

**TITLE 6            PRIMARY AND SECONDARY EDUCATION**  
**CHAPTER 40       TRANSPORTATION - SCHOOL BUS EQUIPMENT**  
**PART 2            NEW MEXICO SCHOOL BUS STANDARDS AND SCHOOL BUS PHASE-OUT**

**6.40.2.1            ISSUING AGENCY:** The Public Education Department  
[7-01-96, 7-30-99; 6.40.2.1 NMAC - Rn, 6 NMAC 9.2.1 7-31-2000; A, 11-15-2005]

**6.40.2.2            SCOPE:** Provisions apply to the design and construction standards for school buses manufactured for use in New Mexico and school bus phase-out.  
[7-01-96; 6.40.2.2 NMAC - Rn, 6 NMAC 9.2.2 & A, 7-31-2000]

**6.40.2.3            STATUTORY AUTHORITY:** Authority is Chapter 22, Article 16, Transportation of Students, Sections 22-16-2.A and B; 22-16-9; and 22-16-11.A, NMSA, 1978.  
[7-01-96; 6.40.2.3 NMAC - Rn, 6 NMAC 9.2.3 7-31-2000]

**6.40.2.4            DURATION:** Permanent.  
[7-01-96; 6.40.2.4 NMAC - Rn, 6 NMAC 9.2.4 7-31-2000]

**6.40.2.5            EFFECTIVE DATE:** July 1, 1996, unless a later date is cited at the end of a section.  
[7-01-96; 6.40.2.5 NMAC - Rn, 6 NMAC 9.2.5 & A, 7-31-2000]

**6.40.2.6            OBJECTIVE:** The state transportation director shall maintain school bus construction standards that meet the needs for school operations that are consistent with national recommendations and design objectives.

**A.** To establish the parameters of school bus design and construction which provides a safe environment for student passengers.

**B.** The school bus construction standards shall be developed for the body and chassis of the school bus.

**C.** The school bus construction standards shall contain construction and design for transporting students with disabilities.

**D.** The school bus construction standards shall be developed to include design and construction to meet the needs of a unified transportation system.

**E.** To establish school bus construction costs for small, medium and large buses, and to establish a maximum useful life criteria for spare and activity buses.

[7-01-96; 6.40.2.6 NMAC - Rn, 6 NMAC 9.2.6, 6 NMAC 9.2.8 & A, 7-31-2000]

**6.40.2.7            DEFINITIONS:**

**A.            Type A** - A Type "A" school bus is a van conversion or bus constructed utilizing a cutaway front-section vehicle with a left side driver's door. The entrance door is behind the front wheels. This definition includes two classifications: Type A-I, with a gross vehicle weight rating (GVWR) less than equal to 10,000 pounds; and Type A-II with a GVWR greater than 10,000 pounds. Type "A-I" school buses are not approved for use in New Mexico.

**B.            Type B** - A Type "B" school bus is constructed utilizing a stripped chassis. The entrance door is behind the front wheels. This definition includes two classifications: Type B1, with GVWR less than or equal to 10,000 pounds; and Type B2, with a GVWR greater than 10,000 pounds. **Type "B" school buses are not approved for use in New Mexico.**

**C.            Type C** - A Type "C" school bus is constructed utilizing a chassis with a hood and front fender assembly. The entrance door is behind the front wheels.

**D.            Type D** - A Type "D" school bus is constructed utilizing a stripped chassis. The entrance door is ahead of the front wheels.

**E.            Commercial advertiser** - A person who advertises a product or services for profit or not for profit and has a permitted advertisement.

**F.            School bus private owner** - A person who owns a school bus other than a local school district, the state public education department, the state or any other political subdivision of the state.

[7-01-96, 7-31-97; 6.40.2.7 NMAC - Rn, 6 NMAC 9.2.7 & A, 7-31-2000; A, 12-30-2010]

**6.40.2.8            SCHOOL BUS PHASE-OUT:**

**A.** All school buses including spare and activity buses shall not be operated for any purpose once they have become twenty (20) years of age, from the date of (body) manufacture.

