor Vehicle Administration, Maryland State Department of Education, Howard County Public School System, and any identified in a particular bid solicitation.

D. Any item not specifically addressed or prohibited shall comply with the most recently published “National Minimum Standards for School Buses”.

E. Before a bus can be placed into service, the Director/designee of Pupil Transportation shall complete an “Acceptance Check Inspection” to ensure it complies with all the applicable regulations contained within this document. It is the contractor’s responsibility to present the vehicle for this inspection.

F. School bus contractors are not prohibited from purchasing vehicles that exceed these specifications.

G. Additional or replacement vehicles used to transport pupils to and from school shall be new equipment. Previously registered schools vehicles not purchased, acceptance checked and originally used to transport Maryland public school pupils are not acceptable.

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H. Regular route buses shall have a minimum manufacturer rated capacity of 70 passengers. (HCPSS Addition)

I. Special needs route buses shall have a minimum manufacturer rated capacity of 48 passengers. (HCPSS Addition)

.01 Scope.

This chapter is intended to provide minimum standards for the design, construction, and equipment of Type I school vehicles manufactured for sale in Maryland. These regulations are intended to enhance 49 CFR standards. When CFR standards supersede Maryland standards, CFR standards are to be used to construct Maryland-certified school vehicles.

.01-1 Incorporation by Reference.

A. In this chapter, the following documents are incorporated by reference.

B. Documents Incorporated.

- (1) 49 CFR §393.65 All fuel systems, as amended.
- (2) 49 CFR §393.67 Liquid fuel tanks, as amended.
- (3) 49 CFR §393.77 Heaters, as amended.
- (4) 49 CFR §571.101 Controls and displays, as amended.
- (5) 49 CFR §571.102 Transmission shift position sequence, starter interlock, and transmission braking effect, as amended.
- (6) 49 CFR §571.103 Windshield defrosting and defogging systems, as amended.
- (7) 49 CFR §571.104 Windshield wiping and washing systems, as amended.
- (8) 49 CFR §571.105 Hydraulic and electric brake systems, as amended.
- (9) 49 CFR §571.108 Lamps, reflective devices, and associated equipment, as amended.
- (10) 49 CFR §571.111 Rearview mirrors, as amended.
- (11) 49 CFR §571.114 Theft protection and rollaway prevention, as amended.
- (12) 49 CFR §571.116 Motor vehicle brake fluids, as amended.

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- (13) 49 CFR §571.119 New pneumatic tires for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) and motorcycles, as amended.
- (14) 49 CFR §571.120 Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity 49 CFR information for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds), as amended.
- (15) 49 CFR §571.131 School bus pedestrian safety devices, as amended.
- (16) 49 CFR §571.205 Glazing materials, as amended.
- (17) 49 CFR §571.208 Occupant crash protection, as amended.
- (18) 49 CFR §571.209 Seat belt assemblies, as amended.
- (19) 49 CFR §571.210 Seat belt assembly anchorages, as amended.
- (20) 49 CFR §571.121 Air brake systems, as amended.
- (21) 49 CFR §571.217 Bus emergency exits and window retention and release, as amended.
- (22) 49 CFR §571.220 School bus rollover protection, as amended.
- (23) 49 CFR §571.221 School bus body joint strength, as amended.
- (24) 49 CFR §571.222 School bus passenger seating and crash protection, as amended.
- (25) 49 CFR §571.301 Fuel system integrity, as amended.
- (26) 49 CFR §571.302 Flammability of interior materials, as amended. Repeal effective January 1, 2014 pursuant to Chapter 453, Acts of 2011.
- (27) 49 CFR §571.303 Fuel system integrity of compressed natural gas vehicles, as amended.
- (28) 49 CFR §571.304 Compressed natural gas fuel container integrity, as amended.

.02 Certification.

A. The Administration may not title or register any school vehicle manufactured on or after December 31, 1972, unless the manufacturer has on file at the Administration a certification that the vehicles are in full compliance with the regulations applicable to school vehicles manufactured after December 31, 1972. This certification shall be in a form prescribed by the Administration.

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B. Each vehicle manufacturer or distributor of vehicles of a type subject to the regulations that are to be sold or distributed in this State shall certify to the Administration that all vehicles to be sold or distributed are in compliance with the provisions of this regulation for the year of manufacture. The certification shall be:

- (1) Filed annually.
- (2) Filed before introduction of new model.

C. School vehicles shall meet standards for the year of manufacture. Contact the School Vehicle Safety Section, Motor Vehicle Administration, 6601 Ritchie Highway N.E., Glen Burnie, Maryland 21062, before purchase of the school vehicle for a physical inspection of the vehicle to determine if these school vehicles meet the standards during the year of manufacture.

D. A metal plate stamped or embossed signifying body compliance with this regulation shall be posted by the body manufacturer in the area above the driver's seating position visible to all inspectors. This certification plate shall have MD following the serial number to indicate compliance with construction standards for the State of Maryland.

E. A tamper-proof, self-adhesive label with a clear surface that will not be damaged by moisture or cleaning solvents may be used in place of the metal plate. Upon return of the damaged or unreadable label, the manufacturer shall supply a new label to the owner.

.03 Bumpers.

A. The front bumper shall be of heavy duty steel channel, or equivalent, at least 3/16-inch thickness and not less than a 9-inch face, painted black, and shall extend around the outer edges of the fender. Bumper and bumper supports shall be of sufficient strength to permit towing or pushing by another vehicle without damage. The front bumper shall be furnished by the manufacturer.

B. The rear bumper shall be of 3/16-inch pressed steel channel, or equivalent, and shall have not less than a 9-inch face. It shall wrap around the back corners of the bus and shall extend forward at least 12 inches measured from the rearmost point of the body at the floor line.

C. The rear bumper shall be furnished by the manufacturer and shall be attached directly to the frame with the following provisions:

- (1) Ease in removal;
- (2) Prevent hitching to or riding on it;
- (3) Braced to develop the full strength of the bumper section against side or rear impact; and
- (4) Permit bus to be pushed by another vehicle without permanent distortion.

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D. The rear bumper shall extend beyond the rearmost part of the body surface at least 1 inch, measured at the floor line.

E. Only bumpers approved by the Administration may be used.

F. Tow eyes or hooks may be furnished front and rear and attached so as not to project beyond the front or rear bumpers. Tow eyes or hooks attached to the frame (chassis) shall be furnished by the chassis manufacturer.

.04 Brakes — General, Hydraulic, Air Brake.

A. General. The brake system:

(1) Shall be designed and constructed so that a single failure anywhere in the brake system, except for mechanical parts of the wheel brake assemblies, the brake pedal, and the brake pedal attachment to the brake valves or the master cylinder, does not leave the vehicle without brakes; and

(2) May not allow the vehicle to be without operative brakes capable of stopping the vehicle when loaded to the manufacturer's rated gross vehicle weight at any legal road speed.

B. Hydraulic.

(1) Buses using a vacuum in operation of the brake system shall be equipped with warning signals, readily audible and visible to the driver, which shall provide a continuous warning when the vacuum for braking is less than 8 inches of mercury. An illuminated gauge shall indicate to the driver the inches of mercury/vacuum available for operation of the brakes.

(2) Vacuum assist brake systems shall have a reservoir used exclusively for brakes and shall be adequate to ensure loss in vacuum at full stroke application of not more than 30 percent, with the engine not running. The brake system on gas-powered engines shall include suitable and convenient connections for the installation of a separate vacuum reservoir.

(3) The brake system dry reservoir shall be safeguarded by a check valve or equivalent device. In the event of failure or leakage in its connection to the source of compressed air or vacuum, the stored dry air or vacuum may not be depleted by leakage or failure.

(4) Buses using a hydraulic assist booster in the operation of the brake system shall be equipped with warning signals, readily audible and visible to the driver, that shall provide continuous warning in event of a loss of fluid from the primary source or loss of electric power in the back-up system.

(5) Brake lines, plus booster assist lines, shall be:

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- (a) Protected from excessive heat and vibration;
 - (b) Installed to prevent chafing, cutting, or stretching.
- (6) The parking brake system shall be designed and assembled to meet the following requirements:
- (a) The parking brake shall hold the vehicle stationary or to the limit of traction on braked wheels, on a 20 percent grade under any condition of legal loading on a surface free from snow, ice, or loose material;
 - (b) When applied, the parking brake shall remain in the applied position with the capability as set forth in this regulation, despite exhaustion of the source of energy used for application or leakage;
 - (c) The parking brake control mechanism:
 - (i) May be mounted on the dash or on the floor,
 - (ii) Shall be readily available to the driver, and
 - (iii) When in the applied position, may not protrude into the walkway; and
 - (d) If floor mounted, there shall be a minimum 30-inch walkway measured from the barrier to the parking brake mechanism.
- (7) A drive-line type parking brake shall have a conveniently mounted control to apply and release.
- (8) A manual release shall be provided in cases when hydraulic pressure cannot be built up to release the brake.
- (9) A warning light shall be provided to alert the driver that the parking brake is or is not applied.

C. Air Brakes.

- (1) Vehicles having full air brake systems shall be equipped with:
- (a) A safety valve to protect the air system against excessive air pressure build-up;
 - (b) An illuminated air gauge in the instrument panel to register the air system pressure, with an audible and visual low pressure indicator to warn the operator when air pressure falls below 60 pounds per square inch; and
 - (c) A warning light to alert the driver that the parking brake is applied.

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- (2) Vehicles having full air brake systems shall be equipped with a check valve located between the source of air supply and reservoir.
- (3) Brake lines shall be:
 - (a) Protected from excessive heat and vibration; and
 - (b) Installed to prevent chafing, rubbing, or stretching.
- (4) Minimum brake lining size shall be 16.5 by 6 inches rear and 15 by 3.5 inches front.
- (5) A fail-safe emergency brake system shall have a spring actuated chamber attached to rear brakes and shall automatically apply rear brakes upon loss of air.
- (6) A brake system shall be of sufficient capacity for at least three brake applications and release after an engine stall.
- (7) A manual control shall be installed in the driver's compartment, located so as not in reach of pupils to be readily available to the driver for emergency stopping or parking.
- (8) If a treadle type is supplied, the treadle shall be either rubber covered or of a nonslip design and mounted directly on a valve. Treadle combination valves, involving linkages between valve body and pedal, are not permitted.
- (9) Air lines, wires, etc., are to be supported or enclosed within the driver's compartment to protect against abnormal wear or damage.
- (10) Rear air chambers are to be mounted in front of the rear axle.
- (11) The system shall be equipped with an automatic, electrically heated drain system, with either an automatic drain valve or air dryer.
- (12) The control of the emergency stopping system shall be designed and constructed to prevent release of brakes by the driver unless energy is available for reapplication.

.05 Drive Train.

A. Axles.

- (1) The front and rear axles, including suspension assemblies, shall have a gross axle weight rating at least equal to that portion of the load as would be imposed by the chassis manufacturer's maximum gross vehicle weight rating.
- (2) The rear axle shall be of the full-floating type. The rear suspension assembly shall have a gross weight rating at ground equal to or exceeding that portion of the total load as would be imposed by the manufacturer's maximum gross vehicle weight rating.

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B. Air Cleaner. The engine intake air cleaner shall be furnished and properly installed by the chassis manufacturer to meet engine specifications.

C. Heater Outlets. The chassis engine shall provide inlet and outlet holes in which heavy duty cut-off valves shall be installed in accessible locations for attachment of the bus heating system water lines.

D. Oil Filter. An engine mounted filter shall be provided by the engine manufacturer.

E. Transmission. A transmission shall have a minimum of four forward speeds and one reverse speed.

F. Drive Shaft. Each segment of the drive shaft shall be equipped with a suitable guard to control its motion and prevent accident or injury in the event of its fracture or disconnection.

.06 Electrical (Chassis Wiring).

A. The chassis wiring system shall be of sufficient capacity to meet the electrical demand of the vehicle. Chassis and body wiring shall be protected with circuit breakers or field effect transistors.

B. Battery or Batteries.

(1) The storage battery or batteries shall:

- (a) Be furnished by the chassis manufacturer;
- (b) Be of sufficient capacity to supply all electrical requirements; and
- (c) Have at least a total of 1,000 cold cranking amperes measured at 0°F.

(2) Mounting.

- (a) The battery or batteries shall be mounted on the outside of the engine compartment.
- (b) The body manufacturer shall permanently mount the battery or batteries on a sliding tray.
- (c) One-piece 00 gauge battery cables shall be provided by the manufacturer. The cables shall be of a length to permit the full travel of the battery and tray.
- (d) The battery cables, if passed through holes in metal, shall be protected by nonconductive grommets.

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(e) The battery or batteries may be mounted in the engine compartment on rear-engine vehicles.

C. Alternator. The alternator shall be of sufficient output to meet the electrical demand of the vehicle. A dual belt drive or equivalent shall be used.

D. Voltmeter. A graduated voltmeter is required.

E. EXTRA WIRING Accessory Power Connection in Electrical Panel; Four Positions Fused at 20 Amps Each 2 ignition and 2 battery. (HCPSS Addition)

.07 Exhaust System.

A. The exhaust system shall include the:

(1) Exhaust manifold and gaskets; and

(2) Piping leading from the flange of the exhaust manifold, to and including the muffler or mufflers and exhaust pipes.

B. The system may not extend into the body and shall be attached to the chassis.

C. Exhaust Pipes.

(1) The exhaust pipe shall be of nonflexible 16-gauge steel. An Original Equipment Manufacture flexible pipe or its equivalent not longer than 24 inches in length may be used at the front of the system at or near the turbocharger.

(2) The exhaust pipe shall exit the rear of the bus on either the left or right side of the emergency door.

(3) The exhaust pipe may not exit through or be attached to the bumper.

D. The complete exhaust system shall be tight and free from leaks, shall be properly insulated from the electrical wiring or any combustible part of the bus, and may not pass within 12 inches of the gasoline fuel tank or its connections unless a suitable heat baffle is installed between the exhaust system and gasoline fuel tank. A shield is not required between the diesel tank and exhaust. A part of the exhaust system may not pass within 12 inches of any flexible brake or diesel fuel line unless a suitable heat baffle is installed between the exhaust system and flexible brake or diesel fuel line.

E. The exhaust system noise level may not exceed the levels in COMAR 11.14.07.08.

F. The manufacturer shall provide the proper size exhaust pipes. Replacement pipes shall be of the same diameter.

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.08 Fenders and Hood (Chassis Sheet Metal).

- A. The total width of outer edges of front fenders, measured at the fender line, shall exceed the total width of front tires when wheels are in a straight ahead position.
- B. Front fenders shall be properly braced and free from body attachments.
- C. The chassis manufacturer shall provide a metal or fiberglass fender extension or flap to extend downward to the lowest edge of body.
- D. Openings in the floorboard or firewall between the chassis and passenger carrying compartment, such as for the gearshift lever and the auxiliary brake lever, shall be sealed.

.09 Frame.

- A. The frame or its equivalent shall be of such design as to correspond at least to the standard practice for trucks of the same general load characteristics which are used for severe service.
- B. The chassis frame shall extend at least to the rear edge of the rear body cross-member. Alteration in the length of the frame shall be made only behind the rear hangers of the rear springs and may not be for the purpose of extending the wheel base. Any alterations to the frame shall be made only when designed and guaranteed by the original chassis or body manufacturer.
- C. When frame side members are used, they shall be of one-piece construction. If frame side members are extended, the extension shall be designed and furnished by the chassis or body manufacturer with his guarantee, and installation shall be made by either the chassis or the body manufacturer and guaranteed by the company making the installation.

.10 Fuel System.

- A. The fuel tank shall have a minimum capacity of 30 gallons and be on the right hand side of the chassis rail or between frame rails.
- B. Vehicles with wheelchair lifts located forward of the rear wheels may have the fuel tank in the rear between frame rails or on the left side of the frame rails.
- C. The tank shall be equipped with adequate baffles.
- D. A drain plug of at least 1/4 inch diameter shall be located in the center of the bottom of the tank.
- E. If tank sizes other than 30 gallons are supplied, the location of the tank shall remain as set forth in §A of this regulation.

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F. The engine supply line shall be taken from the top of the tank.

G. A flexible fuel hose and oil-proof connection shall be provided at the engine end of the fuel feed line.

H. Fill Pipe Cap.

(1) The fill pipe cap shall be of such design as to minimize spillage of fuel when the bus turns corners in either direction.

(2) If venting of the fuel tank is done other than through the fill pipe cap, the cap shall be of a nonvented type.

I. Fuel Filler Cap Door. There shall be a door hinged at the front and designed to cover the opening over the fuel fill pipe.

J. A fuel filter with a replaceable element shall be installed between the fuel tank and fuel delivery system, readily available for service.

K. If a fuel other than gasoline or diesel is used, the fuel system shall meet all applicable federal standards.

.11 Instruments.

Instruments and gauges shall be mounted on the instrument panel in such a manner that each is clearly visible to the driver while the driver is in a normal seated position.

.12 Steering System.

A. Steering gear shall be approved by the chassis manufacturer and designed to assure safe and accurate performance when a vehicle is operated with maximum load at maximum speed.

B. If external adjustments are required, a steering adjustment mechanism shall be accessible.

C. Changes may not be made in steering apparatus which are not approved by chassis manufacturer.

D. There shall be a clearance of at least 2 inches between the steering wheel and cowl instrument panel or any other surface.

E. Power steering is required and shall be of the integral type with integral valves.

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.13 Suspension (Springs and Shocks).

