



NEBRASKA

DEPARTMENT OF EDUCATION

FISCAL IMPACT STATEMENT

Agency: Nebraska Department of Education
 Prepared by: Bryce Wilson
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 Phone: 471-4320
 Title: 92
 Chapter: 92
 Name: REGULATIONS GOVERNING THE MINIMUM EQUIPMENT STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL TRANSPORTATION VEHICLES
 Statement Status: Hearing Draft

Type of Fiscal Impact:

	State Agency	Political Subdivision	Regulated Public
No Fiscal Impact			X
Increase Costs	X		
Decrease Costs			
Increased Revenue			
Decreased Revenue			
Indeterminable		X	

Description of Impact:

State Agency: There will be a one-time fiscal impact (\$650) for publishing the public notice.

Political Subdivision: There were several changes to Rule 92 that affect school transportation vehicle requirements. The difference should be negligible as some of the changes may increase costs while other should reduce costs.

Regulated Public: There will be not fiscal impact to the regulated public.

OCT 26 2018

**NEBRASKA DEPARTMENT
OF EDUCATION**

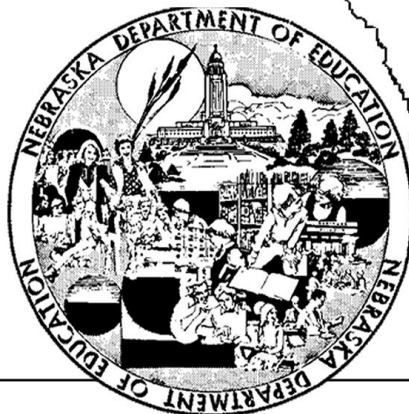
RULE 92

**REGULATIONS GOVERNING THE MINIMUM EQUIPMENT STANDARDS
AND SAFETY INSPECTION CRITERIA FOR PUPIL TRANSPORTATION
VEHICLES**

**TITLE 92, NEBRASKA ADMINISTRATIVE CODE,
CHAPTER 92**

**HEARING DRAFT
OCTOBER 25, 2018**

**State of Nebraska
Department of Education
301 Centennial Mall South
Lincoln, Nebraska 68509**



TITLE 92 - NEBRASKA DEPARTMENT OF EDUCATION
 CHAPTER 92 - REGULATIONS GOVERNING THE MINIMUM EQUIPMENT
 STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL
 TRANSPORTATION VEHICLES

Numerical Table of Contents

<u>Subject</u>	<u>Statutory Authority</u>	<u>Code Section</u>
General Information	79-318, 79-602	001
Definitions	79-318	002
Responsibility of Schools	79-318	003
Chassis and Body Delivery Requirements	79-318	004
School Bus and Activity Bus Body and Chassis Minimum Equipment Standards	79-318	005
Small Vehicle (General) Minimum Equipment Standards	79-318	006
Additional Required Equipment for Vehicles Used With Mobile Seating Devices	79-318	007
Safety Inspection Process for Pupil Transportation Vehicles	79-602	008
Minimum Safety Inspection Criteria for School and Activity Buses	79-602	009
Minimum Safety Inspection Criteria for Small Vehicles	79-602	010
Minimum Safety Inspection Criteria for Vehicles for Transporting Children in Mobile Seating Devices	79-602	011

TITLE 92 - NEBRASKA DEPARTMENT OF EDUCATION
 CHAPTER 92 - REGULATIONS GOVERNING THE MINIMUM EQUIPMENT
 STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL
 TRANSPORTATION VEHICLES

Alphabetical Table of Contents

<u>Subject</u>	<u>Statutory Authority</u>	<u>Code Section</u>
Additional Required Equipment for Vehicles Used With Mobile Seating Devices	79-318	007
Chassis and Body Delivery Requirements	79-318	004
Definitions	79-318	002
General Information	79-318, 79-602	001
Minimum Safety Inspection Criteria for School and Activity Buses	79-602	009
Minimum Safety Inspection Criteria for Small Vehicles	79-602	010
Minimum Safety Inspection Criteria for Vehicles for Transporting Children in Mobile Seating Devices	79-602	011
Responsibility of Schools	79-318	003
Safety Inspection Process for Pupil Transportation Vehicles	79-602	008
School Bus and Activity Bus Body and Chassis Minimum Equipment Standards	79-318	005
Small Vehicle (General) Minimum Equipment Standards	79-318	006

TITLE 92 - NEBRASKA DEPARTMENT OF EDUCATION
 CHAPTER 92 - REGULATIONS GOVERNING THE MINIMUM EQUIPMENT
 STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL
 TRANSPORTATION VEHICLES

Alphabetical Minimum Equipment Standards and Safety Inspection Criteria
Table of Contents

	<u>Page</u>
<u>School/Activity Bus Body and Chassis Minimum Equipment Standards</u>	
Air Cleaner.....	
Aisle.....	
Axles.....	
Back-up Warning Alarm.....	
Body Sizes.....	
Brakes	
Bumpers, Front.....	
Bumpers, Rear.....	
Certification.....	
Color.....	
Communications.....	
Construction	
Defrosters.....	
Doors.....	
Drive Shaft.....	
Electrical System.....	
Emergency Equipment.....	
Exhaust System.....	
Fenders, Front Type C Vehicles	
Floor, Covering.....	
Frame.....	
Fuel Tank.....	
Fuel Alternative	
Governor.....	
Handrails	
Heating System.....	
Horn.....	
Identification.....	
Instruments and Instrument Panel.....	
Insulation.....	
Interior.....	
Lamps and Signals.....	
Metal Treatment.....	
Mirrors.....	
Mounting.....	
Oil Filter.....	
Openings.....	
Passenger Load.....	

TITLE 92 - NEBRASKA DEPARTMENT OF EDUCATION
 CHAPTER 92 - REGULATIONS GOVERNING THE MINIMUM EQUIPMENT
 STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL
 TRANSPORTATION VEHICLES

	<u>Page</u>
<u>Retarder System.....</u>	
<u>Rub Rails.....</u>	
<u>Seat Belts/Occupant Protection Systems</u>	
<u>Seats and Restraining Barriers.....</u>	
<u>Seat Barrier</u>	
<u>Shock Absorbers.....</u>	
<u>Springs and Suspension Systems</u>	
<u>Steering Gear.....</u>	
<u>Steps.....</u>	
<u>Stirrup Steps.....</u>	
<u>Stop Signal Arm.....</u>	
<u>Storage Compartment.....</u>	
<u>Sun Shield.....</u>	
<u>Throttle.....</u>	
<u>Tires and Rims.....</u>	
<u>Tow Hooks.....</u>	
<u>Traction Assisting Devices.....</u>	
<u>Transmission.....</u>	
<u>Trash Container.....</u>	
<u>Turning Radius.....</u>	
<u>Undercoating.....</u>	
<u>Ventilation.....</u>	
<u>Wheel Housings.....</u>	
<u>Windows.....</u>	
<u>Windshield Washers.....</u>	
<u>Windshield Wipers.....</u>	
<u>Small Vehicle General Minimum Equipment Standards.</u>	
<u>Additional Required Equipment for Vehicles Used with</u>	
<u>Mobile Seating Devices.....</u>	
<u>Safety Inspection Process for Pupil Transportation</u>	
<u>Vehicles.....</u>	
<u>Minimum Safety Inspection Criteria for School and Activity</u>	
<u>Buses.....</u>	
<u>Minimum Safety Inspection Criteria for Small Vehicles.....</u>	
<u>Minimum Safety Inspection Criteria for Vehicles for</u>	
<u>Transporting Children in Mobile Seating Devices.....</u>	

TITLE 92 - NEBRASKA DEPARTMENT OF EDUCATION
 CHAPTER 92 - REGULATIONS GOVERNING THE MINIMUM EQUIPMENT
 STANDARDS AND SAFETY INSPECTION CRITERIA FOR PUPIL
 TRANSPORTATION VEHICLES

Table of Contents for Appendices

<u>Appendix</u>	<u>Title</u>	<u>Page</u>
A	Description of National School Bus Yellow	63
B	Contents of a First Aid Kit.....	64
C	Contents of a Body Fluid Clean-up Kit	65
D	School Bus Seat Upholstery Fire Block Test	66
E	Noise Test Procedures	71
F	Retro Reflective Sheeting	73
G	Reference List	76
H	Federal Motor Safety Standards and Regulations.....	78
I	Directory of Acronyms.....	79
J-H	Brake Adjustment Inspection Criteria..... <u>Minimum Inspection Criteria for School Buses</u>	80
K	Steering Wheel Free Play.....	82
L-I	Mechanic’s Pupil Transportation Vehicle Inspection Report.....	83
M	Code of Federal Regulations 49 CFR 567.7 and 49 CFR 567.3	85
<u>J</u>	<u>Wheelchair or Mobility and Envelope</u>	

001—General Information

001.01—Alphabetical List of Minimum Equipment Standards and Safety Inspection Criteria for Pupil Transportation Vehicles contained in this Chapter.

	<u>Page</u>
School/Activity Bus Body and Chassis Minimum Equipment Standards	9
— Air Cleaner.....	9
— Aisle.....	9
— Axles.....	9
— Back-up Warning Alarm.....	9
— Battery.....	9
— Body Sizes.....	10
— Brakes.....	10
— Bumper, Front.....	11
— Bumpers, Rear.....	12
— Certification.....	13
— Clutch.....	13
— Color.....	13
— Communications.....	14
— Cooling System.....	15
— Defrosters.....	16
— Doors.....	16
— Drive Shaft.....	17
— Electrical System.....	18
— Emergency Equipment.....	21
— Exhaust System.....	22
— Fenders, Front Type C Vehicles.....	22
— Floor Covering.....	22
— Frame.....	23
— Fuel Tank.....	23
— Fuel Alternative.....	24
— Governor.....	25
— Heaters.....	25
— Heating System.....	27
— Horn.....	27
— Identification.....	27
— Instruments and Instrument Panel.....	28
— Insulation.....	29
— Interior.....	29
— Lamps and Signals.....	30
— Metal Treatment.....	33
— Mirrors.....	33
— Mounting.....	33

TITLE 92
CHAPTER 92

	<u>Page</u>
— Oil Filter.....	34
— Openings.....	34
— Passenger Load.....	34
— Retarder System.....	34
— Rub Rails.....	34
— Seat Belts/Occupant Protection Systems.....	35
— Seats and Restraining Barriers.....	35
— Shock Absorbers.....	36
— Springs and Suspension.....	37
— Steering Gear.....	37
— Steps.....	37
— Stirrup Steps.....	38
— Stop Signal Arm.....	38
— Storage Compartment.....	38
— Sun Shield.....	39
— Throttle.....	39
— Tires and Rims.....	39
— Tow Hooks.....	39
— Traction Assisting Devices.....	40
— Transmission.....	40
— Trash Container.....	40
— Turning Radius.....	41
— Undercoating.....	41
— Ventilation.....	41
— Wheel Housings.....	42
— Windows.....	42
— Windshield Washers.....	42
— Windshield Wipers.....	42
 Small Vehicle General Minimum Equipment Standards.....	 43
Additional Required Equipment for Vehicles Used with Mobile Seating Devices.....	44
Safety Inspection Process for Pupil Transportation Vehicles.....	51
Minimum Safety Inspection Criteria for School and Activity Buses.....	52
Minimum Safety Inspection Criteria for Small Vehicles.....	61
Minimum Safety Inspection Criteria for Vehicles for Transporting Children in Mobile Seating Devices.....	61

001 General Information

001.021 Statutory Authority. This Chapter is adopted pursuant to Sections 79-318(132) and 79-602 of the Revised Statutes of Nebraska (R.R.S.).

~~"The State Board of Education shall: . . . (13) With the advice of the Department of Motor Vehicles, adopt and promulgate rules and regulations containing reasonable standards, not inconsistent with existing statutes, governing: (a) The general design, equipment, color, operation, and maintenance of any vehicle with the manufacturer's rated seating capacity of eleven or more passengers used for the transportation of public, private, denominational, or parochial school students; and (b) the equipment, operation and maintenance of any vehicle with a capacity of ten or less passengers used for the transportation of public, private, denominational, or parochial school students, when such vehicles are owned, operated, or owned and operated by any public, private, denominational, or parochial school or privately owned or operated under contract with any such school in this state, except for vehicles owned by individuals operating a school which elects pursuant to section 79-1601 not to meet accreditation or approval requirements. Similar rules and regulations shall be adopted and promulgated for operators of such vehicles as provided in 79-607."~~

~~And pursuant to Section 79-602 of the Revised Statutes of Nebraska (R.R.S.) which states, in part:~~

~~"All school boards, the governing authorities of any nonpublic school in this state, and all independent contractors who or which provide student transportation services for such boards and governing authorities and for military installations shall cause all pupil transportation vehicles used for the transportation of students to be inspected before school opens in the fall and each eighty days during that part of the year when school is in session by a motor vehicle mechanic appointed by the board or governing authority having jurisdiction over such students, except that any pupil transportation vehicle that has been inspected under rules and regulations of the Public Service Commission shall be exempted from the provisions of this section. The mechanic shall thoroughly inspect every vehicle used for the transportation of students as to brakes, lights, windshield wipers, window glass, tires, doors, heaters, defrosting equipment, steering gear, exhaust system, and the mechanical condition of every part of such pupil transportation vehicle to ensure compliance with the minimum allowable safety criteria established pursuant to section 79-607 and subdivision (13) of section 79-318. Within five days after such inspection, the mechanic shall make a report of his or her inspection in writing on regular forms provided by the State Department of Education which shall show if the vehicle met the minimum allowable safety criteria for use. Any item not meeting such criteria shall be brought into compliance prior to the vehicle being used to transport students. One copy of the mechanic's report shall be filed with the board or governing authority and, if the school contracts~~

~~with an independent contractor to provide transportation services, one copy with the independent contractor. The chief administrative officer of each school district shall annually certify, by a written verification statement, to the State Department of Education that the inspections required pursuant to this section have been performed. Such verification statement shall be sent to the department no later than June 30.~~

~~In addition to the inspection requirements prescribed in this section, the driver of each pupil transportation vehicle shall make daily inspections of such vehicle to ensure that all lights and equipment are fully operational or repaired before his or her daily route. Reports of such daily inspections shall be kept by the driver in the vehicle and filed weekly with the head mechanic or administrator in charge of the transportation system. If the inspection reveals any significant defect in the lights or equipment, the driver shall immediately report the defect to the head mechanic or administrator in charge of the transportation system."~~

001.032 Scope and Application. This Chapter presents:

001.032A The minimum equipment standards required on all vehicles utilized to transport public and nonpublic school students. The following regulations, when addressing subject matter regulated by the Federal Motor Vehicle Safety Standards, (FMVSS), 49 Code of Federal Regulations (CFR) 571.101 et seq., ~~(see Appendix H)~~ are identical to or additional requirements beyond what is addressed in the FMVSS. Should conflicts be found or arise between the following regulations and the FMVSS, as to the same aspect of performance of a motor vehicle or motor vehicle equipment, the FMVSS or any other applicable provision of federal law or regulation shall supersede these regulations.; ~~and References incorporated herein are available for viewing at the Nebraska Department of Education, 301 Centennial Mall South, 6th Floor, Lincoln, Nebraska 68509.~~

001.032B The safety inspection criteria required for all vehicles utilized to transport public and non-public school students.

001.043 Related Regulation. An additional regulation promulgated by the Nebraska Department of Education dealing with pupil transportation is Rule 91, Regulations Governing Driver Qualifications and Operational Procedures for Pupil Transportation Vehicles. ~~In addition, Nebraska Department of Motor Vehicles has promulgated Title 247 Nebraska Administrative Code, Chapter 7, Rules and Regulations Pertaining to the Vision and Medical Requirements for Class A and B Licenses, Learner's and School Permits and School Bus Driver's Permits.~~

001.054 Penalty Provisions. ~~According to Sections 79-603 and 79-607 of the Revised Statutes of Nebraska (R.R.S.) provide that violation of statutory requirements for inspections of pupil transportation vehicles, safety features, or traffic rules or regulations which relate to school bus transportation, may result in a person being guilty of a misdemeanor.~~

TITLE 92
CHAPTER 92

~~“Any person who violates any provision of section 79-602 or who drives, moves, or causes or knowingly permits to be moved on any highway any vehicle or vehicles which exceed the limitations as to the safety features provided in such section for which a penalty is not elsewhere provided shall be guilty of a Class III misdemeanor.”~~

~~And pursuant to Section 79-607 of the Revised Statutes of Nebraska (R.R.S):~~

~~“...Any officer or employee of any school district who violates any of the traffic rules or regulations or fails to include obligations to comply with the traffic rules and regulations in any contract executed by him or her on behalf of a school district shall be guilty of a Class V misdemeanor and shall, upon conviction thereof, be subject to removal from office or employment. Any person operating a school bus under contract with a school district who fails to comply with any of such traffic rules and regulations shall be guilty of breach of contract, and such contract shall be canceled after notice and hearing by the responsible officers of such school district;”~~

001.065 Effective date and Implementation Date. Regardless of the effective date of this Chapter, the implementation (operative) date will be ~~ninety (90)~~ 180 days after its effective date. Prior to that date, the provisions of 92 NAC 92 effective ~~March 9, 2008~~ July 7, 2015 shall remain in effect. School buses and activity buses manufactured on or after this Chapter’s implementation date shall meet or exceed the equipment standards in Section 005. See also “Vehicle Purchase and Use” at Ssubsection 003.01. Regulations concerning small vehicles’ equipment (Section 006), additional required equipment for vehicles used with mobile seating devices (Section 007), and vehicle inspection criteria (Sections 008 – 011) apply as of the implementation date regardless of the date of manufacture of such vehicles.

002 Definitions.

002.01 Activity Bus ~~shall be~~ means a motor vehicle with motive power, except a trailer, designed or modified by the manufacturer, distributor or dealer for carrying eleven (11) or more passengers, excluding the driver, meeting or exceeding this Chapter (except as provided in to Ssubsection 003.02 of this Chapter) which at any time would be used to carry school children, ~~pupils~~ and school personnel exclusively on a school activity trip from a given location to a second location without stopping to load or unload children or control traffic on public highways, provided that such transportation service is sponsored and approved by the local school governing board. This includes Multi-Function School Activity Bus as defined in 49 CFR 571.3 and does not preclude the use of a school bus as an activity bus.

002.02 Activity Trip ~~shall~~ means the transportation of children, pupils and school personnel to and from a given location to a second or subsequent location or locations without stopping to load or unload ~~children~~ the passengers on the public highways for the purpose of transporting ~~students~~ the passengers to any activity or event sanctioned, authorized or sponsored by the school district or the local school’s governing board.

TITLE 92
CHAPTER 92

002.03 Motor Coach Bus shall means a vehicle not designed primarily for the transportation of school children to and from school and school related activities, but as a commercial motor vehicle ~~for carrying eleven (11) or more passengers~~ as a part of the operation of a common or contract carrier, as those terms are defined in Section 75-302 R.R.S., with a Gross Vehicle Weight of greater than 33,000 lbs., with a semi-monocoque/monocoque unitized body construction and which has ~~front doors only~~ high back seats, under-the-floor storage, ~~and no rear emergency exit.~~ and is designed to seat at least 32 passengers. For purposes of this Section, monocoque means a design where the skin or shell of the vehicle acts as a single unit with the supporting frame and semi-monocoque means a design where the skin or shell of the vehicle acts, to some extent, as a single unit with the supporting frame. Such buses are also commonly known as ~~“motor coaches” or~~ “over-the-road coaches.”

002.04 Federal Motor Vehicles Safety Standards (FMVSS) 49 CFR 571. Shall means the construction standards developed and enforced by the National Highway Traffic Safety Administration (NHTSA) that apply to all new motor vehicles and items of motor vehicle safety equipment must conform with 49 CFR Part 571.

002.05 Route shall means a designated course regularly traveled by a pupil transportation vehicle to pick up students from home or pickup points and take them to school or other location related to a student’s instructional program or to deliver students from school to their homes or designated drop-off points.

002.06 School Bus shall means a motor vehicle with motive power, except a trailer, designed or modified by the manufacturer, distributor or dealer for carrying eleven (11) or more passengers, excluding the driver, meeting or exceeding the requirements of this Chapter which at any time is used to carry ~~pupils,~~ school children and school personnel exclusively that is sponsored and approved by the local school governing board. ~~Such transportation service must be sponsored and approved by the local school governing board.~~ Includes School bus includes an Activity Bus (as defined in this Chapter) and Multi-Function School Activity Bus (MFSAB) ~~(as defined in 49 CFR 571.3)~~ except where otherwise provided in this Chapter (see Subsection 003.02). Vehicles that only carry ~~pupils~~ school children along with other passengers as a part of the operation of a common carrier under the jurisdiction of United States Department of Transportation, ~~or~~ Nebraska Public Service Commission, Nebraska State Patrol Carrier Enforcement, or the Nebraska Department of Motor Vehicles Division of Motor Carrier Services are not included within the definition of school bus.

002.06A Type A School/Activity Bus is a conversion or body constructed upon a van-type compact truck or a front-section vehicle with a left side driver’s door and designed for carrying more than ten (10) persons. This definition includes Type A-1, with a Gross Vehicle Weight Rating (GVWR) of 14,500 pounds or less and Type A-2, with a GVWR of greater than 14,500 pounds and less than or equal to 21,500 pounds.

TITLE 92
CHAPTER 92

002.06B Type B School/Activity Bus is a conversion or body constructed and installed upon a van or front-section vehicle chassis, or stripped chassis. This definition includes Type B-1, with a GVWR of less than 10,000 pounds and Type B-2 with a GVWR of more than 10,000 pounds. This vehicle is designed for carrying more than ten (10) persons. Part of the engine is beneath and/or behind the windshield and beside the driver's seat. The entrance door is behind the front wheels.

002.06C Type C School/Activity Bus is a body installed upon a flat back cowl chassis with a GVWR of more than 21,500 pounds, and designed for carrying more than ten (10) persons. All of the engine is in front of the windshield and the entrance door is behind the front wheels.

002.06D Type D School/Activity Bus is a body installed upon a chassis with the engine mounted in the front, midship, or rear, with a gross vehicle weight rating of more than 10,000 pounds, and designed for carrying more than ten (10) persons. The engine may be behind the windshield and beside the driver's seat, it may be at the rear of the bus, behind the rear wheels, or midship between the front and rear axles. The entrance door is ahead of the front wheels.

002.07 Small Vehicle ~~shall be means~~ a motor vehicle with motive power, except a trailer, designed or modified by the manufacturer, distributor or dealer for carrying ten (10) or ~~less fewer~~ passengers, excluding the driver, meeting or exceeding Nebraska Department of Education minimum standards for small vehicles which at any time would be used to carry ~~pupils students~~ exclusively ~~that is sponsored and approved by the local school governing board. Such transportation service must be sponsored and approved by the local school governing board.~~ If the seating capacity of the vehicle has been reduced to meet the definition of a small vehicle, the manufacturer, distributor, or dealer shall recertify the vehicle if required by 49 CFR 567.7. ~~(See Appendix M.) The capacity of the vehicle shall be posted inside the vehicle in a conspicuous location.~~ The preceding definition is not intended to include private motor vehicles used exclusively to carry members of the owner's household. ~~Capacity shall be posted inside the vehicle in a conspicuous location.~~

002.07A Vehicles that have an original manufacturer's vehicle type classification label under 49 CFR 567.4 of "bus" and that have an original manufacturer's designated seating capacity of 15 persons maximum; (e.g. 15-passenger vans); shall not qualify as a small vehicle.

002.08 Pupil Transportation Vehicle ~~is means~~ any vehicle utilized to carry school children as sponsored and approved by the local school governing board and conforms to the Nebraska Department of Education definitions of pupil transportation vehicles listed ~~as School Bus, Activity Bus, and Small Vehicle~~ in this Chapter, ~~or complies with the provisions applicable to coach buses in Section 003.04 of this Chapter.~~

003 Responsibility of the Schools.

003.01 Vehicle Purchase and Use. Schools shall use only school buses, ~~and~~ activity buses ~~or and~~ equipment which comply with the minimum equipment standards in effect on the date the vehicles were manufactured. Vehicles with manufacturer's rated seating capacity of eleven or more passengers manufactured prior to April 1, 1977, shall not qualify as a pupil transportation vehicle and shall not be used for pupil transportation unless a "coach bus" used as provided in ~~S~~subsection 003.04.

003.01A Schools may purchase and use vehicles that have certain chassis or body equipment that comply with the standards applicable to the vehicle on the date of the vehicle's manufacture, while having other certain chassis or body equipment that instead comply with the standards concerning such equipment in effect on a later, but only if the school files a written assurance statement with NDE that: (i) describes which chassis or body equipment on the vehicle complies with the standards in effect on the later date but not on the date of manufacture; and (ii) after inquiring of its board appointed mechanic or other individual it deems qualified, the school is satisfied that no safety hazards or dangerous conditions are created by having a combination of such equipment.

003.02 Activity Buses. Activity Buses, when used exclusively for an activity trip or trips, are exempt from the following requirements of this Chapter:

003.02A ~~Subsection~~ 005.1~~20~~(color)

003.02B ~~Subsection~~ 005.3~~52~~C (alternating flashing signal lamps)

003.02C ~~Subsection~~ 005.~~5249~~ (stop signal arm)

~~003.03 Equipment Provisions Applying to Use of a School Bus for Purposes of Transportation Other Than To And From School Other Than Transporting Students. If a school bus is used for purposes other than transporting students, it must be in compliance with Section 60-6,175(67) R.R.S. provides that "When a school bus is being operated upon a highway for purposes other than the actual transportation of children either to or from school, all markings thereon indicating school bus shall be covered or concealed. The stop signal arm and system of alternately flashing stop warning lights shall not be operable through the usual controls."~~

003.04 Use of Coach Buses By Schools. Schools may charter or contract for the use of coach buses ~~or other vehicles~~, as provided in Section 79-602 R.R.S., if such vehicles have been inspected or are subject to inspection under the rules and regulations of the Public Service Commission, Carrier Enforcement Division of the State Patrol, or the Division of Motor Carrier Services pursuant to Sections 75-363 through 75-369.07 R.R.S. Schools may own and operate coach buses for use on student activity trips if: (1) such vehicles are exempt from the inspection under Section 79-602 R.R.S., or (2) if such vehicles are not exempt from inspection under Section 79-602 R.R.S., if the school board or governing authority has such a vehicle inspected

TITLE 92
CHAPTER 92

before school opens in the Fall and each eighty (80) days during that part of the year when school is in session by a motor vehicle mechanic it has appointed. The mechanic shall thoroughly inspect every vehicle as to brakes, lights, windshield wipers, window glass, tires, doors, heaters, defrosting equipment, steering gear, and exhaust system for compliance with the criteria prescribed for these items in [Sections 009 Appendix H](#) and [Section 010](#) of this Chapter. Within five (5) days after such inspection, the mechanic shall make a report of his or her inspection in writing on forms provided by the Department of Education to the local school board or governing authority, and the Board or governing authority shall cause any deficiencies to be corrected.