**B.** School buses twenty (20) years of age, from the date of (body) manufacture shall be removed from service in accordance with Section 22-16-9, NMSA, 1978.  
[7-01-96; 6.40.2.8 NMAC - Rn, 6 NMAC 9.2.9 & A, 7-31-2000]

#### **6.40.2.9 BUS CHASSIS STANDARDS**

##### **A. AIR CLEANER**

(1) The engine intake air cleaner system shall be furnished and properly installed by the chassis manufacturer to meet engine manufacturer's specifications.

(2) All diesel engine air filters shall include a restriction indicator of the latching type that retains the maximum restriction developed during operation of the engine. The indicator should include a reset control so the indication can be returned to zero when desired.

##### **B. ALTERNATIVE FUELS**

(1) Chassis shall meet all BUS CHASSIS STANDARDS.

(2) Chassis shall meet all applicable 49 CFR 571 federal motor vehicle safety standards (FMVSS).

**C. AXLES:** The front and rear ends, including suspension assemblies, shall have a gross axle weight rating at ground at least equal to that portion of the load as would be imposed by the chassis manufacturer's maximum gross vehicle weight rating.

##### **D. BRAKES**

(1) The braking system shall include the service brake and a parking emergency brake.

(2) Buses using air in the operation of the brake system shall be equipped with warning signals, readily audible and visible to the driver, that will give a continuous warning when the air pressure available in the system for braking is 60 psi (pounds per square inch) or less. An illuminated gauge shall be provided that will indicate to the driver the air pressure in pounds per square inch for the operation of the brakes.

(3) Any brake system with a dry reservoir shall be equipped with a check-valve or equivalent device to ensure that in the event of failure or leakage in its connection to the source of compressed air, the stored dry air shall not be depleted by the leakage or failure.

(4) Buses using a hydraulic-assist brake shall be equipped with warning signals, readily audible and visible to the driver, that will provide continuous warning in the event of a loss of fluid flow from primary source and in the event of discontinuity in that portion of the vehicle electrical system that supplies power to the backup system.

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

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

(7) All type C and type D school buses shall be equipped with air brakes.

##### **E. BUMPER, FRONT**

(1) 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 on 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.

(2) Unless energy absorbing bumper is used, the front bumper shall be of pressed steel channel or equivalent material at least 3/16-inch thick and not less than 8-inch wide (high) and 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.

(3) 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.

(4) If tow eyes or hooks are furnished they shall be attached so as not to project beyond the front bumper. Tow eyes or hooks attached to the frame chassis **may** be furnished by the chassis manufacturer. This installation shall be in accordance with the chassis manufacturer's standards.

(5) 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.

(6) The exhaust system on vehicles equipped with a power lift unit may be routed to the left of the right frame rail to allow for the installation of a power lift unit on the right side of the vehicle.

**F. CLUTCH**

- (1) Clutch torque capacity shall be equal to or greater than the engine torque output.
- (2) A starter interlock shall be installed to prevent actuation of the starter if the clutch is not depressed.

**G. COLOR**

(1) Chassis, including wheels and front bumper, shall be black. Body cowl, hood, and fenders shall be in national school bus yellow. The flat top surface of the hood may be non-reflective national school bus yellow. Activity school buses may be team colors.

(2) Demountable rims, if used, may be, silver, gray or black as received from the wheel manufacturer. Wheels may be polished aluminum, chrome or of a team color on activity buses only.

**H. COOLING SYSTEMS (ENGINE):** Engine cooling system shall be sufficient capacity to properly maintain engine-operating temperature to manufactures specifications at the rated horsepower.

**I. DRIVE SHAFT:** Drive shafts shall be protected by a metal guard or guards around the circumference of the drive shafts to reduce the possibility of its whipping through the floor or dropping to the ground if broken.

**J. ELECTRICAL SYSTEM**

**(1) Battery**

(a) Storage battery shall have minimum cold cranking capacity rating equal to the cranking current required for 30 seconds at 0 degrees Fahrenheit (-17.8°C) and a minimum reserve capacity rating of 120 minutes at 25 amps. Higher capacities may be required depending upon optional equipment and local environmental conditions.