A. Springs.

- (1) The springs or suspension assemblies shall be of ample resiliency under all load conditions and of adequate strength to sustain the loaded vehicle without evidence of overload.
- (2) Springs or suspension assemblies shall be designed to carry their proportional share of gross vehicle weight.
- (3) If rear springs are used, they shall be of a progressive type.
- (4) If leaf type front springs are used, the stationary eyes shall be protected by a full wrapped leaf in addition to the main leaf.

B. Shock Absorbers. Two front and two rear double acting shock absorbers shall be provided and be compatible with the manufacturer's rated axle capacity.

C. Air Ride Suspension. An air ride suspension may be installed, which shall:

- (1) Meet all of the manufacturer's requirements;
- (2) Have a stop block to prevent the body from hitting the tire in case of an air bag failure;
- (3) Permit the vehicle to be driven off the roadway if the air bag fails; and
- (4) Have a manual drain valve.

D. The air ride suspension system may be equipped with an automatic, electrically heated drain system.

.14 Tires (Wheels and Rims).

A. New tires of proper size and ply rating commensurate with the chassis manufacturer's gross vehicle weight rating shall be provided. All tires on any given vehicle shall be the same size and ply rating.

B. Dual rear wheels and tires shall be provided on all vehicles.

C. If the vehicle is equipped with a spare tire and rim, they shall be of the same size as those mounted on the vehicle, and if the tire carrier is specified, it shall be mounted in an accessible location outside of the passenger compartment.

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.15 Traction-Assisting Devices, if Specified.

A. Automatic chains may be installed.

B. Sanders, when required or used, shall:

- (1) Be of the hopper cartridge valve type;
- (2) Have a metal hopper with all interior surfaces treated to prevent condensation of moisture;
- (3) Be of at least 100-pound (grit) capacity and refillable from the exterior of the vehicle only;
- (4) Have a cover on the filler opening of the hopper, which screws into place, sealing the unit air tight;
- (5) Have discharge tubes extending to the front of each rear wheel under the fender;
- (6) Have nonclogging discharge tubes which shall have slush-proof, nonfreezing nozzles;
- (7) Be operated by an electric switch with a telltale light mounted on the instrument panel;
- (8) Be exclusively driver controlled; and
- (9) Have a gauge to indicate that the hoppers need refilling when they are 1/4 full.

.16 Alternating Flashing Lights.

A. Buses shall be equipped with a system consisting of four red **high intensity LED strobe/pulsating** warning lights and four amber **high intensity LED strobe/pulsating** warning lights. (HCPSS Addition)

B. Shields are required over the warning lights. The shields may be of a single type to cover both the red and amber lights and shall be painted black, with a minimum depth of 4 inches. (HCPSS Addition)

C. There shall be a red and amber pilot light which shall go on when the respective amber or red systems are actuated. The appropriate pilots shall either go out or flash at an obvious altered rate if any of the lights in the system are not functioning normally.

D. The warning light switches and red and amber pilot lights shall be mounted to the right of the seated driver within easy unobstructed reach, in a panel or a specific area in the dash, and not incorporated with other switches.

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E. The signal lamp system shall operate as follows:

- (1) With master switch on and entrance door closed, depress momentary switch. Amber pilot light and amber flashing lights shall go on.
- (2) Open entrance door. Amber pilot light and amber flashing lights shall go off and red pilot light and red flashing lights shall go on. Stop arm shall automatically extend.
- (3) Close entrance door. Red pilot and flashing lights shall go off, and the stop arm shall retract immediately.
- (4) Open entrance door without depressing momentary switch. Red pilot light and red flashing lights shall go on. Stop arm shall automatically extend.
- (5) With master switch off, depressing momentary switch may not activate the amber flashing system, nor will opening entrance door activate the red flashing signal and stop arm.
- (6) An override switch shall be provided which permits the activation of the red warning lights and red pilot light without opening the service door.
- (7) The red override system shall operate when the master switch is in both the on and off positions.

F. Installation Requirements.

- (1) Each flashing light shall be mounted with its axis substantially parallel to the longitudinal axis of vehicle.
- (2) Front and rear alternately flashing lights shall be spaced as far apart laterally as practicable.
- (3) Alternately flashing lights shall be mounted at the front above the windshield and at the rear so that the lower edge of lens is not lower than top line of the side window.
- (4) Vertical and lateral vision of the front and rear alternately flashing warning lights may not be obstructed by any part of the body or lamphouse insofar as standard vehicle body construction permits.
- (5) The area around each lamp, extending approximately 1 inch outward, shall be painted black.
- (6) A separate fuse, circuit breaker, or field effect transistor, adequate to prevent damage to the system in the event of a dead short, shall be provided between the power source and the master switch.

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.16-1 Flashing White Strobe Light.

A. A school vehicle may be equipped with a flashing white strobe light on the roof of the vehicle.

B. The flashing white strobe light:

- (1) Shall be installed on the roof in a position not further than 1/3 of the body length forward from the rear edge of the roof;
- (2) Shall have a single clear lens emitting light 360 degrees around its vertical axis;
- (3) May not extend above the roof more than the maximum legal vehicle height as set forth in Transportation Article, §24-104(a), Annotated Code of Maryland; and
- (4) Shall be approved by the Administration.

C. If a flashing white strobe light is installed, a manual switch and pilot light shall be installed in the driver's compartment to indicate when the light is operating.

D. Shall only be operational with the red warning light system. (HCPSS Addition)

.17 Body Construction — External.

A. External structural construction shall be of rust resistant, zinc coated, prime commercial cold rolled quality steel, or a material with the strength at least equivalent to steel, and shall be fire resistant. The following apply:

- (1) Metal parts that will be painted shall be chemically cleaned, etched, zinc phosphate coated, and zinc chromate or epoxy primed or conditioned by equivalent process;
- (2) Particular attention shall be given to lapped surfaces, welded connections of structural members, cut edges, punched or drilled hole areas in sheet metal, closed or box sections, unvented or undrained areas, and surfaces subjected to abrasion during vehicle operation.

B. The overall length of a school vehicle may not exceed 40 feet.

C. Roof Strainers. Two or more roof strainers or longitudinal members shall be provided to connect roof bows, to reinforce the flattest portion of roof skin, and to space roof rows. These strainers may be installed between roof bows or applied externally. They shall extend from the windshield header and when combined with the rear emergency door post, shall function as longitudinal members extending from the windshield header to the rear floor body cross member. At all points of contact between strainers or longitudinal members and other structural material, attachment shall be made by means of welding, riveting, or bolting. After the test load as specified in 49 CFR §571.220 has been removed, none of the following defects shall be evident:

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- (1) Failure or separation at joints where strainers are fastened to roof bows;
- (2) Appreciable difference in deflection between adjacent strainers and roof bows; or
- (3) Twisting, buckling, or deformation of strainer cross section.

D. Side Strainers.

(1) There shall be one or more side strainers or longitudinal members to connect vertical structural members and to provide impact and penetration resistance in the event of contact with other vehicles or objects. The strainers may not be formed in flat strips. The strainers shall be constructed from metal of at least 16 gauge and 3 inches wide. Side strainers shall be installed in an area between the bottom of the window and the bottom of the seat frame and shall extend completely around the bus body except for door openings and body cowl panel. Side strainers shall be fastened to each vertical structural member in any one or any combination of the following methods as long as the stress continuity of the members is maintained:

- (a) Installed between vertical members;
- (b) Installed behind panels but attached to vertical members;
- (c) Installed outside external panels.

(2) The fastening method employed shall be such that the strength of strainers is fully utilized. Side strainers or longitudinal members either may be combined with one of the required rub rails or installed alone as an additional rub rail, as long as separate conditions and physical requirements for rub rails are met. A portion of the side strainer or longitudinal member may not occupy the same vertical position as either rub rail.

E. Rear Corner Reinforcements. Rear corner framing of the bus body between the floor and the window sill and between emergency door posts and last side posts shall consist of at least three structural members applied horizontally or vertically or in another combination to provide additional impact and penetration resistance equal to that provided by frame members in areas of the sides of the body. The structural members shall be securely attached to each end.

F. Floor Sills. There shall be one main body sill at each side post and two intermediate body sills on approximately 10-inch centers. All sills shall be of equal height not to exceed 3 inches and shall extend the width of the body floor except where structural members or features restrict area. The main body sill shall be equivalent to or heavier than 10 gauge and each intermediate body sill shall be equivalent to or heavier than 16 gauge, or each of all body sills shall be equivalent to or greater than 14 gauge. All sills shall be permanently attached to the floor. Connections between the sides and floor system shall be capable of distributing loads from vertical posts to all floor sills. As evidence that this requirement is fulfilled, the following conditions may not occur during or after application of the load:

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- (1) Appreciable difference in deflection between adjacent sills;
- (2) Failure or separation in joints where floor, floor sills, and sides connect;
- (3) Twisting, buckling, or deformation of floor sill cross members.

G. The metal of commercial gauges used in the construction of the bus body shall be coated with mill applied zinc, be aluminum coated, or be treated by an equivalent process before the bus is constructed. Included are structural members, inside and outside panels, floor panels, and floor sills. Excluded are door handles, grab handles, stanchions, interior decorative parts, and other interior plated parts.

H. After the load has been removed, the following defects may not be evident at all points of contact between longitudinal members and other structure material:

- (1) Failure or separation at joints where longitudinal members are attached to the roof bows;
- (2) Appreciable differences in deflection between adjacent longitudinal members and roof bows;
- (3) Twisting, buckling, or deformation of longitudinal member cross section.

I. Strength of Structural Joints of School Vehicle Bodies. It is the intent of this regulation to insure that all structural joints within bus bodies which employ discrete attachments, which are between heavy gauge members and those which join panels to panels or panel edges to heavier structures, achieve a significant proportion of the strength of the parent metal. For any of the joints described in this section, it shall be demonstrated by calculation that the shear strength of the joints is at least 60 percent of the yield point strength of the thinnest member. Panels shall be attached to underlying structures, and the above requirements may not apply where panels are attached to underlying structures at points other than the panel edges.

J. One rub rail shall be located approximately at the floor line. The rail shall cover the same longitudinal area as the upper rub rail, except at wheel housings, and shall extend to the radii of the right and left rear corners.

K. One rub rail shall be located on each side of the bus approximately at seat level, and shall extend from the rear side of entrance door completely around the bus body, except for the emergency door, to a point of curvature near the outside cowl (or the corner of the body on transit and metropolitan vehicles) on the left side.

L. Both rub rails shall be:

- (1) At least 4 inches in width;
- (2) Of 16 gauge steel;

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- (3) Corrugated or ribbed;
- (4) Attached at each body post and all other upright structural members; and
- (5) Applied outside the body or outside the body posts. Pressed in or snap on rub rails do not satisfy this requirement.

M. A snow rail, if required, shall be installed the full length of the body skirt.

N. Rub rails may not be an integral part of the body.

.18 Body Construction — Internal.

A. Floor.

- (1) The floor shall be of prime commercial quality steel of at least 14 gauge or other metal at least equal in strength to 14 gauge prime commercial quality steel.
- (2) The floor shall be flat from front to back and from side to side, except in wheel housing, toe board, driver's seat platform, and fuel fill locations.
- (3) Humps in the floor may not have sharp corners and shall be located in areas that will not impede student movement.
- (4) Flat floor vehicles may have a step on the aisle, which shall be marked with white nose edging with "Watch Your Step" printed underneath the white nose edging.

B. The inside body height shall be a minimum of 72 inches, measured metal to metal, at any point on the longitudinal centerline from the front vertical bow to the rear vertical bow.

C. The vehicle body shall be thermally insulated between the inner and outer panels, ceiling, roof, and walls with proper material to deaden sound and to reduce vibrations to a minimum.

D. Projections and Exposed Edges.

- (1) The interior of the vehicle, including the ceiling, shall be free of all projections except those required for the installation of equipment approved by the Administration.
- (2) An inner liner shall be provided on the ceiling and walls.
- (3) Rearward components shall be lapped over forward components to reduce the likelihood of injury from exposed edges.
- (4) Exposed edges shall be beaded, hemmed, or flanged.

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E. Interior trim panels from the bottom of the window line to the seat rail shall be unpainted, embossed, aluminized steel.

F. Construction shall provide a reasonably dustproof, weathertight, and fume-proof unit. Openings between the chassis and passenger compartment shall be sealed to prevent fumes or exhaust gas from entering the bus body.

G. The body shall be designed and built to provide impact and penetration resistance into the passenger compartment.

H. Storage Compartment. A metal container of adequate strength and capacity for the storage of tire chains or tow chains and tools for minor emergency repairs may be provided. The storage container may be located either inside or outside the passenger compartment. If inside, it shall have a cover (a seat cushion may serve for this purpose) and be fastened to the floor of the vehicle.

I. Ventilation. The body shall be equipped with a suitable, controlled ventilating system of sufficient capacity to maintain a proper quantity of air under operating conditions without the opening of windows except in extremely warm weather. A static type exhaust roof ventilator is required. It shall be nonclosable and may be incorporated into the roof vent or emergency exit.

J. Mounting—Body-on-Chassis Type Buses.

(1) The chassis frame shall extend to the rear edge of the rear body cross member. In a body-on-chassis type of school vehicle, the body shall be attached to the chassis frame in a manner which prevents shifting or separation of the body from the chassis under severe impact. Alteration in the length of the frame may be made only behind the rear hangers of the rear springs and may not be for the purpose of extending the wheel base. The alterations may be made only if designed and guaranteed either by the original chassis manufacturer or by the company installing the school vehicle body.

(2) The body front shall be attached and sealed to the chassis cowl in a manner which prevents the entry of water, dust, or fumes through the joint between the chassis cowl and the body.

(3) Body holddown clamps shall be positive clamp, not spring type.

(4) Insulating material shall be placed at all contact points between the body and chassis frame. Insulating material shall be approximately 1/4 inch thick, of automobile sidewall tire quality, and attached to the chassis frame or body member so as not to move under severe operating conditions.

.19 Book Racks.

Book racks may be installed on residential special education vehicles only. They shall be installed above the side windows from the front cross seat to the rear transverse seat, except

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across or above the emergency door. Book racks shall be padded with the same material and padding used for seat backs. The padding shall be of sufficient thickness to prevent impact injuries and shall cover the edges and entire area of the lower surface of the book rack.

.20 Color and Identification (Lettering).

A. Color.

- (1) The school bus body, including the hood, cowl, area above and below the School Bus lettering on the front and rear header, and fenders shall be painted a uniform color, National School Bus Yellow. If the window pilasters are visible after the window is installed they shall also be painted National School Bus Yellow. A chrome or manufacturer's grey grill is acceptable and the roof ~~may~~ shall be painted white. The front and rear roof caps may not be painted white. (HCPSS Addition)
- (2) The hood may be painted with nonreflective National School Bus Yellow paint.
- (3) Body trim, on the exterior of the body, including the bumper, the emergency door arrow, and the lettering on the front, rear, and both sides of the body, shall be black. Yellow numbers on the front bumper are acceptable.
- (4) Rub rails, seat line, and snow rails shall be painted glossy black.
- (5) Wheel rims shall be gray, silver, or black, if painted. Wheel rims may be aluminum. Accessories of any type covering axle nuts, wheels, or lug nuts are not permitted.

B. The following lettering is required and shall be block type:

(1) Lettering.

- (a) The body of the school bus shall bear the words "SCHOOL BUS" in black block letters, 8 inches by 1 inch, on both the front and rear of the body.
 - (b) The lettering shall be placed as high as possible without impairment of its visibility. **This requirement also applies to buses with front and rear lighted sign compartments.** (HCPSS Addition)
 - (c) The lettering shall be on a reflective area 12 inches by 49 inches. (HCPSS Addition)
 - (d) The 12-inch by 49-inch background area may be reduced in size to conform to the contours of the vehicle.
- (2) The words "EMERGENCY DOOR" or "EMERGENCY EXIT" shall be 2 inches high black lettering and shall be applied at the top of, or directly above, the emergency exit

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door and above the emergency push-out windows on the inside and outside of the vehicle. If the outside areas above the door or the upper door window are not large enough for the words, the words may be placed on the door under the upper window.

(3) Operation of Emergency Door or Exit Latch (6-inch black arrow by 3/4 inch wide indicating direction of release of door or exit, inside and outside).

(4) Identification number (all four sides 6 inches high by 3/4 inch wide visible directly from the front, rear, and each side). Identification number on rear of vehicle shall be located above the rear bumper and below the window line. Temporary signage or numbers shall be placed in the second window on the lower glass on each side of the vehicle. A School Bus Number Placard is also required: one (1) placard, suction cups, black bumper feet, 3 digit, 4 inches height, 2 inches width, "Bus" in header. Manufactured by SchoolBusSigns.

(5) If applicable, the name of the local school system shall be on both sides of the vehicle, properly centered, in letters 6 inches high by 3/4 inch wide.

(6) Contractors' and private owners' or operators' names to the rear of the entrance door 2-1/2—3 inches high by 1/4—1/2 inch wide in a 16 by 30-inch area. This lettering shall also be on the left side in the same approximate location.