[003.04A](#) Federal motor vehicle safety laws and regulations (49 U.S.C. Secs. 30112 and 30125, 49 CFR Part 571), require that a person may not sell a “new”, (“first purchase”), vehicle designed to carry more than ten (10) passengers that is likely to be used significantly to transport preprimary, primary, and secondary school students to or from school or an event related to school if the vehicle does not conform to the Federal Motor Vehicle Safety Standards for “school buses” in 49 CFR Part 571.

[003.05](#) Compliance with Minimum Allowable Safety Criteria. As provided in Section 79-602 R.R.S., the school’s appointed mechanics shall inspect and assure that pupil transportation vehicles meet the minimum allowable safety criteria. Any item not meeting such criteria shall be brought into compliance prior to the vehicle being used to transport students.

004 Chassis and Body Delivery Requirements.

[004.01](#) The body and chassis manufacturer shall provide the following materials and information for direct delivery to the customer:

[004.01A](#) Line set tickets for each individual unit.

[004.01B](#) A copy of the pre-delivery service performed and verified by a checkout form for each individual unit.

[004.01C](#) Warranty book and statement of warranty for each individual unit.

005 School Bus and Activity Bus Body and Chassis Minimum Equipment Standards.

[005.01](#) Air Cleaner. A dry element type air cleaner shall be provided.

[005.01A](#) All diesel engine air filters shall include a latch-type restriction indicator that retains the maximum restriction developed during operation of the engine. The indicator should include a reset control so the indicator can be returned to zero when desired.

TITLE 92
CHAPTER 92

005.02 Aisle.

005.02A All emergency exit doors shall be accessible by a 12-inch minimum aisle. Minimum clearance of aisle or passageway between seat rows leading to side emergency doors shall be a minimum of 12 inches at seat level.

005.02B Aisle shall be unobstructed at all times by any type of barrier, seat, wheelchair or tie down, unless a flip seat is installed and occupied.

~~005.02C Minimum clearance of aisle or passageway between seat rows leading to side emergency doors shall be a minimum of 12 inches at seat level. The track of a track seating system is exempt from the requirements of subsections 005.02A and 005.02B above.~~

~~005.02D The seat backs shall be slanted sufficiently to give aisle clearance of 15 inches at tops of seat backs.~~

005.03 Axles. The front and rear axle and suspension systems shall have a gross axle weight rating (GAWR) at ground commensurate with the respective front and rear weight loads of the bus loaded to the rated passenger capacity.

005.04 Back-up Warning Alarm. An automatic audible alarm shall be installed behind the rear axle and shall comply with the published Backup Alarm Standards -Society of Automotive Engineers (SAE J994B), providing a minimum of 112 dBA or shall have a variable volume feature that allows the alarm to vary from 87 dBA to 112 dBA sound level, staying at least 5 dBA above the ambient noise level.

~~005.05 Battery. (SEE ELECTRICAL SYSTEM 005.16)~~

~~005.05A The battery is to be furnished by the chassis manufacturer.~~

~~005.05B The body manufacturer shall securely attach the battery on a slide-out tray in a closed, vented compartment in the body skirt, so that the battery is accessible for convenient servicing from the outside. The battery compartment door or cover shall be hinged at the front or top, and be secured by a latch or other type fastener. Battery cables installed by the body manufacturer shall meet chassis manufacturer and SAE requirements.~~

~~005.05C If the bus is equipped with a battery shut-off switch, the switch is to be placed in a location not readily accessible to the driver or passengers.~~

005.065 Body Sizes.

005.065A The overall width of the school bus shall not exceed 102 inches, excluding accessories.

005.065B Bodies for conventional body-on-chassis type buses shall conform to all applicable provisions of the Federal Motor Vehicle Safety Standards (FMVSS).

005.065C The overall length of the school bus (body and chassis) shall not exceed 45 feet, excluding accessories.

005.065D The minimum inside body height shall be 72 inches measured at any point on longitudinal center line from front vertical bow to rear vertical bow. (Type A-1 buses ~~are exempt~~ shall be 62 inches or more.)

005.076 Brakes.

005.076A School bus chassis with a manufacturer's rated capacity of 72 passengers or greater shall be equipped with full compressed air brakes.

005.076B Brakes - General.

005.076B1 The chassis brake system shall conform to the provisions of FMVSS No. 105, *Hydraulic and Electric Brake Systems*, No. 106, *Brake Hoses*, and No.121, *Air Brake Systems*, as applicable. All buses shall have either a parking pawl in the transmission or a park interlock that requires the service brake to be applied to allow release of the parking brake.

005.076B2 The anti-lock brake system (ABS), provided in accordance with FMVSS No. 105, *Hydraulic and Electric Brake Systems* or No. 121 *Air Brake Systems*, shall provide wheel speed sensors for each front wheel and for each wheel on at least one (1) rear axle. The system shall provide anti-lock braking performance for each wheel equipped with sensors. (Four Channel System).

005.076B3 All brake systems shall be designed to permit visual inspection of brake lining wear without removal of any chassis component(s).

005.076B4 The brake lines, booster-assist lines, and control cables shall be protected from excessive heat, vibration and corrosion and installed in a manner which prevents chafing.

005.076B5 The parking brake system for either air or hydraulic service brake systems may be of a power assisted design. The power parking brake actuator shall be a device located on the instrument panel within seated reach of the 5th percentile female driver. As an option, the parking brake may be set by placing the automatic transmission shift control mechanism in the "park" position.

005.076B6 The power-operated parking brake system may be interlocked to the engine key switch. Once the parking brake has been set the ignition switch turned to the “off” position, the parking brake cannot be released until the key switch is turned back to the “on” position.

005.076C Hydraulic Brakes.

005.076C1 Buses using a hydraulic-assist brake shall ~~be equipped with audible and visible warning signals that provide a continuous warning to the driver of a loss of fluid flow from the primary source and of a failure of the back-up pump system.~~ meet the requirements of FMVSS 105.

005.076D Air Brakes.

005.076D1 The air pressure supply system shall include a desiccant-type air dryer installed according to the manufacturers’ recommendations. The air pressure storage tank system may incorporate an automatic drain valve.

005.076D2 The chassis manufacturer shall provide an accessory outlet for air-operated systems installed by the body manufacturer. This outlet shall include a pressure protection valve.

005.076D3 For air brake systems, an air pressure gauge shall be provided in the instrument panel capable of complying with Commercial Driver’s License (CDL) pre-trip inspection requirements.

005.076D4 Air brake-equipped buses shall be equipped with a service brake interlock. The parking brake cannot be released until the brake pedal is depressed.

005.076D5 Air brake systems shall include a system for anti-compounding of the service brakes and parking brakes.

005.076D6 Air brakes shall have both a visible and audible warning device whenever the air pressure falls below the level where warnings are required under FMVSS No. 121, *Air Brake Systems*.

005.087 Bumpers, Front.

~~005.08A Front Bumpers. On a Type D school bus, if the chassis manufacturer does not provide a front bumper, it shall be provided by the body manufacturer.~~

005.08B7A All school buses shall be equipped with a front bumper. ~~The front bumper shall be furnished by the chassis manufacturer as part of the chassis for all types of chassis unless there is a specific arrangement between the chassis manufacturer and body manufacturer that the body manufacturer will furnish the~~

~~front bumper.~~

005.08C7B In all buses except Type A-1 buses, the front bumper shall be equivalent in strength and durability to pressed steel channel, at least 3/16 inch thickness and not less than 8 inch wide (high). It shall extend beyond forward-most part of the body, grille, hood, and fenders and shall extend to outer edges of the fenders at the bumper's top line.

Type A-1 buses having a GVWR of 14,500 pounds or less may be equipped with an Original Equipment Manufacturer (OEM) supplied bumper. The front bumper shall be of sufficient strength to permit being pushed by another vehicle on a smooth surface with a 5 degree (8.7 percent) grade, without permanent distortion. The contact point on the front bumper is between the frame rails, with as wide a contact area as possible. If the front bumper is used for lifting, the contact points shall be under the bumper attachments to the frame rail brackets unless the manufacturer specifies different lifting points in the owner's manual. Contact and lifting pressures should be applied simultaneously at both lifting points.

005.08D7C The front bumper, except breakaway bumper ends, shall be of sufficient strength to permit pushing a vehicle of equal gross vehicle weight without permanent distortion to the bumper, chassis or body.

005.08E7D Tow eyes or hooks shall be furnished and attached so they do not project beyond the front bumper. Tow eyes or hooks attached to the chassis frame shall be furnished by the chassis manufacturer. This installation shall be in accordance with the chassis manufacturer's specifications. (Type A buses are exempt.) (See Section 005.574).

005.08F7E The bumper shall be designed or reinforced so that it will not deform when the bus is lifted by a chain that is passed under the bumper (or through the bumper if holes are provided for this purpose) and attached to both tow eyes. For the purpose of meeting this standard, the bus shall be empty and positioned on a level, hard surface and both tow eyes shall share the load equally.

005.098 Bumpers, Rear.

005.098A Type A-1 bus bumpers shall be a minimum of 8 inches wide (high). Type A-2, B, C, and D bus rear bumper shall be a minimum of 9½ inches wide. The bumper shall be of sufficient strength to permit being pushed by another vehicle without permanent distortion.

005.098B The bumper shall be wrapped around back corners of bus. It shall extend forward at least 12 inches, measured from rearmost point of body at floor line and shall be flush-mounted to the body sides or protected with an end panel.

TITLE 92
CHAPTER 92

~~005.098C~~ The bumper shall be attached to chassis frame in such a manner that it may be removed. It shall be braced to resist deformation of the bumper resulting from impact from the rear and side.

~~005.098D~~ The bumper shall extend at least 1 inch beyond rear-most part of body surface measured at the floor line.

~~005.098E~~ The bottom of the rear bumper shall not be more than 30 inches above ground level.

~~005.409~~ Certification.

~~005.409A~~ Upon request by the Nebraska Department of Education, chassis manufacturers will certify that their product meets ~~or exceeds all applicable Federal and State of Nebraska rules and regulations in effect at the time of manufacture. Nebraska's minimum standards on items which are not covered by FMVSS certification requirements of 49 CFR, Part 567: Certification.~~

~~005.409B~~ Vendors of school buses shall certify, in writing, to the school bus purchaser that their product meets or exceeds all applicable Federal and State of Nebraska rules and regulations in effect at the corresponding date of manufacture; or in the alternative, the vendor shall provide to the purchaser a description of what equipment complies instead with minimum chassis and/or body standards in effect on a later date in accordance with Section 003.01A of this Chapter.

~~005.11~~ Clutch.

~~005.11A~~ Clutch torque capacity shall be equal to or greater than the engine torque output.

~~005.11B~~ A starter interlock shall be installed to prevent actuation of the starter if the clutch pedal is not depressed.

~~005.120~~ Color. (Activity buses are exempt.)

~~005.120A~~ The school bus body shall be painted National School Bus Yellow as specified and described in the School Bus Manufacturers Technical Council publication "National School Bus Yellow Color Standard" (NSBY) (SBMTC-008) (See Appendix A).

~~005.120B~~ The body exterior paint trim shall be black or NSBY.

~~005.120C~~ The roof of the bus may be painted white except that front and rear roof caps shall remain ~~National School Bus Yellow~~ NSBY.

~~005.120D~~ Chassis, ~~including wheels~~ and ~~the front~~ bumpers, shall be painted ~~silver, gray, white, yellow, or~~ black as received from the manufacturer.

005.120E ~~Body, Cowl~~; hood and fenders shall be painted ~~National School Bus Yellow NSBY~~. ~~The flat top surface of the hood may be nonreflective black or NSBY.~~

005.120F ~~Grille may be chrome, anodized aluminum finish or painted National School bus Yellow~~. ~~Wheels may be silver, gray, white, yellow or black.~~

005.120G Retro Reflective Sheeting (See Appendix F)

005.120G1 Front and rear bumper shall be marked diagonally 45 degrees down to centerline of pavement with 2 inch wide strips of non-contrasting reflective material.

005.120G2 Rear of bus body shall be marked with strips of reflective National School Bus Yellow material to outline the perimeter of the back of the bus using material which conforms with the requirements of FMVSS No. 131, *School Bus Pedestrian Safety Devices* Table 1 in effect on date of manufacture. The perimeter marking of rear emergency exits per FMVSS No. 217 Bus Emergency Exits and Window Retention and Release and/or the use of reflective "SCHOOL BUS" signs partially accomplish the objective of this requirement. To complete the perimeter marking of the back of the bus, strips of at least 1 3/4 inches a minimum of 1 inch and a maximum of 2 inches in width of reflective National School Bus Yellow material shall be applied horizontally above the rear windows and above the rear bumper extending from the rear emergency exit perimeter marking outward to the left and right rear corners of the bus; and vertical strips shall be applied at the corners connecting these horizontal strips.

005.120G3 "SCHOOL BUS" signs, if not of lighted design, shall be marked with reflective National School Bus Yellow material comprising background for lettering of the front and/or rear "SCHOOL BUS" signs.

005.120G4 Sides of bus body shall be marked with reflective National School Bus Yellow Material at least 1 3/4 inches in width, extending the length of the bus body and located (vertically) between the floor line and the beltline.

005.10H Multifunction school activity buses (MFSABs) are exempt from the requirements in subsection 005.10G above.

005.131 Communications. School bus shall be equipped with a two-way communication system which can be used at any point on the vehicle's route. The system can be after-market provided.

TITLE 92
CHAPTER 92

005.142 Construction.

005.142A Construction shall provide a reasonable dustproof and watertight unit.

005.142A1 Buses shall meet FVMSS 220, *Rollover Protection and* FMVSS 221, *Body Joint Strength*.

005.142A2 For buses manufactured on or after the implementation date of this Rule:

005.142A2a Buses shall pass the "Side Intrusion Test." The bus body shall be constructed to withstand an intrusion force equal to the curb weight of the vehicle; ~~but shall not exceed or~~ 20,000 pounds, whichever is less. Each vehicle shall be capable of meeting this requirement when tested in accordance with the procedures set forth below.

The complete body structure, or a representative seven-body section mock up with seats installed, shall be load-tested at a location 24-inches plus or minus two inches above the floor line, with a maximum 10-inch diameter cylinder, 48 inches long, mounted in a horizontal plane.

The cylinder shall be placed as close as practical to the mid-point of the tested structure, spanning two internal vertical structural members. The cylinder shall be statically loaded to the required force of curb weight or 20,000 pounds, whichever is less, in a horizontal plane with the load applied from the exterior toward the interior of the test structure. Once the minimum load has been applied, the penetration of the loading cylinder into the passenger compartment shall not exceed a maximum of ten inches from its original point of contact. There can be no separation of lapped panels or construction joints. Punctures, tears or breaks in the external panels are acceptable but are not permitted on any adjacent interior panel.

Body companies shall certify compliance with this intrusion requirement, including test results, if requested by the Nebraska Department of Education.

005.142B If floor insulation is requested by the local school district or governing authority, it shall be either 5 ply softwood plywood nominal 5/8 inch thick plywood, or a material of equal or greater strength and insulation R-value and it shall equal or exceed properties of exterior-type Douglas fir plywood, C-D Grade, as specified in standard PSI-83 issued by U.S. Department of Commerce (~~1983~~). All exposed edges shall be sealed. Type A buses shall be equipped with nominal ½ inch thick plywood meeting above requirements.

TITLE 92
CHAPTER 92

Equivalent material may be used to replace plywood, provided it has equal or greater insulation R-value, sound abatement, deterioration-resistant and moisture-resistant properties.

005.12C Construction shall be reasonably dust-proof and watertight.

005.15 Cooling System

~~005.15A~~ ~~The cooling system radiator shall be of sufficient capacity to cool the motor at all speeds in all gears. Thermostatic controls shall be high temperature type.~~

~~005.15B~~ ~~The cooling system fan shall be of heavy-duty reinforced type with clutch-type drive. The clutch must automatically control fan.~~

~~005.15C~~ ~~The chassis cooling system shall be equipped with heavy-duty truck type water pump.~~

~~005.15D~~ ~~Permanent base anti-freeze shall be provided by the chassis manufacturer to protect the cooling system to a minimum of -40 degrees F when tested at normal engine temperature.~~

005.163 Defrosters. (Also see Section 005.286 Heatersing System)

005.163A All school buses shall be equipped with defrosters with sufficient flow of heated air to keep windshield, window to left of driver and glass in entrance door clear of fog, frost and snow. The defrosting system shall conform to SAE J381 Windshield Defrosting Systems Test Procedure and Performance Requirements—Trucks, Buses, and Multipurpose Vehicles.

Note: The requirements of this standard do not apply to the exterior surfaces of double pane storm windows.

005.163B The defroster and defogging system shall be capable of furnishing heated, outside ambient air except that part of the system furnishing additional air to the windshield, entrance door and step well may be of the recirculating air type.

005.163C Auxiliary fans are not considered defrosting or defogging systems.

005.163D Portable heaters shall not be used.

005.174 Doors.

005.174A Entrance Door.

005.174A1 Entrance door shall be in the driver's control, designed as to afford easy release and provide a positive latching device on manual operating door ~~so as~~ to prevent accidental opening. Manual door controls shall not require more than 25 pounds of force to operate at any point throughout the range of operation, as tested on a 10 percent grade both uphill and downhill.

005.174A2 Entrance door shall be located on right side of bus opposite driver within direct view of driver.

005.14A2a Buses may be equipped with a left side entrance door located immediately behind the driver to be used exclusively for curb side loading/unloading on one-way streets.

005.14A2b Buses equipped with a left side entrance door shall have a mirror mounted in the upper right corner of the interior of the bus to provide a clear view of the left side entrance door and stepwell.

005.174A3 Entrance door shall have a minimum horizontal opening of 24 inches and a minimum vertical opening of 68 inches.

005.174A4 Entrance door shall be of split type and shall open outward.

005.174A5 All entrance door glass shall be made of safety glass. Bottom of lower glass panel shall not be more than 10 inches from the top surface of the bottom step. Top of upper glass panel when viewed from the interior shall not be more than 3 inches ~~from the top of door.~~ below the interior door control cover or header pad.

005.174A6 Vertical closing edges shall be equipped with flexible material.

005.174A7 Power operated doors must be equipped with an emergency release valve, switch or device placed above or to the immediate left or right of the service door and clearly labeled. The emergency release valve, switch or device shall work in the absence of power.

005.174A8 Padding at the top of edge of each door opening shall be 3 inches wide and 1 inch thick and extend full width of the door opening.

005.174B Emergency Exits.

005.174B1 All installed emergency exits shall comply with the design and performance requirements of FMVSS No. 217, *Bus Emergency Exits and Window Retention and Release*, applicable to that type of exit, regardless of whether or not that exit is required by FMVSS No. 217.

005.174B1a The upper portion of the emergency door shall be equipped with safety glazing, the exposed area of which shall be at least 400 square inches. ~~The lower portion of the rear emergency doors on Types A-2, B, C, and D vehicles shall be equipped with a minimum of 350 square inches of safety glazing. If installed, all other glass panels on emergency doors shall be equipped with safety glazing.~~

005.174B1b There shall be no steps leading to an emergency door ~~except on Types C and D all-wheel drive buses.~~

~~005.17B1c~~ ~~The emergency door(s) shall be equipped with padding at the top edge of each door opening. Padding shall be at least three inches wide and one inch thick, and shall extend the full width of the door opening.~~

005.174B1cd There shall be no obstruction higher than ¼ inch across the bottom of any emergency door opening. Fasteners used within the emergency exit opening shall be free of sharp edges or burrs.

005.174B1de The rear emergency window shall have an assisted lifting device that will aid in lifting and holding the rear emergency window open.

~~005.17B2~~ ~~Types A, B, C, and D buses shall be equipped with a total number of emergency exits as follows for the indicated capacities of the buses. Exits required by FMVSS-217 may be included to comprise the total number of exits specified.~~

<u>Passengers</u>	<u>Exits</u>
up to 42	1 emergency exit per side and 1 roof hatch
43 to 78	2 emergency exits per side and 2 roof hatches
79 to 90	3 emergency exits per side and 2 roof hatches

005.14B2 Emergency Exit Requirements: The following tables determine the required number and types of emergency exits to comply with this specification:

005.14B2a A school bus will meet the requirements of this specification and the requirements of FMVSS 217 if it contains the types and quantities of emergency exits listed on the row selected.

TABLE 1 BUSES WITH REAR EMERGENCY DOOR (All Front Engine Buses)						TABLE 2 BUSES WITH REAR PUSHOUT WINDOW AND LEFT SIDE EMERGENCY DOOR (All Rear Engine Buses)					
Available Combinations By Capacity	Manufacturers Equipped Capacity	Shall Have	And Shall Also Have			Available Combinations By Capacity	Manufacturers Equipped Capacity	Shall Have	And Shall Also Have		
		Roof Hatch	L. Side Emerg. Exit Windows	R. Side Emerg. Exit Windows	L. Side Emerg. Exit Door			Roof Hatch	L. Side Emerg. Exit Windows	R. Side Emerg. Exit Windows	R. Side Emerg. Exit Door
1-45	1-45	1	0	0	0	1-45	1-45	1	0	0	0
46-77	46-77	2	1	1	0	46-89	46-89	2	1	1	0
	46-77	2	0	0	1		46-89	2	0	0	1
78-93	78-93	2	2	2	0	90-105	90-105	2	2	2	0
	78-93	2	1	1	1		90-105	2	1	1	1

005.174B3 Side emergency exit windows when installed may be vertically hinged on the forward side of the window. No side emergency exit window will be located above the stop arm.

005.185 Drive Shaft.

005.185A The drive shaft shall be protected by a metal guard or guards of steel or equivalent strength around circumference of the drive shaft to prevent it from whipping through floor or dropping to ground if broken.

005.196 Electrical System.

005.196A Battery.

005.196A1 The storage batteries shall have minimum cold cranking capacity rating (cold cranking amps) equal to the cranking current required for 30 seconds at 0 degrees Fahrenheit and a minimum reserve capacity rating of 120 minutes at 25 amps.

005.196A2 All batteries are to be secured in a slide-out or swingout sliding tray in the body. Chassis manufacturers shall mount the battery temporarily on the chassis frame, except that van conversion or cutaway front-section chassis may be secured in accordance with the manufacturer's standard configuration. In these cases, the final location of the battery and the appropriate cable lengths shall be agreed upon mutually by the chassis and body manufacturer.

closed, vented compartment in the body skirt or chassis frame so that the battery is accessible for convenient servicing from the outside. When in the stored position, the tray shall be retained by a securing mechanism capable of holding the tray [with battery(ies)] in position when subjected to a 5g load from any direction. The battery compartment door or cover, if separate from the tray, shall be hinged at the front or top. It shall be secured by a positive operated latching system or other type fastener. The door may be an integral part of the battery slide tray. The door or cover must fit tightly to the body, and not present sharp edges or snagging points. Battery cables shall meet SAE requirements. Battery cables shall be of sufficient length to allow the battery tray to fully extend. Any chassis frame-mounted batteries shall be relocated to a battery compartment on Type A buses.

005.16A3 All batteries are to be secured in a sliding tray except that on van conversion or cutaway front-section chassis, batteries may be secured in accordance with the manufacturer's standard configuration. In these cases, the final location of the battery and the appropriate cable lengths shall be agreed upon mutually by the chassis and body manufacturers. However, in all cases the battery cable provided with the chassis shall have sufficient length to allow some slack, and shall be of sufficient gauge to carry the required amperage.

005.16A4 Buses may be equipped with a battery shut-off switch. The switch is to be placed in a location not readily accessible to the driver or passengers.

005.196B Alternator.

005.196B1 All Type A-2 and Type B buses with a GVWR of 15,000 lbs or less shall have a minimum 130-amp alternator. Buses equipped with an electrically powered wheelchair lift and/or air conditioning shall be equipped with the highest rated capacity available from the chassis OEM.

005.196B2 All Type A-2 and Type B buses over 15,000 lbs GVWR and all Type C and Type D buses shall be equipped with a heavy-duty truck or bus-type alternator meeting Society of Automotive Engineers (SAE)-J-180, having a minimum output rating of 130-200-amp or higher, and shall should produce a minimum current output of 50 percent of the rating at engine idle speed.

005.196B3 All other ~~b~~Buses described in subsection 005.16B1 equipped with ~~accessories such as~~ an electrically powered wheelchair lift and/or air conditioning shall have a minimum output of 240 amps and may be equipped with a device that advances ~~shall be equipped with a device that monitors the electrical system voltage and advances~~ the engine idle speed when the voltage drops to, or below, a pre-set level.

005.196B4 A belt alternator drive shall be capable of handling the rated capacity of the alternator with no detrimental effect on any other driven components. (See School Bus Manufacturer Technical Council's "School Bus Technical Reference" for estimating required alternator capacity.)

005.196B5 A direct drive alternator is permissible in lieu of a belt driven alternator.

005.196C Electrical Components. Materials in all electrical components shall contain no mercury.

005.196D Wiring. Chassis.

005.196D1 All wiring shall conform to current applicable recommended practices of the Society of Automotive Engineers (SAE).

005.196D2 All wiring shall use color and at least one other method of identification. The other method shall be either a number code or name code, and each chassis shall be delivered with a wiring diagram that illustrates the wiring of the chassis.

005.196D3 The chassis manufacturer shall install a readily accessible terminal strip or plug on the body side of the cowl or in an accessible location in the engine compartment of vehicles designed without a cowl. The strip or plug shall contain the following terminals for the body connections:

- | | |
|-------------------|---|
| <u>005.196D3a</u> | Main 100 amp body circuit; |
| <u>005.196D3b</u> | Tail lamps; |
| <u>005.196D3c</u> | Right turn signal; |
| <u>005.196D3d</u> | Left turn signal; |
| <u>005.196D3e</u> | Stop lamps; |
| <u>005.196D3f</u> | Back-up lamps; and |
| <u>005.196D3g</u> | Instrument panel lights (rheostat controlled by <u>dimmer headlamp</u> switch). |

005.196D4 An appropriate identifying diagram (color plus a name or number code) for all chassis electrical circuits shall be provided to the body manufacturer for distribution to the end user.

005.196D5 The headlight system must be wired separately from the electronic controlled body solenoid/module.

005.196E Wiring, Body.

005.196E1 Wiring shall be arranged in circuits as required with each circuit protected by a fuse or ~~a circuit breaker~~ electronic protection device. A system of color and number coding shall be used and an appropriate identifying diagram shall be provided to the end user along with the wiring diagram provided by the chassis manufacturer. The wiring diagrams shall be specific to the bus model supplied and include any changes to wiring made by the body manufacturer. Chassis wiring diagrams shall also be supplied to the end user. A system of color and number coding shall be used on buses. The following body interconnecting circuits shall be color coded as noted:

<u>FUNCTION</u>	<u>COLOR</u>
Left Rear Directional Light <u>Lamp</u>	Yellow
Right Rear Directional Light <u>Lamp</u>	Dark Green
Stop lights <u>Lamps</u>	Red
Back-up Lights <u>Lamps</u>	Blue
Taillights <u>Lamps</u>	Brown
Ground	White
Ignition Feed, Primary Feed	Black

The color of the cables shall correspond to SAE J 1128, Low-Tension Primary Cable.