(b) Since all batteries are to be secured in a sliding tray in the body, chassis manufacturers shall temporarily mount the battery on the chassis frame, except that van conversion or cutaway front-section chassis may be manufacturer's standard configuration. In these cases, the final location of the battery and the appropriate cable lengths shall be according to the design objectives, or as mutually agreed upon by the chassis and body manufacturer. In all cases, however, the battery cable provided with the chassis shall have sufficient length to allow some slack. Battery storage area shall be secured with a locking system or release system that shall be accessible from the driver's compartment.

**(2) Alternator**

(a) All type A-II buses up to 15,000 lbs. GVWR shall have a minimum 60-ampere alternator.

(b) Types A-II buses over 15,000 lbs. GVWR and all types C and D buses shall be equipped with a heavy-duty truck or bus-type alternator, having a minimum output rating of 130 amperes. Alternators of 130 through 145-ampere design shall produce a minimum of 50 percent amperes output at engine idle speed.

(c) All buses equipped with an electrical power lift shall have a minimum 130-ampere alternator.

(d) Direct-drive alternator is permissible in lieu of belt drive. Belt drive shall be capable of handling the rated capacity of the alternator with no detrimental effect on other driven components.

**(3) Wiring**

(a) All wiring shall conform to current applicable recommended practices of the society of automotive engineers (SAE). All wiring shall use a standard color and number coding and each chassis shall be delivered with a wiring diagram that illustrates the wiring of the chassis.

(b) 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, that shall contain the following terminals for the body connections:

- (i) main 130 amp body circuit
- (ii) tail lamps
- (iii) right turn signal
- (iv) left turn signal
- (v) stop lamps
- (vi) back up lamps
- (vii) instrument panel lights (rheostat controlled by headlamp switch)

**(4) Circuits**

(a) An appropriate identifying diagram (color and number coded) for electrical circuits shall be provided to the body manufacturer for distribution to the end user.

(b) Headlight system must be wired separately from the body-controlled solenoid.

**(5) Daytime running light**

(a) Exterior low-beam headlights and taillights may be provided with a switch to automatically operate said lamps when the vehicle's ignition is engaged. This switch, if furnished, shall not engage while the starter is engaged. If this switch designed to provide reduced illumination under normal operating conditions, a means whereby the headlights and taillights can be engaged at full power shall be provided.

(b) Chassis manufacturer shall provide a means for body manufacturer to include the taillights in the daytime running light (DRL) circuit.

**K. ENGINE FIRE EXTINGUISHER (optional equipment):** Manufacturer may provide an automatic fire extinguisher system in the engine compartment.

**L. EXHAUST SYSTEM**

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

(2) Tailpipe shall be constructed of a corrosion-resistant tubing material at least equal in strength and durability to 16-gauge steel tubing.

(3) Chassis manufacturers shall furnish an exhaust system with tailpipe of sufficient length to exit the rear of the bus at the left side of the bus body no more than 18-inches forward of the front edge of the rear wheelhouse opening. If designed to exit at the rear of the bus, the tailpipe shall extend at least five 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.

(a) On types C and D vehicles, the tailpipe shall not exit beneath a fuel fill or emergency door exit.

(b) Type A chassis may be furnished with the manufacturer's standard tailpipe configuration.

(4) Exhaust system on a chassis shall be properly insulated from the fuel tank connections by securely attached metal shield at any point where it is 12-inches or less from tank or tank connection.

(5) Muffler shall be constructed of corrosion-resistant material.

(6) The exhaust system on vehicles equipped with a power lift unit may be routed to the left of the right frame rail to allow for the installation of a power lift unit on the right side of the vehicle.

**M. FENDERS, FRONT-TYPE C VEHICLES**

(1) Total spread of outer edges of front fenders, measured at fender line, shall exceed total spread of front tires when front wheels are in straight-ahead position.

(2) Front fenders shall be properly braced and free from any body attachments.

**N. FRAME**

(1) Frame or equivalent shall be of such design and strength characteristics as to correspond at least to standard practice for trucks of the same general load characteristics which are used for highway service.

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

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

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

(5) Frame lengths shall be provided in accordance with design objectives, except where body and chassis manufacturer are the same or have established mutual design criteria for the vehicle.