C. The following lettering may be used, if required or desired:

(1) ICC number (to rear of entrance door 2 1/2—3 inches high by 1/4—1/2 inch wide);

(2) Address of owner (to rear of entrance door 2 1/2—3 inches high by 1/4—1/2 inch wide);

(3) Telephone number of owner (to rear of entrance door 2 1/2—3 inches high by 1/4—1/2 inch wide);

(4) "STOP ON SIGNAL" **shall be lettered on the exterior of the rear emergency door. The lettering shall be block type, black in color, measuring 3/4 inch wide and 4 inches in height.** (HCPSS Addition)

D. Only signs and lettering approved by State law or regulation and any numbers necessary for identification shall appear on the vehicle. Bumper stickers are not permitted. The fleet number may be on the front bumper. All lettering shall be located according to the diagram and shall be block type.

E. A vehicle titled and registered shall comply with all lettering size and location requirements. If buses are repainted, they shall be relettered in compliance with these regulations.

F. Lettering shall be painted or applied using vinyl die cut self-adhering letters and numbers.

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G. "Drug Free School Zone" Lettering.

- (1) If desired, "Drug Free School Zone" may be on the exterior of the vehicle.
- (2) The lettering shall be:
 - (a) Located under the first window on the service door side or at another location near the service door approved on each individual bus;
 - (b) Black, in block letters 2 inches high by 3/8 inch wide.
- (3) A decal for the "Drug Free School Zone" may be used provided the background is National School Bus Yellow and the decal is not larger than 8 by 18 inches.

H. Yellow Reflective Tape.

- (1) Reflective tape at least 1 inch wide and not wider than 6 1/2 inches may be used to form a:
 - (a) Single horizontal line on each side of the bus immediately below the upper rub rail or at the floor line; or
 - (b) Rectangular figure on the rear of the bus body.
- (2) The vertical lines of the rectangle in §H(1)(b) of this regulation shall be as close to the sides of the bus as possible without extending over the sides of the bus.
- (3) The horizontal lines of the rectangle shall consist of one straight line above and near the rear bumper and one straight line at or near the roof line.

I. The reflective tape specified in §H of this regulation may be applied in a discontinuous fashion so as not to cover any existing or required lettering.

J. Roof Identification Number. Identification numbers on the roof may be used. If used, they shall be:

- (1) Located in the most forward section of the roof as possible;
- (2) Lettered from the left side to the right side of the bus; and
- (3) 18 inches high by 10 inches wide, with a 2-3/4 inch stroke.

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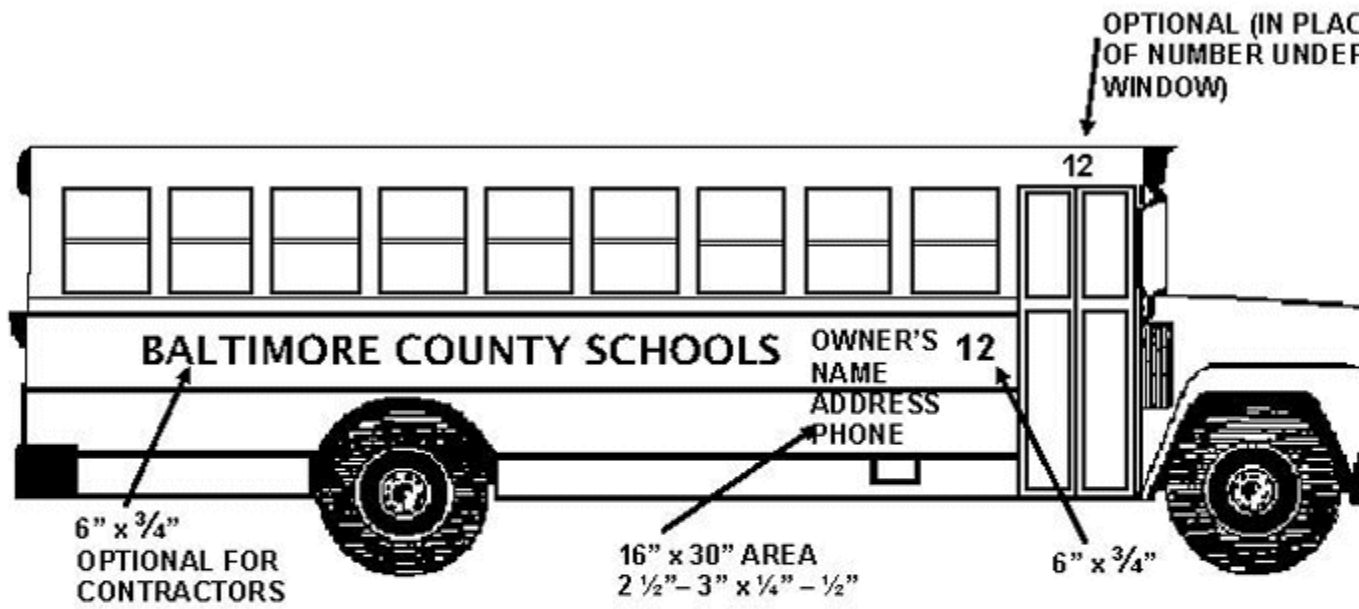


FIGURE 1

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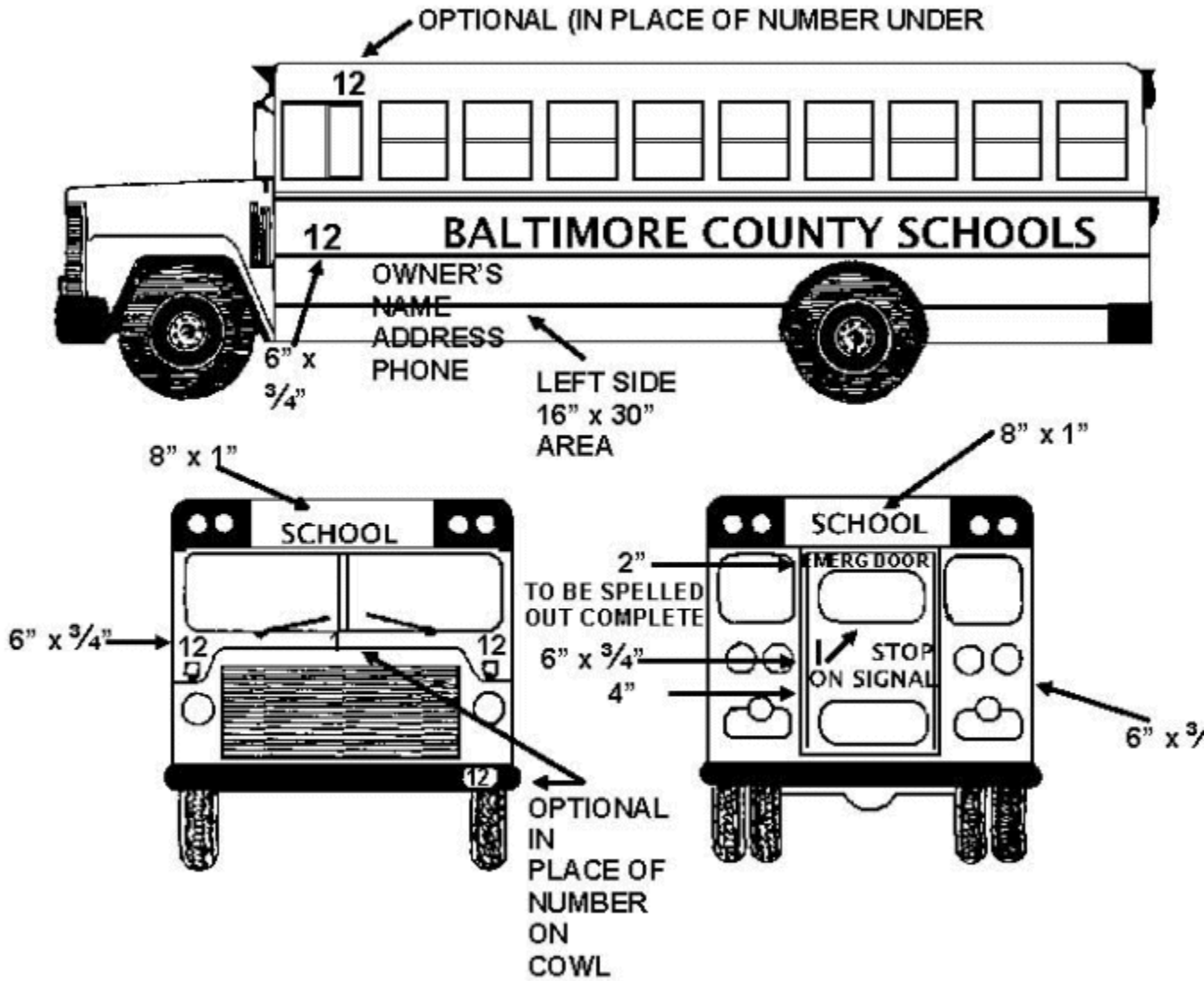


FIGURE 2

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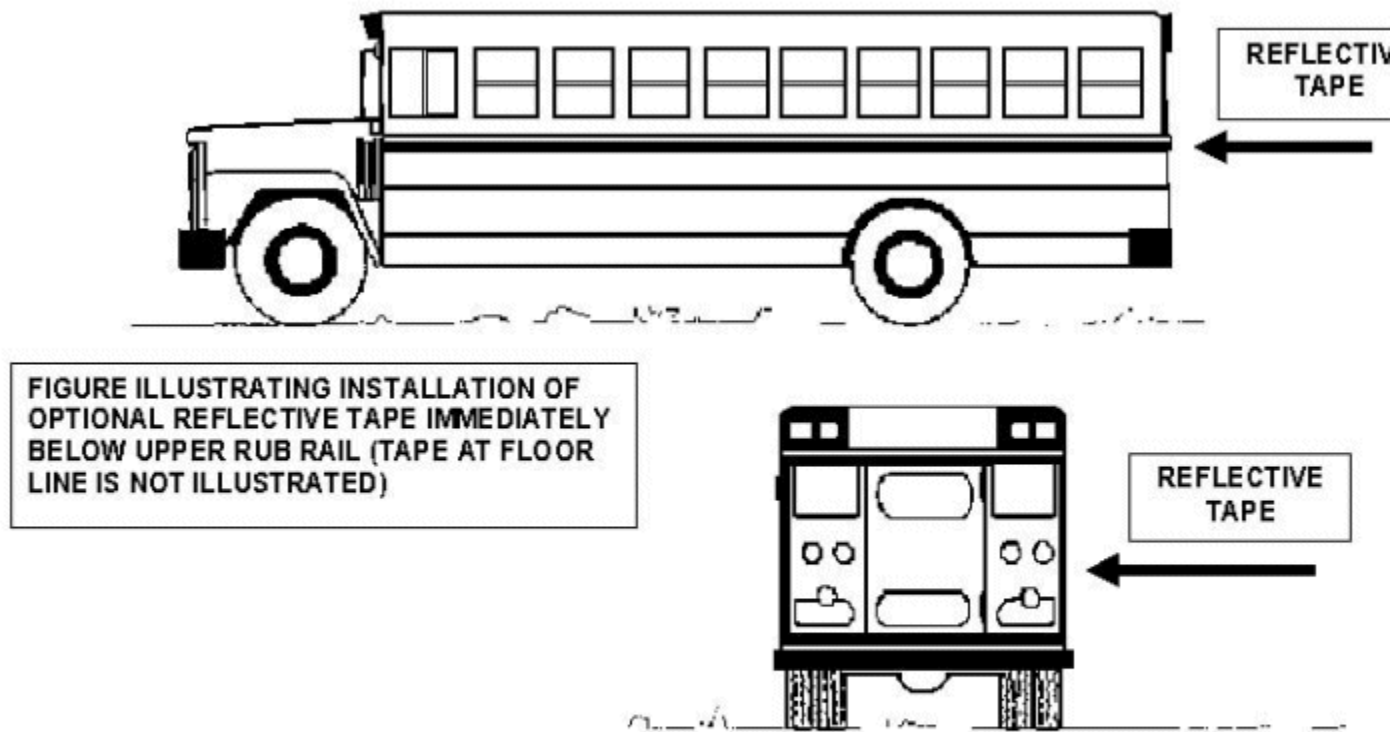


FIGURE 3

.21 Electrical (Body) — Lamps, Signals, Reflectors, and Fuses.

A. Tail and Stop (Brake) Lamps **shall be LED** (HCPSS Addition).

(1) Vehicles shall be equipped with four combination red stop/tail lamps. Two combination lamps with a minimum diameter of 7 inches or, if a shape other than round, a minimum 38 square inches of illuminated area shall be mounted on the rear of the vehicle just inside the turn signal.

(2) Two combination lamps with a minimum diameter of 4 inches or, if shaped other than round, a minimum 12 square inches of illuminated area shall be placed on the rear of the body between the belt line and the floor line. The rear license plate lamp may be combined with one lower tail lamp. Stop lamps shall be activated by the service brakes and shall emit a light that is plainly visible at night from a distance of 500 feet.

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B. Turn Signal Lamps **shall be LED** (HCPSS Addition). These signals shall be independent units and equipped with a four-way hazard warning signal switch to cause simultaneous flashing of the turn signal lamps when needed as a vehicular traffic hazard warning. Surface-mounted, amber lamps, with a minimum of four 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 the same location on the left side. They are to be connected to function with the regular turn signal lamps.

C. Back-Up Lights **shall be LED** (HCPSS Addition). Two back-up lights shall be installed to be activated when the gear shift lever is placed in reverse position. Lights shall be not less than 4 inches in diameter with a minimum of 32 candlepower and mounted above the bumper and below the window line.

D. Clearance, Side-Marker, and Identification Lamps **shall be LED** (HCPSS Addition). Two red clearance lamps on the rear and two amber clearance lamps on the front shall be mounted as high as practical on the permanent structure of the school bus to indicate extreme width. Two side marker lamps, amber at the front and red at the rear, shall be mounted on each side of the bus. Three red identification lamps shall be mounted on the same level not more than 8 inches apart in the center rear of the body as high as practical, and three amber identification lamps shall be likewise mounted in the center front of the body. Recessed lights are permitted.

E. Registration Plate Lamp **shall be LED** (HCPSS Addition). The rear registration number shall be illuminated by a white light so as to be plainly legible at 60 feet during periods of darkness. The registration plate lamp shall be so wired as to be lighted when the headlamps are lighted.

F. The above combination circuits may be subdivided into independent circuits. Each body circuit shall be coded by number or letter at 4-inch intervals or by color. The code shall appear on a diagram of the circuits in a readily accessible location.

G. A separate circuit breaker or electronic circuit protection shall be provided for each circuit required, except starter motor and ignition circuits.

H. Wires within the body shall be insulated and protected by a covering of fibrous loom, or equivalent, which shall protect them from external damage and minimize dangers from short circuits. Whenever wires pass through the body or chassis members, additional protection in the form of a grommet or other appropriate type of insert shall be provided. Exposed wires are not permitted.

I. Wires shall be fastened securely per manufacturers requirements. All joints shall be soldered or joined by equally effective connectors.

J. Switches.

(1) A solenoid switch or an electronic control system shall be connected to the ignition switch so that body accessories cannot be operated when the ignition switch is off.

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(2) The wheelchair lift, alternating flashing warning lights, and electric-powered service door handle may operate independently of the ignition switch.

(3) A noise reduction off and on switch shall be installed to permit the driver to shut off the entertainment devices and all interior fan motors. This requirement applies to school vehicles constructed as of June 20, 2005.

.22 Ignition Lock.

A lock, key, or other device to prevent the vehicle from being set in motion or its engine started by unauthorized persons, or otherwise contrary to the will of the owner or person in charge of the vehicle, shall be provided.

.23 Horns.

A. The bus shall be equipped with a minimum of two horns of standard make, each horn capable of producing complex sound in a band of audio frequencies between approximately 250 and 2,000 hertz and having a total sound level of 110 decibels within these frequency limits when measured at a point on an axis of the horn 3 feet from the exit of the horn.

B. The horns shall be audible to other highway users at a distance of 300 feet.

C. If louder horns are desired, they shall be capable of producing a sound level of 120 decibels under the conditions specified above.

D. The horn control shall be located in the manufacturer's original position.

.24 Backup Warning Alarm.

An automatic non-variable audible alarm shall be installed behind the rear axle and be at least 97 decibels.

.25 Emergency Equipment.

A. Fire Extinguisher.

(1) The vehicle shall be equipped with at least one 5-pound capacity pressurized, dry chemical fire extinguisher complete with hose.

(2) The extinguisher shall be mounted in a bracket located below the window line in the driver's compartment and shall be readily accessible.

(3) A pressure gauge shall be mounted on the extinguisher so as to be easily read without moving the extinguisher from its mounted position.

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(4) The fire extinguisher shall be of a type with a total rating of 2A 10 BC or greater. The operating mechanism shall be sealed with a type of seal which does not interfere with the use of the fire extinguisher.

B. First Aid Kit. The bus shall carry a weatherproof first aid kit, removable and readily identifiable, mounted in the driver's compartment. The kit shall contain at least the contents suggested by the National School Transportation Specifications and Procedures.

C. Reflectors and Flares.

(1) Reflectors and flares shall be located in the driver's area.

(2) The vehicle shall be equipped with three red triangular emergency reflectors in a suitable holder.

(3) Vehicles shall be equipped with three 30-minute stand-up lean-to flares stored in a red canister.

D. A locking device on the storage door for emergency equipment is prohibited.

E. Body Fluid Clean-Up Kit. Each bus shall have a removable and moisture-proof body fluid clean-up kit. The kit shall be properly mounted in the driver's compartment, and identified as a body fluid clean-up kit.