005.196E2 Wiring shall be arranged in at least six (6) regular circuits as follows:

005.196E2a Head, tail, stop (brake), clearance and instrument panel lamps.

005.196E2b ~~Clearance and s~~Step well lamps shall be actuated when entrance service door is open.

005.196E2c Dome lamps.

005.196E2d Ignition and emergency door signal.

005.196E2e Turn signal lamps.

005.196E2f Alternately flashing signal lamps.

TITLE 92
CHAPTER 92

005.196E3 Any of above combination circuits may be subdivided into additional independent circuits.

005.196E4 Heaters and defrosters shall be wired on an independent circuit.

005.196E5 Each body circuit shall be coded by number or letter on a diagram of circuits and shall be attached to the body in readily accessible location. Buses may be equipped with a 12-volt power port in the driver's area.

005.196E6 All other electrical functions (such as sanders and electric-type windshield wipers) shall be provided with independent and properly protected circuits.

005.196F Wires not enclosed within body shall be fastened securely at intervals of not more than 18 inches. All joints shall be soldered or joined by equal effective connectors which shall be water-resistant and corrosion-resistant.

005.196G All wiring shall have an amperage capacity exceeding the design load by at least 25 percent. All wiring splices are to be noted as splices on the wiring diagram.

005.196H A body wiring diagram sized to be easily read, shall be furnished with each bus body or affixed in an area convenient to the electrical accessory control panel.

005.196I The body power wire shall be attached to a separate terminal on the chassis.

005.196J All wires passing through metal openings shall be protected by a grommet.

005.16K All wiring shall conform to current applicable SAE recommended practices.

005.16L A manual noise suppression switch must be installed in the control panel. The switch shall be labeled and alternately colored. This switch shall be an on/off type that deactivates body equipment that produces noise, including at least the AM/FM radio, heaters, air conditioners, fans and defrosters. This switch shall not deactivate safety systems, such as windshield wipers or lighting systems.

005.16M The entire electrical system of the body shall be designed for the same voltage as the chassis on which the body is mounted. The reference to a common body/chassis voltage does not apply to buses utilizing a high voltage propulsion system (more than 48 nominal volts), commonly referred to as “High Voltage-Powered Vehicles.”

005.2017 Emergency Equipment. All buses shall be equipped with emergency equipment as listed in this section. Any of the following emergency equipment may be mounted in an enclosed compartment, provided the compartment is labeled in not less than one-inch letters, identifying each piece of equipment contained therein.

005.2017A Fire Extinguisher. The bus shall be equipped with at least one (1) Underwriter’s Laboratory Inc. (UL) approved pressurized, dry chemical-type fire extinguisher, with hose, mounted and secured in a bracket located in the driver’s compartment readily accessible to the driver and passengers. A pressure gauge shall be mounted on the extinguisher shall be easily read without moving the extinguisher from its mounted position.

005.2017A1 The fire extinguisher shall have a total rating of 2-A:10-BC or greater. The operating mechanism shall be sealed with a type of seal that will not interfere with use of the fire extinguisher.

005.2017B First Aid Kit. The bus shall have at least one removable, moisture proof and dustproof first aid kit in an accessible place in the driver’s compartment. It shall be properly mounted and clearly identified as a first aid kit. The location for the first aid kit shall be marked. Contents of the first aid kit are listed in Appendix B of this Chapter.

005.2017B1 All school bus bodies with a manufacturer’s rated seating capacity of thirty (30) or less shall be equipped with one (1) first aid kit.

005.2017B2 All school bus bodies with a manufacturer’s rated seating capacity greater than thirty (30) shall be equipped with two (2) first aid kits.

005.2017B3 When two (2) first aid kits are carried on the bus, one (1) kit shall be mounted over the rear exit door and the other in the driver’s compartment.

005.2017C Body Fluid Clean-up Kit. Each bus shall have a removable and moisture proof body fluid clean-up kit. It shall be securely mounted and identified as a body fluid clean-up kit. (Required contents of kit are listed in Appendix C of this Chapter.)

005.2017D Warning Devices. The school bus shall carry three (3) retroreflective triangle road warning devices that meet the requirements of FMVSS No. 125, *Warning Devices*. They shall be mounted in an accessible place.

005.218 Exhaust System.

005.218A Exhaust pipe, muffler, and tailpipe shall be outside the bus body compartment and attached to chassis, so as not to damage any other chassis component.

005.218B Tailpipe and after treatment system shall be constructed of corrosion resistant tubing of 16-gauge steel or equivalent.

005.18C The tailpipe shall not extend more than two inches beyond the perimeter of the body for side-exit pipe or the bumper for rear-exit pipe. The exhaust system shall be designed such that exhaust gas will not be trapped under the body of the bus.

005.18D The tailpipe shall exit to the left or right of the emergency exit door in the rear of the vehicle or to the left side of the bus in front of or behind the rear drive axle or the tailpipe may extend through the bumper. The tailpipe exit location on all Types A-1 or B-1 buses may be in accordance to the manufacturer's standards. The tailpipe shall not exit beneath any fuel filler location, emergency door or lift door.

005.18E The exhaust system shall be insulated in a manner to prevent any damage to any fuel system component.

005.18F The design of the after treatment systems shall not allow active (non-manual) regeneration of the particulate filter during the loading and unloading of passengers. Manual regeneration systems will be designed such that unintentional operation will not occur.

005.18G For after treatment systems that require Diesel Exhaust Fluid (DEF) to meet federally mandated emissions:

005.18G1 The composition of Diesel Exhaust Fluid (DEF) must comply with International Standard ISO 22241-1. Refer to engine manufacturer for any additional DEF requirements.

005.18G2 The DEF supply tank shall be sized to meet a minimum ratio of 3 diesel fills to 1 DEF fill.

~~005.21C Chassis manufacturers shall furnish an exhaust system with tailpipe of sufficient length to exit the rear of the bus or at the left side of the bus body no more than 18 inches forward of the front edge of the rear wheel house opening. If designed to exit at the rear of the bus, the tailpipe shall extend at least five (5) inches beyond the end of the chassis frame. If designed to exit to the side of the bus, the tailpipe shall extend at least 48.5 inches (51.5 inches if the body is to be 102 inches wide) outboard from the chassis centerline.~~

~~005.21C1~~ On Types C and D vehicles, the tailpipe shall not exit beneath a fuel fill or emergency door exit.

~~005.21C2~~ Type A and B chassis may be furnished with the manufacturer's standard tailpipe configuration.

~~005.21D~~ Exhaust system on a chassis shall be adequately insulated from fuel system.

~~005.21E~~ The muffler shall be constructed of corrosion-resistant material.

005.2219 Fenders, Front - Type C Vehicles.

005.2219A When measured at the fender line, Total spread of outer edges of front fenders, measured at fender line, shall exceed the total spread of front tires when front wheels are in a straight ahead position.

005.2219B Front fenders shall be braced and free from any body attachment. Rear bottom edge of front fender shall extend to the bottom of the front body section.

005.230 Floor, Covering.

005.230A Floor in the under seat area, including tops of wheel housings, driver's compartment, and toe board, shall be covered with an elastomer floor covering, having a minimum overall thickness of .125 inch and a calculated burn rate of 0.1 or less, using the test methods, procedures and formulas listed in FMVSS No. 302, *Flammability of Interior Materials*. The floor under the driver's seat in all Type A buses may be manufacturer's standard flooring and floor covering.

005.230B Floor covering in aisle shall be ribbed or other pattern of elastomer and have a calculated burn rate of 0.1 or less using the test methods, procedures, and formulas listed in FMVSS No. 302, *Flammability of Interior Materials*. Minimum overall thickness shall be 3/16th in. measured from tops of ribs.

005.230C Floor covering must be permanently bonded to floor and must not crack when subjected to sudden changes in temperature. Bonding or adhesive material shall be waterproof and shall be of type recommended by manufacturer of floor-covering material. All seams must be sealed with waterproof sealer.

005.230D A flush-mounted, screw-down plate that is secured and sealed shall be provided to access the fuel tank sending unit and or fuel pump. (This plate shall not be installed under flooring material. (Type A Buses are exempt.)

005.241 Frame.

005.241A Frame lengths shall be established in accordance with the design criteria for the complete vehicle.

005.241B Any secondary manufacturer that modifies the original chassis frame shall provide a warranty at least equal to the warranty offered by the original equipment manufacturer (OEM), and shall certify that the modification and other parts or equipment affected by the modification shall be free from defects in material and workmanship under normal use and service intended by the OEM.

005.241C Holes in top or bottom flanges or, side units of the frame, and welding to the frame shall not be permitted except as provided or accepted by the chassis manufacturer.

005.241D Frames shall not be modified for the purpose of extending the wheelbase.

005.252 Fuel Tank.

005.252A Fuel tank or tanks shall be provided by the chassis manufacturer. The tanks shall be filled and vented to the outside of the body and the fuel filter should be placed in a location where accidental fuel spillage will not drip or drain on any part of the exhaust system.

005.252B Fuel lines shall be mounted to the chassis frame in such a manner that the frame provides the maximum possible protection from damage.

005.252C The fuel system shall comply with FMVSS No. 301, *Fuel System Integrity*.

005.252D Fuel tank(s) may be mounted between the chassis frame rails or outboard of the frame rails on either the left or right side of the vehicle. The actual draw capacity of each fuel tank shall be a minimum of 83% of the tank capacity.

005.252E Installation of alternative fuel systems, including fuel tanks and piping from tank to engine, shall comply with all applicable fire codes in effect on the date of manufacture of the bus.

005.252E1 Installation of Liquefied Petroleum Gas (LPG) tanks shall comply with National Fire Protection Association (NFPA) 58.

005.252E2 Installation of Compressed Natural Gas (CNG) containers shall comply with FMVSS No. 304, *Compressed Natural Gas Fuel Container Integrity*.

005.252E3 The CNG Fuel System shall comply with FMVSS No. 303, *Fuel System Integrity of Compressed Natural Gas Vehicles*.

005.22E4 Installation of alternative fuel systems, including fuel tanks and piping from the tank to the engine, shall comply with all applicable fire codes in effect on the date of manufacture of the bus.

TITLE 92
CHAPTER 92

005.263 Fuel Alternative. School transportation vehicles may use alternative fuel systems. The fuel system integrity shall meet the specified leakage performance standards when impacted by a moving contoured barrier in accordance with test conditions specified in FMVSS No. 301 or FMVSS No. 303, as applicable.

005.23A Chassis shall meet all specifications in Section 005 of this Chapter.

005.23B Chassis shall meet all applicable Federal Motor Vehicle Safety Standards (FMVSS).

005.23C The fuel system integrity shall meet the specified leakage performance standards when impacted by a moving contoured barrier in accordance with test conditions specified in FMVSS No. 301, *Fuel System Integrity*, or FMVSS No. 303, *Fuel System Integrity of Compressed Natural Gas Vehicles*, as applicable.

005.23D Original equipment manufacturers (OEMs) and conversion systems using compressed natural gas (CNG) shall comply with National Fire Protection Association (NFPA) Specification 52 2013, *Compressed Natural Gas Vehicular Fuel Systems*. Fuel systems using liquefied petroleum gas (LPG) shall comply with NFPA Specification 58 2014, *Liquefied Petroleum Gases Engine Fuel Systems*.

005.23E Fuel tank(s) for vehicles of less than 54 passenger capacity powered by LPG or CNG shall have a minimum 40-gallon capacity. Fuel tank(s) for vehicles of 54 or more passenger capacity powered by LPG or CNG shall have a minimum 60-gallon capacity.

005.23F Natural gas-powered buses may be equipped with an interior/exterior gas detection system. All natural gas-powered buses may be equipped with an automatic or manual fire detection and suppression system.

005.23G All materials and assemblies used to transfer or store alternative fuels shall be installed outside the passenger/driver compartment.

005.23H All Types C and D buses using alternative fuels shall meet the same base requirements of BUS CHASSIS SPECIFICATIONS for passenger load.

005.23I The total weight shall not exceed the vehicle's GVWR when loaded to rated capacity.

005.23J The manufacturer supplying the alternative fuel equipment must provide the owner and operator with adequate training and certification in fueling procedures, scheduled maintenance, troubleshooting and repair of alternative fuel equipment.

005.23K All fueling equipment shall be designed specifically for fueling motor vehicles and shall be certified by the manufacturer as meeting all applicable federal, state and industry standards.

TITLE 92
CHAPTER 92

005.23L All on-board fuel supply containers shall meet all appropriate requirements of the American Society for Mechanical Engineering (ASME) code, United States Department of Transportation (USDOT) regulations or applicable FMVSSs and NFPA standards.

005.23M All fuel supply containers shall be securely mounted to withstand a static force of eight times their weight in any direction.

005.23N All safety devices that discharge to the atmosphere shall be vented to the outside of the vehicle. The discharge line from the safety relief valve on all school buses shall be located in a manner appropriate to the characteristics of the alternative fuel. Discharge lines shall not pass through the passenger compartment.

005.23O CNG buses shall have a positive, quick-acting (¼ turn) shut-off control valve shall be installed in each gaseous fuel supply line, as close as possible to the fuel supply containers. The valve controls shall be placed in a location easily operable from the exterior of the vehicle. The location of the valve controls shall be clearly marked on the exterior surface of the bus.

005.23P An electrical grounding system shall be required for grounding of the fuel system during maintenance-related venting.

005.23Q Fuel systems identified as compatible with biodiesel must be provided with components compatible with biodiesel conforming to the specifications of ASTM 6751, *Biodiesel Standard*.

005.23R High Voltage-Powered Vehicles: Buses utilizing a high voltage propulsion system (more than 48 nominal volts) shall meet the requirements of FMVSS 305, *Electric Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection*, except for the following:

005.23R1 The propulsion power source (batteries, fuel cells, etc.) shall be located outside the passenger compartment.

005.23R2 The propulsion power source enclosure shall be constructed to conform to the power source manufacturer's requirements and recommendations.

005.23R3 Due to the much larger size and quantities of the propulsion power sources on larger vehicles, buses over 10,000 lbs are permitted to exceed the 5.0 liter spillage constraint of Section S5.1, *Electrolyte damage from propulsion batteries* and the requirements to statically rotate the vehicle on its longitudinal axis post test.

~~005.26A Original equipment manufacturers (OEMs) and conversion systems using compressed natural gas (CNG) shall comply with National Fire Protection Association (NFPA) Standard 52A "Compressed Natural Gas Vehicular Fuel~~

TITLE 92
CHAPTER 92

~~Systems" in effect at the time of installation. Fuel systems using liquefied petroleum gas (LPG) shall comply with NFPA Standard 58A "Liquefied Petroleum Gases Engine Fuel Systems" in effect at the time of installation.~~

~~005.26B All alternative fuel buses shall be capable of traveling not less than 200 miles with a full load, except those powered by electricity which shall travel not less than 80 miles.~~

~~005.26C Natural gas powered buses shall be equipped with an interior/exterior gas detection system. All natural gas powered buses shall be equipped with an automatic or manual fire detection and suppression system.~~

~~005.26D All materials and assemblies used to transfer or store alternative fuels shall be installed outside the passenger/driver compartment.~~

~~005.26E All Type C and D buses using alternative fuel shall meet the same base requirements of BUS CHASSIS STANDARDS for Power and Gradeability i.e., at least one published net horsepower per each 185 pounds of GVWR.~~

~~005.26F The total weight shall not exceed the GVWR when loaded to rated capacity.~~

~~005.26G The manufacturer supplying the alternative fuel equipment must provide the owner and operator with adequate training and certification in fueling procedures, scheduled maintenance, troubleshooting, and repair of alternative fuel equipment.~~

~~005.26H All fueling equipment shall be designed specifically for fueling motor vehicles and shall be certified by the manufacturer as meeting all applicable federal, state and industry standards.~~

~~005.26I All on-board fuel supply containers shall meet all appropriate requirements of the American Society Mechanical Engineers (ASME) code, United States Department of Transportation (DOT) regulations, or applicable FMVSS and NFPA Standards.~~

~~005.26J All fuel supply containers shall be securely mounted to withstand a static force of eight times their weight in any direction.~~

~~005.26K All safety devices that discharge to the atmosphere shall be vented to the outside of the vehicle. The discharge line from the safety relief valve on all school buses shall be located in a manner appropriate to the characteristics of the alternative fuel. Discharge line shall not pass through the passenger compartment.~~

~~005.26L A positive quick acting (1/4 turn) shut-off control valve shall be installed in each gaseous fuel supply lines as close to the fuel supply containers as possible. The controls for this valve shall be placed in a location easily~~

~~operable from the exterior of the vehicle. The location of the valve control shall be clearly marked on the exterior surface of the bus.~~

~~005.26M—An electrical grounding system shall be required for grounding of the fuel system during maintenance related venting.~~

~~005.26N—Bio-Diesel must conform to the specifications of ASTM 6751, Biodiesel Standard.~~

005.274 Governor. The engine and road speed governors may be installed to limit engine speed to a maximum revolutions per minute as recommended by the engine manufacturer, ~~and road speed at a maximum state speed limit or tachometer shall be installed so engine speed may be known to driver.~~

005.25 Handrails. At least one handrail shall be installed. The handrail shall be a minimum of 1" diameter and be constructed from corrosion resistant material(s). The handrail(s) shall assist passengers during entry or exit and shall be designed to prevent entanglement, as evidenced by the passing of the NHTSA string and nut test.

005.26 Heating System. The engine shall be capable of supplying coolant at a temperature of at least 170 degrees Fahrenheit at the engine coolant thermostat opening. The coolant flow rate shall be 50 pounds per minute at the return end of 30 feet of one inch inside diameter automotive hot water heater hose. (See SBMTC-001, *Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating Equipment.*)

~~005.286A Heaters: and Air Conditioning Systems (See Section 005.16 Defrosters)~~

~~005.286A1~~ Heaters shall be ~~of~~ hot water type ~~and/or~~ combustion type, electric heating element or heat pump.

~~005.28B6A2~~ If only one heater is used, it shall be the fresh air type or the combination fresh air and recirculating air type. ~~One heater shall be installed near the right front entrance.~~

~~005.28C6A3~~ If more than one hot water heater is used, additional heaters may be of recirculating air type.

~~005.28D6A4~~ The heating system shall be capable of maintaining bus interior temperatures as specified in Society of Automotive Engineers (SAE) test procedure J2233.

~~005.28E6A5~~ Optional: Auxiliary fuel-fired heating systems are permitted, provided they comply with the following:

~~005.28E16A5a~~ The auxiliary heating system fuel shall utilize the same type fuel as specified for the vehicle engine.

005.28E26A5b Heater(s) may be direct hot air or connected to the engine's coolant system.

005.28E36A5c An auxiliary heating system, when connected to the engine's coolant system, may be used to preheat the engine coolant or preheat and add supplementary heat to the bus's heating system.

005.28E46A5d Auxiliary heating systems shall be installed pursuant to the manufacturer's recommendations and shall not direct exhaust in such a manner that will endanger bus passengers.

005.28E56A5e The auxiliary heating system shall be low voltage.

005.28E66A5f Auxiliary heating systems shall comply with FMVSS No. 301, *Fuel system integrity* and all other applicable FMVSS in effect on date of manufacture, as well as SAE test procedures.

005.28E76A5g All combustion heaters shall be in compliance with current Federal Motor Carrier Safety Regulations.

005.28F6A6 All forced-air heaters installed by body manufacturers shall bear a nameplate that indicates the heater rating in accordance School Bus Manufacturer's Technical Council SBMTC-001. The plate shall be affixed by heater manufacturer and shall constitute certification that the heater performance is as shown on the plate.

005.28G6A7 Heater hoses shall be adequately supported to guard against excessive wear due to vibration. The hoses shall not dangle or rub against the chassis or sharp edges and shall not interfere with or restrict the operation of any engine function, such as the spark advance of an automatic distributor. Heater hose shall conform to the standards of the Society of Automotive Engineers (SAE) Standard J20c *Coolant System Hoses*. Heater lines on the interior of the bus shall be shielded to prevent scalding of the driver or passengers.

005.28H6A8 Each hot water system installed by a body manufacturer shall include one shut-off valve in the pressure line and one shut-off valve in the return line with both valves at the engine in an accessible location, except that on all Type A and B buses the valves may be installed in another accessible location.

005.28I6A9 There shall be a water flow regulating valve installed in the pressure line for convenient operation by the driver while seated.

005.28J6A10 Accessible bleeder valves shall be installed in an appropriate place in the return lines of body company-installed heaters to remove air from the heater lines.

005.28K6A11 Access panels shall be provided to make heater motors, cores, and fans readily accessible for service. Outside access panel may be provided for the driver's heater.

005.26B Passenger Compartment Air Conditioning (Optional). The following specifications are applicable to all types of school buses that may be equipped with air conditioning.

005.26B1 Requirements

005.26B1a Evaporator cases, lines and ducting (as equipped) shall be designed in such a manner that all condensation is effectively drained to the exterior of the bus below the floor level under all conditions of vehicle movement and without leakage on any interior portion of the bus;

005.26B1b Evaporators and ducting systems shall be designed and installed to be free of projections or sharp edges. Ductwork shall be installed so that exposed edges face the front of the bus and do not present sharp edges;

005.26B1c On school buses equipped with Type-2 seatbelts having anchorages above the windows, the ducting (if used) shall be placed at a height sufficient to not obstruct occupant securement anchorages. This clearance shall be provided along the entire length (except at evaporator locations) of the passenger area on both sides of the bus interior;

005.26B1d The body may be equipped with insulation, including sidewalls, roof, firewall, rear, inside body bows and plywood or composite floor insulation to reduce thermal transfer;

005.26B1e All glass (windshield, service and emergency doors, side and rear windows) may be equipped with maximum integral tinting allowed by federal, state or ANSI standards for the respective locations, except that windows rear of the driver's compartment, if tinted, shall have approximately 28 percent light transmission;

005.26B1f Electrical generating capacity shall be provided to accommodate the additional electrical demands imposed by the air conditioning system;

005.26B1g Air intake for any evaporator assembly(ies), except for front evaporator of Type A-1, shall be equipped with replaceable air filter(s) accessible without disassembly of evaporator case.

005.26B1h For all buses (except Type D rear engine transit) equipped with a rear evaporator assembly, evaporator shall not encroach upon head impact zone, but may occupy an area of less than 26.5 inches from the rear wall and 14 inches from the ceiling.

005.26B1i For Type D rear engine transit buses equipped with a rear evaporator over the davenport, the evaporator assembly may not interfere with rear exit window and may not extend above the rear seating row.

~~005.29 Heating System. The chassis engine shall have plugged openings for the purpose of supplying hot water for the bus heating system. The opening shall be suitable for attaching 3/4 inch pipe thread/hose connector. The engine shall be capable of supplying coolant having a temperature of at least 170 degrees Fahrenheit at the engine cooling thermostat opening temperature. The coolant flow rate shall be 50 pounds per minute at the return end of 30 feet of one inch inside diameter automotive hot water heater hose. (School Bus Manufacturer's Technical Council (SBMTC) G-001).~~

005.3027 Horn. The bus shall be equipped with a horn(s) of standard make. Each horn shall be capable of producing complex sounds in bands of audio frequencies between approximately 250 and 2,000 cycles per second and tested in accordance with Society of Automotive Engineers (SAE) J-377.

005.3128 Identification.

005.3128A Body shall bear words "SCHOOL BUS" in black letters at least 8 inches high on both front and rear of body or on signs attached thereto. Lettering shall be placed as high as possible without impairment of its visibility. Lettering shall conform to "Series B" of Standard Alphabets for Highway Signs of the Federal Highway Administration (See 23 CFR 655.601). "SCHOOL BUS" lettering shall have a reflective background or may be illuminated by backlighting. Activity buses may instead bear lettering identifying the school, school district, school mascot and/or school logos at these locations.

005.3128B Required lettering and numbering is:

005.3128B1 District, school, company name or owner of the bus displayed at the beltline.

005.3128B2 If the bus has a district or other identification number, it shall be displayed on the sides, on the rear, and on the front.

TITLE 92
CHAPTER 92

005.3128C Other lettering, numbering or symbols which may be displayed on the exterior of the bus shall be limited to:

005.3128C1 Bus identification number on the top of the bus (minimum 12-inch high characters), in addition to required numbering on the sides, rear and front.

005.3128C2 The location of the battery(ies) identified by the word "BATTERY" or "BATTERIES" on the battery compartment door in two-inch lettering;

005.3128C3 Symbols or letters not to exceed 64 square inches of total display within 36 inches of the service door, displaying information for identification by the pupils of the bus or route served.

005.3128C4 Manufacturer, dealer or school identification or mascots/logos;

005.3128C5 Symbols identifying the bus as equipped for or transporting pupils with special needs;

005.3128C6 Lettering on the rear of the bus relating to school bus flashing signal lamps ~~or~~ and railroad stop procedures

005.3128C7 Identification of fuel type in ~~two~~ one-inch lettering adjacent to the fuel filler opening.

005.329 Instruments and Instrument Panel.

005.329A Chassis shall be equipped with the instruments and gauges listed below (lights in lieu of gauges are not acceptable):

005.329A1 Speedometer.

005.329A2 Odometer which will give accrued mileage, (to seven digits) including tenths of miles.

005.329A3 Voltmeter: An ammeter with graduated charge and discharge indications, is permitted in lieu of voltmeter; however, when used, the ammeter wiring must be compatible with the current flow of the system. (Exempt from Type A Bus.)

005.329A4 Oil-pressure gauge.

005.329A5 Water-temperature indicator.

005.329A6 Fuel gauge.

TITLE 92
CHAPTER 92

005.329A7 ~~High Upper~~-beam headlamp indicator.

005.329A8 Brake Air Pressure Gauge (air brakes): Brake indicator lamp (vacuum/hydraulic brakes) or brake indicator lamp (hydraulic/hydraulic).

005.329A9 Turn signal Indicator.

005.329A10 Tachometer. For Types B, C and D buses, a tachometer shall be installed to be visible to the driver while seated in a normal driving position. (Exempt from Type A Buses.)

005.329A11 Glow-plug indicator light where appropriate.

005.329B All instruments shall be easily accessible for maintenance and repair.

005.329C The instruments and gauges shall be mounted on instrument panel in such manner that each is clearly visible to driver in normal seated driving position.

005.329D Instruments and controls must be illuminated as required by FMVSS No. 101, *Controls and Displays*.

005.329E Multi-Function Gauge (MFG).