**O. FUEL TANK**

(1) Fuel tank or tanks having a minimum 30-gallon capacity with a 25-gallon actual draw shall be provided by the chassis manufacturer. The tank shall be filled and vented to the outside of the body, in a location where accidental fuel spillage will not drip or drain on any part of the exhaust system. Vehicles with a wheel base of 193-inches and larger shall be equipped with fuel tank or tanks of minimum 60-gallon capacity with a 50-gallon actual draw.

(2) No portion of the fuel system, which is located outside the engine compartment, except the filler tube, shall extend above the top of the chassis frame rail. Fuel lines shall be mounted to obtain maximum possible protection from the chassis frame.

(3) Fuel filter with replaceable element shall be installed between the fuel tank and engine.

(4) Fuel tank installation shall be in accordance with design objectives and all federal motor vehicle safety standards in effect on the date of manufacture of the bus. 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.

(5) The actual draw capacity of each fuel tank shall be 83% of the tank capacity.

(6) Unless specific agreement has been made between the body and chassis manufacturers, fuel tanks and filler spouts shall not be located in spaces restricted by design objectives.

(7) Installation of alternative fuel systems, including fuel tanks and piping from tank to engine, shall comply with all applicable fire codes and applicable federal motor vehicle safety standards in effect on the date of manufacture of the bus. Installation of LPG tanks shall comply with national fire protection association (NFPA) 58.

**P. HEATING SYSTEM:** The chassis engine shall have plugged openings for the purpose of supplying hot water for the bus heating system. The openings shall be suitable for attaching 3/4-inch pipe thread/hose connector. The engine shall be capable of supplying water having a temperature of at least 170 degrees Fahrenheit at a flow rate of 50 pounds/per minute at the return end of 30 feet of one inch inside diameter automotive hot water heater hose. (School Transportation Manufacturing Technical Committee Standard No. 001 - Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating Equipment.)

**Q. HORN:** Bus shall be equipped with horn or horns of standard make with each horn capable of producing a complex sound in bands of audio frequencies between 250 and 2,000 cycles per second and tested in accordance with SAE J-377.

**R. INSTRUMENTS AND INSTRUMENT PANEL**

(1) Chassis shall be equipped with the following instruments and gauges. (lights in lieu of gauges are not acceptable, except as noted):

- (a) speedometer;
- (b) odometer which will give accrued mileage (to seven digits), including tenths of miles;
- (c) voltmeter; ammeter with graduated charge and discharge, with ammeter and its wiring compatible with generating capacities, is permitted in lieu of voltmeter;
- (d) oil pressure gauge;
- (e) water temperature gauge;
- (f) fuel gauge;
- (g) upper beam headlight indicator light;
- (h) brake indicator gauge light indicator in lieu of gauge is permitted on vehicle equipped with hydraulic-over-hydraulic brake system;
- (i) turn signal indicator light;
- (j) start indicator light where appropriate.

(2) All instruments shall be easily accessible for maintenance and repair.

(3) Instruments and gauges shall be mounted on the instrument panel so that each is clearly visible to the driver while seated in a normal driving position.

(4) Instrument panel shall have lamps of sufficient candlepower to illuminate all instruments and gauges and shift selector indicator for automatic transmission.

**(5) Multi-function gauge (MFG)**

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

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

(c) The use of a MFG does not relieve the requirements for audible warning devices, where required.

**S. OIL FILTER:** An oil filter with a replaceable element shall be provided and connected by flexible oil lines if not a built-in or an engine-mounted design. The oil filter shall have a capacity of at least one (1) quart.

**T. OPENINGS:** All openings in the floorboard or firewall between chassis and passenger compartment, such as for gearshift selector and parking brake lever, shall be sealed.

**U. PASSENGER LOAD**

(1) 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.

(a) For purposes of calculation, the driver's weight is 150 pounds.

(b) For purposes of calculation, the pupil weight is 120 pounds per pupil.

(2) Actual gross vehicle weight (GVW) shall not exceed the chassis manufacturer's GVWR for the chassis nor shall the actual weight carried on any axle exceed the chassis manufacturer's GVWR.