F. The safety equipment may be stored in a non-locking compartment that is permanently labeled "Safety Equipment Inside".

.26 Flooring and Floor Covering.

A. The floor in the underseat area, including the top and side of the wheel housing, driver's compartment, and toe board shall be covered with fire-resistant rubber or equivalent floor covering having a minimum overall thickness of 0.125 inch. A molded floor cover over wheel housings is acceptable.

B. Floor covering in the aisle and steps shall be one continuous piece of fire-resistant, nonskid, wear-resistant, rubber. The minimum overall thickness shall be 0.1875 inch. There shall be a heavy-duty, white-nosed, rubber wear plate where floor covering meets steps.

C. Floor covering shall be permanently bonded to the floor. Bonding material or seam sealers shall match the manufacturer's specification to ensure waterproofing. All seams, including those in the front and rear of or over wheel housings, shall be covered with aluminum strips or joined by bonding or welding. Aisle seams shall be located on the aisle side of seat legs and shall be covered with strips made of aluminum or other material approved by the Administration. Cove or cove molding made of metal or other material approved by the Administration shall be installed over joints around the sides and rear body wall.

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.27 Heaters.

- A. Heaters shall be of hot water type.
- B. If only one heater is used, it shall be of fresh air or combination fresh air and recirculating type.
- C. If more than one heater is used, additional heaters may be of recirculating air type.
- D. The heating system shall be capable of maintaining throughout the bus a temperature of not less than 50°F at average minimum January temperature as established by the National Weather Service, National Oceanic and Atmospheric Administration, for the area in which the vehicle is to be operated.
- E. Heaters installed by body manufacturers shall bear a name plate affixed by the heater manufacturer, which specifies the heater rating and performance.
- F. Heater hoses shall be adequately supported to guard against excessive wear due to vibration. The hoses may not dangle or rub against the chassis or sharp edges and may not interfere with or restrict the operation of any engine function. Heater hose shall conform to SAE J20C, which is incorporated by reference. Heater lines on the interior of the bus shall be shielded to prevent scalding of the driver or passengers.
- G. The chassis engine shall provide inlet and outlet holes in which heavy duty cut-off valves shall be installed in accessible locations for attachment of the bus heating system water lines.
- H. There shall be water flow regulating valves installed in the pressure line for convenient operation from the driver's seat.
- I. Accessible bleeder valves shall be installed in an appropriate place in the return lines of the body company installed heaters to remove air from the heater lines.
- J. Heater motors, cores, and fans shall be readily accessible for service. Access panels shall be provided as needed.
- K. Combustion Heaters.
 - (1) Combustion heaters are permitted and shall:
 - (a) Have a switch or one-way valve installed at the fuel tank when the fuel line is pressurized to shut off the fuel to the heater in case of a broken line;
 - (b) Have an indicator light in the driver's compartment to alert the driver of any malfunction;

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(c) Be mounted on the left side in an individual compartment opening from the outside; and

(d) Have the exhaust come out the left side under the skirt as close to the rear wheels as possible.

(2) Only combustion heaters approved by this Administration are to be installed on school vehicles.

L. Portable heaters may not be used.

.28 Defogger, Auxiliary.

One 6-inch auxiliary top mount fan shall be installed for window defogging. This fan is not to be considered a defroster.

.29 Mirrors.

A. An interior clear view mirror shall be at least 6 by 30 inches to afford a good view of the passengers and the roadway to the rear. If it is not metal backed and framed, the mirror shall be laminated safety glass. It shall have rounded corners and protected edges.

B. Two adjustable exterior, clear view mirrors, with black housing, shall be installed on each side of the vehicle. **The mirrors shall be adjustable power mirrors.** (HCPSS Addition)

C. Fender-Mounted Mirrors.

(1) One fender-mounted tripod or solid piece mirror bracket shall be mounted on each front fender.

(2) An exterior convex mirror shall be mounted on each front fender to provide a close infield of the vision to eliminate blind spots.

(3) A single mirror of a type approved by the Administration in conjunction with the State Department of Education may be used in place of the mirrors in §C(2) of this regulation.

.30 Seat/Shoulder Belt for Driver. (HCPSS Addition)

A single locking retractor type, with the latch on the right side and at seat cushion height, or a double locking retractor type seat/**shoulder** belt shall be provided for the driver. **The seat/shoulder belt shall be orange in color.** (HCPSS Addition)

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.31 Seats, Crash Barriers, and Interior.

A. Passenger Seats. **Seating arrangements shall be twelve (12) rows of seats, to be the 3-3 plan (39 inch – 39 inch). The last row of seats is to consist of 30 inch seats. Seat Belts are required as follows:**

39" High Back with three-point restraining belts (shoulder/lap belts) for 3 occupants.

30" High Back with three-point restraining belts (shoulder/lap belts) for 2 occupants. (HCPSS Addition)

- (1) The minimum clearance of all aisles, including the aisle or passageway between seats leading to the emergency door, shall be 12 inches.
- (2) The forward-most seat on the right side of the vehicle shall be located so as not to interfere with the operator's vision and may not be farther forward than the rear of the operator's seat when adjusted to its rearmost position.
- (3) A minimum of 36 inches of headroom for the sitting position above the top of the undepressed cushion line of all seats shall be provided. Measurement shall be made vertically not more than 7 inches from the side wall at cushion height and at the fore and aft center of the cushion.
- (4) The backs of seats of similar size shall be of the same width at the top, of the same height from the floor, and shall slant at the same angle with the floor.
- (5) Seats shall be:
 - (a) Forward facing and shall be securely fastened with bolts and nuts to supporting parts of the vehicle. Each leg shall be fastened with a minimum of two bolts and nuts. Portable seats are not acceptable. Aisles between forward facing seats shall have a minimum clear width of 12 inches; and
 - (b) **As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures adopted at the most recent National Congress on School Transportation. (HCPSS Addition)**
- (6) Aisle supports of seat backs shall be slanted away from the aisle sufficiently to give an aisle clearance of 15 inches at the tops of the seat backs.
- (7) The rear davenport paneling shall be covered with fireblock upholstery or have fireblock material between the engine compartment and the passenger compartment, and the seat on rear engine busses shall be covered with fireblock upholstery. **As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures**

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adopted at the most recent National Congress on School Transportation. (HCPSS Addition)

(8) A flip-up seat may be installed at side emergency doors.

B. Track Seating.

(1) Track seating may be used.

(2) The top of the track shall be flush with the floor.

(3) The manufacturer shall install a label to indicate the required seat spacing.

(4) Bolts, nuts, and washers or flanged-head nuts shall be used.

C. Operator's Seat.

(1) The minimum distance between the steering wheel and the backrest of the operator's seat is 11 inches.

(2) The operator's seat shall:

(a) Be rigidly positioned;

(b) Have vertical adjustment and fore and aft adjustment of not less than 4 inches, without the use of tools or other devices;

(c) Be fastened to the floor with bolts, nuts, and washers or flanged-head nuts; and

(d) Be covered with Fire-Block material. As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures adopted at the most recent National Congress on School Transportation.

D. Crash Barriers.

(1) Crash barriers shall be located on both sides of the aisle in front of the most forward facing seat.

(2) On vehicles with the engine inside the front of the body, the minimum distance between the barrier at rear of the entrance step-well and the engine cover shall be 14 inches at floor level.

(3) Barriers shall be covered with Fire-Block material. As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all

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the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures adopted at the most recent National Congress on School Transportation.

E. Sun Visor. An interior adjustable transparent sun visor not less than 6 inches wide and 30 inches long shall be installed so that it can be turned up to prevent being a hazard when not in use. It shall be supported by two brackets.

F. Steering Wheel. The steering wheel circumference shall have at least 2 inches of clearance at all points.

G. Speakers. Ceiling or side-mounted speakers shall be flush mounted.

.32 Service Doors, Emergency Windows, Doors, and Exits.

A. Service Door.

(1) The service door shall be:

(a) Located on the right side near the front, convenient to the seated operator's unobstructed vision. The entrance shall have a minimum horizontal opening of 24 inches and a minimum vertical opening of 68 inches.

(b) Manually or power operated by the seated operator and designed to afford easy release and prevent accidental opening. Parts of the hand lever may not come together so as to shear or crush fingers. ~~If once section of the folding door open outward, the forward section shall open outward.~~ **Both sections of the service door shall open outward.** Vertical closing edges shall be equipped with padding to prevent injury. The bottom of the lower glass panel shall be not more than 10 inches from the top surface of the bottom step when the bus is unloaded. The top of the upper glass panel shall be not more than 6 inches from the top of the door. Power-operated doors shall be equipped for emergency release in case of power failure and shall be labeled on the inside with letters at least 1/2 inch high and instructions for emergency opening. (HCPSS Addition)

(2) There may not be a door to the left of the driver on vehicles with a gross vehicle weight rating greater than 21,500 pounds.

(3) A grab handle of stainless steel not less than 20 inches in length shall be properly secured in an unobstructed location inside the doorway.

(4) An entrance door head pad, minimum of 1 by 4 inches, of foam rubber, shall be installed on the interior of the vehicle to extend the width of the door opening.

(5) Manually operated service doors shall be equipped with heavy duty non-painted or powder coated, rust resistant controls and rod with a positive inside latching device.

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- (6) The service door or doors shall have a non-locking handle for opening it from the outside.
- (7) The effective date for a positive latching device and non-locking handle is January 1, 1991.
- (8) There may not be a security locking device on the service door.
- (9) Electric-powered service doors shall have a non-locking handle switch directly powered by the battery.
- (10) The switch for power operated doors shall be located to the right side of the driver.** (HCPSS Addition)

B. Emergency Door.

- (1) An emergency door shall be located in the rear and near the center. If the engine is so located as to prevent a rear emergency door or exit location, the emergency door shall be in the left side of the rear half of the bus and shall be clearly marked "EMERGENCY DOOR" in letters at least 2 inches high at the top of, or directly above, the door on both the inside and the outside. If the outside areas above the door or the upper door window are not large enough for the words, the words may be placed on the door under the upper window. An arrow at least 6 inches in length and 3/4 of an inch in width indicating the direction the release mechanism should be turned to open the emergency door shall be painted black on the inside of the emergency door.
- (2) An arrow of equal dimensions indicating the direction the release mechanism should be turned to open the emergency door shall be on the outside of the emergency door in black and on the National School Bus Yellow background, as set forth in Regulation .20 of this chapter. The emergency door shall have a horizontal opening of at least 24 inches and a vertical opening of at least 48 inches measured from the floor level. The emergency door or exit shall be designed to be opened from both the inside and outside.
- (3) The passage to the emergency door shall be kept clear of obstructions. For rear doors, the horizontal clearance of 24 inches shall be maintained for a distance of at least 12 inches inside the bus. When the emergency door is in the left side, a minimum horizontal clearance of 12 inches and a vertical clearance of 48 inches shall be maintained between it and the center aisle. An emergency door head pad, a minimum of 1 inch by 4 inches of foam rubber, shall be installed on the interior of the vehicle to extend the width of the door opening.
- (4) The upper and lower portion of the central rear emergency door shall be equipped with approved safety glass, the exposed area of which shall be not less than 400 square inches in the upper portion and not less than 300 square inches in the lower portion. The left side emergency door shall be equipped with safety glass in the upper portion and the lower portion shall be of at least the same gauge metal as the body.

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(5) The emergency door shall be hinged on the right side if it is in the rear end of the bus and on the front side if it is in the left side, and shall open only outward. Control from the operator's seat may not be permitted.

(6) The emergency door shall be equipped with a slide bar, cam-operated latch which shall have a minimum stroke of 1 inch. The latch shall be equipped with a suitable electric plunger-type switch connected with a distinctive audible signal automatically operated and located in the operator's compartment which shall clearly indicate the unlatching of this door to the seated driver when the engine is running. A cut-off switch, except through the ignition switch, may not be installed in the circuit. The switch shall be enclosed and wires leading from the switch shall be concealed in the body. The switch shall be so installed that the plunger contacts the farthest edge of the slide bar in such a manner that any movement of the slide bar will immediately close the circuit and activate the signal. The door latch shall be equipped with an interior handle which shall be capable of quick release but shall be protected against accidental release.

(7) There may not be:

(a) Steps leading to the emergency door;

(b) A security locking device installed on the emergency door.

(8) The outside handle shall be non-detachable and so designed as to minimize hitching.

C. Emergency Windows.

(1) Side emergency windows shall be labeled "EMERGENCY EXIT" in letters at least 2 inches high located directly above the emergency exit on both the inside and outside surfaces of the bus.

(2) A distinctive audible signal, automatically operated, shall clearly indicate to the seated driver when the engine is running the unlatching of any emergency window. A cut-off switch, except through the ignition switch, may not be installed in the circuit.

(3) The rear emergency window shall be designed to be opened from both the inside and the outside and shall be equipped with an air or gas-assisted mechanism to assist in opening.

(4) The words "Emergency Exit" shall be in letters at least 2 inches high above a rear exit window on the inside and above or below the window on the outside of the vehicle.

D. Operating Instructions. Concise operating instructions describing the motions necessary to unlatch and open the emergency window shall be:

(1) Of a color that contrasts with the letters background; and

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(2) Located within 6 inches of the release mechanism on the inside surface of the vehicle.

(3) A decal containing the precise operating instructions may be placed on any Emergency Exit window. The decal shall be transparent except for the lettering.

E. Roof Vent/Emergency Exit. At least one roof vent/emergency exit shall be installed and be:

(1) Adjustable;

(2) Equipped with a release handle inside and outside to permit the ventilator cover to hinge open for emergency exit;

(3) Labeled "EMERGENCY EXIT" in letters at least 2 inches high on the inside and outside of the vehicle followed by precise operating instructions; and

(4) Roof vents may be equipped with a distinctive audible signal.

.33 Step-Well Service Door.

A. The step risers shall be approximately equal in height with the upper riser not more than 15 inches in height.

B. The surface of steps shall be completely covered with a nonskid material having 1-1/2 inch white nosing, fire-resistant, nonskid wear-resistant, and rubber step treads, which shall have a minimum overall thickness of 0.1875 inch.

C. The steps shall be enclosed to prevent accumulation of ice and snow and may not protrude beyond the width of the body.

D. The step well shall be illuminated by at least one lamp providing white light actuated automatically by the opening of the door.

E. The lower step shall be not less than 12 inches and not more than 16 inches above the level on which the unloaded bus rests.

.34 Stop Signal Arm.

A second stop signal arm **shall** be installed on the left outside of the body and shall be installed as close as practicable to the rear of the bus. **Both front and rear stop signal arms shall have two alternating flashing high intensity LED strobe/pulsating lamps visible from both sides.** (HCPSS Addition)

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.34-1 Crossing Arm.

A. A crossing arm **shall** be installed on the far right of the front bumper. The crossing arm:
(HCPSS Addition)

- (1) Shall be securely bolt-mounted;
- (2) Shall be easily removable for towing;
- (3) Shall be activated simultaneously with the stop arm;
- (4) May not open more than 90 degrees;
- (5) Shall extend a minimum of 66 inches from the front of the bumper when activated;
- (6) May not have sharp edges or projections which may cause injury to students; and
- (7) Shall be air, vacuum, or electrically operated and may not have lights.

(8) Shall be activated and deactivated by the red warning light system. (HCPSS Addition)

B. Interrupt Switch.

- (1) A crossing arm interrupt switch may be installed on the dash near the control box for the alternating flashing lights.
- (2) Pressing the switch shall stop the arm from opening for a full cycle and the arm shall recycle after the alternating flashing lights have been deactivated.

.35 Undercoating.

The entire underside of the vehicle body and front fenders, including floor members and side panels below floor level, shall be coated with a fire-resistant undercoating material applied by spray method at least 1/8-inch thick in order to seal, deaden sound, insulate, and prevent oxidation. Fiberglass construction is exempt from undercoating requirements.

.36 Wheel Housing.

A. The body shall provide coverage of the two dual rear wheels and tires or be equipped with suitable protectors of metal or substantial flexible extensions. When extensions are provided, they shall meet the requirements of COMAR 11.14.04.10.

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B. The wheel housing opening shall allow for easy tire removal and service. Rear wheel housing shall be shielded with a metal splash guard on the front and rear of rear wheel wells.

C. The wheel housings shall:

- (1) Provide clearance for installation and use of tire chains on dual wheels;
- (2) Be designed to support the seat and passenger loads; and
- (3) Be attached to the floor sheets in such a manner as to prevent any dust, water, or fumes from entering the body.

D. The inside height of the wheel housing above the floor line may not exceed 12 inches.

.37 Windshields, Windows, Wipers, and Washers.

A. Safety Glass. Glass shall be installed so that the identification mark is legible.

B. Windshields. The glass in the windshield shall have a horizontal gradient band starting slightly above the line of the operator's vision and gradually decreasing in light transmission to 20 percent or less at the top of the windshield.

C. Stirrup Steps. There shall be at least one folding stirrup step or recessed foothold and suitably located handles on each side of the front of the body for easy accessibility for cleaning the windshield and lamps.

D. Windows.

- (1) Glass in all side windows, doors, and rear windows shall be AS-2 laminated safety sheet.
- (2) Passenger compartment windows shall be AS-2 or 3 and:
 - (a) Operate freely;
 - (b) Open 9 to 10 1/2 inches from the top only and provide an emergency exit of a least 9 by 22 inches, except that there may be a window that does not open to 9 by 22 inches located next to a side emergency door;
 - (c) Have all exposed edges of glass banded;
 - (d) Be free of window guards or bars either on the inside or outside; and
 - (e) Be metal framed split sash.