005.329E1 The driver must be able to manually select any displayable function of the gauge on a MFG whenever desired.

005.329E2 Whenever an out-of-limits condition that would be displayed on one or more functions of a MFG occurs, the MFG controller shall automatically display this condition on the instrument cluster. This shall be in the form of an illuminated telltale warning lamp as well as having the MFG automatically display the out-of-limits indications. If two or more functions displayed on the MFG go out of limits simultaneously, then the MFG shall sequence automatically between those functions continuously until the condition(s) are corrected.

005.329E3 The use of a MFG does not relieve the need for audible warning devices, where required.

005.330 Insulation.

005.330A The school bus body shall be fully insulated in the roof and all body panels to deaden sound, reduce vibrations, and reduce the transfer of heat.

005.330B The school bus body side walls and ceilings shall be insulated with a fire resistant material of a type approved by Underwriters Laboratories Inc., and which has a thermal insulation R value of 5.5 at least equivalent to 1½ inch

TITLE 92
CHAPTER 92

thickness of fiber glass in addition to the usual sprayed-on material. All insulation shall be firmly installed so that it will retain its original position.

005.330C For floor insulation, see §subsection 005.142B of this Chapter.

005.341 Interior.

005.341A Interior of school bus body shall have steel or equivalent strength material, inner linings on ceilings and walls and be free of all unnecessary projections, which includes luggage racks and attendant hand rails, to minimize the potential for injury. This standard requires inner lining on ceilings and walls. If ceiling is constructed to contain lapped joints, forward panel shall be lapped by rear panel and exposed edges shall be beaded, hemmed, flanged, or otherwise treated to minimize sharp edges.

005.341B The driver's area forward of the foremost padded barriers will permit the mounting of required emergency equipment and vehicle operation equipment.

005.341C Every school bus shall be constructed so that the noise level taken at the ear of the occupant nearest to the primary vehicle noise source shall not exceed 85 dBA when tested according to the procedure found in Appendix E of this Chapter.

005.31D Interior overhead storage compartments may be provided if they meet the following criteria:

005.31D1 Head protection requirements of FMVSS No. 222, *School Bus Passenger Seating and Crash Protection*, where applicable.

005.31D2 Be completely enclosed and equipped with latching door (both door and latch sufficient to withstand a pushing force of 50 pounds applied at the inside center of the door).

005.31D3 All corners and edges are rounded with a minimum radius of one inch or be padded equivalent to door header padding.

005.31D4 Compartments are attached to the bus sufficiently to withstand a force equal to 20 times the maximum rated capacity of the compartment and do not have protrusions greater than ¼ inch.

005.352 Lamps and Signals.

005.352A Interior lamps shall be provided which adequately illuminate aisle and stepwell. Stepwell light shall be illuminated by a service door operated switch, to illuminate only when headlights and clearance lights are on and service door is open.

TITLE 92
CHAPTER 92

005.352B Body instrument panel lights shall be controlled by an independent rheostat switch or may be controlled by the rheostat that operates the gauge lighting.

005.352C School Bus Alternately Flashing Signal Lamps. (Activity buses are exempt.)

005.352C1 Bus shall be equipped with two (2) red lamps at the rear of vehicle and two (2) red lamps at the front of the vehicle.

005.352C2 In addition to the four red lamps described above, four (4) amber lamps shall be installed so that one (1) amber lamp is located ~~no further than three (3) inches from~~ near each red signal lamp, at same level, but closer to vertical centerline of bus. The system of red and amber signal lamps shall be wired so that automatically energized (with amber lamps being automatically de-energized) when stop signal arm is extended or when bus service door is opened. An amber pilot light and a red pilot light shall be installed adjacent to the driver controls for the flashing signal lamp to indicate to the driver which lamp system is activated.

005.352C3 Red lamps shall flash at any time the stop signal arm is extended.

005.352C4 All flashers for alternately flashing red and amber signal lamps shall be enclosed in the body in a readily accessible location.

005.352D Turn Signal and Stop/Tail Lamps.

005.352D1 Bus body shall be equipped with amber rear turn signal lamps that are at least seven (7) inches in diameter or if a shape other than round, a minimum 38 square inches of illuminated area and meet FMVSS No. 108, *Lamps, Reflective Devices, and Associated Equipment*. These signals must be connected to the chassis hazard warning switch to cause simultaneous flashing of turn signal lamps when needed as vehicular traffic hazard warning. Turn signal lamps are to be placed so that their centerline shall be a maximum of twelve (12) inches below the rear window. ~~Type A-1 conversion vehicle lamps must be at least 21 square inches in lens area and be in manufacturer's standard color.~~

005.352D2 Buses shall be equipped with amber side-mounted turn signal lights. The turn signal light on the left side shall be mounted rearward of the stop signal arm and the turn signal on the right side shall be mounted rearward of the service door.

005.352D3 Buses shall be equipped with four (4) combination red stop/tail lamps:

005.352D3a Two (2) combination lamps with a minimum diameter of seven (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 bus just inside the turn signals.

005.352D3b Two (2) combination lamps with a minimum diameter of four (4) inches, or if a shape other than round, a minimum 12 square inches of illuminated area shall be placed on the rear of the body between the beltline and the floor line. 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 steady light when illuminated. ~~(Type A-1 buses with bodies supplied by chassis manufacturer may be equipped with manufacturer's standard stop and tail lamps.)~~

005.352D3c On buses equipped with a monitor for the front and rear lamps of the school bus, the monitor shall be mounted in full view of the driver. If the full circuit current passes through the monitor, each circuit shall be protected by a fuse or circuit breaker, or an electronic protection device, against any short circuit or intermittent shorts.

005.352D3d The bus body shall be equipped with two (2) white rear backup lamps that are at least four (4) inches in diameter or, if a shape other than round, a minimum of 12 square inches of illuminated area and shall meet FMVSS No. 108, *Lamps, Reflective Devices and Associated Equipment*. If backup lamps are placed on the same horizontal line as the brake lamps and turn signal lamps, they shall be to the inside.

005.352E Clearance-Marker and Identification Lamps.

005.352E1 The body shall be equipped with two (2) red clearance lights at the rear and two (2) amber clearance lights at the front mounted as high as possible on permanent structure of bus in such a manner as to indicate extreme width of body.

005.352E2 All buses over 30 feet long shall be equipped with one (1) amber intermediate side marker light on each side located midway between the front and rear clearance lights.

005.352E3 The bus shall be equipped with three (3) amber identification lights on the front and three (3) red identification lights on the rear. Each individual light within such group or cluster shall be evenly spaced not less than six (6) inches nor more than 12 inches apart along a horizontal line near the top roof edge of the vehicle.

TITLE 92
CHAPTER 92

005.352F A white flashing strobe light shall be installed on the roof of a school or activity bus, not to exceed 1/3 the body length forward from the rear of the roof edge. The light shall have a single clear lens emitting light 360 degrees around its vertical axis. A manual switch and a pilot light shall be included to indicate when light is in operation.

005.352G Backup Lamps. Bus body shall be equipped with two (2) white rear backup lamp signals that are at least four (4) inches diameter or, if a shape other than round, a minimum of 13 square inches of illuminated area, meeting FMVSS 108, *Lamps, Reflective Devices, and Associated Equipment*. If backup lamps are placed on the same line as the brake lights and turn signals, they shall be to the inside.

005.352H Reflex Reflectors.

005.352H1 The bus shall be equipped with two (2) amber reflectors: One on each side of body located approximately at floor level and back of the door on the right side and at a similar forward position on the left side.

005.352H2 The bus shall be equipped with four (4) red reflectors: One (1) on each side as far to the rear as possible and two (2) on the rear as far apart as practicable.

005.352H3 All buses over 30 feet long shall be equipped with additional intermediate amber reflectors which shall be located at or near the midpoint between the front and rear side reflector.

005.352H4 The reflectors are to be mounted at a height of not less than 15 inches nor more than 60 inches above the ground on which the vehicle stands.

005.352I License Plate Lamp. Bus shall be equipped with rear license plate illuminator. This lamp may be combined with one (1) of tail lamps.

005.352J Daytime Running Lamps (DRL). A Daytime Running Lamps system shall be provided.

005.363 Metal Treatment.

005.363A All metal used in construction of bus body shall be zinc or aluminum coated or treated by equivalent process before bus is constructed. This includes, but is not limited to such items as structural members, inside and outside panels, floor panels, and floor sills. Excluded are such items as door handles, grab handles, stanchions, interior decorative parts, and other interior plated parts.

TITLE 92
CHAPTER 92

005.363B All metal parts that will be painted shall be (in addition to above requirements) chemically cleaned, etched, zinc-phosphate coated, and zinc-chromate or epoxy-primed or conditioned by equivalent process.

005.363C In providing for these requirements, particular attention shall be given to lapped surfaces, welded connections or 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.

005.374 Mirrors.

005.374A Interior mirror shall be either clear view laminated glass or clear view glass bonded to a backing which retains the glass in the event of breakage. Mirror shall have rounded corners and protected edges. All Type A buses shall have a minimum of a 6" x 16" mirror and Type B, C, and D buses shall have a minimum of a 6" x 30" mirror.

005.374B Each bus shall be equipped with a system of exterior mirrors meeting the requirements of FMVSS No.111, *Rearview Mirrors*. The right side rear view mirror shall not be obscured by the unwiped portion of the windshield.

005.374C This system of mirrors shall be easily adjustable, but be rigidly braced so as to reduce vibration.

005.374D Heated external mirrors may be used. Remote controlled external rear view mirrors may be used.

005.385 Mounting.

005.385A Chassis frame shall support the rear body cross member. Bus body shall be attached to chassis frame at each main floor sill, except where chassis components interfere, in such manner as to prevent shifting or separation of body from chassis under severe operating conditions.

005.385B Insulating material shall be installed at all contact points between the body and chassis frame on Type A-2, B, C and D buses, and shall be secured to chassis frame or body to prevent shifting, separation, or displacement of the isolators under severe operating conditions.

005.396 Oil Filter. An oil filter with a replaceable element shall be provided and connected by flexible oil lines if it is not a built-in or an engine-mounted design. Oil filter shall have a capacity in accordance with the engine manufacturer's recommendations.

005.4037 Openings. All openings in floorboard or firewall between chassis and passenger carrying compartment, such as for gearshift lever and auxiliary brake lever, shall be sealed.

TITLE 92
CHAPTER 92

005.4138 Passenger Load.

005.4138A ~~Average calculated Actual~~ Gross Vehicle Weight (GVW) is the sum of average chassis weight, plus ~~average body weight, plus 150 pounds for~~ driver's weight, plus total seated pupil weight (~~based on 120 pounds per pupil~~).

~~005.41B—Actual gross vehicle weight (GVW) is the sum of the chassis weight plus the body weight, plus the driver's weight, plus total seated pupil weight.~~

~~005.41B1—For the purposes of calculation, the driver's weight is 150 pounds and the pupil weight is 120 pounds per pupil.~~

005.4138BC Actual gross vehicle weight (GVW) shall not exceed the chassis manufacturer's gross vehicle weight rating (GVWR) for the chassis, nor shall the actual weight carried on any axle exceed the chassis manufacturer's Gross Axle Weight Rating (GAWR).

005.4239 Retarder System. Retarder system, if used, shall limit the speed of the fully loaded school bus at 19.0 mph on a 7% grade for 3.6 miles.

005.430 Rub Rails.

005.430A There shall be one (1) rub rail located on each side of the bus approximately at seat level or no more than eight (8) inches above the seat cushion level. They shall extend from rear side of the entrance door completely around bus body (except for emergency door or any maintenance access door) to a point of curvature near outside cowl on the left side.

005.430B There shall be one (1) additional rub rail located on each side at, or no more than ten (10) inches above the floor line. The rub rail shall cover the same longitudinal area as upper rub rail, except at the wheel housings, and shall extend only to ~~radii~~ the longitudinal tangent of right and left rear corners.

005.430C There shall be a rub rail or equivalent bracing located horizontally at the bottom of the side skirts.

005.430D Rub rails above the floor line shall be attached at each body post and all other upright structural members.

005.430E Rub rails shall be four (4) inches or more in width, shall be of 16 gauge steel, or equivalent strength material, and shall be constructed in corrugated or ribbed fashion.

005.430F Both rub rails shall be applied outside the body or outside the body posts. Pressed-in or snap-on rub rails do not satisfy this requirement.

005.430F1 For Type A-1 buses using the body provided by the chassis manufacturer or for Types A-2, B, C, and D buses using the rear luggage or the rear engine compartment, rub rails need not extend around the rear corners.

005.441 Seat Belts/Occupant Protection Systems.

005.441A A Type 2 lap belt/shoulder harness seat belt shall be provided for the driver and must meet FMVSS in effect on date of manufacture.

005.441A1 In addition, the assembly shall be equipped with an emergency locking retractor for the continuous belt system. On all buses except Type A equipped with standard chassis manufacturer's driver's seat, the lap portion of the belt shall be guided or anchored so as to prevent the driver from sliding sideways under it.

005.441A2 Each bus shall be equipped with a durable webbing cutter (belt cutter) having a full width handgrip and a protected, replaceable or non-corrodible blade. The belt cutter shall be mounted in a location accessible to the seated driver in an easily detachable manner.

005.441B Type A buses shall have seat belts/occupant protection systems for all passengers and shall comply with FMVSS in effect on date of manufacture. In Type A buses, children shall be required to use child passenger restraint systems or occupant protection systems as required by Section 60-6,267 R.R.S.

005.452 Seats and Restraining Barriers.

005.452A All seats shall have a minimum depth of 15 inches, a seat back height of 24 inches above the seating reference point, and must comply with all requirements of FMVSS No. 222, *School Bus Passenger Seating and Crash Protection*. School bus design capacities shall be in accordance with 49 CFR, Part 571.3 and FMVSS No. 222.

005.452A1 Each seat leg shall be secured to the floor by a minimum of two bolts, washers and nuts in order to meet the performance requirements of FMVSS No. 222. Flange-head nuts may be used in lieu of nuts and washers, or seats may be track-mounted in conformance with FMVSS No. 222, *School Bus Passenger Seating and Crash Protection*. If track seating is installed, the manufacturer shall supply minimum and maximum seat spacing dimensions applicable to the bus, which comply with FMVSS No. 222. This information shall be on a label permanently affixed to the bus.

005.452A2 All seat frames shall be fastened to the seat rail with a minimum of two (2) bolts, washers and nuts or flange-headed nuts in conformance with FMVSS No. 222.

TITLE 92
CHAPTER 92

005.452A3 No bus shall be equipped with jump seats, portable seats, or other auxiliary seating.

005.452A4 All restraining barriers, upholstered areas, driver and passenger seats, including seat bottom, shall be covered with a material that meets the criteria contained in the School Bus Seat Upholstery Fire Block Test. (See Appendix D of this Chapter.)

005.452A5 Seat belts/occupant protection systems installed by retrofits must be installed on seats that meet FMVSS No. 222.

005.452A6 All school buses (including Type A) shall be equipped with restraining barriers which conform to FMVSS No. 222.

005.452B The driver's seat supplied by the body company shall be a high back seat with a head restraint to accommodate a 95th percentile adult male, as defined in FMVSS No. 208, *Occupant Crash Protection*, and with a minimum seat back adjustable to 15 degrees. The driver's seat shall be secured with nuts, bolts, and washers or flanged-head nuts.

005.452B1 Type A buses may utilize the standard driver's seat provided by the chassis manufacturer.

005.452B2 A Type 2 lap belt/shoulder harness seat belt shall be provided for the driver. The assembly shall be equipped with an emergency locking retractor for the continuous belt system. On all buses except Type A equipped with a standard chassis manufacturer's driver's seat, the lap portion of the belt system shall be guided or anchored to prevent the driver from sliding sideways under it. The lap belt/shoulder harness seat belt shall be designed to allow for adjustment in order to fit and to protect drivers varying in size from 5th percentile adult female to 95th percentile adult male.

005.42B3 Pre-School Age Seating on School Buses. Passenger seats designed to accommodate a child or infant carrier seat shall comply with FMVSS No. 225, *Child Restraint Anchorage Systems*. These seats shall be in compliance with NHTSA's "Guideline for the Safe Transportation of Pre-school Age Children in School Buses."

005.463 Seat Barrier. The right hand seat barrier shall include a modesty panel from barrier to floor and comply with Federal Motor Vehicle Safety Standards in effect on date of manufacture.

005.474 Shock Absorbers. A bus shall be equipped with double-acting shock absorbers compatible with manufacturer's rated axle capacity at each wheel location.

TITLE 92
CHAPTER 92

005.485 Springs and Suspension Systems.

005.485A The capacity of springs or suspension assemblies shall be commensurate with the chassis manufacturer's GVWR.

005.485B Rear leaf springs shall be of a progressive rate or multi-stage design. Front Leaf springs shall have a stationary eye at one end and shall be protected by a wrapped leaf, in addition to the main leaf.

005.496 Steering Gear.

005.496A The steering gear shall be approved by the chassis manufacturer and designed to ensure safe and accurate performance when vehicle is operated with maximum load and at maximum speed.

005.496B If external adjustments are required, steering mechanism shall be accessible to make adjustments.

005.496C No changes shall be made in steering apparatus which are not approved by chassis manufacturer.

005.496D There shall be clearance of at least two (2) inches between steering wheel and cowl, instrument panel, windshield, or any other surface.

005.496E Power steering is required and shall be of the integral type with integral valves.

005.496F The steering system shall be designed to provide a means for lubrication of all wear-points which are not permanently lubricated.

005.5047 Steps.

005.5047A First step at service door shall be not less than 10 inches and not more than 14 inches from ground, based on standard chassis specifications. Type D buses shall have the first step at the service door 12 inches to 16 inches from the ground. On chassis modifications which may result in increased ground clearance (such as four-wheel drive) an auxiliary step may be provided to compensate for the increase in ground-to-first-step clearance. The auxiliary step is not required to be enclosed.

005.5047B Step risers shall not exceed a height of 10 inches, however, with plywood floor on steel, the differential may be increased by thickness of plywood used.

005.5047C Steps shall be enclosed to prevent accumulation of ice and snow.

005.5047D Steps shall not protrude beyond side body line.

TITLE 92
CHAPTER 92

005.5047E At least one (1) handrail shall be installed in accordance with subsection 005.25. ~~The handrail(s) shall assist passengers during entry or exit, and be of such design to prevent entanglement.~~

005.5047F All steps, including floor line platform area, shall be covered with 3/16 inch rubber floor covering or other material equal in wear and abrasion resistance to top grade rubber.

005.5047G The step covering shall be permanently bonded to a durable backing material that is resistant to corrosion.

005.5047H Steps, including the floor line platform area, shall have a 1 ½" nosing that contrasts in color by at least 70 percent measured in accordance with the contrasting color specifications in 36 CFR, Part 1192 Americans with Disabilities Act regulations (ADA), Accessibility Guidelines for Transportation Vehicles.

005.5047I Step treads shall have the following characteristics:

005.5047I1 Abrasion resistance: Step tread material weight loss shall not exceed .40 percent, as tested under ASTM D-4060, *Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser*.

005.5047I2 Weathering resistance: Step treads shall not break, crack, or check after ozone exposure (7 days at 40 phm at 40 degrees C) and weatherometer exposure (*ASTM D=750 Standard Test Method for Rubber Deterioration in Carbon-Arc Weathering Apparatus, 7 days*).

005.5047I3 Flame resistance: Step tread shall have a calculated burn rate of .01 or less using the test methods, procedures and formulas listed in FMVSS No. 302, *Flammability of Interior Materials*.

005.5148 Stirrup Steps. There may be one or more folding stirrup steps 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. Steps are permitted in or on the front bumper, in lieu of the stirrup steps, if the windshield and lamps are easily accessible for cleaning from that position.

005.5249 Stop Signal Arm. The stop signal arm(s) shall comply with the requirements of FMVSS No. 131, *School Bus Pedestrian Safety Devices*. (Activity buses are exempt.)

005.530 Storage Compartment. A storage container for tools, tire chains, and/or tow chains may be located either inside or outside the passenger compartment. If inside, it shall have a cover capable of being securely latched and fastened to the floor. (The seat cushion may not serve this purpose.)

TITLE 92
CHAPTER 92

005.541 Sun Shield.

005.541A On Type B, C and D buses, an interior transparent, adjustable, sun shield shall be installed that is not less than 6 inches wide and 30 inches long with a finished edge.

005.541B On Type A buses, the sun shield shall be installed according to the manufacturer's standard.

005.552 Throttle. The force required to operate the throttle shall not exceed 16 pounds throughout the full range of accelerator pedal travel.

005.563 Tires and Rims.

005.563A Tires and rims of the proper size and tires with a load rating commensurate with chassis manufacturer's gross vehicle weight rating shall be provided. The use of multipiece rims and/or tube-type tires shall not be permitted on any school bus ordered after December 31, 1995 .

005.563B Dual rear tires shall be provided on Type A-2, Type B, Type C and Type D school buses.

005.563C All tires on a bus shall be of the same size. The load range of the tires shall meet or exceed the GVWR, as required by FMVSS No. 120, *Tire Selection and Rims for Motor Vehicles Other than Passenger Cars with a GVWR of More Than 10,000 Pounds.*

005.563D If the bus is equipped with a spare tire and rim assembly, it shall be of the same size as those mounted on the bus.

005.563E Chains or snow tires shall be supplied if required by local regulation or warranted by circumstances.

~~005.56F Recapped tires are permissible as replacements on equipment now in operation for use on rear wheels only.~~

~~005.56G Front tires with a tread depth of less than 4/32 inches and rear tires with a tread depth of less than 2/32 inches shall be removed from normal operating conditions.~~

005.56H3F If a tire carrier is utilized, it shall be mounted in an accessible location outside of the passenger compartment.

005.574 Tow Hooks. Tow eyes, hooks or other devices shall be furnished on the rear and attached so they do not project beyond the rear bumper. Tow eyes or hooks for attachment to the rear of the chassis frame shall be furnished by either the chassis or body manufacturer. The installation shall be in accordance with the chassis manufacturer's specifications. (Type A buses are exempt.)

TITLE 92
CHAPTER 92

005.585 Traction Assisting Devices.

005.585A Where required or used, sanders shall:

005.585A1 be of hopper cartridge - valve type,

005.585A2 have metal hopper with all interior surfaces treated to prevent condensation of moisture,

005.585A3 be of at least 100 pound (grit) capacity,

005.585A4 have cover on filler opening of hopper, which screws into place, sealing unit airtight,

005.585A5 have discharge tubes extending to front of each rear wheel under fender,

005.585A6 have non-clogging discharge tubes with slush-proof, nonfreezing rubber nozzles,

005.585A7 be operated by electric switch with telltale pilot light mounted on instrument panel so as to be exclusively controlled by the driver,

005.585A8 be exclusively driver controlled,

005.585A9 have a gauge to indicate that the hopper needs refilling when it is down to one-quarter full.

005.585B Automatic traction chains may be installed.

005.596 Transmission.

005.596A Automatic transmissions shall have no fewer than three (3) forward speeds and one (1) reverse speed. Mechanical shift selectors shall provide a detent between each gear position when the gear selector quadrant and shift selector are not steering-column mounted.

005.596B In manual transmissions, second gear and higher shall be synchronized, except when incompatible with engine power. A minimum of three (3) forward speeds and one (1) reverse speed shall be provided.

005.596C A transmission shifter interlock, controlled by application of the service brake, shall be installed to prohibit accidental engagement of the automatic transmission.

TITLE 92
CHAPTER 92

005.6057 Trash Container. When used, the trash container shall be secured by a holding device. It shall be installed in an accessible location in the driver's compartment, not obstructing passenger use of the service door.

005.6158 Turning Radius.

005.6158A Chassis with a wheel base of 264 inches or less shall have a right and left turn radius of not more than 42½ feet, curb to curb measurement.

005.6158B Chassis with a wheelbase of 265 inches or more shall have a right and left turning radius of not more than 44½ feet, curb to curb measurement.

005.6259 Undercoating. The chassis manufacturer or their agent shall coat the undersides of ~~steel or metallic-constructed front fenders with a rust-proofing compound for which compound manufacturers have issued notarized certification of compliance to chassis builder that the compound meets or exceeds all performance and qualitative requirements of paragraph 3.4 of Federal Specification TT-C-520B, using modified tests. the bus from the firewall to the back of the bus. Any undercoating compound must meet or exceed all performance and qualitative requirements of SAE J1959, Sept. 2003 Edition of the Standard.~~

~~005.62A Entire underside of bus body, including floor sections, cross member and below floor line side panels, shall be coated with rust proofing compound for which material manufacturer has issued notarized certification of compliance to the bus body builder that compound meets or exceeds all performance and qualitative requirements of paragraph 3.4 of Federal Specification TT-C-520b 1963 using modified test procedures for following requirements:~~

~~005.62A1 Salt spray resistance pass test modified to 5% salt and 1000 hours.~~

~~005.62A2 Abrasion resistance pass.~~

~~005.62A3 Fire resistance pass.~~

~~005.62B Test panels are to be prepared in accordance with paragraph 4.6.12 of Federal Specification TT-C-520b with modified procedure requiring that tests be made on a 48-hour air cured film at thickness recommended by material manufacturer.~~

005.6259CA Undercoating material shall be applied with suitable airless or conventional spray equipment to recommended film thickness and shall show no evidence of voids in cured film.

005.6259DB The undercoating material shall not cover any exhaust components of the chassis.

TITLE 92
CHAPTER 92

005.630 Ventilation.

005.630A Body shall be equipped with suitable, controlled ventilating system of sufficient capacity to maintain proper quantity of air flow under operating conditions without opening of windows except in extremely warm weather.

005.630B Static-type non-closable exhaust roof ventilator shall be installed in low-pressure area of roof.

005.630C Roof hatches designed to provide ventilation in all types of weather conditions may be provided.

005.630D Auxiliary fans shall meet the following requirements:

005.630D1 Fans for the left and right sides shall be placed in a location where they can be adjusted to maximum effectiveness.

005.630D2 Fans shall be in a location where they do not obstruct vision to any mirror. Type A buses may be equipped with one fan.

005.630D3 These fans shall be a nominal six-inch diameter.

005.630D4 Fan blades shall be covered with a protective cage. Each fan shall be controlled by a separate switch.

005.641 Wheel Housings.

005.641A Wheel house openings shall allow for tire removal and service.

005.641B Wheel housings shall be attached to floor sheets in such manner as to prevent any dust, fumes or water from entering the body. Wheel housings shall be constructed of at least 16-gauge steel.

005.641C Inside height of wheel housings above floor line shall not exceed 12 inches.

005.641D Wheel housings shall provide clearance for installation and use of tire chains on single and dual (if so equipped) power-driving wheels.

005.641E No part of a raised wheel housing shall extend into the emergency door opening.