(3) Manufacturer's (GVWR) shall be furnished in duplicate (unless more are requested) by manufacturers to the state agency having pupil transportation jurisdiction. The state agency shall, in turn, transmit such ratings to other state agencies responsible for development or enforcement of state standards for school buses.

**V. POWER AND GRADE ABILITY:** Shall not exceed the manufacturer's recommended standards for the vehicle size. A maximum speed limiter shall be set at 75 miles per hour. A lower setting is permissible at the request of the school bus owner. A cruise control mechanism may be installed on school activity buses only.

**W. RETARDER SYSTEM (OPTIONAL EQUIPMENT):** Retarder system, if used, shall maintain the speed of the fully loaded school bus at 19.0 mph or 30 km/hr on a 7% grade for 3.6 miles or 6 km.

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

**Y. STEERING GEAR**

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

(2) If external adjustments are required, steering mechanism shall be accessible to accomplish same.

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

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

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

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

**Z. SUSPENSION SYSTEM:** A soft ride suspension system, (taper leaf) low friction parabolic springs, vari-rate and two stage steel leaf rear springs shall be provided on type C and D buses where lift equipment is required.

(1) The capacity of springs or suspension assemblies shall be commensurate with chassis manufacturer's GVWR rating.

(2) Leaf rear springs shall be a progressive rate or multi-stage design. Front leaf springs shall have a stationary eye at one end and shall be protected by wrapped leaf in addition to the main leaf.

**AA. THROTTLE:** The force required to operate the throttle shall not exceed 16 pounds throughout the full range of accelerator pedal travel.

**BB. TIRES AND RIMS**

(1) 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 multi-piece rims and/or tube-type tires shall not be permitted on any school bus ordered after the effective date of these standards. Rims on activity buses may be chrome or of a team color.

(2) Dual rear tires shall be provided on type A-II, type C, and type D school buses.

(3) All tires on a vehicle shall be of the same size, and the load range of the tires shall meet or exceed the GVWR as required by 49 CFR 571.120 (FMVSS).

(4) If the vehicle is equipped with a spare tire and rim assembly, it shall be the same size as those mounted on the vehicle.

(5) If a tire carrier is required, it shall be suitably mounted in an accessible location outside the passenger compartment. Exception: On type A vehicles, spare tire and carrier may be mounted behind the last seat at the rear of the bus if adequately secured and mounted in such a way as not to interfere with the emergency exit.

**CC. TRANSMISSION**

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

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

(3) An electronic control or similar device may be installed to ensure that automatic transmissions cannot accidentally be moved out of the neutral or park gear position while the driver is not in the driver's seat.

(4) A two-speed axle is not permitted.

**DD. TURNING RADIUS**

(1) A chassis with a wheelbase of 264-inches or less shall have a right and left turning radius of not more than 42 1/2 feet, curb to curb measurement.

(2) A chassis with a wheelbase of 265-inches or more shall have a right and left turning radius of not more than 44 1/2 feet, curb to curb measurement.

**EE. UNDERCOATING:** The chassis manufacturers 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 using modified tests.

**FF. VEHICLE INTERLOCK SYSTEM:** School buses equipped with a power lift shall meet 49 CFR 571.403 and 571.404 (FMVSS). [7-01-96; 6.40.2.9 NMAC - Rn, 6 NMAC 9.2.10 & A, 7-31-2000; A, 07-15-2003; A, 11-15-2005; A, 12-30-2010]

#### **6.40.2.10 BUS BODY STANDARDS**

**A. AIR CONDITIONING (optional equipment):** Air conditioning systems must meet manufacture standards.

##### **B. AISLE**

(1) All emergency doors shall be accessible by a 12-inches minimum aisle. 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. A flip seat in the unoccupied (up) position shall not obstruct the 12-inches minimum aisle to any side emergency door.

(2) The seat backs shall be slanted sufficiently to give aisle clearance of 15-inches at tops of seat backs.

(3) All school buses equipped with a power lift shall provide a 30" aisle leading from any wheelchair/mobility aid position to at least one emergency door and the lift area.