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(3) The window directly to the left of the driver:

- (a) Shall be split;
- (b) Shall slide forward and backward in weather-stripped grooves; and
- (c) May have an adjustable driver's vent window.

E. Windshield Wipers. Two automatic, wipers with blades at least 14 inches long with nonglare arms and blades shall clean the maximum possible area of the windshield. The windshield wiper blades and arms shall be heavy duty.

F. Windshield Washers.

- (1) Electric windshield washers shall be installed by the body manufacturer.
- (2) The liquid container may not be less than 70 ounces and shall be of rigid plastic mounted under the hood.
- (3) Transit-style vehicles may have the liquid container in an enclosed compartment in the driver's area.

.38 Vehicles for Transporting Special Needs Children.

A. Vehicles constructed for transporting special needs children shall comply with minimum standards for school vehicles, but because of the use of specialized equipment, certain modifications in these minimum standards may be made.

B. Special Service Doors.

- (1) A special single door opening, if provided, shall be located on the right side of the vehicle, **to the rear of the rear wheels** far enough to prevent the open door from obstructing the front right service door. The lift door opening shall accommodate the lift provided. (HCPSS Addition)
- (2) The header over the door area shall be padded.
- (3) **A single special door shall** be hinged at the forward side. (HCPSS Addition)
- (4) If dual doors are used, the doors shall be approximately equal in width and hinged to the side of the vehicle. Each panel shall open outward, and the forward panel shall be provided with an overlapping flange to close the space where the door panels meet. A weather seal shall be provided to close all door edges.
- (5) A two-point fastening device, which shall be a slide bar or rod, cam activated, and fastened to the header and floor or jamb, shall be used for single doors. If there are

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double doors, the front door shall have a three-point fastening device, which shall be a slide bar or rod, cam activated, and fastened to the header, floor, and rear door. The rear door shall have at least a one-point fastening device to the header.

(6) Doors shall:

(a) Be manually operated.

(b) Be equipped with a device that will activate an audible signal in the driver's compartment when the door is not closed securely. The signal shall deactivate when the door is fully opened. When the door is closed, the device shall be automatically reset. A visible signal may be installed in addition to the audible signal.

(c) Contain a window aligned with the lower line of other windows of the vehicle and approximately the same size as other vehicle windows.

(7) Between the special service door and the service door, there shall be at least one standard size window.

(8) When ramps are used, door panels shall extend below the floor line and cover the ramp container opening.

(9) Door posts and headers shall be reinforced sufficiently to provide support and strength equivalent to that of other doors.

(10) A light shall be placed inside the vehicle to provide light in the area of the special service door, and shall be operated from the door area.

C. All aisles leading to the emergency door or doors and lift door from the wheelchair area shall be a minimum of 30 inches to permit passage of wheelchairs.

D. Ramp.

(1) If a ramp is used, it shall be of sufficient strength and rigidity to support a minimum of 600 pounds. It shall be equipped with a protective flange on each side to keep a wheelchair on the ramp.

(2) The floor of the ramp shall be of nonskid material.

(3) If the ramp is hinged, it shall be designed to prevent injury to the ramp operator.

(4) A dustproof and waterproof enclosed container shall be provided if the ramp is stored under the floor.

(5) The ramp shall be:

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- (a) Of an appropriate weight and equipped with handles to permit one person to put the ramp in place and return it to the storage place.
- (b) Connected to the vehicle at floor level so as to permit each access of a wheelchair to the floor of the vehicle. When in place, provisions shall be made to secure the ramp to the side of the vehicle without danger of detachment.
- (c) At least 88 inches long, and the width of the ramp shall conform to the width of the door opening at floor level.

E. Power Lift (Elevator and Fold-up Platform).

- (1) **The power** shall have a minimum of **1000** pounds working capacity. The power lift shall have the capability of power up. (HCPSS Addition)
- (2) The power lift platform shall be at least **30** inches wide and **45** inches long, including guard panels or rails. (HCPSS Addition)
- (3) The power lift platform surface shall be of nonskid material.
- (4) A self-adjusting steel or equivalent ramp shall be attached to the lift platform and equipped with a skid-resistant surface and safety stop at both ends of the platform.
- (5) The power lift unit shall be:
 - (a) Controlled from a panel within the vehicle;
 - (b) Adjacent to the lift; and
 - (c) Capable of operation by an attendant standing upon the lift when the lift is in any position.
- (6) A device shall be installed which shall be used to prevent operation of the lift until the doors are opened.
- (7) Optional Manual Operation. Manual operation shall be provided to raise the lift in the event of power failure.

F. Wheelchairs. Forward-facing wheelchairs shall be secured by a four-point fastening system.

G. Grab handles may be provided on each side of the front service doors.

H. Seating arrangements for special needs vehicles shall accommodate a minimum of three (3) wheelchairs in a forward facing position and be equipped with 39 inch C.E. White Company seats, or equivalent, that contains two (2) integrated child restraint system positions. The

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seating arrangement must yield a minimum of 18 integrated child restraint system positions. (HCPSS Addition)

I. The bus shall have a minimum of two, three-point restraining belts for each seat. (HCPSS Addition)

J. Wheelchair securement devices shall be a Q'Straint Q-8100-A Securement System or equivalent. The restraint system shall be of the retractor type and comply with the ADA, SAEJ2249 and ISO 10542. The restraint system shall contain the following features: (HCPSS Addition)

- (1) Retractors shall be automatic self-locking and self-tensioning.**
- (2) Retractors shall be the same design, size and shape to avoid confusion in placement and interchangeable.**
- (3) Retractors shall have "J" style speed hooks for attachment to the wheelchair or mobility device.**
- (4) Retractors shall have the ability to swivel to accommodate more easily smaller or larger wheelchairs.**
- (5) A shoulder harness type restraint system.**

K. Air conditioning units are required on all special needs route buses and must meet all items listed in section .41 Air Conditioning, manufacturer's specifications, and shall have the following: (HCPSS Addition)

- (1) A BTU rating of not less than 100,000 BTU.**
- (2) Not less than two (2) interior evaporators, with at least one mounted in the front half and the other in the rear half of the bus.**
- (3) An alternator rated capacity of not less than 270 amps.**

L. Special needs route buses shall have the roof painted white. (HCPSS Addition)

M. Special needs route buses must be equipped with: (HCPSS Addition)

- (1) Red locking document bag, size 11" X 15", laminated nylon, standard keyed alike (Cardinal Bag Supplies)**
- (2) Evacuation blanket**
- (3) Seat belt cutter**

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.39 Video Cameras.

Video cameras may be installed if the system is:

- A. Approved by the Administration;
- B. Installed securely in an area of the vehicle with no sharp edges;
- C. Located in an area not likely to cause student injury; and
- D. Outside the federal head impact zone.

.40 Safety Detection Systems.

A. A safety detection system approved by the Federal Communications Commission may be installed to warn bus drivers of moving objects, such as children, within areas around a school vehicle considered to be most dangerous if the system:

- (1) Is designed to monitor and warn school bus drivers of moving objects during loading and unloading;
- (2) Operates automatically;
- (3) Is activated by extending the stop arm; and
- (4) Has audible and visual alarms.

B. The audible alarm shall be volume adjustable to compensate for background noises.

C. The visual alarm shall be easily visible both at night and in bright sunshine.

D. The system shall be:

- (1) Located in the driver's compartment; and
- (2) Visible to the driver in a seated position.

E. A delay feature shall be incorporated in the system which will operate the detection unit for a brief period of time after the bus resumes motion.

.41 Air Conditioning Systems.

A. Air conditioning systems may be installed in school vehicles if:

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- (1) The systems are approved by the Administration;
- (2) The agency and personnel installing the systems have been certified by the air conditioning manufacturer;
- (3) There are no sharp edges or protrusions that could injure students;
- (4) The total vehicle battery capacity is at least 1800 amperes;
- (5) The vehicle alternator rating is at least 145 amperes; and
- (6) The system does not contain refrigerant that is:
 - (a) Toxic to persons, or
 - (b) Flammable.

B. System operating controls, including the on-off and blower switch or switches and the thermostat control or controls, shall be accessible to the driver in a seated position.

C. Wiring, hoses, and lines shall be grommeted, routed, and supported so as to reduce wear resulting from heat, chafing, vibration, or other factors.

D. Evaporator cases, lines, and ducting shall be designed so that:

- (1) All condensation is effectively drained to the exterior of the vehicle below floor level;
- (2) Under all conditions of vehicle movement they are without leakage on any interior portion of the vehicle;
- (3) They are inaccessible to passengers; and
- (4) They do not cross the windows.

E. System components shall be readily available for servicing.

F. An air conditioning grill on the exterior shall be the same color as the predominant area in which it is installed.

G. See .38 Vehicles for Transporting Special Needs Children (HCPSS Addition)

.42 Child Reminder System.

A child reminder system approved by the Administration may be installed. The deactivating switch shall be located on the inside rear most portion of the bus. **The vehicle manufacturer's**

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child check system shall be installed and connected to the red light (Amber and Red) warning system. (HCPSS Addition)

.43 Backup Camera System.

A. A ROSCO Visions Systems backup camera system shall be installed.

- (1) To activate when the engine is running and the gearshift is placed in reverse.**
- (2) Monitor to be integrated within the inside rear view (overhead) mirror. Monitor shall remain dark when gearshift is placed in any position other than reverse, and when ignition is in the “off” position.**
- (3) Four (4) backing sensors shall be incorporated into the rear bumper (conventional) or below engine compartment door (rear engine only). Backing sensors shall provide an audible alarm that gradually increases in frequency once an object is detected within the sensor range. The audible alarm shall be emitted from the rear of the 6’ X 30” interior driver’s mirror with integrated backup camera display.**

.44 Section Effective Dates.

Regulation .01 adopted effective April 3, 1981 (8:7 Md. R. 643)

Regulations .02—.17 amended effective April 3, 1981 (8:7 Md. R. 643)

Regulations .02—.06, .08—.12, and .14—.17 amended as an emergency provision effective July 6, 1983 (10:15 Md. R. 1342); emergency status extended at 10:22 Md. R. 1964 and 11:4 Md. R. 313

Regulations .03B, .04B, .05B, .06, .08, .09B, .10B, .11, .12, .14B, .15B, .16B, and .17A, B amended effective June 18, 1984 (11:12 Md. R. 1063)

Regulation .14B amended effective August 2, 1982 (9:15 Md. R. 1515)

Regulation .18 adopted effective June 18, 1984 (11:12 Md. R. 1063) (Originally adopted as Regulation .17C; recodified as Regulation .18)

Regulations .01—.18 repealed effective June 1, 1987 (14:11 Md. R. 1261)

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Annotation: Various provisions of COMAR 11.19.02 cited in Attorney General Opinion No. 83-042 (September 28, 1983), in which a county board of education could include product specifications in a transportation service contract that exceed the requirements set by Motor Vehicle Administration regulations. The specifications may not conflict with, or fall short of, any applicable regulation.

Regulations .01—.38 adopted effective June 1, 1987 (14:11 Md. R. 1261)

Regulation .02D amended effective June 27, 1988 (15:13 Md. R. 1557)

Regulation .03 amended effective April 1, 1991 (18:6 Md. R. 687)

Regulation .03D amended effective June 19, 1995 (22:12 Md. R. 902)

Regulation .03E amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .04C amended effective January 8, 1990 (16:26 Md. R. 2795); October 7, 1996 (23:20 Md. R. 1425)

Regulation .05 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .05H amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .06 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .06D amended effective April 1, 1991 (18:6 Md. R. 687); April 10, 1995 (22:7 Md. R. 537)

Regulation .06E amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .07C, E amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .07C, F amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .10 amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .10Q amended effective June 27, 1988 (15:13 Md. R. 1557)

Regulation .11A amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .13C adopted effective April 1, 1991 (18:6 Md. R. 687)

Regulation .14C amended effective October 7, 1996 (23:20 Md. R. 1425)

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Regulation .16 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .16G amended effective April 1, 1991 (18:6 Md. R. 687)

Regulation .16-1 adopted effective January 15, 1996 (23:1 Md. R. 29)

Regulation .17A, J amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulations .18 amended effective January 8, 1990 (16:26 Md. R. 2795); October 7, 1996 (23:20 Md. R. 1425)

Regulation .19 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .20 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .20B amended effective July 18, 1994 (21:1 Md. R. 1230)

Regulation .20G adopted effective April 1, 1991 (18:6 Md. R. 687)

Regulation .20H—J adopted effective July 18, 1994 (21:14 Md. R. 1230)

Regulation .21C, E, F, M amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .23E amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .24 amended effective April 1, 1991 (18:6 Md. R. 687)

Regulation .25A, B, D amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .25B amended and E adopted effective April 1, 1991 (18:6 Md. R. 687)

Regulation .26 amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .27 amended effective April 1, 1991 (18:6 Md. R. 687)

Regulation .27G amended effective June 27, 1988 (15:13 Md. R. 1557)

Regulation .28D amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795); October 7, 1996 (23:20 Md. R. 1425)

Regulation .29 amended effective January 8, 1990 (16:26 Md. R. 2795)

Regulation .29D adopted effective April 1, 1991 (18:6 Md. R. 687)

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Regulation .29E, F adopted effective October 10, 1994 (21:20 Md. R. 1733)

Regulation .31 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795); April 1, 1991 (18:6 Md. R. 687); October 10, 1994 (21:20 Md. R. 1733)

Regulation .32 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795); April 1, 1991 (18:6 Md. R. 687)

Regulation .32C amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .34-1 adopted effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .37D amended effective October 7, 1996 (23:20 Md. R. 1425)

Regulation .37E amended effective June 27, 1988 (15:13 Md. R. 1557)

Regulation .37F amended effective June 27, 1988 (15:13 Md. R. 1557); April 1, 1991 (18:6 Md. R. 687)

Regulation .38 amended effective June 27, 1988 (15:13 Md. R. 1557); January 8, 1990 (16:26 Md. R. 2795)

Regulation .38B amended effective April 1, 1991 (18:6 Md. R. 687)

Chapter revised effective December 15, 1997 (24:25 Md. R. 1719)

Chapter revised effective April 2, 2001 (28:6 Md. R. 621)

Regulation .04B amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .06A amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .16B, K amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .17H, I amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .18 amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .20A amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .20K adopted effective June 20, 2005 (32:12 Md. R. 1047)

School Vehicle Specifications

Regulation .21F, J, M amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .29B amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .31A amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .32A, C amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .37E amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .38B amended effective June 20, 2005 (32:12 Md. R. 1047)

Regulation .41F adopted effective June 20, 2005 (32:12 Md. R. 1047)

Chapter revised effective July 12, 2010 (37:14 Md. R. 939)

Regulation .01-1B amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .04B amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .07A, C amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .14A amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .20 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .20J amended effective March 3, 2014 (41:4 Md. R. 302)

Regulation .21 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .24 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .26B amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .28 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .29B amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .31 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .32 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .32A amended effective March 3, 2014 (41:4 Md. R. 302)

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Regulation .33B amended effective January 21, 2013 (40:1 Md. R. 20)

Chapter 03 Type II School Vehicles — Construction Standards

Authority: Education Article, §7-808; Transportation Article, §§11-174, 12-104(b), and 25-110; Annotated Code of Maryland

.00 General.

A. Vehicles used to transport students on designated Type II routes shall be:

(1) New

B. Spare Vehicles.

(1) Spare vehicles shall be available during the time route vehicles are in operation.

(2) Spare vehicles shall be:

(a) New;

(b) Previously registered regular route vehicles; or

(c) Vehicles purchased new and verified in writing by the Motor Vehicle Administration as originally used in Maryland to transport private or parochial school students.

C. All school vehicles shall meet these specifications which includes those promulgated by the Federal Department of Transportation, Maryland State Motor Vehicle Administration, Maryland State Department of Education, Howard County Public School System, and any identified in a particular bid solicitation.

D. Any item not specifically addressed or prohibited shall comply with the most recently published “National Minimum Standards for School Buses”.

E. Before a bus can be placed into service, the Director/designee of Pupil Transportation shall complete an “Acceptance Check Inspection” to ensure it complies with all the applicable regulations contained within this document. It is the contractor’s responsibility to present the vehicle for this inspection.

F. School bus contractors are not prohibited from purchasing vehicles that exceed these specifications.

G. Additional or replacement vehicles used to transport pupils to and from school shall be new equipment.

H. **Special needs route buses shall have a wheelbase of 159 inches.** (HCPSS Addition)

School Vehicle Specifications

.01 Scope.

A. This chapter is intended to provide minimum standards for the design, construction, and equipment of Type II school vehicles manufactured for sale in Maryland and is intended to enhance 49 CFR standards.

B. When CFR standards conflict with Maryland standards, CFR standards shall be used to construct Maryland certified school vehicles.

.02 Incorporation by Reference.

A. In this chapter, the following documents are incorporated by reference.

B. Documents Incorporated.

(1) 49 CFR §393.65 All fuel systems, as amended.

(2) 49 CFR §393.67 Liquid fuel tanks, as amended.

(3) 49 CFR §393.77 Heaters, as amended.

(4) 49 CFR §571.101 Controls and displays, as amended.

(5) 49 CFR §571.102 Transmission shift position sequence, starter interlock, and transmission braking effect, as amended.

(6) 49 CFR §571.103 Windshield defrosting and defogging systems, as amended.