005.652 Windows. Each full side window, other than emergency exits designated to comply with FMVSS No. 217, *Bus Emergency Exits and Window Retention and Release*, shall provide an unobstructed opening at least 9 inches high but not more than 13 inches high and at least 22 inches wide, obtained by lowering of the window. One side window on each side of the bus may be less than 22 inches wide. Windshields shall comply with federal, state, and local laws and regulations.

TITLE 92
CHAPTER 92

005.663 Windshield Washers. A windshield washer system which conforms to FMVSS Standard 104, *Windshield Wiping and Washing Systems*, shall be provided.

005.674 Windshield Wipers. A two-speed or variable speed windshield wiping system, with an intermittent feature, which meet the requirements of FMVSS No. 104, *Windshield Wiping and Washing Systems*, shall be provided and shall be operated by a single switch.

006 Small Vehicle (General) Minimum Equipment Standards.

006.01 Construction.

006.01A The small vehicle shall be of closed integral body type.

006.01B The small vehicle shall have a wheel base of 100 inches or more.

006.01C Body shall be all steel or of a metal at least equivalent in strength to steel.

006.01D Body interior such as headliner, interior door, and side panels shall be lined with a protective material.

006.02 Equipment. The small vehicle shall be equipped with:

006.02A Four-wheel brakes properly adjusted to efficiently stop vehicle when fully loaded.

006.02B Park brake adequate to hold vehicle when stopped on incline.

006.02C Two windshield wipers.

006.02D Rearview mirrors - one inside and one outside on left side, one outside on right.

006.02E Two tail lights.

006.02F Two stop lights.

006.02G Multiple beam halogen headlights (including indicator light).

006.02H Switch to raise or lower headlight beam.

006.02I Directional signals - front and rear (including indicator lights).

006.02J Adequate horn.

006.02K Interior adjustable sun shield.

TITLE 92
CHAPTER 92

006.02L Adequate heater and defroster.

006.02M Laminated safety glass in the windshield and tempered safety glass in other windows is permissible.

006.02N Seat belts/occupant protection systems for the driver and all passengers. Child passenger restraint systems shall be provided for passengers as required by Sections 60-6,266 and 60-6,267 R.R.S.

006.02O Two way electronic voice communication system which can be used at any point on the vehicle's route. This may be after market provided.

006.03 Safety Equipment.

006.03A The small vehicle shall be equipped with one (1) dry chemical type fire extinguisher with a minimum capacity of 2 ½ pounds (approved by Underwriters Laboratories, Inc.) with at least a total rating of 2A10-B:C.

006.03B The small vehicle shall be equipped with one first aid kit. (See Appendix B.)

006.03C The small vehicle shall have a removable and moisture proof body fluid clean-up kit. It shall be identified as a body fluid clean-up kit. (See Appendix C.)

006.03D The small vehicle shall carry three (3) red and orange emergency reflective triangles, in compliance with Federal Motor Vehicle Safety Standards (FMVSS) No. 125, *Warning Devices*.

006.03E Small vehicles, when used to transport handicapped children, must be equipped with support or restraining devices that meet the requirements of Federal Motor Vehicle Safety Standards (FMVSS) in effect on date of manufacture.

007 Additional Required Equipment For Vehicles Used With Mobile Seating Devices.

007.01 General Requirements. Pupil transportation vehicles designed for transporting children with special transportation needs shall comply with ~~2010~~ National School Transportation Specifications & Procedures and with Federal Motor Vehicle Safety Standards (FMVSS) applicable to their Gross Vehicle Weight Rating (GVWR) category. In addition, any pupil transportation vehicle to be used for the transportation of children who are confined to a wheelchair or other mobile positioning device, or who require life support equipment which prohibits use of the regular service entrance, shall be equipped with a power lift, unless a ramp is needed for unusual circumstances related to passenger needs.

TITLE 92
CHAPTER 92

007.02 Emergency Exit. All school and activity buses equipped with a power lift shall provide a 30-inch aisle leading from any wheelchair/mobility aid position to at least one emergency door. A wheelchair securement position shall never be located directly in front of a power lift door location. When provided, the lift service door is considered an emergency exit.

007.03 Communications. All pupil transportation vehicles which are used to transport individuals with disabilities shall be equipped with a two way electronic voice communication system which can be used at any point in the vehicles' route. This system may be after market provided.

007.04 Glazing. Tinted glazing may be installed in all doors, windows, and windshields consistent with federal, state, and local regulations.

007.05 Identification. Vehicles with power lifts used for transporting individuals with disabilities shall display the International Symbol of Accessibility below the window line. Such emblems shall be white on blue background, shall not exceed 12 inches in size, and shall be of a high-intensity reflectorized material meeting Federal Highway Administration (FHWA) FP-85 Standards.

007.06 Passenger Capacity Rating. In determining the passenger capacity of a school transportation vehicle for purposes other than actual passenger load (i.e., vehicle classification, or various billing/reimbursement models), any location in a vehicle intended for securement of an occupied wheelchair/mobility aid during vehicle operations may be regarded as four designated seating positions. Similarly, each lift area may be regarded as four designated seating positions. (Small vehicles are exempt.) (See Appendix J for Wheelchair or Mobility and Envelope diagram.)

007.07 Power Lifts and Ramps. On all vehicles other than small vehicles, power lift shall be located on the right side of the vehicle body when not extended. The lift may be located on the left side of the bus if used to deliver individuals to the left side of one way streets.

007.07A All vehicles covered by this specification shall provide a level-change mechanism or boarding device (e.g., lift or ramp) ~~complying with paragraphs 8.07E through 8.07U of this Section and sufficient clearances to permit a wheelchair or other mobility aid user to reach a securement location, which comply with the requirements set forth in FMVSS 403, Platform Lift Systems for Motor Vehicles, and FMVSS 404, Platform Lift Installations in Motor Vehicles.~~

007.07B Vehicle Lift. The design load of the lift shall be at least 800 pounds. Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware which would not be expected to wear, shall have a safety factor of at least three, based on the ultimate strength of the material.

TITLE 92
CHAPTER 92

007.07C Lift Capacity. The lifting mechanism and platform shall be able to operate effectively with a wheelchair and occupant mass of at least 800 pounds.

007.07D Lift Controls. (See 49 CFR 571.402, S6.7, *Control Systems*)

007.07E Emergency Operation. (See 49 CFR 571.403, S6.9, *Backup Operation*)

007.07F Power or Equipment Failure. (See 49 CFR 571.403, S6.2.2 *Maximum Platform Velocity*).

007.07G Platform Barriers.(See 49 CFR 571.403, S6.4.7, *Wheelchair Retention*).

007.07H Platform Surface. (See 49 CFR 571.403,, S6.4.2, S6.4.3, *Platform Requirements*).

007.07I Platform Gaps. (See 49 CFR 571.403, S6.4.4, *Gaps, Transitions and Openings*).

007.07J Platform Deflection. (See 49 CFR 571.403, S6.4.5, *Platform Deflection*).

007.07K Platform Movement. (See 49 CFR 571.403,S6.4.5 *Maximum Platform Acceleration*).

007.07L Boarding Direction. The lift shall permit both inboard and outboard facing of wheelchair and mobility aid users.

007.07M Use by Standees. Lifts shall **be capable of accommodating** persons using walkers, crutches, cane or braces, or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

007.07N Handrails. (See 49 CFR 571.403, S6.4.9, *Handrails*).

007.07O Circuit Breaker. A resetable circuit breaker shall be installed between power source and lift motor if electrical power is used. It shall be located as close to the power source as possible, but not within the passenger/driver compartment.

007.07P Excessive Pressure. (See 49 CFR 571.403, S6.8, *Jacking Prevention*).

007.07Q Documentation. The following information shall be provided with each vehicle equipped with a lift.

007.07Q1 A phone number where information can be obtained about installation, repair, and parts. (Detailed written instructions and a parts list shall be available upon request.)

007.07Q2 Detailed instructions regarding use of the lift are readily visible when the lift door is open, including a diagram showing the proper placement and positioning of wheelchair/mobility aids on lift.

007.07R Training Materials. The lift manufacturer shall make available training materials to ensure the proper use and maintenance of the lift. These may include instructional videos, classroom curriculum, system test results, or other related materials.

007.07S Identification and Certification. Each lift shall be permanently and legibly marked or incorporate a non-removable label or tag which states that it conforms to all applicable requirements of the ~~2010~~ National School Transportation Specifications & Procedures. In addition, the lift manufacturer, or an authorized representative, upon request of the original titled purchaser, shall provide a notarized Certificate of Conformance, either original or photo copied, which states that the lift system meets all the applicable requirements of the ~~2010~~ National School Transportation Specifications & Procedures.

007.07T Vehicle Ramp.

007.07T1 If a ramp is used, it shall be of sufficient strength and rigidity to support the special device, occupant, and attendant(s). It shall be equipped with a protective flange on each longitudinal side to keep special device on the ramp.

007.07T2 Floor of ramp shall be of non-skid material.

007.07T3 Ramp shall be equipped with handles and be of weight and design to permit one (1) person to put ramp in place and return it to its storage place.

007.07T4 Ramps installed in raised floor buses by manufacturers may be used for emergency evacuation purposes. They shall not be used as a substitute for a lift when a lift is capable of servicing the need.

007.08 Regular Service Entrance.

007.08A On power-lift equipped vehicles, step shall be the full width of the step well, excluding the thickness of doors in open position.

007.08B A device shall be provided to assist passengers during entry or exit. This device shall allow for easy grasping or holding and shall have no openings or pinch points which might entangle clothing, accessories or limbs.

007.08C An additional handrail may be provided on all specially equipped school buses. This handrail shall be located on the opposite side of the entrance door from the handrail required in subsection 005.25 of this Chapter and shall meet the same requirements for handrails.

007.09 Restraining Devices.

007.09A On power-lift equipped vehicles with a GVWR of 10,000 pounds or more, seat frames may be equipped with attachments or devices to which belts, restraining harnesses or other devices may be attached. Attachment framework or anchorage devices, if installed, shall conform to FMVSS No. 210, *Seat Belt Assembly Anchorages*. Any belt assembly anchorage shall comply with FMVSS No 210, Seat Belt Assembly Anchorages.

008.09B Seat belt assemblies, if installed, shall conform to FMVSS No. 209, *Seat Belt Assemblies*.

007.09C Child restraint systems, which are used to facilitate the transportation of children who in other modes of transportation would be required to use a child, infant, or booster seat, shall conform to FMVSS No. 213, *Child Restraint Systems*.

007.10 Seating Arrangements. Flexibility in seat spacing to accommodate special devices shall be permitted to meet passenger requirements. All seating shall meet the requirements of FMVSS No. 222, School Bus Passenger Seating and Crash Protection.

007.11 Securement and Restraint System for Wheelchair/Mobility Aid and Occupant. For purposes of better understanding the various aspects and components of this section, the term “securement and tiedown” and the phrases “securement system” or “tiedown system” are used exclusively in reference to the device(s) which anchor the wheelchair to the vehicle. The term “restraint” or the phrase “restraint system” are used exclusively in reference to the equipment that is intended to limit the movement of the wheelchair occupant in a crash or sudden maneuver. The term “wheelchair tiedown” and “occupant restraint system” (WTORS) is used to refer to the total system that secures the wheelchair and restrains the wheelchair occupant.

007.11A Wheelchair Tiedown and Occupant Restraint System (WTORS) general requirements:

007.11A1 A wheelchair and occupant restraint system installed in specially equipped school buses shall be designed, installed, and operated for use with forward-facing wheelchair-seated passengers and shall comply with applicable requirements of FMVSS 222, *School Bus Passenger Seating and Crash Protection*, and SAE J2249, *Wheelchair Tie down and Occupant Restraint Systems for Use in Motor Vehicles.*

007.11A2 The WTORS, including the anchorage track, floor plates, pockets or other anchorages, shall be provided by the same manufacturer or shall be certified to be compatible by manufacturers of all equipment/systems used.

TITLE 92
CHAPTER 92

007.11A3 Wheelchair securement positions shall be located such that wheelchairs and their occupants do not block access to the lift door.

007.11A4 A device for storage of the WTORS shall be provided. When the system is not in use, the storage device shall allow for clean storage of the system, shall keep the system securely contained within the passenger compartment, shall provide reasonable protection from vandalism, and shall enable the system to be readily accessed for use.

007.11A5 The WTORS, including the storage device, shall meet the flammability standards established in FMVSS No. 302, *Flammability of Interior Materials*.

007.11A6 The following information shall be provided with each vehicle equipped with a securement and restraint system:

007.11A6a A phone number where information can be obtained about installation, repair and parts.

007.11A6b Detailed instructions regarding use, including a diagram showing the proper placement of the wheelchair/mobility aids and positioning of securement devices and occupant restraints, including correct belt angles.

007.11A7 Wheelchair Securement/Tiedown (See 49 CFR 571.403, S5.4.3, S5.4.4). Each wheelchair position in a specially equipped school bus shall have a minimum clear floor area of 30 inches laterally by 48 inches longitudinally. Additional floor area may be required for some wheelchairs. Consultation between the user and the manufacturer is recommended to ensure that adequate area is provided.

007.11A8 Occupant restraint system (See 49 CFR 571.403, S5.4.3, S5.4.4). If the upper torso belt anchorage is higher than 44 inches measured from the vehicle floor, an adjustment device, as part of the occupant restraint system, shall be supplied.

007.12 Special Light. Doorways in which lifts are installed, shall have, when lift is to be used, at least 2 foot-candles of illumination measured on the floor of the vehicle immediately adjacent to the lift, and on the lift, when deployed at the vehicle floor level.

007.13 Special Service Entrance.

007.13A Power lift equipped bodies shall have a special service entrance to accommodate the power lift.

TITLE 92
CHAPTER 92

Exception: If the lift is designed to operate within the regular service entrance, and is capable of stowing such that the regular service entrance is not blocked in any way, and that persons entering or exiting the vehicle are not impeded in any way, a special service entrance shall not be required.

007.13B The special service entrance and door shall be located on the right side of the vehicle and shall be designed so as not to obstruct the regular service entrance. (Small vehicles are exempt.)

Exception: A special service entrance and door may be located on the left side of the vehicle only if the vehicle is primarily used to deliver children to the left side of one way streets and its use is limited to that function.

007.13C The opening may extend below the door through the bottom of the body skirt. If such an opening is used, reinforcements shall be installed at the front and rear of the floor opening to support the floor and give the same strength as other floor openings.

007.13D A drip molding shall be installed above the opening to effectively direct water from entrance.

007.13E Door posts and headers from entrance shall be reinforced sufficiently to provide support and strength equivalent to the areas of the side of the bus not used for special service entrance.

007.14 Special Service Entrance Doors.

007.14A A single door or double doors may be used for the special service entrance.

007.14B A single door shall be hinged to the forward side of the entrance unless doing so would obstruct the regular service entrance. If, due to the above condition, the door is hinged to the rearward side of the doorway, the door shall utilize a safety mechanism which will prevent the door from swinging open should the primary door latch fail. If double doors are used, the system shall be designed to prevent the door(s) from being blown open by aerodynamic forces created by the forward motion of the bus, and/or shall incorporate a safety mechanism to provide secondary protection should the primary latching mechanism(s) fail.

007.14C All doors shall have positive fastening devices to hold doors in the open position.

007.14D All doors shall be weather sealed.

TITLE 92
CHAPTER 92

007.14E When manually-operated dual doors are provided, the rear door shall have at least a one-point fastening device to the header. The forward-mounted door shall have at least three one-point fastening devices. One shall be to the header, one to the floor line of the body, and the other shall be into the rear door. The door and hinge mechanism shall be of a strength that is greater than or equivalent to the strength of the emergency exit door.

007.14F Door materials, panels and structural strength shall be equivalent to the conventional service and emergency doors. Color, rub rail extensions, lettering and other exterior features shall match adjacent sections of the body.

007.14G Each door shall have windows set in a waterproof manner that is visually similar in size and location to adjacent non-door windows. Glazing shall be of same type and tinting (if applicable) as standard fixed glass in other body locations.

007.14H Door(s) shall be equipped with a device that will actuate an audible or flashing signal located in the driver's compartment when door(s) is/are not securely closed and ignition is in "on" position.

007.14I A switch shall be installed so that the lifting mechanism will not operate when the lift platform door(s) is/are closed.

007.14J Special service entrance doors shall be equipped with padding at the top edge of the door opening. Pad shall be at least three inches wide and one inch thick and extend the full width of the door opening.

007.15 Support Equipment and Accessories.

007.15A Each specially equipped vehicle which is set up to accommodate wheelchair/mobility aids or other assistive or restraint devices which utilize belts, shall contain at least one (1) belt cutter properly secured in a location within reach of the driver while belted into his/her driver's seat. The belt cutter shall ~~be designed to eliminate the possibility of the operator or others being cut during use.~~ meet the requirements of subsection 005.41A2 of this Chapter.

007.15B Special equipment or supplies which are used on the bus for mobility assistance, health support, or safety purposes shall meet any local, federal, or engineering standards which may apply, including requirements for proper identification. Equipment which may be used for these purposes includes, but is not limited to:

007.15B1 Wheelchairs and other mobile seating devices.

007.15B2 Crutches, walkers, canes, and other ambulating devices.

TITLE 92
CHAPTER 92

007.15B3 Medical Support Equipment. This may include respiratory devices such as oxygen bottles (which should be no larger than 22 cubic feet for liquid oxygen and 38 cubic feet for compressed gas), or ventilators. Tanks and valves should be located and positioned to protect them from direct sunlight, bus heater vents, or other heat sources. Other equipment may include intravenous, and fluid drainage apparatus.

007.15C All portable equipment and special accessory items including equipment in subsection 007.15B, shall be secured at the mounting location to withstand a pulling force of five times the weight of the item, or shall be retained in an enclosed, latched compartment. The compartment shall be capable of withstanding forces applied to its interior equal to five times the weight of its contents without failure to the box's integrity and securement to the bus. Exception: If these standards provide specific requirements for securement of a particular type of equipment, the specific standard shall prevail (i.e., wheelchairs).

008 Safety Inspection Process for Pupil Transportation Vehicles.

008.01 Schools shall inspect and assure that pupil transportation vehicles meet the minimum allowable safety criteria pursuant to Section 79-602 R.R.S.

008.01A All pupil transportation vehicles used for the transportation of pupils shall be inspected before school opens in the fall and each eighty days during the time period school is in session. Any item not meeting such criteria shall be brought into compliance prior to the vehicle being used to transport pupils.

008.01A1 Inspections shall be conducted by a motor vehicle mechanic appointed by the school board or governing authority.

008.01A2 A mechanic's inspection report for each vehicle shall be on file with the school. (See Appendix ~~L~~)

008.01A3 The chief administrative officer of each school district shall annually certify to the Department of Education that inspections pursuant to ~~s~~Section 79-602 R.R.S. have been performed.

009 Minimum Safety Inspection Criteria for School and Activity Buses.

009.01 ~~These criteria are t~~The minimum inspection standards for school buses are detailed in Appendix H. These criteria are not intended to replace, modify, or alter the vehicle manufacturer's recommended preventative maintenance schedule. These inspections are to be performed as required by Section 79-602 R.R.S. (See Section 008.01).

~~009.01A Brake System.~~

~~009.01A1—Adjustment. All brake adjustments shall not be beyond the adjustment limit as indicated in the Brake Adjustment Table (See Appendix I.)~~

~~009.01A2—Air System. Brakes shall recover air pressure as recommended by bus manufacturer and shall maintain pressure in the following situations:~~

~~009.01A2a—The leakage rate (brakes released) exceeds 2psi/minute.~~

~~009.01A2b—The leakage rate (brakes applied) exceeds 3 psi/minute.~~

~~009.01A3—Hydraulic Brake System.~~

~~009.01A3a—The master cylinder reservoir shall not be below the minimum level and there shall be no leaks of fluid in the master cylinder unit or system.~~

~~009.01A3b—The pedal reserve shall maintain original equipment manufacturer designed height and travel requirements.~~

~~009.01A3c—The power assist unit shall function as designed by the original equipment manufacturer.~~

~~009.01A4—Brake Components. (Air and Hydraulic).~~

~~009.01A4a—Brake Hoses/Tubing.~~

~~009.01A4a1—There shall be no brake hose with any damage extending through the outer reinforcement ply.~~

~~009.01A4a2—There shall be no bulge or swelling when brakes are applied.~~

~~009.01A4a3—There shall be no restriction due to cracked, broken or crimped line/hose.~~

~~009.01A4a4—All line, tubing, hose, or connection shall be constructed to meet all applicable manufacturing codes and standards as recommended by original equipment manufacturer.~~

~~009.01A5 Brake Lining.~~

~~009.01A5a There shall be no lining/pad worn beyond the recommended replacement measurement or no wear marks.~~

~~009.01A5b The lining pad shall not be broken; shall be firmly attached to shoe or plate; shall not be contaminated with oil or grease.~~

~~009.01A5c The brake lining shall make contact with drum and shall not be frozen, binding, or uneven.~~

~~009.01A6 The parking brake shall be present and working as designed by the original equipment manufacturer.~~

~~009.01A7 Brake drum/rotor shall not be cracked, improperly mounted or worn beyond manufacturer's discard specifications. Short hairline heat check cracks should not be confused with flexural cracks.~~

~~009.01B Steering System.~~

~~009.01B1 There shall be no modification or other condition that interferes with the free movement of any steering component. (See Appendix J)~~

~~009.01B2 All U-bolt(s) or positioning parts shall be properly tightened and in place.~~

~~009.01B3 There shall be no worn or faulty, or repair-welded universal joint(s).~~

~~009.01B4 The steering wheel shall be properly secured.~~

~~009.01B5 The front axle beam shall have no crack(s) or obvious welded repair.~~

~~009.01B6 Steering Gear Box.~~

~~009.01B6a There shall be no loose or missing mounting bolt(s).~~

~~009.01B6b There shall be no crack(s) in the gear box or in the mounting brackets.~~

~~009.01B6c There shall be no obvious welded repair of the steering gear box.~~

~~009.01B7 Pitman Arm. There shall be no obvious welded repair or looseness of the Pitman Arm on the steering gear output shaft.~~

~~009.01B8 Power Steering.~~ The auxiliary power assist cylinder must be properly secured. The power steering pump must be in proper operating condition.

~~009.01B9 Ball and Socket Joints.~~

~~009.01B9a~~ There shall be no movement under steering load of a nut stud.

~~009.01B9b~~ There shall be no motion, other than rotational, between any linkage member and its attachment point of more than 1/8 inch measured with hand pressure only.

~~009.01B9c~~ There shall be no obvious welded repair.

~~009.01B10 Rods and Drags Links.~~ There shall be no looseness in any threaded joint or loose clamp(s) or clamp bolts(s) on tie rod or drag links.

~~009.01B11 Nuts.~~ There shall be no loose or missing fasteners on tie rod, Pitman Arm, drag link, steering arm or tie rod arm.

~~009.01B12 Hoses and Fluids.~~ All fluid control devices shall be in operational condition. There shall be no leaks and reservoir shall not be empty.

~~009.01C Suspension Components.~~

~~009.01C1 Axle Parts/Members.~~

~~009.01C1a~~ All U-bolts or other spring to axle clamp bolt(s) shall have no cracks or be broken, loose or missing.

~~009.01C1b~~ There shall be no spring hanger(s), or other axle positioning parts which are cracked, broken, loose, or missing that results in shifting of an axle from its normal position.

~~009.01C1c~~ There shall be no worn or improperly assembled U bolt, shock, king pin, ball joint, strut, air bag and positioning component which is beyond the original equipment manufacturer's specifications.

~~009.01C1d~~ There shall be no broken or missing spring hangers or assembly part or leaf.

~~009.01C1e~~ Coil springs shall be intact.

~~009.01D Bus Chassis/Frame/Unibody.~~

~~009.01D1 Frame.~~

~~009.01D1a The frame side rail shall not be cracked, loose, sagging or broken.~~

~~009.01D1b There shall be no bending or no evidence of damage to the frame resulting from a collision.~~

~~009.01D1c There shall be no worn or loose mounting hole(s) in the frame.~~

~~009.01D2 Cross Members. No cross members, outrigger or other structural support shall be cracked, missing, deformed or have rust holes.~~

~~009.01D3 Outriggers/Body Support. There shall be no missing, broken, shifted, or corroded part of the frame that would affect the safe operation of the bus.~~

~~009.01D4 Bumpers. All bumpers shall be securely attached.~~

~~009.01E Exhaust System. There shall be no part of the exhaust system that is leaking or discharging fumes under the passenger or engine compartment.~~

~~009.01E1 Fuel Container/Connection.~~

~~009.01E1a Fuel tank(s) and any part of the fuel system shall be securely attached to the vehicle according to original equipment manufacturer specifications.~~

~~009.01E1b There shall be no fuel leak in the system at any point.~~

~~009.01F Drive Shaft. The drive shaft guard shall be securely attached and not bent.~~

~~009.01G Differential. There shall be no cracks in the housing.~~

~~009.01H Universal Joint(s). There shall be no worn or faulty, or obviously repair-welded universal joints(s).~~

~~009.01I Engine.~~

~~009.01I1 Engine Components. All critical components shall function as designed by the original equipment manufacturer's specifications.~~

~~009.01I2 Leaks in Engine. There shall be no fluid leaks that would affect the safe operation of the engine.~~

TITLE 92
CHAPTER 92

~~009.01J Tires, Wheels, and Hubs. Tires, wheels, and hubs shall be of proper type as recommended by the original equipment manufacturer specifications. All shall be of proper load range, size and not be mismatched.~~

~~009.01J1 Tire Tread Depth. Any rear tire worn to less than 2/32 inch shall be replaced. On the front tire, 4/32 inch shall be the limit.~~

~~009.01J2 Tire Sidewall.~~

~~009.01J2a A tire shall be replaced if any sidewall is cut, worn, or damaged so that the plycord is exposed.~~

~~009.01J2b A tire shall be replaced if a bump, bulge or knot is observed or if there is tread separation.~~

~~009.01J2c Tire inflation. No tire shall be flat or have a noticeable leak.~~

~~009.01J3 Wheels/Rim/Spiders.~~

~~009.01J3a No nuts, bolts, studs, lugs shall be missing, damaged, or loose.~~

~~009.01J3b Wheel/rims shall not be cracked, improperly seated, damaged, or welded.~~

~~009.01J3c Hub. King pin play shall not exceed 1/4 inch or excessive wheel bearing.~~

~~009.01K Aisle. The aisle shall have adequate clearance between seats. There shall be no objects blocking the aisle or any exit.~~

~~009.01L Electrical System. The electrical system shall function properly. There shall be no wires or electrical component that is charred or shows evidence of being burnt or exposed.~~

~~009.01L1 Battery. The battery shall be secured into the proper position according to the original equipment manufacturer. Battery cables shall not be broken and/or terminals corroded. The battery shall function properly by activating the starter. There shall be no leakage out of the battery.~~

~~009.01M Windshield Wipers. The windshield wiper assembly shall be complete, undamaged, and operative. Windshield washer shall be operative and the system capable of cleaning an effective wash area.~~

~~009.01N Bus Body Interior.~~

~~009.01N1 Panels. Panels (ceiling, side, wheel well) shall be secured and not protruding. There shall be no sharp edges exposed which may~~

~~cause injuries.~~

~~009.01N2 Floors. Floor pan and inner panels shall not have excessive perforated area or openings.~~

~~009.01N3 Step Well. No part of the step well or support structure shall be damaged. Handrail shall be intact and will not have any protruding edges.~~

~~009.01N4 Step Treads. Step treads shall be intact and have no condition that would present a tripping hazard for passengers.~~

~~009.01N5 Seats/Seat Barrier.~~

~~009.01N5a All seats and barriers shall be properly secured.~~

~~009.01N5b Seats and barrier material shall have no cuts. There shall be no defects that compromise the integrity of occupant protection and compartmentalization.~~

~~009.01N5c Seat spacing shall comply with FMVSS No. 222, *School Bus Passenger Seating and Crash Protection*.~~

~~009.01N5d If seat belts/occupant protection systems are provided or required, they shall comply with FMVSS No. 209, *Seat Belt Assemblies* and 210, *Seat Belt Assembly Anchorages*.~~

~~009.01N5e Driver's Seat. The driver's seat shall be adjustable or hold proper adjustment. No parts of the driver's safety restraint assembly shall be missing or improperly installed or defective.~~

~~009.01N6 Doors.~~

~~009.01N6a Entrance Doors.~~

~~009.01N6a1 The entrance door shall open and close properly according to the original equipment manufacturer's specifications.~~

~~009.01N6a2 The entrance door control handle shall lock in the closed position.~~

~~009.01N6a3 The bus shall be equipped with a padlock or similar non-original equipment manufacturer locking device on the entrance door. (Excludes vehicles equipped with an interlock system)~~

~~009.01N6b Emergency Exits.~~

~~009.01N6b1~~ The emergency door shall open freely and completely as designed by the original equipment manufacturer.