**C. BACK-UP WARNING ALARM (optional equipment):** An automatic audible alarm may be installed behind the rear axle and shall comply with the published backup alarm standards (SAE 994), providing a minimum of 112 dBA for rubber-tired vehicles.

##### **D. BATTERY**

(1) Battery is to be furnished by chassis manufacturer.

(2) When the battery is mounted as described in the chassis section, the body manufacturer shall attach the battery securely on a slide-out or swing-out tray in a closed, vented compartment in the body skirt, so that the battery is accessible for convenient servicing from the outside. Battery compartment door or cover shall be hinged at front or top, and secured by a locking system. On all type A buses, one or both batteries may be mounted in the engine compartment in an accessible location.

(3) 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. (optional equipment)

**E. BUMPER (FRONT):** On a type "D" school bus, if the chassis manufacturer does not provide a bumper, it shall be provided by the body manufacturer. The bumper will conform to the standards in the chassis section.

##### **F. BUMPER (REAR)**

(1) Bumper shall be pressed steel channel or equivalent material, at least 3/16-inches thick, and shall be a minimum of 9 1/2-inches wide (high) on types A-II, C and D buses and of sufficient strength to permit being pushed by another vehicle without permanent distortion.

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

(3) Bumper shall be attached to the chassis frame in such a manner that it may be easily removed. It shall be so braced as to withstand impact from a rear or side impact. It shall be so attached as to discourage hitching of rides.

(4) Bumper shall extend at least 1-inch beyond rear-most part of body surface measured at the floor line.

**G. CHAINS (TIRE) (optional equipment):** See wheel housing

##### **H. COLOR**

(1) The school bus body shall be painted national school bus yellow (NSBY).

(2) The body exterior paint trim shall be black.

(3) The roof of the bus shall be painted white extending down to the drip rails on the sides of the body, except that front and rear roof caps shall remain national school bus yellow.

**I. COMMUNICATIONS:** All school buses may be equipped with a two-way electronic voice communications system, which can be used at any point in the vehicle's route.

**J. CONSTRUCTION:**

(1) **Side intrusion test:** The bus body shall be so constructed to withstand an intrusion force equal to the curb weight of the vehicle; but not to exceed twenty thousand (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 (7) body section mock up, with seats installed shall be load tested at a location twenty-four inches (24") plus or minus two inches (2") above the floor line, with a maximum 10-inch diameter cylinder, forty-eight inches (48") 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 the curb weight or twenty thousand (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 (10") 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.

(2) Construction shall be reasonably dust-proof watertight.

**K. CROSSING CONTROL ARM:** A crossing control arm if equipped shall be placed on the front bumper and shall have a positive locking device. The operation of the crossing control arm shall be equipped with a shut off control switch located in the driver compartment.

(1) Buses equipped with a crossing control arm shall be mounted on the right side of the front bumper, and shall open to a 90° angle.

(2) All components of the crossing control arm and all connections shall be weatherproofed.

(3) The crossing control arm shall incorporate system connectors (electrical, vacuum, or air) at the gate and shall be easily removable to allow for towing of the bus.

(4) The crossing control arm shall meet or exceed SAE Standard J1133.

(5) The crossing control arm shall be constructed of noncorrosive or nonferrous material or treated in accordance with the body sheet metal standard, See METAL TREATMENT Section 11 (29).

(6) There shall be no sharp edges or projections that could cause hazard or injury to students.

(7) The crossing control arm shall extend approximately 72-inches from the front bumper when in the extended position.

(8) The crossing control arms shall extend simultaneously with the stop arm(s) by means of the stop arm controls.

**L. DEFROSTERS**

(1) Defrosting and defogging equipment shall direct a sufficient flow of heated air onto the windshield, the window to the left of the driver, and the glass in the viewing area directly to the right of the driver to eliminate frost, fog and snow.

(2) The defrosting system shall conform to SAE standards J381 and J382.

(3) The defroster and defogging system shall be capable of furnishing heated outside ambient air, except the part of the system furnishing additional air to the windshield, entrance door and step well may be of the re-circulating air type.

(4) Auxiliary fans are not considered defrosting or defogging systems.