(7) 49 CFR §571.104 Windshield wiping and washing systems, as amended.

(8) 49 CFR §571.105 Hydraulic and electric brake systems, as amended.

(9) 49 CFR §571.108 Lamps, reflective devices, and associated equipment, as amended.

(10) 49 CFR §571.111 Rearview mirrors, as amended.

(11) 49 CFR §571.114 Theft protection and rollaway prevention, as amended.

(12) 49 CFR §571.116 Motor vehicle brake fluids, as amended.

(13) 49 CFR §571.119 New pneumatic tires for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) and motorcycles, as amended.

(14) 49 CFR §571.120 Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity 49 CFR information for motor vehicles with a GVWR of more than 4,536 kilograms (10,000 pounds) , as amended.

(15) 49 CFR §571.131 School bus pedestrian safety devices, as amended.

(16) 49 CFR §571.205 Glazing materials, as amended.

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(17) 49 CFR §571.208 Occupant crash protection, as amended.

(18) 49 CFR §571.209 Seat belt assemblies, as amended.

(19) 49 CFR §571.210 Seat belt assembly anchorages, as amended.

(20) 49 CFR §571.217 Bus emergency exits and window retention and release, as amended.

(21) 49 CFR §571.220 School bus rollover protection, as amended.

(22) 49 CFR §571.221 School bus body joint strength, as amended.

(23) 49 CFR §571.222 School bus passenger seating and crash protection, as amended.

(24) 49 CFR §571.301 Fuel system integrity, as amended.

(25) 49 CFR §571.302 Flammability of interior materials, as amended. Repeal effective January 1, 2014 pursuant to Chapter 453, Acts of 2011.

(26) 49 CFR §571.303 Fuel system integrity of compressed natural gas vehicles, as amended.

(27) 49 CFR §571.304 Compressed natural gas fuel container integrity, as amended.

.03 Certification.

A. A manufacturer, distributor, or dealer of Type II school vehicles that are to be sold or distributed in this State shall certify to the Administration that all vehicles they sell or distribute are in full compliance with the provisions of this chapter. The certification shall be:

- (1) In a form prescribed by the Administration;
- (2) Filed annually; and
- (3) Filed before the introduction of a new model.

B. Supplemental certifications are required before new models are introduced during the current model year.

C. Metal Certification Plate.

(1) A stamped or embossed metal plate certifying that body construction is in compliance with the provisions of this chapter shall be posted by the body manufacturer in the area above the driver's seating position.

(2) The metal certification plate shall be visible and, at a minimum, shall contain the body model number followed by "MD" and the manufacturer's name.

(3) A tamper-proof, self-adhesive label with a clear surface that will not be damaged by moisture or cleaning solvents may be used in place of the metal plate. Upon return of the damaged or unreadable label, the manufacturer shall supply a new label to the owner.

.04 Bumpers.

School Vehicle Specifications

A. A front bumper shall be provided, and shall:

- (1) Be painted black;
- (2) Extend to protect the outer edges of the fenders;
- (3) Be of sufficient strength to permit pushing another vehicle of comparable weight without permanent deformation; and
- (4) Be located at a height of between 14 inches and 18 inches when measured from the bottom edge of the bumper to the level surface on which the unloaded bus stands.

B. A rear bumper shall be provided by the body manufacturer and it shall:

- (1) Have at least a 7-inch face;
- (2) Be at least 3/16 inch thick steel, or equivalent material;
- (3) Be attached directly to the chassis frame with provisions for easy removal;
- (4) Be constructed so as to prevent hitching to or riding on it;
- (5) Be of sufficient strength to permit the vehicle to be pushed by another vehicle without permanent distortion;
- (6) Extend at least 1 inch beyond the rearmost part of the body surface measured at the floor line;
- (7) Be painted black; and
- (8) Be located at a height of between 14 inches and 18 inches from the bottom edge to the level surface upon which the unloaded vehicle stands.

.05 Brakes.

A. Braking systems may not allow the vehicle to be without operative brakes capable of stopping the vehicle when loaded to manufacturers gross vehicle weight at any legal road speed.

B. Brake lines shall be:

- (1) Protected from excessive heat and vibration by means of a heat shield, if necessary; and
- (2) Installed to prevent chafing, cutting, or stretching.

C. Brake drums and rotors shall be permanently and plainly marked to clearly indicate, in legible cast or stamped legend, the maximum safe diameter of the drum or minimum safe thickness of the rotor beyond which it may not be used or machined, but shall be discarded.

.06 Drive Train.

A. Axles.

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(1) The front axle and suspension shall be of sufficient capacity to support that portion of the load as would be imposed by the manufacturer's maximum gross vehicle weight rating.

(2) The rear suspension assembly shall have a gross weight rating equal to that portion of the load as would be imposed by the manufacturer's maximum gross vehicle weight rating.

B. 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 fracture or disconnection.

.07 Electrical (Chassis Wiring).

A. Alternator. The alternator with rectifier shall have an operational rating capable of supplying sufficient electrical power to maintain a fully charged storage battery with all electrical equipment, except the horn, hydraulic lift, and engine starting motor, operating simultaneously while the vehicle is running normally.

B. Battery.

(1) The battery shall:

(a) Be of sufficient capacity to supply all electrical requirements; and

(b) Have a minimum cold cranking capacity rating of 650 amperes measured at 0°F.

(2) If equipped with a hydraulic lift, the manufacturer shall equip the vehicle with an appropriate heavy duty battery and alternator.

C. EXTRA WIRING Accessory Power Connection in Electrical Panel; Four Positions Fused at 20 Amps Each 2 ignition and 2 battery. (HCPSS Addition)

.08 Exhaust System.

A. The exhaust system shall include the:

(1) Exhaust manifold and gaskets; and

(2) Piping leading from the flange of the exhaust manifold to and including the muffler or mufflers and exhaust pipes.

B. The exhaust system may not extend into the body and shall be attached to the chassis.

C. Exhaust Pipes:

(1) Shall be of nonflexible 16-gauge steel. An Original Equipment Manufacture flexible pipe or its equivalent not longer than 24 inches in length may be used at the front of the system at or near the turbocharger;

(2) Shall exit:

(a) At the rear of the bus on either the left or right side of the emergency door, or

(b) Behind the rear wheel of the bus;

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(3) May not exit under the fuel filler; and

(4) May not exit through or be attached to the bumper.

D. The complete exhaust system shall be:

(1) Tight and free from leaks; and

(2) Properly insulated from electrical wiring or any combustible part of the bus.

E. The complete exhaust system may not pass within 12 inches of the gasoline fuel tank or its connections unless a suitable heat baffle is installed between the exhaust system and gasoline fuel tank. A shield is not required between a diesel tank and exhaust.

F. The exhaust system noise level may not exceed the levels in COMAR 11.14.07.08.

G. The manufacturer shall provide the proper size exhaust pipes for the vehicle.

H. Replacement pipes shall be of the same diameter as the pipes provided by the manufacturer.

.09 Frame.

A. The chassis frame, for a body on chassis type vehicles, shall extend to the rear edge of the rear body cross member.

B. The body shall be attached to the chassis frame in such a manner as to minimize shifting of the body from the chassis under severe impact.

C. Alterations.

(1) Alterations in the length of the frame may be made only behind the rear hangers of the rear springs or forward of the front hangers of the front springs, or both, and may not be for the purpose of extending the wheelbase.

(2) Alterations may be made only if designed and guaranteed either by the original chassis manufacturer or by the company installing the school vehicle body.

.10 Fuel System and Tank.

A. Fuel Tank. The fuel tank shall:

(1) Have a minimum capacity of 22 gallons;

(2) Be filled and vented entirely outside the body; and

(3) Have a fill opening located so that accidental fuel spillage will not drip or drain to any part of the exhaust system.

B. A fuel filter with replaceable element shall be installed between the fuel tank and the engine fuel system.

School Vehicle Specifications

- C. The fuel lines shall be mounted to obtain maximum possible protection from the chassis frame.
- D. If mounted on the right-hand side, the fill opening shall be equipped with a door.
- E. If a fuel other than gasoline or diesel is used, the fuel system shall meet all applicable federal standards.

.11 Instruments.

A. A type II school vehicle shall be equipped with, at a minimum, the following nonglare illuminated instruments and gauges:

- (1) Ammeter or voltmeter with charge or discharge indication;
- (2) Fuel gauge;
- (3) Odometer capable of registering mileage in tenths of a mile;
- (4) Oil pressure gauge;
- (5) Speedometer;
- (6) Upper beam headlamp indicator; and
- (7) Water temperature gauge.

B. These instruments and gauges shall be:

- (1) Mounted so as to allow for easy maintenance and repair; and
- (2) Positioned so as to be clearly visible to a seated driver.

.12 Steering System.

A. Steering gear shall be approved by the chassis manufacturer and designed to ensure safe and accurate performance when a vehicle is operated with a maximum load at maximum speed.

- B. The steering adjustment mechanism shall be accessible to perform required external adjustments.
- C. Only changes approved by the chassis manufacturer may be made in the steering apparatus.
- D. The steering system design shall provide for lubrication of wear points, if necessary.

.13 Suspension (Springs and Shocks).

A. Springs and Suspension Assemblies. Springs and suspension assemblies shall be:

- (1) Of ample resiliency under all load conditions;

School Vehicle Specifications

(2) Able to sustain the loaded vehicle without evidence of overload; and

(3) Designated to carry their proportional share of gross vehicle weight.

B. Rear Springs. Rear springs shall be of a progressive type.

C. Front Springs. If leaf-type front springs are used, the stationary eyes shall be protected by a full wrapped leaf in addition to the main leaf.

D. Shock Absorbers. Two front and two rear double acting shock absorbers compatible with the manufacturer's rated axle capacity shall be provided.

.14 Tires and Rims.

A. Tires and rims of proper size and tires with load range commensurate with the chassis manufacturer's gross vehicle weight rating shall be provided.

B. If the vehicle is equipped with a spare tire and rim, they shall be of the same size as those mounted on the vehicle, and shall be mounted outside the passenger compartment under the vehicle.

C. Dual rear tires shall be provided on all vehicles.

D. Wheels will be one piece construction and painted black.

.15 Alternating Flashing Lights.

A. Warning Lights. A bus shall be equipped with four red flashing warning lights **high intensity LED strobe/pulsating** and four amber **high intensity LED strobe/pulsating** flashing warning lights that conform to the same requirements except as to: (HCPSS Addition)

(1) Color; and

(2) Candlepower which shall be at least 2-1/2 times that specified for red flashing warning lights.

B. Installation. Both red and amber flashing warning lights shall:

(1) Be installed so that each amber flashing warning light shall be located near each red flashing warning light, at the same level, but closer to the vertical center line of the vehicle; and

(2) Have shields over the warning lights, except those equipped by the manufacturer with Halogen or L.E.D (Light Emitting Diodes). Shields may be of a single type to cover both the red and amber lights and shall be painted black, with a minimum depth of 4 inches. Shields are required over the warning lights. The shields may be of a single type to cover both the red and amber lights and shall be painted black, with a minimum depth of 4 inches. (HCPSS Addition)

C. The system shall be wired so that the amber flashing warning lights are activated only by hand operation, and if activated, are automatically deactivated when the vehicle entrance door is opened.

D. The red and amber flashing warning lights shall draw an equal current load.

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E. The flashing mechanism shall be capable of carrying the full current load of the signal system in continuous operation.

F. There shall be red and amber pilot lights which shall go on when the respective red or amber systems are actuated. The appropriate pilots shall either go out or flash at an obvious altered rate if any of the lights in the system are not functioning normally.

G. Warning Light System. The switches and red and amber pilot lights shall be mounted to the right of the seated driver within easy unobstructed reach in a panel or specific area in the dash and may not be incorporated with other switches.

H. Signal Lamp System.

(1) Master Switch. The amber pilot light and amber flashing lights shall go on, with the master switch on and the entrance door closed, when the momentary switch is depressed.

(2) Open Entrance Door. The amber pilot light and amber flashing lights shall go off and the red pilot light and red flashing lights shall go on when the entrance door is opened, and the stop arm and crossing arm, if equipped, shall automatically extend.

(3) Close Entrance Door. The red pilot and red flashing lights shall go off, and the stop arm and crossing arm, if equipped, shall retract immediately when the entrance door is closed.

(4) Open Entrance Door Without Depressing Momentary Switch. The red pilot light and red flashing lights shall go on, and stop arm and crossing gate, if equipped, shall automatically extend when the entrance door is opened without depressing the momentary switch.

(5) With the master switch off, depressing the momentary switch may not activate the amber flashing system. Opening the entrance door with the master switch off may not activate the red flashing signal and stop arm.

(6) An override switch shall be provided to permit activation of the red warning lights and red pilot light without opening the service door whether the master switch is in the on or off position.

I. Installation Requirements.

(1) Each flashing light shall be mounted with its axis substantially parallel to the longitudinal axis of the vehicle.

(2) Front and rear alternately flashing lights shall be spaced as far apart laterally as practicable.

(3) Alternately flashing lights shall be mounted at the front above the windshield and at the rear so that the lower edge of the lens is not lower than the top line of the side window.

(4) Vertical and lateral vision of the front and rear alternately flashing warning lights may not be obstructed by any part of the body or lamphouse insofar as standard vehicle body construction permits.

(5) The area around each lamp, extending approximately 1 inch outward, shall be painted black.

(6) A separate fuse or circuit breaker, adequate to prevent damage to the system in the event of a dead short, shall be provided between the power source and the master switch.

School Vehicle Specifications

.16 Flashing White Strobe Light.

A. A school vehicle may be equipped with a flashing white strobe light on the roof of the vehicle.

B. The flashing white strobe light:

(1) Shall be installed on the roof in a position not further than 1/3 of the body length forward from the rear edge of the roof;

(2) Shall have a single clear lens emitting light 360 degrees around its vertical axis;

(3) May not extend above the roof more than the maximum legal vehicle height, as set forth in Transportation Article, §24-104(a), Annotated Code of Maryland; and

(4) Shall be approved by the Administration.

C. If a flashing white strobe light is installed, a manual switch and pilot light shall be installed in the driver's compartment to indicate when the light is operating.

D. Shall only be operational with the red warning light system. (HCPSS Addition)

.17 Body Construction.

A. The body shall be constructed of fire-resistant material and the materials used inside the passenger compartment.

B. The body shall be reasonably dustproof, gasproof, weathertight, and fume proof, and openings between the chassis and passenger compartment, where applicable, shall be sealed to prevent fumes or gases from entering the vehicle body.

C. The body manufacturer shall indicate in a permanent and readily visible location on the body the month and year of final completion of the vehicle.

D. The floor in the passenger compartment shall be level, except in the wheel housing, toeboard, stepwell, fuel fill pipe, and driver's platform areas which shall be constructed of fire resistant material.

E. Rub Rails.

(1) One rub rail shall:

(a) Be located approximately at the floor line;

(b) Cover the same longitudinal area as the upper rub rail, except at wheel housings; and

(c) Extend to the radii of the right and left rear corners of the vehicle.

(2) One rub rail shall:

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- (a) Be located on each side of the bus approximately at seat level; and
 - (b) Extend from the rear side of the entrance door completely around the bus body, except for the emergency door, to a point of curvature near the outside cowl on the left side.
- (3) Both rub rails shall be:
- (a) At least 4 inches in width;
 - (b) Of 16-gauge steel;
 - (c) Corrugated or ribbed;
 - (d) Attached at each body post and all other upright structural members; and
 - (e) Applied outside the body or outside the body posts, pressed in or snap on rub rails not satisfying this requirement.
- F. A snow rail, if required, shall be installed the full length of the body skirt.
- G. Snow and floor line rails shall be screwed or huck bolted on and may not be an integral part of the body.
- H. The inside body height shall be 65 inches or more, measured metal to metal, at any point on the longitudinal center line from the front vertical bow to the rear vertical bow.
- I. The vehicle body shall be thermally insulated between the inner and outer panels, ceiling, roof, and walls with proper material to deaden sound and to reduce vibrations to a minimum.
- J. Projections and Exposed Edges.
- (1) The interior of the vehicle, including the ceiling, shall be free of projections except those required for the installation of equipment approved by the Administration.
 - (2) An inner liner shall be provided on the ceiling and walls.
 - (3) Rearward components shall be lapped over forward components to reduce the likelihood of injury from exposed edges. Exposed edges shall be beaded, hemmed, or flanged.
- K. Storage Compartment. A fire resistant container of adequate strength and capacity for the storage of tire chains, or tow chains and tools for minor emergency repairs, may be provided. If inside, the compartment shall have a cover and be fastened to the floor of the vehicle. A seat cushion may serve as a storage compartment cover.
- L. Ventilation.
- (1) The body shall be equipped with a suitable controlled ventilating system of sufficient capacity to maintain a proper quantity of air under normal operating conditions, without opening windows except in extremely warm weather.
 - (2) A static type exhaust roof ventilator is required, which:
 - (a) Shall be nonclosable; and

School Vehicle Specifications

(b) May be incorporated into the roof vent or emergency exit.

.18 Book Racks.

Book racks may not be installed in Type II school vehicles.

.19 Color and Identification (Lettering).