~~009.01N6b2~~ The door(s) warning devices shall be operational. A door hold-open device shall be present and operational.

~~009.01N6b3~~ The bus shall be equipped with a padlock or locking device on the emergency door(s) or roof hatch. (Excludes vehicles equipped with an interlock system.)

~~009.01O~~ Windows.

~~009.01O1~~ All windows shall be intact. All window glass or glazing shall not be broken through or missing.

~~009.01O2~~ All windows shall be of the approved type as specified by the original equipment manufacturer.

~~009.01O3~~ Each windshield shall be free of discoloration and other damage in the area extending upward from the height of the topmost portion of the steering wheel, but not including a two-inch border at the top and a one-inch border at each side of the windshield or each panel thereof.

~~009.01O3a~~ The following windshield discoloration or damage is permissible:

~~009.01O3a1~~ Coloring or tinting applied during manufacture for reduction of glare;

~~009.01O3a2~~ Any crack not over 1/4 inch long, if not intersected by any other crack;

~~009.01O3a3~~ Any damaged area which can be covered by a disc $\frac{3}{4}$ inch in diameter, if not closer than three (3) inches to any other such damaged area.

~~009.01O4~~ The driver's side area window(s) shall have no chips, clouding or cracks that obscure the driver's vision.

~~009.01O5~~ All emergency exit windows shall open properly and shall be properly labeled inside and outside of the bus.

~~009.01O6~~ The number of emergency exit window/roof latches shall comply with Section 005.18B of this Chapter.

~~009.01O7~~—If equipped, audible warning devices on emergency exits shall be operational.

~~009.01P~~ Heating and Defrosters.

~~009.01P1~~—The interior heaters shall be operational.

~~009.01P2~~—The defroster shall be operational.

~~009.01Q~~ Bus Body Exterior.

~~009.01Q1~~ Panels, Rub Rails, Trim. There shall be no school bus body part that is loose, torn, dislocated, or protruding from the surface of the bus.

~~009.01Q2~~ Compartment Doors. All doors on the bus body (engine, battery, storage) shall be secured tightly.

~~009.01Q3~~ Mirrors. All mirrors shall be securely intact, not discolored, and able to hold a set adjustment.

~~009.01R~~ Lights, Lamps and Signals.

~~009.01R1~~—The horn shall function as designed.

~~009.01R2~~—All turn signal lights and indicators shall function as designed.

~~009.01R3~~—All lights shall be properly installed, have no cracks on the lenses and function as designed.

~~009.01R4~~ Back-up lamps and alarms shall function when the vehicle is placed in reverse.

~~00.01R5~~ Gauges/Brake Warning. All critical brake, telltale lamp, buzzer and gauges shall function as designed by original equipment manufacturer.

~~00.01R6~~ Stop arm and optional crossing device. The stop arm and any crossing device (if equipped) shall function as designed.

~~009.01S~~ Emergency Equipment.

~~009.01S1~~—The fire extinguisher shall:

~~009.01S1a~~ be dry-chemical type. There shall be at least one (1) 5 pound extinguisher or two (2) 2 1/2 pound extinguishers (approved by Underwriters Laboratories Inc.),

~~with at least a total rating of 2A10-B:C.~~

~~009.01S1b be present, fully charged and operable. Each fire extinguisher shall be inspected annually, have documentation of inspection on file with the school and have a inspection tag showing the most recent inspection date affixed to it.~~

~~009.01S1c be accessible to driver and be securely fastened.~~

~~009.01S2 The first aid kit/s.~~

~~009.01S2a There shall be at least one (1) kit present on buses with capacity of 30 passengers or less.~~

~~009.01S2a1 At least two (2) kits shall be on buses with a capacity of more than 30 passengers.~~

~~009.01S2b The kits shall be securely fastened, accessible, and visible to everyone on the bus.~~

~~009.01S2c The kits shall contain the items listed in Appendix B of this Chapter.~~

~~009.01S3 Vehicles shall have one (1) body fluid clean-up kit which will contain the items listed in Appendix C of this Chapter.~~

~~009.01S4 Vehicles shall have (3) red and orange emergency reflective triangles.~~

~~009.01S5 A belt cutter shall be located and secured in the driver compartment of the bus.~~

~~009.01T Communication Devices~~

010 Minimum Safety Inspection Criteria for Small Vehicles.

010.01 Body interior shall be lined with upholstered material on head liner, door, and side panels.

010.02 Brakes shall be four-wheel brakes properly adjusted.

010.03 Parking brake shall be capable of holding the vehicle on an incline.

010.04 Two (2) windshield wipers shall be provided and operable.

010.05 Three (3) mirrors (two exterior and one interior) shall be provided and they shall not be cracked or broken.

TITLE 92
CHAPTER 92

010.06 Tail lights, stop lights, headlights, and directional signals shall be provided and operable with no broken or cracked lenses.

010.07 A horn shall be provided and operable.

010.08 A sunshield shall be provided for the driver and be operable.

010.09 Heater/defroster shall be provided and be operable.

010.10 Unbroken and uncracked safety glass shall be in all windows.

010.11 Seat belts and child passenger restraint systems for driver and all passengers shall be provided as required by Sections 60-6,265 through 60-6,267 R.R.S.

010.12 One (1) fire extinguisher shall be provided. It shall be a dry chemical type of 2 ½ pounds, size approved by Underwriters Laboratories, Inc., with a total rating of 1A10-B:C.

010.13 One (1) first aid kit shall be provided which includes the items as listed in Appendix B of this Chapter.

010.14 Body Fluid Clean-up Kit shall be provided and contain the items as listed in Appendix C of this Chapter.

010.15 Emergency reflective triangles shall be provided.

011 Minimum Safety Inspection Criteria for Vehicles for Transporting Children In Mobile Seating Devices.

011.01 Vehicles must generally comply with minimum standards and inspection criteria established for school buses and small vehicles, but with the modifications as listed below:

011.01A Special service entrance doors, and positive fastening devices that function properly and a red flashing signal that functions properly.

011.01B A power lift that is covered with non-skid materials. (Exception - a ramp may be substituted.)

011.01C A steel ramp provided with a restraining device to prohibit mobile device from rolling off platform.

011.01D Fastening devices for mobile devices that attach securely to floor or walls.

011.01E Restraining devices shall be provided.

011.01F A light inside the vehicle which functions properly.

TITLE 92
CHAPTER 92

011.01G Grab handles shall be provided that are installed properly.

011.01H Restraining devices for handicapped transport shall be available that meet FMVSS 213, *Hood Latch System*.

011.02 Wheelchair lift shall function as designed and is operable.

011.03 Platform lift manufactured after 4/1/05 must meet all of the following criteria:

011.03A Jacking prevention;

011.03B Manual Backup operating mode;

011.03C Interlocks to prevent forward or rearward mobility of the vehicle unless lift is stowed;

011.03D Wheelchair retention device;

011.03E Platform outer barrier and inner roll stop.

011.04 No hydraulic lines shall be leaking during lift operation.

011.05 Wheelchair restraint system shall be complete and properly installed. No loose or damaged parts shall be in use.

011.06 All required wheelchair occupant restraint systems shall be in compliance with FMVSS 571.222).

APPENDIX A - DESCRIPTION OF NATIONAL SCHOOL BUS YELLOW

The color known as National School Bus Yellow was designated as such by the 1939 National Conference on School Bus Standards. The National Bureau of Standards of the U.S. Department of Commerce assisted in developing this color and its color metric specifications.

At the 1980 conference, the colors in use were reviewed. A color standard was selected, slightly different from above, and specific tolerances were chosen. These tolerances will ensure a continuity of appearance from bus to bus, and within the same bus when different elements are finished or refinished at different times.

When it was determined that the use of lead and chromium in paint was a health hazard, the National Bureau of Standards of the U.S. Department of Commerce assisted the S.B.M.I. in developing their color standard No. SBMI-008, which further defined the tolerances to permit better definition of the color. Specifications for the standard color, with light and dark tolerances are shown below in tabular form.

COLORMETRIC (CIE) DATA

DESCRIPTION	REFLECTANCE	CHROMATICITY	
	Y	X	Y
Centroid	41.5%	.5139	.4434
V+ Light Limit	42.9%	.5139	.4427
V- Dark Limit	39.8%	.5133	.4422
H+ Green Limit	41.6%	.5123	.4368
H- Red Limit	41.7%	.5168	.4489
C+ Vivid Limit	41.5%	.5188	.4457
C- Weak Limit	41.5%	.5095	.4405

APPENDIX B – CONTENTS OF A FIRST AID KIT

<u>UNITS</u>	ITEM
3	Sterile gauze compress (36" x 36")
2	Non-sterile triangular bandage (40" x 36" x 54") with 2 safety pins
24	Sterile gauze pads (3" x 3")
2	Adhesive Tape (1" X 2 ½ yards)
2	Sterile gauze roller bandage (2" x 6')
12	Bandage compress (3")
12	Bandage compress ("2")
1	Bandage scissors (4")
3	Sterile eye pads
100	Adhesive bandage (3/4" x 3")
1	Moisture and dustproof kit of sufficient capacity to contain Materials of the first aid kit
1	Pair of medical examination gloves
1	Mouth to mouth airway

APPENDIX C – CONTENTS OF A BODY FLUID CLEAN-UP KIT

<u>UNITS</u>	<u>ITEMS</u>
1	Absorbent Pack - 5 oz.
2 <u>pair</u>	Plastic disposable gloves
1	Scoop
1	Scraper
2	Plastic trash bag with tie (Minimum 12 in. x 12 in.) 1 Red-biohazard and 1 black
1	Disinfectant - 8 oz.
1	Disposable Environmental Protection Agency (EPA) registered germicidal towels
1	Benzalkonium Chloride towelette
1	Antiseptic biohand cleaner - 4 oz.
1	Moisture and dustproof kit of sufficient capacity to contain materials of the body fluid clean-up kit

APPENDIX D – SCHOOL BUS SEAT UPHOLSTERY FIRE BLOCK TEST

A. TEST CHAMBER

Cross Section

The suggested test chamber is same cross section as bus body in which seats are used with rear section on each end. If bus section is not used, cross section to be 91" \pm 1" in width x 75" \pm 3" in height. There shall be a door, which does not provide ventilation, in the center of each end of the test chamber. The doors shall be 38" \pm 3" in width and 53" \pm 3" in height and include a latch to keep the doors closed during the test. See Figure 1.

Length

Length of chamber shall allow 3 rows of seats at the minimum spacing recommended by the installer or required by Federal Motor Vehicle Safety Standards. See Figure 1, Detail A.

In order that different types of seats may be tested in the same chamber, a length tolerance of plus 45" is allowed.

Ventilation

One ventilation opening shall be in each end of the test chamber and shall be 325 square inches \pm 25 square inches. The bottom of the opening shall be 30" \pm 3" above the chamber floor. Ventilation openings shall be on the same side of the test chamber. See Figure 1.

There shall be no ventilation openings along the length of the test chamber.

A forced air ventilation system may not be used.

Baffles shall be used to prevent wind from blowing directly into the ventilation openings.

Camera View Area

An opening covered with glass shall be provided at the midpoint of the chamber length for camera viewing. The opening shall allow the camera to view the seat parallel to the seat width. See Figure 1.

APPENDIX D - SCHOOL BUS SEAT UPHOLSTERY FIRE BLOCK TEST

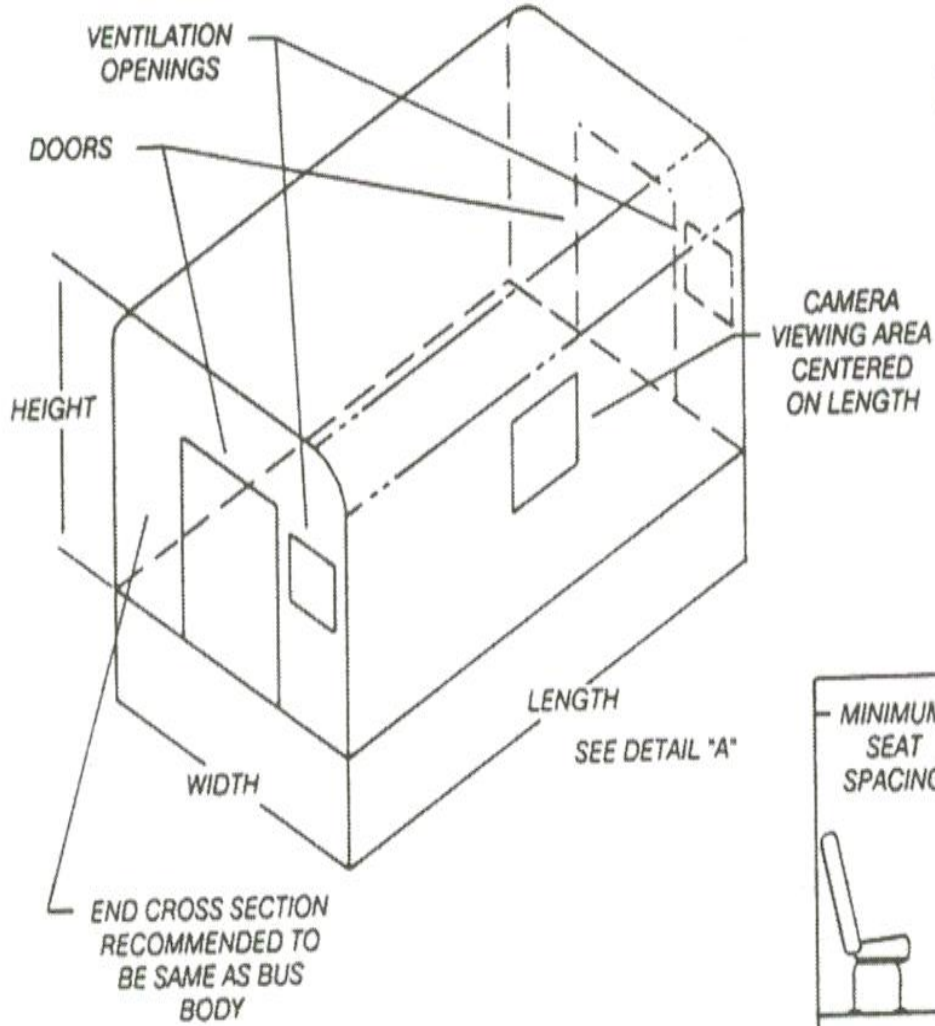
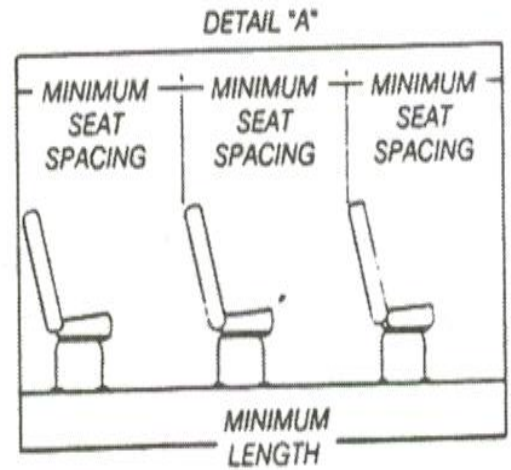


Figure 1



APPENDIX D – SCHOOL BUS SEAT UPHOLSTERY FIRE BLOCK TEST

B. TEST SAMPLE

Sample shall be fully-assembled seat.

Record the weight of all padding upholstery prior to assembly. Record the weight of the fully assembled seat.

IGNITION

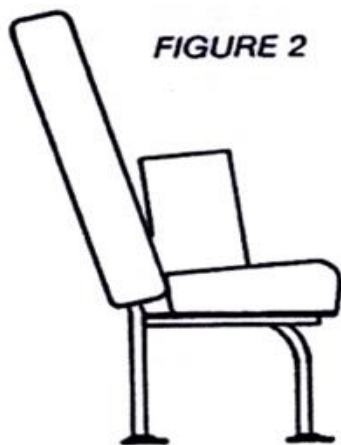
A paper grocery bag whose dimensions are approximately 7" x 11" x 18" is used to contain double sheets of newsprint (black print only, approximately 22" x 28"). The total combined weight of bag and newspaper shall be 7 oz. + .5 oz.

TEST PROCEDURE

1. Install three (3) seats in test chamber at minimum spacing per installer recommendation of FMVSS requirement. Seats shall be perpendicular to the dimension indicated as "length" in Figure 1 Detail A. Install so that seat frames will not fall during test. Seat width shall be determined so that maximum passenger capacity per row (2 seats) for the seat style shall be tested.
2. For each test, position ignition source in the following positions outlined. Widest seat in the center row shall be tested.

Position A

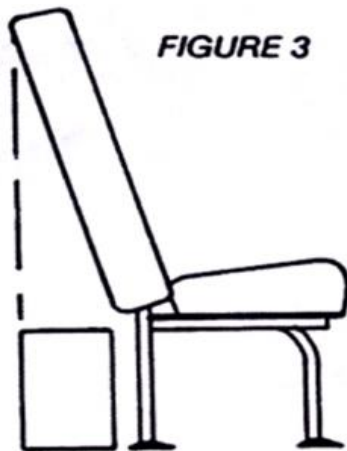
Position ignition source with 18" dimension in contact with seat cushion and touching seat back. Center bag on top of cushion. See Figure 2.



APPENDIX D – SCHOOL BUS SEAT UPHOLSTERY FIRE BLOCK TEST

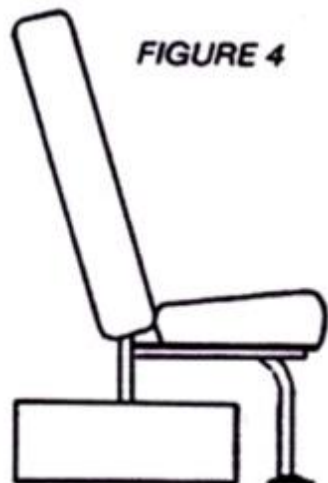
Position B

Position ignition source on floor behind seat with 18” dimension on floor and parallel to seat width centered on width so that rear of bag does not extend rear of seat back.
See Figure 3.



Position C

Position ignition source on floor on aisle side of seat with 18” dimension on floor and perpendicular to seat width touching seat leg with centerline of bag at center of seat back.
See Figure 4



APPENDIX D - SCHOOL BUS SEAT UPHOLSTERY FIRE BLOCK TEST

3. A wooden match shall be used to light the ignition source. Time the test beginning where the ignition source is on fire until all flame is out.
4. After each ignition source position test, weigh seat assembly including loose materials on the seat. Do not include loose material which has fallen off the seat onto the floor.

C. PERFORMANCE CRITERIA

For each ignition source position test, the seat tested must meet all of the following criteria. A new seat specimen may be used for each ignition source position test.

1. Maximum time from ignition to flameout shall be 8 minutes.
2. Flame shall not spread to any other seat with ignition source in Position A and Position C.
3. Weight loss may not exceed 10% of pretest weight of padding and upholstery.

APPENDIX E - NOISE TEST PROCEDURES

- A. The vehicle is located so that no other vehicle or signboard, building, hill, or other large reflecting surface is within 15.2 m (50 feet) of the occupant's seating position.
- B. All vehicle doors, windows, and ventilators are closed.
- C. All power-operated accessories are turned off.
- D. The driver is in the normal seated driving position and the person conducting the test is the only other person in the vehicle.
- E. A sound level meter is used that is set at the "A-weighting fast" meter response and meets the requirements of:
 - 1. The American National Standards Institute, Standard ANSI S1.4-1971. "Specifications for Sound Level Meters," for Type 1 Meters; or
 - 2. The International Electrotechnical Commission (IEC), Publication No. 179 (1973). "Precision Sound Level Meters".
- F. The microphone is located so that it points vertically upward 6 inches to the right and directly in line with and on the same plane as the occupant's ear adjacent to the primary noise source.
- G. If the motor vehicle's engine radiator fan drive is equipped with a clutch or similar device that automatically either reduces the rotational speed of the fan or completely disengages the fan from its power source in response to reduced engine cooling loads, the vehicle may be parked before testing with its engine running at high idle or any other speed the operator chooses for sufficient time, but not more than 10 minutes, to permit the engine radiator fan to automatically disengage.
- H. With the vehicle's transmission in neutral gear, the engine is accelerated to:
 - 1. Its maximum governed speed, if it is equipped with an engine governor, or
 - 2. Its speed at its maximum rated horsepower, if it is not equipped with an engine governor, and the engine is stabilized at that speed.
- I. The A-weighted sound level reading on the sound level meter for the stabilized engine speed condition referred to in H.1. or H.2. above is observed and, if it has not been influenced by extraneous noise sources, is recorded.

APPENDIX E - NOISE TEST PROCEDURES

- J. The vehicle's engine speed is returned to idle and the procedures set out in paragraphs H. and I. are repeated until two maximum sound levels within 2 dbA of each other are recorded, the two maximum sound level readings are then averaged; and
- K. The average obtained in accordance with paragraph J., with a value of 2 dbA subtracted therefrom to allow for variations in the test conditions and in the capabilities of meters, is the vehicle's interior sound level at the driver's seating position for the purposes of determining compliance with the requirements of this test procedure.

APPENDIX F - RETRO REFLECTIVE SHEETING

DAYTIME COLOR SPECIFICATION PROPOSAL

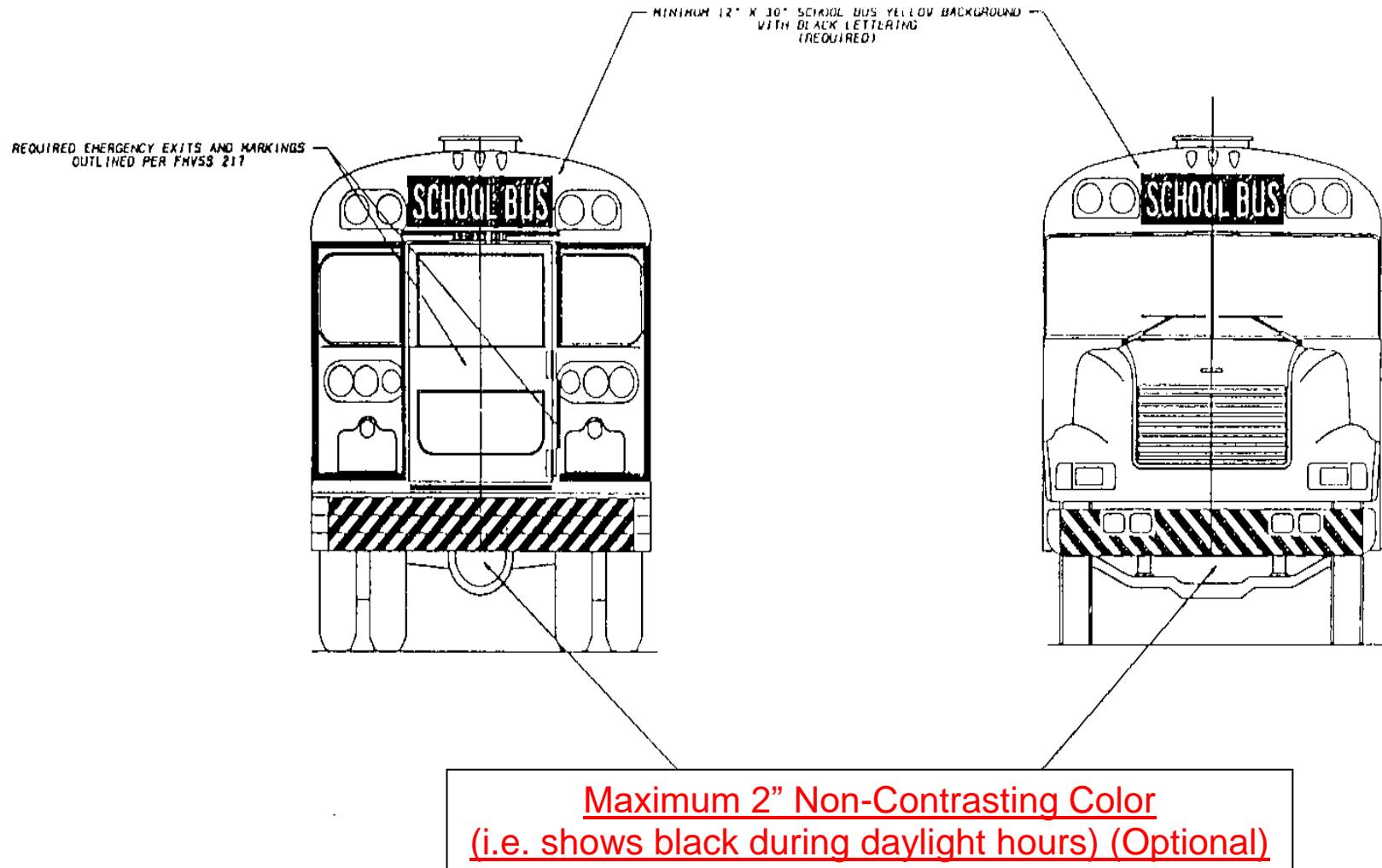
The daytime color of the RETRO REFLECTIVE sheeting used to enhance school bus safety requires different color tolerances in order to assure optimum safety benefit as well as to be consistent with the color of the school bus.