A. Color.

(1) The school bus body, including the cowl, hood, and fenders shall be painted a uniform color, National School Bus Yellow. If the window pilasters are visible after the window is installed they also shall be painted National School Bus Yellow. A chrome or manufacturer's gray grill is acceptable and the roof may shall be painted white. The white painted area may not extend below the top of the marker lights on the sides of the vehicle. The front and rear caps may not be painted white. (HCPSS Addition)

(2) Body trim, on the exterior of the body, including the bumpers, the emergency door arrow, lamp hoods, and the lettering on the front, rear, and both sides of the body, shall be black. Yellow numbers on the front bumper are acceptable.

(3) Rub rails, seat line, and snow rails shall be painted glossy black.

(4) Wheel rims shall be black, gray, or silver.

B. Required Lettering.

(1) The lettering described in this section is required and shall be black, block type, and placed according to the appropriate diagrams in Figures 1 through 6.

(2) "SCHOOL BUS".

(a) The body of the vehicle shall bear the words "SCHOOL BUS" in capital letters 8 inches by 1 inch, on both the front and rear of the body. This lettering:

(i) Shall be placed as high as possible without impairment of its visibility; and

(ii) Shall May be on a reflective area 12 inches by 49 inches. (HCPSS Addition)

(b) The 12-inch by 49-inch background area may be reduced in size to conform to the contours of the vehicle.

(3) The words "EMERGENCY DOOR" or "EMERGENCY EXIT" in capital letters shall be 2 inches high painted above the door and above the emergency push-out windows, both inside and outside the vehicle.

(4) "Operating of Emergency Door or Exit Latch" shall be indicated by a 6-inch high by 3/4-inch wide black arrow indicating direction or release of the door or exit, inside and outside.

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(5) The identification number shall be 6 inches high by 3/4 inch wide, shall be on all four sides of the vehicle and shall be visible directly from the front, rear, and each side. On the rear of the vehicle, the identification number shall be located above the rear bumper and below the window line. Temporary signage or numbers shall be placed in the second window on the lower glass on each side of the vehicle. A School Bus Number Placard is also required: one (1) placard, suction cups, black bumper feet, 3 digit, 4 inches height, 2 inches width, "Bus" in header. Manufactured by SchoolBusSigns. (HCPSS Addition)

(6) If applicable, the name of the local school system shall be on both sides of the vehicle, properly centered, in letters 6 inches high by 1 inch wide.

(7) Contractors' and private owners' or operators' names shall be to the rear of the entrance door and at the same approximate location on the left side in letters 2-1/2—3 inches high by 1/4—1/2 inch wide in a 16 inch by 30 inch area.

C. The following lettering may be used, if required or desired:

(1) Address and telephone number of owner, placed to the rear of entrance door and at the same approximate location on the left side, in letters 2-1/2—3 inches high by 1/4—1/2 inch wide;

(2) "STOP ON SIGNAL", in letters 4 inches high below the rear window; and "STOP ON SIGNAL" **shall be lettered on the exterior of the rear emergency door. The lettering shall be block type, black in color, measuring 3/4 inch wide and 4 inches in height.** (HCPSS Addition)

(3) Body manufacturer's name or logo, in letters placed in an area 8 inches by 24 inches above the first passenger window on each side of the vehicle.

D. Only signs and lettering approved by State law or regulation and any numbers necessary for identification shall appear on the vehicle. Bumper stickers are not permitted. The fleet number may be on the front bumper.

E. A vehicle titled and registered after April 2002 shall comply with all lettering size and location requirements. If buses are repainted, they shall be relettered in compliance with this regulation.

F. Lettering shall be painted or applied using vinyl die cut self-adhering letters and numbers.

G. "Drug Free School Zone" Lettering.

(1) If desired, "Drug Free School Zone" may be on the exterior of the vehicle.

(2) The lettering shall be:

(a) Located under the first window on the service door side or at another approved location near the service door; and

(b) 2 inches high by 3/8 inch wide.

(3) A decal for the "Drug Free School Zone" may be used provided the background is National School Bus Yellow and the decal is not larger than 8 inches by 18 inches.

H. Yellow Reflective Tape. Yellow reflective tape at least 1 inch wide and not wider than 6-1/2 inches may be used to form a:

School Vehicle Specifications

(1) Single horizontal line on each side of the bus at the floor line; or

(2) Rectangular figure on the rear of the bus body, which shall have its:

(a) Vertical lines as close to the sides of the bus as possible without extending over the sides of the bus, and

(b) Horizontal lines consisting of one straight line above and near the rear bumper and one at or near the roof line.

I. The reflective tape specified in §H of this regulation may be applied in a discontinuous fashion so as not to cover any existing or required lettering.

J. Roof Identification Number. Identification numbers on the roof may be used. If used, they shall be:

(1) Located in the most forward section of the roof as possible;

(2) Lettered from the left side to the right side of the bus; and

(3) 18 inches high by 10 inches wide with a 2-3/4 inch stroke.

School Vehicle Specifications

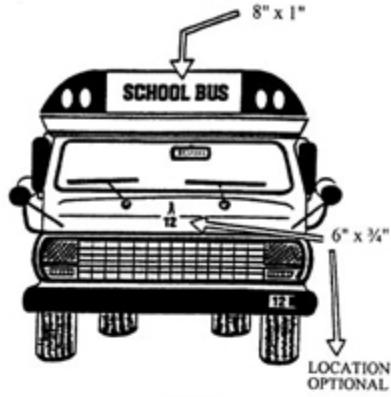


FIGURE 1

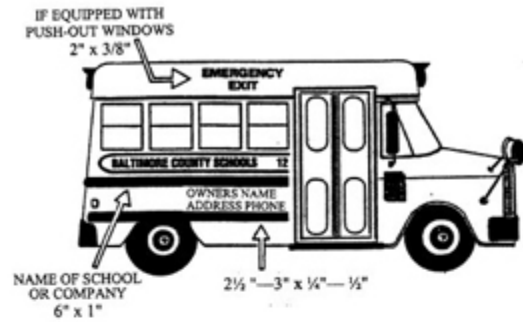


FIGURE 3

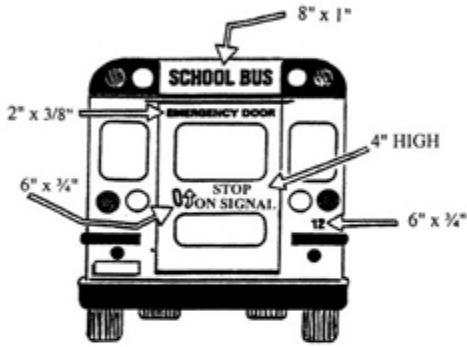


FIGURE 2

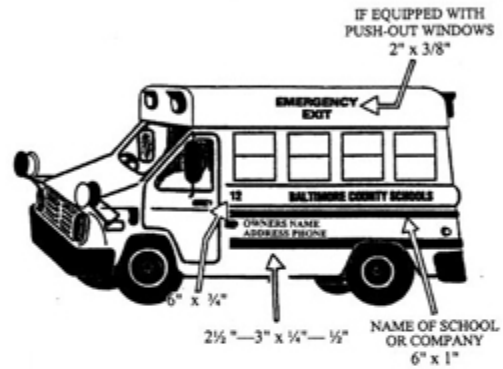


FIGURE 4

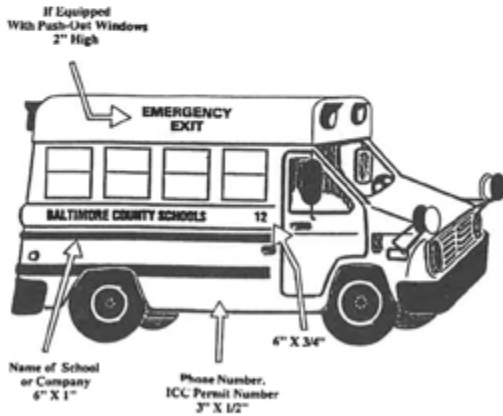


Figure 5

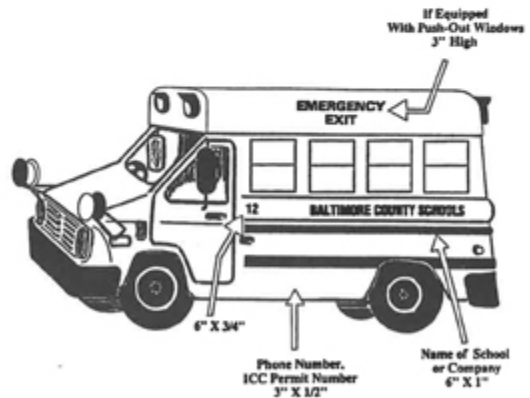


Figure 6

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.20 Electrical — Lamps, Signals, Reflectors, and Fuses.

A. Tail and Stop (Brake) Lamps. Two tail and stop lamps having an illuminated area of not less than 19 square inches shall be mounted on the rear of the vehicle at a height not less than 15 inches and not more than 72 inches above the surface on which the unloaded vehicle rests and shall be positioned as far apart as practicable. **shall be LED** (HCPSS Addition).

B. Turn Signal Lamps.

(1) Turn signal lamps **shall be LED** (HCPSS Addition may be independent units and shall be equipped with a four-way hazard warning signal switch to activate simultaneous flashing of the turn signal lamps when needed as a vehicular traffic hazard warning.

(2) Surface mounted, amber clearance lamps, with a minimum of 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 the same location on the left side, and shall be connected to function with the regular turn signal lamps.

C. Back-Up Lights.

(1) Two back-up lights **shall be LED** (HCPSS Addition shall be installed to be activated when the gear shift lever is placed in reverse.

(2) The lights shall be not less than 4 inches in diameter with a minimum of 32 candlepower and mounted above the bumper and below the window line.

D. Clearance, Side-Marker, and Identification Lamps.

(1) Two red clearance lamps on the rear and two amber clearance lamps on the front **shall be LED** (HCPSS Addition shall be mounted as high as practical on the permanent structure of the school bus to indicate extreme width.

(2) Two side marker lamps, amber at the front and red at the rear, **shall be LED** (HCPSS Addition shall be mounted on each side of the bus.

(3) Three red identification lamps **shall be LED** (HCPSS Addition shall be mounted on the same level not more than 8 inches apart in the center rear of the body as high as practical, and three amber identification lamps shall be likewise mounted in the center front of the body.

E. Interior lamps shall adequately illuminate the entire aisle, the emergency passageway, and the stepwell.

F. Registration Plate Lamp **shall be LED** (HCPSS Addition). The rear registration number shall be illuminated by a white light so as to be plainly legible at 60 feet during periods of darkness. The registration plate lamp shall be so wired as to be lighted when the headlamps are lighted.

G. Circuits.

(1) Wiring shall be arranged in at least ten regular circuits as follows:

(a) Head, tail, stop (brake), and instrument panel lamps;

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- (b) Clearance and stepwell lamps;
- (c) Dome lamps;
- (d) Starter motor;
- (e) Ignition and emergency door signal;
- (f) Turn signal lamps;
- (g) Alternately flashing red and amber warning signal lamps;
- (h) Horn and wipers;
- (i) Heater and defrosters; and
- (j) Hydraulic or electric lift, if equipped.

(2) The combination circuits listed in §F(1) of this regulation may be subdivided into independent circuits. Each body circuit shall be coded by number or letter at 4 inch intervals or by color. The code shall appear on a diagram of the circuits in a readily accessible location.

H. Wiring Protection.

(1) Wires within the body shall be insulated and protected by a covering of fibrous loom, or its equivalent, which shall protect them from external damage and minimize dangers from short circuits.

(2) Whenever wires pass through the body or chassis members, additional protection in the form of a grommet or other appropriate type of insert shall be provided.

(3) Exposed wires are not permitted.

I. Wires shall be fastened securely according to manufacturer requirements, and joints shall be soldered or joined by equally effective connectors.

J. Switches.

(1) A solenoid switch or an electronic control system shall be connected to the ignition switch so that body accessories cannot be operated when the ignition switch is off.

(2) The alternating flashing warning lights, wheelchair lift, and electric powered service door, if equipped, may operate independently of the ignition switch.

(3) A noise reduction off and on switch shall be installed to permit the driver to shut off the body heater and fan motors. This requirement applies to school vehicles constructed as of the effective date of this regulation.

.21 Ignition Lock.

A lock key or other device to prevent the vehicle from being set in motion or its engine started by an unauthorized individual, or otherwise contrary to the will of the owner or individual in charge of the vehicle, shall be provided.

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.22 Horns.

A suitable horn or horns providing an audible warning to other highway users at a distance of 300 feet shall be conveniently controlled from the driver's seated position.

.23 Back-Up Warning Alarm.

An automatic non-variable audible alarm activated when the vehicle is in reverse shall be installed behind the rear axle and be at least 97 decibels.

.24 Emergency Equipment.

A. Fire Extinguisher. The vehicle shall be equipped with at least one 5-pound capacity, pressurized, dry chemical fire extinguisher complete with hose. The extinguisher shall:

(1) Be mounted in a bracket located below the window line in the driver's compartment and shall be readily accessible;

(2) Be equipped with a pressure gauge mounted on the extinguisher so as to be easily read without moving the extinguisher from its mounted position;

(3) Be of a type with a total rating of 2A 10 ABC or greater; and

(4) Have an operating mechanism sealed with a type of seal which does not interfere with the use of the fire extinguisher.

B. First Aid Kit. Type II school vehicles shall carry a weatherproof first aid kit, removable and readily identifiable, mounted in an accessible, nonenclosed location in the driver's compartment. The kit shall contain at a minimum, the contents suggested by the National Standards for School Transportation Specifications and Procedures.

C. Reflectors and Flares.

(1) The vehicle shall be equipped with three red triangular emergency reflectors in a suitable holder located in the driver's area.

(2) The vehicle shall be equipped with three 30-minute stand-up lean-to flares stored in a red canister in the driver's area.

D. A locking device on the storage door for emergency equipment is prohibited.

E. Body Fluid Clean-Up Kit. Each bus shall have a removable and moisture-proof body fluid clean-up kit. The kit shall be properly mounted in the driver's compartment and identified as a body fluid clean-up kit.

F. The safety equipment may be stored in a non-locking compartment that is permanently labeled "Safety Equipment Inside".

.25 Flooring and Floor Covering.

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A. Underseat Areas. The floor in underseat areas, including the top and side of the wheelhousing, driver's compartment, and toe board, shall be covered with fire-resistant rubber or equivalent floor covering having a minimum overall thickness of 0.125 inch. A molded floor cover over wheel housings is acceptable.

B. Aisle and Step Areas.

(1) Floor covering in the aisle and steps shall be one continuous piece of fire resistant, nonskid, wear resistant, rubber, with a minimum overall thickness of 0.1875 inch.

(2) There shall be a heavy-duty, white-nosed, rubber wear plate where the floor covering meets the steps.

C. Bonding and Seals.

(1) Floor covering shall be permanently bonded to the floor.

(2) Bonding material or seam sealers shall match the manufacturer's specification to ensure waterproofing.

(3) All seams, including those in the front and rear of or over wheel housings, shall be covered with aluminum strips or joined by bonding or welding.

(4) Aisle seams shall be located on the aisle side of seat legs and shall be covered with strips made of aluminum or other material as approved by the Administration.

(5) Cove or cove molding made of metal or other material as approved by the Administration shall be installed over joints around the sides and rear body wall.

.26 Interior Heaters.

A. Heaters shall be of a hot water type.

B. The heating system shall be capable of maintaining a temperature of not less than 50°F throughout the vehicle at the average minimum January temperature established by the National Weather Service, National Oceanic and Atmospheric Administration, for the area in which the vehicle is to be operated.

C. Heaters shall bear a name plate attached by the manufacturer which shall indicate the heater rating and which shall constitute certification that the heater performance is as shown on the plate.

D. Heater hoses shall be adequately supported to guard against excessive wear due to vibration, and may not dangle or rub against the chassis or sharp edges and may not interfere with or restrict the operation of any engine function.

E. Heater lines inside the passenger compartment shall be shielded to prevent accidental contact or scalding of the driver or passengers.

F. Dual Heater Installation.

(1) Each dual heater installation, if so equipped, shall:

(a) Include a shut-off valve on each heater hose located in the engine compartment or under the body to the rear of the right front wheel on each heater hose;

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(b) Be secured to the underside of the chassis to prevent abrasion or damage; and

(c) Be of a type to withstand weathering and abrasion of this exposed location.

(2) One heater shall be located at the front of the vehicle as original equipment.

(3) If an auxiliary heater is used, it shall be located as far to the rear of the passenger compartment as possible.

G. Combustion Heaters.

(1) Combustion heaters are permitted and shall:

(a) Have a switch or one-way valve installed at the fuel tank when the fuel line is pressurized to shut off the fuel to the heater in case of a broken line;

(b) Have an indicator light in the driver's compartment to alert the driver of a malfunction;

(c) Be mounted on the left side of the vehicle in an individual compartment opening from the outside; and

(d) Have the exhaust come out the left side of the vehicle under the skirt as close to the rear wheels as possible.

(2) Only combustion heaters approved by the Administration may be installed on school vehicles.

H. Portable heaters may not be used.

.27 Repealed.

.28 Mirrors.

A. An interior clear view mirror shall be at least 5 by 15 inches to afford a good view of the passengers and the roadway to the rear. If it is not metal backed and framed, the mirror shall be made of laminated safety glass. It shall have rounded corners and protected edges.

B. Two adjustable exterior, clear view mirrors, framed with black housing, shall be installed on each side of the vehicle. **The mirrors shall be adjustable power mirrors.** (HCPSS Addition)

C. Fender-Mounted Mirrors.

(1) One fender-mounted tripod or solid piece mirror bracket shall be mounted on each front fender.