The color of the RETRO REFLECTIVE sheeting shall conform to the table below when samples applied to aluminum test panels are measured as specified in ASTM E1164. For colorimetric measurements, material is illuminated by Standard Illuminant D65 at an angle of 45 degrees with the normal to the surface the observations are made in the direction of the normal (45/0 degree geometry). The inverse (0/45 degree geometry) with the illuminant at the normal to the surface and the observations at 45 degrees with the normal to the surface may also be used. For materials which are directionally sensitive (e.g. prismatic sheeting), the colorimetric measurements are made using circumferential illumination and viewing and the various measurements are averaged. Calculations shall be done in accordance with ASTM E308 using the CIE 1931 (2 degree) Standard Observer.

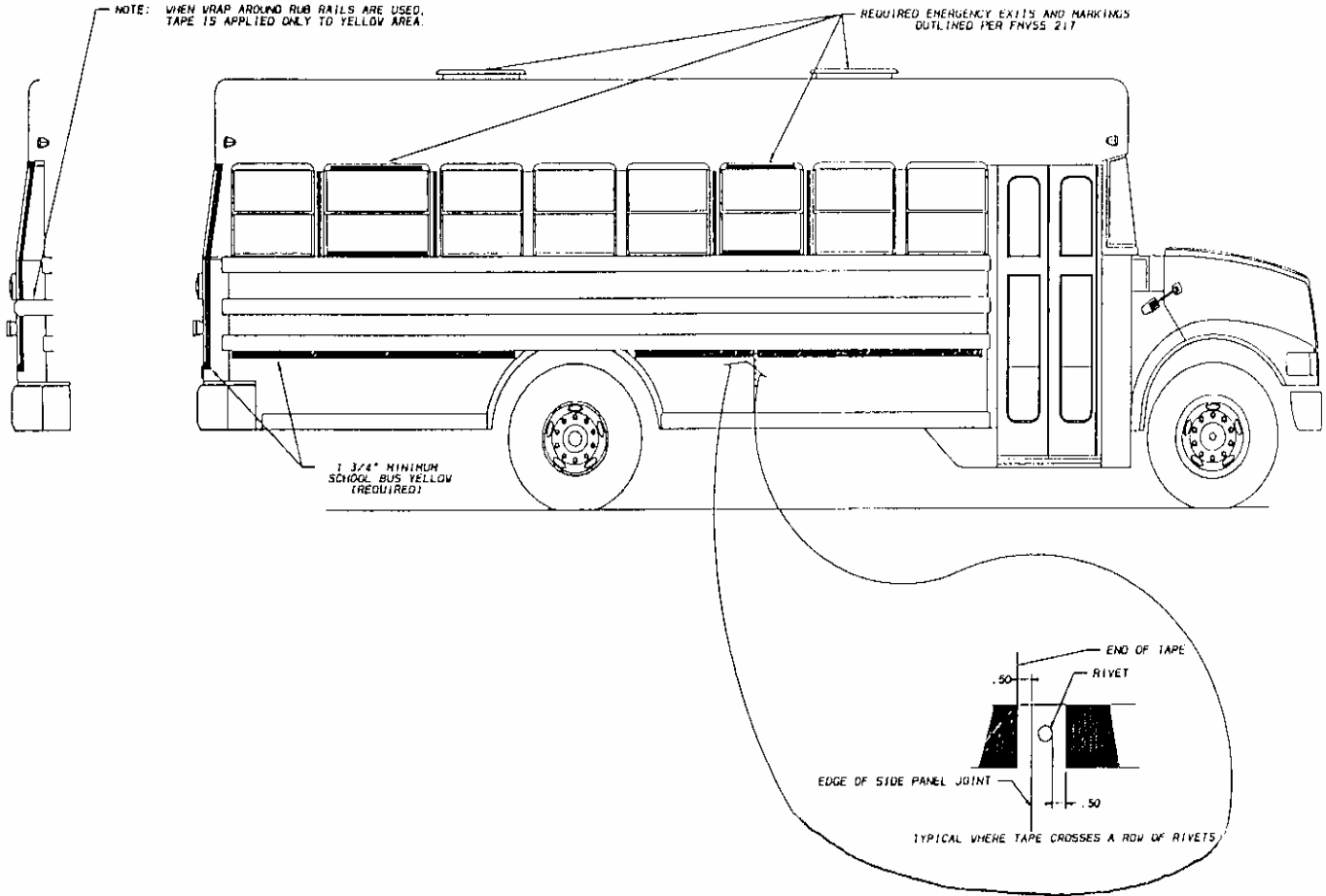
**RETRO REFLECTIVE SHEETING DAYTIME COLOR
CHROMATICITY COORDINATES OF CORNER POINTS
DETERMINING THE PERMITTED COLOR AREA**

Yellow	X	0.484	0.513	0.517	0.544
	Y	0.455	0.426	0.482	0.455
Luminance Factor (Y%)	Minimum	10.0			
	Maximum	36.0			

APPENDIX F - RETRO REFLECTIVE SHEETING



APPENDIX F - RETRO REFLECTIVE SHEETING



PLACEMENT OF RETROREFLECTIVE MARKINGS

APPENDIX G – REFERENCE LIST

Reference

Section

American National Standards Institute
1430 Broadway
New York, NY 10018

~~Appendix E~~

School Bus Manufacturers Institute
Division of Truck Body & Equipment Association
4907 Cordell Avenue
Bethesda, MD 20814
(301) 652-8004

~~005.12~~

ASME International
Three Park Avenue
New York, NY 10016-5990
(212) 591-7740
<http://www.asme.org>

~~005.26~~

School Bus Manufacturer's Technical Council
Nat'l Association of State Directors of Pupil Transportation
116 Howe Drive
Dover, DE 19901

~~005.19, 005.29~~

Society of Automotive Engineers (SAE)
400 Commonwealth Drive
Warrendale, PA 15096
(412) 776-4841

~~005.04, 005.16, 005.19,
005.29, 005.30, 005.62,
007.11~~

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

~~005.33, 006.03, 009.01,
010.12~~

National School Transportation Specification & Procedures
Missouri Safety Center
Central Missouri State University
Humphreys Suite 201
Warrensburg, MO 64093
(660) 543-4830

~~007.01, 007.07~~

APPENDIX G – REFERENCE LIST (con't)

Reference

Section

National Fire Protection Agency
1 Batterymark Park
P.O. Box 9101
Quincy, MA 02269
<http://nfpa.org>

~~005.25, 005.26~~

U.S. Department of Commerce
Office of Product Standards Policy
National Bureau of Standards
Washington, D.C. 20231
<http://commerce.gov>

~~005.14, Appendix A~~

Department of Transportation
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington DC 20590
<http://www.fhwa.dot.gov/>

~~005.31, 007.05~~

International Electrotechnical Commission
OEC Regional Centre for North America
446 Main Street
16th Floor
Worcester, MA 01608
<http://www.iec.ch/>

~~Appendix E~~

ASTM International
100 Barr Harbor Dr.
PO Box C700
West Conshohocken, PA 19428-2959
<http://www.astm.org>

~~005.26, 005.050, Appendix
F~~

National Highway Transportation Safety Agency (NHTSA)
1200 New Jersey Avenue, SE
Washington DC 20590
<http://www.nhtsa.gov>

~~Appendix M~~

TITLE 92
Chapter 92

APPENDIX H – FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND REGULATIONS

49 CFR 571 - (Revised as of October 2010)

101	Controls and displays.
102	Transmission shift lever sequence, starter interlock, and transmission-braking effect.
103	Windshield defrosting and defogging systems.
104	Windshield wiping and washing systems.
105	Hydraulic and electric brake systems.
106	Brake Hoses.
108	Lamps, reflective devices, and associated equipment.
109	New pneumatic Bias Ply and Certain Specialty tires
110	Tire selection and rims and Motor Home/Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of 4,536 Kilograms (10,000 pounds) or Less.
111	Rearview mirrors.
113	Hood latch systems.
116	Motor vehicle brake fluids.
117	Retreaded pneumatic tires.
118	Power-operated window, partition, and roof panel systems.
119	New pneumatic tires for Motor Vehicles with a GVWR of more Than 4,536 Kilograms (10,000 pounds) and Motorcycles.
120	Tire selection and rims and Motor Home/Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 pounds).
121	Air brake systems.
124	Accelerator control system.
125	Warning devices.
131	School Bus Pedestrian Safety Devices.
205	Glazing materials.
206	Door locks and door retention components.
207	Seating systems.
208	Occupant crash protection.
209	Seat belt assemblies.
210	Seat Belt assembly anchorages.
212	Windshield mounting.
213	Child Restraint Systems.
217	Bus emergency exits and window retention and release.
219	Windshield zone intrusion.
220	School bus rollover protection.
221	School bus body joint strength.
222	School bus passenger seating and crash protection.
301	Fuel system integrity.
302	Flammability of interior materials.
305	<u>Battery System Component</u>
403	<u>Platform and Platform Lift</u>
404	Platform lift installations in motor vehicles.

As found in "Federal Motor Vehicle Safety Standards and Regulations; with Amendments and Interpretations," U.S. Department of Transportation, National Highway Traffic Safety Administration, Washington, D.C. 20590, U.S. Government Printing Office.

These documents can also be found at: http://www.nhtsa.gov/staticfiles/rulemaking/pdf/FMVSS_QuickRefGuide_HS811439.pdf (2010 Version)

APPENDIX I – DIRECTORY OF ACRONYMS

ADA	Americans with Disabilities Act
ABS	Anti-lock Brake System
ASTM	American Society of Testing and Materials (ASTM International)
ASME	American Society of Mechanical Engineers
CDL	Commercial Driver's License
CFR	Code of Federal Regulations
CNG	Compressed Natural Gas
DOT or USDOT	United States Department of Transportation
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FMVSS	Federal Motor Vehicle Safety Standards
GVW	Gross Vehicle Weight
GVWR	Gross Vehicle Weight Rating
LPG	Liquefied Petroleum Gas
MFG	Multi-Function Gauge
NFPA	National Fire Protection Association
OEM	Original Equipment Manufacturer
R.R.S.	Revised Statutes of Nebraska
SAE	Society of Automotive Engineers
SBMTG	School Bus Manufacturer's Technical Council
UL	Underwriters Laboratories, Inc.
WTORS	Wheelchair Tiedown and Occupant Restraint System

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

When working on or around a vehicle, the following general precautions should be observed at all times:

- A. Park the vehicle on a level surface, apply the parking brakes and always block the wheels.
- B. Always wear safety glasses and other appropriate safety gear.
- C. Stop the engine and remove ignition key when working under or around the vehicle.
- D. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.

BODY EXTERIOR

- A. Visually inspect the body exterior to ensure that there is not any panel, rub rail or trim that is loose, torn, dislocated or protruding from the surface of the bus that would create a hazard.
- B. All engine, battery or other doors must be securely mounted and properly installed.

BODY INTERIOR

Aisle

- A. Visually inspect the aisle to ensure that all aisles, including aisle (or passageway between seats) leading to emergency door are a minimum of 12 inches.
- B. Visually inspect to ensure that there are no obstructions in an aisle that would prevent passengers from egress to emergency exits.
- C. On school buses with a side emergency door, check that aisle space from center aisle to side of emergency door is 12 inches by measuring between the vertical line of the seat back and the face of the next seat cushion or bottom of a flip seat.
- D. On buses equipped with flip up seats, inspect to ensure the seat cushion rises to a vertical position automatically when not occupied.

Door, Entrance

Visually inspect and operate entrance door and inspect door to properly open and close without any obstruction of movement. Inspect manually operated door to make sure door will maintain an open and closed position. Door shall not have any locking device except for interlock systems. On power-operated entrance doors, the emergency release valve, switch or device to release the entrance door must be placed above or to the immediate left or immediate right of the entrance door and must be clearly labeled.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Floor

Visually inspect floor covering, aisle and cove molding strips for condition and adhesion. Check fastening holes for cracks, and check condition of rubber in aisle to ensure that there are no unsealed holes or cracks through the underside of the bus and that there is no damage to the coverings which could cause a trip or slip hazard.

Handrail

Handrail must be securely mounted and all OEM hardware present. Perform the NHTSA *Nut and String Test* as described and illustrated below.

Nut and String Test

The Handrail Inspection Tool and Procedure

The inspection tool is inexpensive and the procedure for detecting potentially fatal handrail designs is quite simple. The inspection tool is a standard ½ inch hex nut measuring ¾ inch across the flats. This nut is tied to ⅛ inch thick cotton cord measuring 36 inches in length with overhand knots. The drawstring should have a minimum length of 30 inches, when tied to the nut and attached so that a pull of at least 10 pounds does not separate the nut from or break the drawstring.

Steps to conduct a handrail inspection are:

- Stand on the ground outside of the bus;
- Drop the inspection tool between the handrail and step well wall, simulating the typical way students exit the bus;
- Draw the inspection tool through the handrail in a smooth, continuous slow motion; and
- Repeat this procedure several times (minimum of three times).



Note: It is important to drop the inspection tool over the handrail in such a way as to simulate a child exiting the bus. This is a drop-and-drag test. Do not create a snagging situation by placing the nut in an area that would not be exposed to a drawstring or other articles.

Inspection Results

Take the bus out of service and repair it if the inspection tool catches or snags anywhere on the handrail. If the nut separates from the drawstring or the drawstring breaks, reassemble the tool and retest. If the inspection tool pulls freely without catching or snagging, the bus should not be rejected.

Panels

Visually inspect all interior sidewall, rear, ceiling and driver's area paneling for secure fastening, projections or sharp edges and general condition.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Seat(s) and Barrier(s)

- A. Visually inspect all seats and barriers to ensure that all are securely mounted and not loose or broken.
- B. All seats shall be forward-facing and securely fastened to the bus body. Passenger seat cushions shall be fastened to prevent the cushions from disengaging from the seat frames in the event of an accident. There shall be a minimum space of 24 inches between the forward surface of a seat back and the rear surface of the seat or barrier ahead measured across the seat cushion without depressing any surface. The forward surface may have side bolsters that briefly reduce the width to less than 24 inches provided the remainder of the seat measures at least 24 inches.
- C. Seats and barriers should appear symmetrical. Seats/barriers that do not appear symmetrical should be physically inspected to ensure seat covering and/or padding is not significantly compromised and complies with FMVSS 571.222.

Seat, Driver

- A. Visually inspect driver's seat to ensure that it is securely fastened to the vehicle.
- B. Visually inspect the driver's seat for its ability to maintain the adjusted position. Inspect driver's restraining device (seat belt) for fraying, attaching hardware and the capacity of the seat belt for maintaining the driver in the seated position.

Stepwell

Visually inspect the stepwell for the condition of support structure to ensure structural stability. Inspect stepwell treads to ensure proper securing and adhesion to stepwell. Visually inspect step treads for any excessive worn areas that may pose a tripping or slip hazard.

BRAKE SYSTEMS

Air System

- A. With full system air pressure, depress the brake pedal and inspect each wheel end brake to determine if effective braking forces are applied to each wheel end brake. There should be no audible air loss at supply lines, fittings, valves or brake chambers.
- B. With full system pressure, make a single full service brake application with the parking brake and ignition off. Note the gauges and listen for air leaks. Release the service brake.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- C. If an air leak is detected at any point in the inspection process, the inspector should check the vehicle's air loss rate following these procedures:
1. Set engine at idle and release brakes;
 2. Reduce air pressure in reservoir to 80 psi;
 3. Make a full brake application with governor cut-in; and
 4. Check air pressure gauge after initial application for air loss. Air pressure should be maintained or increase. A drop in pressure indicates a serious air leak in the brake system.

Air Brakes Measurement

The following procedure is based on the applied stroke method for measuring the movement of the brake chamber push rod:

- A. Release the spring brakes and visually check each brake to ensure that it is in the normal released position.
- B. With the brakes released, make a mark where the pushrod exits the brake chamber.
- C. With the engine off, make a series of brake applications to reduce the reservoir pressure to between 90 to 100 psi.
- D. Apply and hold a full brake application (90 to 100 psi).
- E. Measure the distance between the mark and the face of the brake chamber. The difference between measurements is called the chamber applied stroke.

Note: Any brake that is beyond the re-adjustment limit will require repairs and/or adjustment. (See Table 1: *Brake Adjustment Specifications* below.)

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Table 1: Brake Adjustment Specifications

Brake adjustment: Shall be less than those specifications contained herein relating to "Brake Adjustment Limit."
(Dimensions are in inches.)

<u>CLAMP TYPE BRAKE CHAMBER DATA</u>		
<u>Type</u>	<u>Outside Diameter</u>	<u>Brake Adjustment Limit</u>
<u>6</u>	<u>4 1/2</u>	<u>1.25</u>
<u>9</u>	<u>5 1/4</u>	<u>1.375</u>
<u>12</u>	<u>5 11/16</u>	<u>1.375</u>
<u>16</u>	<u>6 3/8</u>	<u>1.75</u>
<u>20</u>	<u>6 25/32</u>	<u>1.75</u>
<u>24</u>	<u>7 7/32</u>	<u>1.75</u>
<u>30</u>	<u>8 3/32</u>	<u>2</u>
<u>36</u>	<u>9</u>	<u>2.25</u>

<u>"LONG STROKE" CLAMP TYPE BRAKE CHAMBER DATA</u>		
<u>Type</u>	<u>Outside Diameter</u>	<u>Brake Adjustment Limit</u>
<u>12</u>	<u>5 11/16</u>	<u>1.75</u>
<u>16</u>	<u>6 3/8</u>	<u>2.0</u>
<u>20</u> <u>(2 1/2" Rated Stroke)</u>	<u>6 25/32</u>	<u>2.0</u>
<u>20</u> <u>(3" Rated Stroke)</u>	<u>6 25/32</u>	<u>2.5</u>
<u>24</u> <u>(2 1/2" Rated Stroke)</u>	<u>7 7/32</u>	<u>2.0</u>
<u>24+</u> <u>(3" Rated Stroke)</u>	<u>7 7/32</u>	<u>2.5</u>
<u>30</u>	<u>8 3/32</u>	<u>2.5</u>

<u>DD-3 Brake Chamber Data</u>		
<u>Type</u>	<u>Outside Diameter</u>	<u>Brake Adjustment Limit</u>
<u>30</u>	<u>8 1/8</u>	<u>2.25</u>
<u>Note: This chamber has three air lines and found on motorcoaches.</u>		

<u>Wedge Brake Data</u>
<u>The combined movement of both brake shoe lining scribe marks shall not exceed 1/8 inch (3.18mm).</u>

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Brake Shoe/Pad/Lining

- A. Visually inspect all brake linings/shoes/pads. Linings may be checked through inspection slots. All shoes/pads/linings shall comply with the applicable standards.
- B. The brake lining/pad thickness shall not be less than $\frac{3}{16}$ inch at the shoe center for a shoe with a continuous strip of lining, less than $\frac{1}{4}$ inch at the shoe center for a shoe with two pads, or worn to the wear indicator if the lining is so marked, for air drum brakes.
- C. The brake lining/pad thickness shall not be less than $\frac{1}{8}$ inch for air disc brakes, or $\frac{1}{16}$ inch or less for hydraulic disc brakes.
- D. Visually inspect the brake lining/pad to ensure that it is firmly attached to the shoe, is not cracked or broken, and that the friction surface is not saturated with oil, grease, or brake fluid.
- E. Visually inspect all brake components mounting hardware for any loose, cracked, broken or missing items. This inspection should be performed with the brakes released and with the brakes applied. It may be necessary to remove inspection access covers, brake dust covers or, in some instances, pull wheels and drums to accomplish the inspection.

Chamber Size

Visually inspect all brake chambers to ensure they are properly marked, in good operating condition, have no visible damage, and are properly matched. Chambers must be matched by size, type and stroke.

Drums/Rotors

- A. Visually inspect all brake drums/rotors for any external cracks that open when brakes are applied. (Do not confuse short hairline internal check cracks with flexural cracks.) B. Inspect for any portion of the drum/rotor missing or in danger of falling away.

Note: It may be necessary to remove inspection access covers, brake dust covers or, in some instances, pull wheels and drums to accomplish the inspection.

Hoses and Tubing

- A. Carefully perform a visual inspection of all system hoses, lines, and tubing.
- B. Inspect all hoses, lines, and tubing for any audible leak (if air), or visible leak (if hydraulic), any bulging/swelling when the system is pressurized, any hose, line, or tubing is cracked, broken or crimped in such a manner as to restrict flow, any hose abraded (chafed) through outer cover to fabric layer or any line/tubing, and for proper securement and support.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Hydraulic Brakes Measurement

- A. With the brake pedal in the full upright position, the inspector shall measure the distance between the brake pedal and the floor or firewall. With the engine running, a single firm brake application shall be made and the distance between the brake pedal and the floor or firewall shall be measured a second time. The difference shall be recorded.
- B. With vehicle stopped and engine running, depress brake pedal. The system must be able to maintain brake pedal height under moderate foot force (40-60 pounds) for one minute without pumping. With vehicle in stopped position and brake pedal depressed under moderate foot force (40-60 pounds) there should be a minimum of 1/3 of the total available pedal travel (manufacturer's specification) remaining on nonpowered systems.

Hydraulic Brake System

- A. With the engine off, turn the ignition switch to the "on" position and check the instrument panel for visible and audible warning signals to indicate system malfunction. If bus is equipped with vacuum assist, it shall have a visible warning signal and gauge to indicate any loss of vacuum. Audible signals must be loud enough to be heard over engine noise.
- B. Visually inspect the master cylinder to determine if it is below the minimum fill requirements, is leaking, is loose or improperly mounted.
- C. Visually inspect the hydraulic fluid reservoir level in the master cylinder unit. Inspect for any fluid leaks on wheel cylinders/calipers, master cylinders, hose connection and hydrovac and on buses using vacuum-assisted brakes. Check for brake fluid around the brake booster between the booster and firewall.

Parking Brake

- A. With the engine operating and the park brakes set, place the transmission in both forward and reverse gears to determine if brakes will hold vehicle stationary.
- B. Visually and physically check condition of parking brake system and parking brake warning light.

Pedal Reserve

- A. With the brake pedal in the full upright position, the inspector shall measure the distance between the brake pedal and the floor or firewall. With the engine running, a single firm brake application shall be made and the distance between the brake pedal and the floor or firewall shall be measured a second time. The difference shall be recorded.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- B. With vehicle stopped and engine running, depress brake pedal. The system must be able to maintain brake pedal height under moderate foot force (40-60 pounds) for one minute without pumping. With vehicle in stopped position and brake pedal depressed under moderate foot force (40-60 pounds) there should be a minimum of 1/3 of the total available pedal travel (manufacturer's specification) remaining on nonpowered systems.

Power Assist Unit

- A. Electric/Hydraulic Assist: With engine off, depress the brake pedal. The electric/hydraulic brake assist motor must operate.
- B. Hydrovac Assist: With engine off, the driver shall pump the brakes to exhaust all reserve. Hold firm pressure on the brake pedal and start the engine. The pedal should fall slightly. Failure of the pedal to fall slightly indicates a malfunction of the power assist unit.
- C. Hydro-boost: After 2-3 brake applications with the engine off, start the vehicle while maintaining pressure on the brake pedal. The pedal should push briefly, and then fall as the power assist engages.

Slack Adjuster Length

Measure from the center of the S-cam to the center of the push rod clevis pin. All slack adjusters on a single axle shall be of the same type and length.

DIFFERENTIAL

The Inspector shall visually inspect the differential and differential housing for cracks and leaks. Careful attention shall be made to the areas of mounting attaching hardware and wheel end areas. Housing vent shall be inspected to ensure that it is not clogged and is functional by twisting the vent cap by hand.

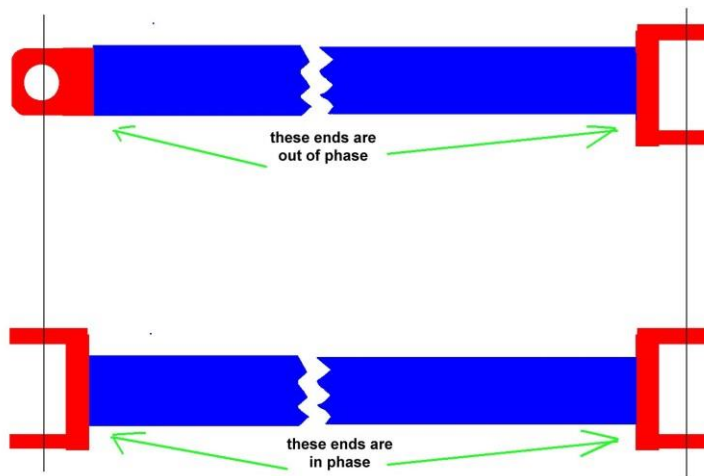
APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

DRIVESHAFT

- A. Visually and physically inspect each segment of the driveshaft and associated hardware. Inspect for bends, cracks, missing weights or debris entangled in the shaft.

Each shaft more than 18 inches long shall be equipped with a suitable guard to prevent an accident or injury in the event of its fracture or disconnection. The inspector shall check to ensure that the driveshaft guards are not loose, bent or missing.

- B. Visually and physically inspect each universal joint and center bearing. The universal joint(s) and center bearing(s) shall not be loose or worn and shall have all attaching hardware securely fastened. The inspector shall check for lateral and vertical movement of the universal joints and center bearing by grasping the universal joint and attempting to move the joint laterally and vertically. Inspector shall inspect universal joints for substandard or welded repairs.



- C. Visually inspect driveshaft for proper phasing. (See illustration.)

ELECTRICAL/BATTERY

Battery

- A. Visually and physically inspect that the battery(ies) is(are) securely mounted and no signs of leaking, or excessive corrosion.
- B. Crank engine to ensure adequate battery capacity to start engine.

Cables

- A. Visually inspect all electrical cabling and wiring for chafed, frayed, damaged or burnt insulation.
- B. Visually and physically inspect for corroded or loose connections at the battery terminals. Inspect for unsuitable insulation to electrical cabling.
- C. Inspect for missing or damaged protective grommets insulating all electrical cables through metal compartment panels. All electrical cabling passing through a metal surface shall pass through an insulated grommet as to provide adequate protection against chaffing and shorting.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- D. Visually and physically inspect for any broken or unsecured mounting of electrical components.
- E. Visually and physically inspect electrical cabling for securement, routing or any unsecured wiring that may cause chafing or frayed conditions.

Windshield Wipers

Operate wiper and washer system. The wiping system should be power-driven with at least two speeds and should be able to clean the area of the windshield within the wiping pattern. Wipers should operate with a minimum of 45 cycles per minute.