(2) An exterior convex mirror shall be mounted on each front fender to provide a close infield of the vision to eliminate blind spots.

(3) A single mirror of a type approved by the Administration in conjunction with the State Department of Education may be used in place of the mirrors in §C(2) of this regulation.

.29 Seats, Crash Barriers, and Interior.

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A. Passenger Seats.

(1) The minimum clearance of all aisles, including the aisle or passageway between seats leading to the emergency door, shall be 12 inches.

(2) The forward-most seat on the right side of the vehicle shall be located so as not to interfere with the operator's vision and may not be farther forward than the rear of the operator's seat when adjusted to its rearmost position.

(3) The backs of seats of similar size shall be of the same width at the top, of the same height from the floor, and shall slant at the same angle with the floor.

(4) Seats shall be forward facing and shall be securely fastened with bolts and nuts to supporting parts of the vehicle.

(5) Each seat leg shall be fastened with a minimum of two bolts and nuts.

(6) Portable seats may not be used.

(7) Aisle supports of seat backs shall be slanted away from the aisle sufficiently to give an aisle clearance of 15 inches at the tops of the seat backs.

(8) As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures adopted at the most recent National Congress on School Transportation.

(9) Seat cushions shall be fastened to the seat structure.

(10) Seat covering shall be of minimum 42-ounce or approved equal material.

B. Operator's Seat.

(1) The minimum distance between the steering wheel and the backrest of the operator's seat is 11 inches.

(2) The operator's seat shall:

(a) Be rigidly positioned;

(b) Have fore and aft adjustment of not less than 4 inches, without the use of tools or other devices; and

(c) Be fastened to the floor with bolts, nuts, and washers or flanged-head nuts.

(d) **The seat/shoulder belt shall be orange in color.** (HCPSS Addition)

C. Crash Barriers.

(1) Crash barriers shall be located on both sides of the aisle in front of the most forward facing seat.

(2) On vehicles with the engine inside the front of the body, the minimum distance between the barrier at the rear of the entrance stepwell and the engine cover shall be 14 inches at floor level.

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(3) As of January 1, 2014, all vehicles procured for use in this State shall be constructed with materials that enable it to meet all the criteria of the school bus seat upholstery fire block test established by the National School Transportation Specifications and Procedures adopted at the most recent National Congress on School Transportation.

D. Sun Visor. An interior adjustable sun visor supported by two brackets not less than 5 inches wide and 15 inches long shall be installed so that it can be turned up to prevent being a hazard when not in use.

E. Steering Wheel. The steering wheel circumference shall have at least 2 inches of clearance at all points.

F. Speakers. Ceiling or side mounted speakers shall be flush mounted.

.30 Service Door.

A. The service door shall:

(1) Be located on the right side near the front in a location which shall provide the seated driver an unobstructed view of the entrance;

(2) Have a minimum horizontal opening of 24 inches and a minimum vertical opening of 50 inches;

(3) Have a head pad, minimum of 1 inch by 4 inches of foam rubber, on the interior of the vehicle to extend the width of the door opening;

(4) Be of the jackknife, accordion, or split type;

(5) Be manually or power operated by the seated driver; and

(6) Be designed to afford easy release and prevent accidental opening.

B. The parts of a service door hand lever may not come together so as to shear or crush fingers.

C. Split-type doors may open outward, but if one section of a folding door opens inward and the other opens outward, the forward section shall open outward. ~~If once section of the folding door open outward, the forward section shall open outward.~~ **Both sections of the service door shall open outward.** (HCPSS Addition)

D. Vertical closing edges shall be equipped with padding to prevent injury.

E. The bottom of the lower glass panel may not be more than 10 inches from the top surface of the bottom step.

F. The top of the upper glass panel may not be more than 3 inches below the interior control cover or head pad.

G. Manually operated service doors shall be reinforced to support the door control operating mechanism.

H. Power operated doors shall be:

(1) Equipped so as to regulate control and to permit manual operation in case of power failure; and

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(2) Labeled on the inside in letters at least 1/2 inch high with instructions for emergency opening.

I. Step Well.

(1) Step risers shall be approximately equal in height, with the upper riser not more than 12 inches high.

(2) The steps shall be surfaced with a non-skid material with a minimum of 1-1/2 inch white nosing on the steps and where the floor meets the steps as an integral piece.

(3) The step well shall be illuminated by at least one lamp providing a white light actuated automatically when the service door is open.

(4) The lower step may not be less than 10 inches and not more than 14 inches above the level on which the unloaded vehicle rests.

(5) The entrance may be equipped with a running board-type step which does not extend beyond the width of the vehicle body.

(6) A step well shall have a grab handle of stainless steel not less than 10 inches in length and be properly secured on the left in an unobstructed location inside the doorway.

J. The switch for power operated doors shall be located to the right side of the driver.
(HCPSS Addition)

.31 Emergency Door.

A. Emergency exits shall be in accordance with the requirements of 49 CFR §571.217, with the following additions:

(1) The rearmost seats shall be spaced to provide an unobstructed exit; and

(2) The words "Emergency Door" shall be 2 inches high by 3/8 inch wide black lettering and shall be applied above the door and emergency push-out windows on the inside and outside of the vehicle. If the outside areas above the door or the upper door window are not large enough for the words, the words may be placed on the door under the upper window.

B. There shall be a head bumper pad sufficient to reduce the likelihood of injury upon impact installed on the inside of the vehicle at the top of the emergency door. The pad shall:

(1) Be 4 inches wide; and

(2) Extend across the entire top of the door opening.

C. Passage to the emergency door shall be kept clear of obstructions.

D. Slide Bar Latch.

(1) The emergency door or doors shall be equipped with a slide bar-type latch which shall extend into or overlap the door frame by not less than 1 inch.

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(2) If a vertical slide bar latch system is used, it shall simultaneously engage latch plates in both the floor and overhead structure not more than 4-1/2 inches from the opening side of the door or doors.

(3) The outside handle of the slide bar latch shall be installed so as to minimize hitching and shall be a nondetachable device.

E. An automatically operated, distinctive audible signal shall clearly indicate to the seated driver, when the engine is running, the unlatching of the emergency door or doors. A cut-off switch except through the ignition switch may not be installed in the circuit.

F. The upper and lower portion of a central rear emergency door shall be equipped with approved safety glass, the exposed area of which shall be not less than 400 square inches in the upper portion and not less than 300 square inches in the lower portion.

G. Prohibitions.

(1) There may not be steps leading to the emergency door; and

(2) The engine starting system of a bus may not operate if any emergency exit is locked from either inside or outside the bus.

.32 Emergency Exit Windows.

A. An automatically operated distinctive audible signal shall clearly indicate to the seated driver, when the engine is running, that an emergency window has been unlatched. A cut-off switch except through the ignition switch may not be installed in the circuit.

B. Operating Instructions.

(1) Concise operating instructions describing the motions necessary to unlatch and open the emergency window shall be:

(a) Of a color that contrasts with the letters' background; and

(b) Located within 6 inches of the release mechanism on the inside surface of the vehicle.

(2) A decal containing the instructions may be placed on the window. The decal shall be transparent except for the lettering.

C. The emergency window, if provided, shall be labeled "Emergency Exit" in letters 2 inches high located at the top of or directly above the emergency window on both the inside and outside surfaces of the vehicle.

.33 Roof Vent/Emergency Exit.

At least one roof vent/emergency exit shall be installed and be:

A. Adjustable;

B. Equipped with a release handle inside and outside to permit the ventilator cover to hinge open for emergency exit;

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- C. Labeled "Emergency Exit" followed by precise operating instructions; and
- D. Equipped with a distinctive audible alarm, if a roof vent.

.34 Stop Signal Arm.

A second stop signal arm may be installed on the left outside of the body and shall be installed as close as practicable to the rear of the bus.

.35 Crossing Arm.

A. A crossing arm may shall be installed on the far right of the front bumper. The crossing arm:

- (1) Shall be securely bolt-mounted;
- (2) Shall be easily removable for towing;
- (3) Shall be activated simultaneously with the stop arm;
- (4) May not open more than 90 degrees;
- (5) Shall extend a minimum of 66 inches from the front of the bumper when activated;
- (6) May not have sharp edges or projections which may cause injury to students; and
- (7) Shall be air, vacuum, or electrically operated and may not have lights.

(8) Shall be activated and deactivated by the red warning light system. (HCPSS Addition)

B. Interrupt Switch.

(1) A crossing arm interrupt switch may be installed on the dash near the control box for the alternating flashing lights.

(2) Pressing the switch shall stop the arm from opening for a full cycle and the arm shall recycle after the alternating flashing lights have been deactivated

.36 Undercoating.

A. The entire underside of the vehicle body and front fenders, including floor members and side panels below floor level, shall be coated with a fire resistant asphalt based or rubber based undercoating material applied by spray method at least 1/8 inch thick in order to seal, deaden sound, insulate, and prevent oxidation.

B. Fiberglass construction is exempt from undercoating requirements.

.37 Wheel Housing.

A. The wheel housing opening shall allow for easy tire removal and service.

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B. The wheel housing shall be attached to the floor sheets in such a manner as to prevent dust, water, or fumes from entering the body.

C. The inside height of the wheel housing above the floor line may not exceed 10 inches.

D. The wheel housing shall provide clearance for the installation and use of tire chains on single and dual, if so equipped, power driving wheels.

E. No part of a raised wheel housing may extend into the emergency door opening.

.38 Windshields, Windows, Wipers, and Washers.

A. Safety Glass. Glass shall be installed so that the identification mark is legible.

B. Windshields. The windshield shall:

(1) Be large enough to permit the operator to see the highway clearly;

(2) Be slanted to reduce glare; and

(3) Be installed between front corner posts that are so designed and located as to afford a minimum of obstruction to the operator's view of the highway.

C. Stirrup Steps. There may be at least one folding stirrup step or recessed foothold and suitably located handles on each side of the front of the body for easy accessibility for cleaning the windshield and lamps.

D. Windows.

(1) Glass in passenger compartment side windows, doors, and rear windows shall be AS-2 or AS-3 laminated safety glass.

(2) Passenger compartment windows shall:

(a) Operate freely;

(b) Open 9—10-1/2 inches from the top only and provide an emergency exit of at least 9 inches by 22 inches;

(c) Have all exposed edges of glass banded;

(d) Be free of window guards or bars either on the inside or outside; and

(e) Be aluminum-framed split sash.

E. Windshield Wipers.

(1) Automatic, variable, two speed or intermittent windshield wipers with nonglare arms and blades shall be installed so as to clean the maximum possible area of the windshield.

(2) The windshield wiper blades and arms shall:

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- (a) Be heavy-duty; and
- (b) Be at least 14 inches long.

38 Vehicles for Transporting Special Needs Children.

A. Vehicles constructed for transporting special needs children shall comply with minimum standards for school vehicles, but because of the use of specialized equipment, certain modifications in these minimum standards may be made.

B. Special Service Doors.

- (1) A special single door opening, if provided, shall be located on the right side of the vehicle, **to the rear of the rear wheels** far enough to prevent the open door from obstructing the front right service door. The lift door opening shall accommodate the lift provided. (HCPSS Addition)
- (2) The header over the door area shall be padded.
- (3) **A single special door shall** be hinged at the forward side. (HCPSS Addition)
- (4) If dual doors are used, the doors shall be approximately equal in width and hinged to the side of the vehicle. Each panel shall open outward, and the forward panel shall be provided with an overlapping flange to close the space where the door panels meet. A weather seal shall be provided to close all door edges.
- (5) A two-point fastening device, which shall be a slide bar or rod, cam activated, and fastened to the header and floor or jamb, shall be used for single doors. If there are double doors, the front door shall have a three-point fastening device, which shall be a slide bar or rod, cam activated, and fastened to the header, floor, and rear door. The rear door shall have at least a one-point fastening device to the header.
- (6) Doors shall:
 - (a) Be manually operated.
 - (b) Be equipped with a device that will activate an audible signal in the driver's compartment when the door is not closed securely. The signal shall deactivate when the door is fully opened. When the door is closed, the device shall be automatically reset. A visible signal may be installed in addition to the audible signal.
 - (c) Contain a window aligned with the lower line of other windows of the vehicle and approximately the same size as other vehicle windows.

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(7) Between the special service door and the service door, there shall be at least one standard size window.

(8) Door posts and headers shall be reinforced sufficiently to provide support and strength equivalent to that of other doors.

(9) A light shall be placed inside the vehicle to provide light in the area of the special service door, and shall be operated from the door area.

C. All aisles leading to the emergency door or doors and lift door from the wheelchair area shall be a minimum of 30 inches to permit passage of wheelchairs.

D. Grab handles may be provided on each side of the front service doors.

E. The bus shall have a minimum of two, three-point restraining belts for each seat. (HCPSS Addition)

F. Special needs route buses shall have the roof painted white. (HCPSS Addition)

G. Special needs route buses must be equipped with: (HCPSS Addition)

(3) Red locking document bag, size 11" X 15", laminated nylon, standard keyed alike (Cardinal Bag Supplies)

(4) Evacuation blanket

(3) Seat belt cutter

.39 Video Cameras.

A video camera system may be installed if the system is:

A. Approved by the Administration;

B. Installed securely in an area of the vehicle with no sharp edges;

C. Located in an area not likely to cause student injury; and

D. Outside the federal head impact zone, as defined in 49 CFR §571.222.

.40 Safety Detection Systems.

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A. A safety detection system approved by the Federal Communications Commission may be installed to warn bus drivers of moving objects such as children within areas around a school vehicle considered to be most dangerous, if the system:

- (1) Is designed to monitor and warn school bus drivers of moving objects during loading and unloading;
- (2) Operates automatically;
- (3) Is activated by extending the stop arm; and
- (4) Has audible and visual alarms.

B. The audible alarm volume shall compensate for background noises.

C. The visual alarm shall be easily visible both at night and in bright sunshine.

D. The system shall be located in the driver's compartment and be visible to the driver in a seated position.

E. A delay feature shall be incorporated in the system which shall operate the detection unit for a brief period of time after the bus resumes motion.

.41 Air Conditioning Systems.

A. Air conditioning systems may be installed in school vehicles if:

- (1) The systems are approved by the Administration;
- (2) The agency and personnel installing the systems have been certified by the air conditioning manufacturer;
- (3) There are no sharp edges or protrusions that could injure students;
- (4) The total vehicle battery capacity is of sufficient amperes to supply all electrical requirements;
- (5) The vehicle alternator rating is at least 130 amperes; and
- (6) The system does not contain refrigerant that is toxic to individuals or is flammable.

B. System operating controls, including the on-off and blower switch or switches and the thermostat control or controls, shall be accessible to the driver in a seated position.

C. Wiring, hoses, and lines shall be grommeted, routed, and supported so as to reduce wear resulting from heat, chafing, vibration, or other factors.

D. Evaporator cases, lines and ducting shall be designed so that condensation is effectively drained to the exterior of the vehicle below floor level and under all conditions of vehicle movement without leakage on any interior portion of the vehicle. Evaporator cases, lines, and ducting shall be inaccessible to passengers.

E. System components shall be readily available for servicing.

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F. An air conditioning grill on the exterior shall be the same color as the predominant area in which it is installed.

G. A BTU rating of not less than 55,000. (HCPSS Addition)

H. Not less than two (2) interior evaporators, with at least one mounted in the front half and the other in the rear half of the bus. (HCPSS Addition)

.42 Air Cleaners.

The engine intake air cleaner shall be furnished and properly installed by the chassis manufacturer to meet engine specifications.

.43 Child Reminder System.

A child reminder system approved by the Administration may be installed. The deactivating switch shall be located on the inside rear-most portion of the bus. A child reminder system approved by the Administration may be installed. The deactivating switch shall be located on the inside rear most portion of the bus. **The vehicle manufacturer's child check system shall be installed and connected to the red light (Amber and Red) warning system.** (HCPSS Addition)

.44 Backup Camera System.

A. A ROSCO Visions Systems backup camera system shall be installed.

- (1) To activate when the engine is running and the gearshift is placed in reverse.**
- (2) Monitor to be integrated within the inside rear view (overhead) mirror. Monitor shall remain dark when gearshift is placed in any position other than reverse, and when ignition is in the "off" position.**
- (3) Four (4) backing sensors shall be incorporated into the rear bumper (conventional) or below engine compartment door (rear engine only). Backing sensors shall provide an audible alarm that gradually increases in frequency once an object is detected within the sensor range. The audible alarm shall be emitted from the rear of the 6" X 30" interior driver's mirror with integrated backup camera display.**

11.19.03.9999

Administrative History

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Regulations .01—.02, .04, .06—.11, .13, .15—.18, .20—.24, .26, .29—.33, .35, .36, .40, .42—.46, .49—.52, .54, .55, and .58 amended effective June 3, 1985 (12:11 Md. R. 1050)

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Regulations .03C, .09C, .17C, .19A, .24, .25C and .34 amended effective April 2, 2001 (28:6 Md. R. 621)

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Regulation .29A, C amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .30A amended effective January 21, 2013 (40:1 Md. R. 20); March 28, 2016 (43:6 Md. R. 410)

Regulation .31G amended effective March 28, 2016 (43:6 Md. R. 410)

Regulation .32B, C amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .33 amended effective January 21, 2013 (40:1 Md. R. 20)

Regulation .38A, E amended effective January 21, 2013 (40:1 Md. R. 20)

School Vehicle Specifications