EMERGENCY EQUIPMENT

- A. Visually inspect that the fire extinguisher is readily accessible to the driver and passengers, that it is fully charged of proper type and size, is properly secured and has a working pressure gauge.
- B. Visually inspect any other state-required equipment such as first aid kits, body fluid kits, webbing cutters and emergency reflectors and ensure that these items are fully stocked, functional and properly secured.

EMERGENCY EXITS

- A. Visually inspect all emergency exits.
 - 1. Operate all emergency exits. Exits must open freely and completely.
 - 2. Door prop rods must operate freely and hold door or exit in open position without obstructing exit.
 - 3. There shall be no padlocks or any other locking devices on exits except interlocking systems.
- B. Visually inspect all exits to ensure they are clearly labeled and marked on both the inside and outside of the bus.
- C. Ensure that all exits have an audible device to alert the driver of an open exit door or window.

Note: FMVSS 571.217 defines the number of exits for each type of bus.

ENGINE

- A. Visually inspect engine and surrounding components for evidence of fluid leaks and loose or damaged components. Inspector shall start engine. While engine is operating, inspector shall visually and audibly monitor engine for proper operation, leaks and unusual noises of engine or components.
- B. Inspect cooling fan per manufacturer's recommendations.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- C. Visually and physically inspect all drive belts for proper alignment and tension per manufacturer's recommendations. All belts shall be free of cracking, frays, fluid, glazing and excessive wear. Inspect belt-tensioner per manufacturer's recommendations.
- D. Visually inspect all hydraulic, coolant, fuel and pneumatic hoses for damage, proper routing, proper type and proper securement. Hoses shall be routed in such a way as to avoid contact with exhaust, rotating or moving engine components or sharp edges. Hoses shall not be cracked, leaking, swollen or chaffed.

EXHAUST SYSTEM

- A. Visually and audibly inspect the complete exhaust system including muffler, diesel particulate filter (DPF) and diesel oxidation catalyst (DOC) for leaks, restrictions and damage and to ensure that exhaust is not discharging directly below the driver or passenger compartment. All exhaust emission control devices shall be installed and operating per the manufacturer's recommendations.
- B. Inspect for the presence and condition of heat shielding over and around all piping, and components where specified by vehicle manufacturer.
- C. Visually and physically inspect all exhaust system mounting hardware for loose, missing or damaged components and that it is securely attached. Inspect to ensure that all clamps are in place and secure.
- D. Visually inspect exhaust system for indications of, and areas likely to result in, burning, charring or damaging the electrical wiring, the fuel supply or any combustible part of the vehicle.

FUEL SYSTEM

- A. Visually inspect all parts of the fuel tank, fuel tank cage and fuel system to include lines, hoses, filters, fill cap and fittings for indications of damage or leaks.
- B. Visually and physically inspect fuel lines and hoses for proper securement, routing and missing or loose clamps that may cause chafing or come in contact with electrical components.

LAMPS/SIGNALS

- A. Visually inspect all lamps, such as brakes, turn signals, tail, head (low beam), overhead warning lights (amber and red), hazard warning and stop arm lights to ensure proper visibility and operation. Turn signals should flash at a rate of 60 to 120 times per minute.
- B. Inspect that the horn functions and is audible from approximately 200 feet away.
- C. Inspect the crossing control device, if equipped, for proper operation (e.g., that it extends and retracts as designed).

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

MIRRORS

Visually inspect all mirrors to identify any mirror that is damaged, clouded or otherwise has an obscured area. All mirrors should hold a set adjustment. All mirrors should be directed to view the intended area for which they are designed.

STEERING SYSTEM

Ball and Socket Joints

- A. With the bus on the ground, the inspector shall examine the ball joint nut stud for movement while the steering wheel is being rocked in a back-and-forth action. The inspector shall examine the ball/socket joint for weld repairs.
- B. Check for lateral and vertical movement by grasping the tie rod and drag link sockets attempting to laterally and vertically move the ball joint. (Rotational movement will not be considered.) Any motion other than rotational, greater than 1/8 inch that can be detected by movement with two hands with moderate strength in any connecting joint is a defect.

Front Axle Beam

Visually examine the front axle beam for any obvious bend or twist, any cracks, or any welded repair.

Hoses/Fluids

Visually examine the power steering fluid reservoir for proper fluid level. With the system operating, inspect all system components, hoses and fittings for leaks.

Nuts

Visually examine all tie rods, pitman arm, drag link, steering arm and tie rod arm for looseness and missing fasteners.

Pitman Arm

- A. While the steering wheel is being rotated in a back-and-forth motion; visually inspect the pitman arm and output shaft connection for looseness at the output shaft joint. B. The pitman arm shall also be inspected for damage, cracks or welded repairs.

Power Steering

- A. The inspector shall manually manipulate the auxiliary power assist cylinder to check for looseness. The inspector shall start the bus and rotate the steering wheel in a back-and-forth action to ensure the power steering pump is operable.
- B. With the engine stopped inspect the system drive belt(s) for any fraying, cracks or fluid saturation. Check belt tension. On units equipped with automatic tensioner ensure that tensioner moves freely.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- C. Inspect the fluid reservoir while at operating temperature to ensure that the fluid level is not below add mark. Inspect for signs of fluid leakage.

Steering

- A. Visually inspect for any modification or other condition that interferes with free movement of any steering component. Turn steering wheel through a full right and left turn and feel for binding or jamming conditions. Both front wheels must be capable of being turned to full right or full left without binding or interference.
- B. Inspect turn stops by observing for shiny spots and/or signs of wear due to contact with other vehicle components on the sides of tires, drag links, pitman arm, shock absorbers or brake lines.

Steering Column/Wheel

- A. Inspect steering column for any looseness in bolts, clamps, positioning parts or universal joints. Inspect flexible coupling in steering column (if the vehicle is so equipped) for excessive misalignment and tightness of clamp bolt or nut.
- B. The steering column and components shall also be inspected for damage, cracks or welded repairs. Inspect steering wheel to ensure that it is properly positioned and secured.
- C. Place steering axle wheels in a straight ahead position have an assistant turn the steering wheel until movement is observed at the left road wheel and measure the steering wheel movement from starting position to wheel movement position. Compare this measurement to the applicable listing in Table 2: *Steering Wheel Free Play*, below.

Table 2: Steering Wheel Free Play

Steering Wheel Free Play: Steering wheel free play shall not exceed the requirements listed in the following chart:

<u>Steering Wheel Diameter</u>	<u>Manual System Movement 30</u>	<u>Power System Movement 45</u>
<u>16" (41cm)</u>	<u>2" (5.1cm)</u>	<u>4 1/2" (11.5cm)</u>
<u>18" (46cm)</u>	<u>2 1/4" (5.4cm)</u>	<u>4 3/4" (12cm)</u>
<u>20" (51cm)</u>	<u>2 1/2" (6.4cm)</u>	<u>5 1/4" (13.5cm)</u>
<u>22" (56cm)</u>	<u>2 3/4" (7cm)</u>	<u>5 3/4" (14.5cm)</u>

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

Steering Gear Box

- A. Visually examine the steering gear box for any loose, damaged or missing mounting bolts. Inspect for cracks in the gear box, mounting brackets or any obvious welded repairs.
- B. While having an assistant rock the steering wheel back-and-forth; visually inspect the steering shaft and gear box for any looseness where the steering gear box is mounted to the frame. Visually inspect steering shaft coupler for cracks, damage or looseness.
- C. With the engine operating inspect for excessive fluid and/or oil leak (observable movement of fluid).

Tie Rods/Drag Links

- A. While having an assistant to rock the steering wheel back-and-forth, visually inspect the tie rod ends, crossbar, and drag links for any looseness at the steering linkage pivot points.
- B. Check for lateral and vertical movement by grasping the tie rod and drag link sockets attempting to laterally and vertically move the ball joint (rotational movement will not be considered). Any motion, other than rotational, greater than 1/8 inch that can be detected by movement with two hands with moderate strength in any connecting joint is a defect.
- C. Check crossbar for structural damage and crossbar clamps for secure mounting.

SUSPENSION COMPONENTS

Axle Parts/Members

- A. Visually and physically inspect all front and rear axle components. Inspect all U-bolts and other suspension to axle mounting hardware for cracks, breaks, looseness or improper type.
- B. Inspect axle, axle housing, spring hanger(s), shackles or other axle components for alignment, cracks, breaks and loose or missing items that could result in shifting of an axle from its normal position.
- C. Inspect front axle beam for signs of improper repair (e.g., welding or heating).
- D. Inspect for any worn (beyond manufacturer specifications) or improperly assembled U-bolt, shock, kingpin, ball joint, strut, air spring or positioning components.
- E. Inspect all leaf spring hangers, hanger assemblies or portions of leaf for broken, separated, sagging, bent, abnormally worn (beyond manufacturer specifications), shifted or missing components.
- F. Inspect pins and bushings for wear, off-center spring eye, rubbing shackle or nonsymmetric joints. Inspect for any broken, weak or damaged coil spring and mounting assemblies.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

- G. Visually and physically inspect all hydraulic shock absorbers for leaks, looseness, damage or missing components.
- H. Inspect air suspension (if equipped). Observe that the vehicle is lifting level. With the air system fully charged, inspect for any audible or visual air leakage at the air spring assembly, supply hoses and connections.

Caution: Inspector should use caution whenever underneath the vehicle. There may not be sufficient room underneath the vehicle should a problem occur with the air suspension system.

Bumpers

Visually inspect front and rear bumpers for missing attaching hardware or broken hardware. Ensure bumpers are properly mounted and secure and that there is no point protruding beyond the confines of the vehicle so as to create a hazard.

Chassis/Frame/Unibody

- A. Visually inspect frame for cracks, loose attaching hardware, sagging, broken, or unapproved welds to frame side rail or flange.
- B. Visually and physically inspect for body hold-down components for damage that would permit the shifting of the body.
- C. Inspect for cracked, loose, bent, broken or unapproved welds to frame member that affect support of functional components (e.g., steering gear, engine, transmission, body parts or suspension). Welding to frame should be performed only by manufacturer or designee.

Note: Inspect for any crack 1 ½ inch or longer in the frame side rail web which is directed toward bottom flange or any crack extending from the frame side rail web around the radius and into the bottom flange.

Crossmembers

- A. Visually and physically inspect all crossmembers, attaching hardware and other structural supports for cracks or deformations. Visually inspect for three or more adjacent cross members that are missing, broken, damaged or loose.
- B. Inspect any area of the floor that is sagging, weak or damaged due to broken, damaged or loose crossmembers.

Outriggers/Body Supports

Visually inspect all outriggers and attaching hardware for cracks, missing bolts and damage.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

TIRES/WHEELS/HUBS

Hub & Assemblies

- A. Visually inspect kingpin and wheel bearing assemblies for looseness, damage, missing or loose fasteners. This shall include locking pins, draw keys, caps and bearings.
- B. Physically inspect kingpin and bearing assemblies for play as follows: with the tire raised off the ground, grasp tire at top and attempt to move the wheel assembly in and out. If movement is present, inspector can help to identify the source by following this procedure:
Have an assistant fully apply brakes while rechecking play. If movement disappears with brakes applied, then play is in the wheel bearings. If movement remains, it is most likely in the kingpin area. Assembly shall not have excessive kingpin play that exceeds .250 inch measured at outside edge of tire or wheel bearing movement that exceeds .010 inch measured at bearing hub.
- C. Visually inspect A-frames and bushings on Type A vehicles. Inspect bushings for wear, cracking, splitting, or severe extrusion from suspension parts.
- D. For vehicles equipped with "wet hubs" or oil bath hubs the inspector should visually check the site glass for lubricant level.

Tire Inflation

- A. Visually inspect that tires are properly inflated and do not have noticeable leaks. (See 393.76 (h)(1),(2).) If pressure is questionable, inspector shall use a tire pressure gauge to verify pressure.
- B. Visually inspect valve stem for damage and presence of valve cap.

Tire Sidewall

Inspector shall inspect tire sidewall for cuts, wear and any observable bumps or bulges.

Tire Tread Depth

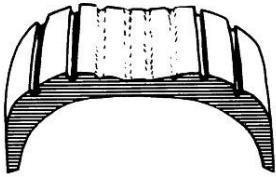
- A. Visually inspect for any front tire worn to less than $\frac{4}{32}$ inch.
- B. Visually inspect for any rear tire worn to less than $\frac{2}{32}$ inch.
- C. If a visual inspection cannot determine that the tire meets the minimum depth requirement, the inspector shall use a commercial tire depth gauge to verify tread depth.

Tire Type

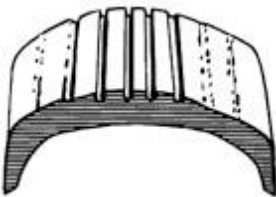
- A. Visually inspect the steer axle (front) to ensure that no recapped, re-grooved tires are present.
- B. Visually inspect tires for improper wear patterns. (See Tire Wear Chart below.)

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

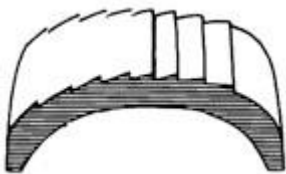
- C. Check proper type (i.e., load range, size, mismatched on axle).



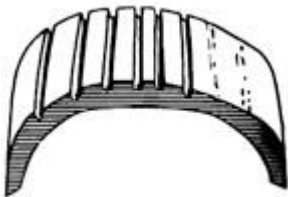
Over Inflation: Excessive wear at the center of the tread indicates that the air pressure in the tire is consistently too high. The tire is riding on the center of the tread and wearing it prematurely. Many times, this visual method of inflation (inflating the tires up until there is no bulge at the bottom) is at fault; tire inflation pressure should always be checked with a reliable tire pressure gauge.



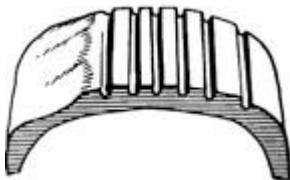
Under Inflation: This type of wear usually results from consistent under inflation. When a tire is under inflated, there is too much contact with the road by the outer treads, which wear prematurely. Tire pressure should be checked with a reliable pressure gauge. When this type of wear occurs, and the tire pressure is known to be consistently correct, a bent or worn steering component or the need for wheel alignment could be indicated. Bent steering or idler arms cause incorrect toe-in and abnormal handling characteristics on turns.



Feathering: Feathering is a condition when the edge of each tread rib develops a slightly rounded edge on one side and a sharp edge on the other. By running your hand over the tire, you can usually feel the sharper edges before you'll be able to see them. The most common cause of feathering is incorrect toe-in setting, which can be cured by having it set correctly. Occasionally toe-in will be set correctly and this wear pattern still occurs.



Side Wear: When an inner or outer rib wears faster than the rest of the tire, the need for alignment is indicated. There is excessive camber in the front suspension, causing the wheel to lean too much to the inside or outside and putting too much load on one side of the tire. Misalignment could be due to sagging springs, worn ball joints, worn control arm bushings or worn kingpin bushings.



Cupping: Cups or scalloped dips appearing around the edge of the tread on one side or the other, almost always indicate worn (sometimes bent) suspension parts. Adjustment of wheel alignment alone will seldom cure the problem. Any worn component that connects the wheel assembly to the vehicle (ball joint, kingpins, wheel bearing, shock absorber, springs, bushings, etc.) can cause this condition. Occasionally, wheels that are out of balance will wear like this, but wheel imbalance usually shows up as bald spots between the outside edges and center of the tread.

Wheels/Rims/Spiders

- A. Inspector shall inspect all nuts, bolts, studs, lugs and holes for damage. Visually inspect for broken, damaged, missing or loose fasteners. Rust around fasteners or on rim surface is sometimes an indication of cracked or loose mounting hardware.
- B. Visually inspect rim for, cracks, welds or broken components. Visually inspect for any lock or slide ring that is broken, cracked, improperly seated, sprung or has mismatched rings.

APPENDIX JH - BRAKE ADJUSTMENT INSPECTION CRITERIA - MINIMUM INSPECTION CRITERIA FOR SCHOOL BUSES

WHEELCHAIR LIFT-EQUIPPED VEHICLES

- A. Visually inspect and operate wheelchair lift to ensure proper function as designed. Inspect for any leaks that would hinder the operation of the lift.
- B. Inspect all safety systems of the wheelchair lift (e.g., hand rails, ramp stops, etc.) and ensure that they are functioning as designed and in compliance with FMVSS 403 and 404.
- C. Ensure that all pinch points are protected from seated passengers.
- D. Visually inspect all wheelchair and occupant securement devices to ensure none are missing or broken and that straps are not frayed.
- E. Inspect that all components for each wheel chair position are compatible in accordance with manufacturers' specifications.
- F. Visually and physically inspect all anchorage points, tracking and fasteners for securement.

WINDOWS

- A. Any glass or glazing that is broken through or missing (393.60);
- B. Any glass not of approved type [393.60(a)];
- C. Windshield has discoloration or other damage in that portion extending upward from the height of the topmost portion of the steering wheel, but not including a two-inch border at the top and a one-inch border at each side of the windshield or each panel thereof, except as follows:
 - 1. Color or tint applied by the manufacturer for the reduction of glare;
 - 2. Any crack not over ¼ inch long, if not intersected by any other crack;
 - 3. Any damaged area, that can be covered by a disc ¾ inch in diameter, if not closer than three inches to any other such damaged area; or 83
 - 4. Driver's side area window(s) have chips, clouding, or cracks that obscure the driver's vision [393.60(c)]; or
- D. No operable defrosting and defogging system to clear the driver's windshield (571.103).

APPENDIX J - BRAKE ADJUSTMENT INSPECTION CRITERIA

<u>CLAMP TYPE BRAKE CHAMBER DATA</u>		
<u>TYPE</u>	<u>OUTSIDE DIAMETER</u>	<u>BRAKE ADJUSTMENT LIMIT</u>
6	4 1/2	1.25 1/4
9	5 1/4	1.375 3/8
12	5 11/16	1.375 3/8
16	6 3/8	1.75 3/4
20	6 25/32	1.75 3/4
24	7 7/32	1.75 3/4
30	8 3/32	2
36	9	2.25 1/4

<u>"LONG STROKE" CLAMP TYPE BRAKE CHAMBER DATA</u>		
<u>TYPE</u>	<u>OUTSIDE DIAMETER</u>	<u>BRAKE ADJUSTMENT LIMIT</u>
16	6 3/8	2.0
20	6 25/32	2.0
24	7 7/32	2.0
24+	7 7/32	2.5
30	8 3/32	2.5
<i>* For 3" maximum stroke type 24 chambers</i>		

<u>TIE ROD PISTON BRAKE CHAMBER DATA</u>		
<u>SIZE</u>	<u>OUTSIDE DIAMETER</u>	<u>BRAKE ADJUSTMENT LIMIT</u>
30	6 1/2 (165mm)	2.5 (64mm)

<u>BOLT TYPE BRAKE CHAMBER DATA</u>		
<u>TYPE</u>	<u>OUTSIDE DIAMETER</u>	<u>BRAKE ADJUSTMENT LIMIT</u>
A	6 15/16	1 3/8
B	9 3/16	1 3/4
C	8 1/16	1 3/4
D	5 1/4	1 1/4
E	6 3/16	1 3/8
F	11	2 1/4
G	9 7/8	2

APPENDIX J - BRAKE ADJUSTMENT INSPECTION CRITERIA

ROTO CHAMBER DATA		
TYPE	OUTSIDE DIAMETER	BRAKE ADJUSTMENT LIMIT
9	4-9/32	1-1/2
12	4-13/16	1-1/2
16	5-13/32	2
20	5-15/16	2
24	6-13/32	2
30	1-1/16	2-1/4
36	7-5/8	2-3/4
50	8-7/8	3

DD-3 BRAKE CHAMBER DATA		
TYPE	OUTSIDE DIAMETER	BRAKE ADJUSTMENT LIMIT
30	8-1/8	2-1/4
NOTE: This chamber has three air lines and is found on motor coaches.		

WEDGE BRAKE DATA
The combined movement of both brake shoe lining scribe marks shall not exceed 1/8 inch (3.18 mm)

APPENDIX K -- STEERING WHEEL FREE PLAY

The steering wheel free play shall not exceed the requirements listed below:

Steering Wheel Diameter	Manual System Movement 30N	Power System Movement 45N
16" (41 cm)	2" (5.1 cm)	4 1/2" (11.5 cm)
18" (46 cm)	2 1/4" (5.4 cm)	4 3/4" (12 cm)
20" (51 cm)	2 1/2" (6.4 cm)	5 1/4" (13.5 cm)
22" (56 cm)	2 3/4" (7 cm)	5 3/4" (14.5 cm)

APPENDIX L- MECHANIC'S PUPIL TRANSPORTATION VEHICLE INSPECTION REPORT

This report is included as an example and details minimum Inspection Points. Schools/contractors may include additional inspection points to this report. This form is to be kept in your school records and made available upon request. **This Checklist Indicates Compliance with Rule 92 Inspection Criteria**

District/System:			County District #:		
Vehicle Year:	Make of Chassis:	Make of Body:	Capacity:	VIN No:	

	First Quarter Date:		Second Quarter Date:		Third Quarter Date:		Fourth Quarter Date:	
	Approved Yes	Approved No	Approved Yes	Approved No	Approved Yes	Approved No	Approved Yes	Approved No
Brakes								
Steering	Yes	No	Yes	No	Yes	No	Yes	No
Suspension Components	Yes	No	Yes	No	Yes	No	Yes	No
Bus Chassis/Frame	Yes	No	Yes	No	Yes	No	Yes	No
Exhaust System	Yes	No	Yes	No	Yes	No	Yes	No
Drive Shaft/Differential	Yes	No	Yes	No	Yes	No	Yes	No
Engine & Fuel System	Yes	No	Yes	No	Yes	No	Yes	No
Tires/Wheels/Hubs	Yes	No	Yes	No	Yes	No	Yes	No
Electrical System	Yes	No	Yes	No	Yes	No	Yes	No
Windshield Wipers	Yes	No	Yes	No	Yes	No	Yes	No
Bus Interior, Floors and Seats (buses only)	Yes	No	Yes	No	Yes	No	Yes	No
Doors, Steps, and Handrail	Yes	No	Yes	No	Yes	No	Yes	No
Emergency Door/Hatches (buses only)	Yes	No	Yes	No	Yes	No	Yes	No
Windows	Yes	No	Yes	No	Yes	No	Yes	No
Heaters, Defrosters	Yes	No	Yes	No	Yes	No	Yes	No
Mirrors and Bus Exterior	Yes	No	Yes	No	Yes	No	Yes	No
Lights, Lamps, Signals	Yes	No	Yes	No	Yes	No	Yes	No
Stop Signal Arm (buses only)	Yes	No	Yes	No	Yes	No	Yes	No
Emergency Equipment:								
Fire Extinguisher	Yes	No	Yes	No	Yes	No	Yes	No
First Aid/Body Fluid Kit	Yes	No	Yes	No	Yes	No	Yes	No
Emergency Reflection	Yes	No	Yes	No	Yes	No	Yes	No
Wheel Chair Lift Equipment (if equipped)	Yes	No	Yes	No	Yes	No	Yes	No

APPENDIX H - MECHANIC'S PUPIL TRANSPORTATION VEHICLE INSPECTION REPORT

First Quarter Approved Not Approved

DESCRIPTION OF ITEMS NOT APPROVED:

This pupil transportation vehicle was inspected by: (Signed) _____ Date: _____
School Appointed Mechanic

Date non-compliant items were corrected: _____
(Signed) _____
School Appointed Mechanic

Second Quarter Approved Not Approved

DESCRIPTION OF ITEMS NOT APPROVED:

This pupil transportation vehicle was inspected by: (Signed) _____ Date: _____
School Appointed Mechanic

Date non-compliant items were corrected: _____
(Signed) _____
School Appointed Mechanic

Third Quarter Approved Not Approved

DESCRIPTION OF ITEMS NOT APPROVED:

This pupil transportation vehicle was inspected by: (Signed) _____ Date: _____
School Appointed Mechanic

Date non-compliant items were corrected: _____
(Signed) _____
School Appointed Mechanic

Fourth Quarter Approved Not Approved

DESCRIPTION OF ITEMS NOT APPROVED:

This pupil transportation vehicle was inspected by: (Signed) _____ Date: _____
School Appointed Mechanic

Date non-compliant items were corrected: _____
(Signed) _____
School Appointed Mechanic

APPENDIX M

CODE OF FEDERAL REGULATIONS 49 CFR 567.7 and 49 CFR 567.3

~~{Code of Federal Regulations}
{Title 49, Volume 6}
{Revised as of October 1, 2006}
From the U.S. Government Printing Office via GPO Access
-[Page 189-190]
TITLE 49--TRANSPORTATION~~

~~CHAPTER V--NATIONAL HIGHWAY TRAFFIC
SAFETY ADMINISTRATION, DEPARTMENT
OF TRANSPORTATION~~

PART 567 CERTIFICATION

~~Sec. 567.7 Requirements for persons who alter certified vehicles.~~

- ~~(a) With respect to the vehicle alterations it performs, an alterer:~~
- ~~—(1) Has a duty to determine continued conformity of the altered vehicle with applicable Federal motor vehicle safety, Bumper, and Theft Prevention standards, and~~
 - ~~—(2) Assumes legal responsibility for all duties and liabilities for certification under the Vehicle Safety Act.~~
- ~~(b) The vehicle manufacturer's certification label and any information labels shall remain affixed to the vehicle and the alterer shall affix to the vehicle an additional label in the manner and location specified in Sec.567.4, in a manner that does not obscure any previously applied labels, and containing the following information:~~
- ~~—(1) The statement: "This vehicle was altered by (individual or corporate name) in month and year in which alterations were completed)and as altered it conforms to all applicable Federal Motor Vehicle Safety, Bumper and Theft Prevention Standards affected by the alteration and in effect in (month, year)." The second date shall be no earlier than the date of manufacture of the certified vehicle (as specified on the certification label), and no later than the date alterations were completed.~~
 - ~~—(2) If the gross vehicle weight rating or any of the gross axle weight ratings of the Vehicle as altered are different from those shown on the original certification label, the modified values shall be provided in the form specified in Sec. 567.4(g)(3) and (4).~~
 - ~~—(3) If the vehicle as altered has a different type classification from that shown on the original certification label, the type as modified shall be provided.~~

~~Sec. 567.3 Definitions.~~

~~—Altered vehicle means a completed vehicle previously certified in accordance with Sec. 567.4 or Sec. 567.5 that has been altered other than by the addition, substitution, or removal of readily attachable components, such as mirrors or tire and rim assemblies, or by minor finishing operations such as painting, before the first purchase of the vehicle other than for resale, in such a manner as may affect the conformity of the vehicle with one or more Federal Motor Vehicle Safety Standard(s) or the validity of the vehicle's stated weight ratings or vehicle type classification.~~

~~—Alterer means a person who alters by addition, substitution, or removal of components (other than readily attachable components) a certified vehicle before the first purchase of the vehicle other than for resale.~~

APPENDIX J

Wheelchair or Mobility and Envelope