(5) Portable heaters shall not be used.

**M. DOORS**

(1) Service door

(a) Service door shall be in the drivers control, and designed to afford easy release and provide a positive latching device. An air or electric assist system shall be provided.

(b) Service door shall be located on the right side of the bus, opposite and within direct view of driver.

(c) Service door shall have a minimum horizontal opening of 24-inches and a minimum vertical opening of 68-inches.

(d) Service door shall be a split-type, sedan-type, or jack-knife type. (Split-type door includes any sectioned door, which divides and opens inward or outward.) If one section of a split-type door opens inward and the other opens outward, the front section shall open outward.



(e) Lower as well as upper door panels shall be of approved safety glass. Bottom of each lower glass panel shall not be more than 10-inches from the top surface of bottom step. Top of each upper glass panel shall not be more than 3-inches from the top of the door. Type A vehicles shall have an upper panel (windows) of safety glass with an area of at least 350 square inches.

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

(g) There shall be no door to left of driver on type C or D vehicles. All type A vehicles may be equipped with chassis manufacturer's standard door.

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

(i) On power operated service doors the emergency release valve, switch or device to release the service door must be placed above or to the immediate left or right of the service door and clearly labeled.

(2) [Reserved]

#### **N. DRIVER COMPARTMENT**

(1) Driver seat supplied by the body company shall be a high back six way adjustable seat with a minimum seat back adjustment of 15 degrees, not requiring the use of tools, and with a head restraint to accommodate a 95th percentile adult male, as defined in 49 CFR 571.208 (FMVSS). The driver seat shall be secured with nuts, bolts, and washers or flanged-headed nuts.

(2) Driver seat positioning and range of adjustments shall be designed to accommodate comfortable actuation of the foot control pedals by 95% of the male/female adult population.

(3) Exception: Type A bus standard high back seat.

(4) A type 2 lap belt/shoulder harness shall be provided for the driver. The lap belt and shoulder harness shall be integrated into the seat design and not anchored to the side of the bus body or the floor. The assembly shall be equipped with an emergency locking retractor (ELR) for the continuous belt system. On all buses except type A equipped with standard chassis manufacturer's driver seat, the lap portion of the belt shall be guided or anchored to prevent the driver from sliding sideways under it. The lap belt/shoulder harness shall be designed to allow for easy adjustment in order to fit properly and effectively protect drivers varying from 5th percentile female to 95th percentile male.

#### **O. EMERGENCY EXITS**

(1) Emergency door(s) and other emergency exits shall comply with the requirements of 49 CFR 571.217 (FMVSS) and any of the requirements of these standards that exceed 49 CFR 571.217 (FMVSS).

(2) Emergency door requirements

(a) Upper portion of the emergency door shall be equipped with approved safety glazing, exposed area of which shall be at least 400 square inches. The lower portion of the rear emergency doors on types A-II, C, and D vehicles shall be equipped with a minimum of 350 square inches of approved safety glazing.

(b) There shall be no steps leading to an emergency door.

(c) The words "EMERGENCY DOOR," in letters at least 2-inches high, shall be placed at the top of or directly above the emergency door, or on the door in the metal panel above the top glass, both inside and outside the bus.

(d) The emergency door(s) shall be equipped with padding at top edge of each door opening. Padding shall be at least 3-inches wide and 1-inch thick, and extend the full width of the door opening.

(e) The side emergency door, if installed, must meet the requirements as set forth in 49 CFR 571.217 (FMVSS), regardless of its use with any other combination of emergency exits.

(f) There shall be no obstruction higher than 1/4-inch across the bottom of any emergency door opening.

(g) The rear emergency window shall have an assisted lifting device that will aid in lifting and holding the rear emergency window open.

(3) Emergency exit requirements shall comply with 49 CFR 571.217 (FMVSS).

#### **P. EMERGENCY EQUIPMENT**

(1) Fire extinguisher

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

(b) The fire extinguisher shall have a total rating of 2A10BC or greater. The operating mechanism shall be sealed with a type of seal, which will not interfere with the use of the fire extinguisher.

(2) First-aid kit

(a) The bus shall have a removable moisture-proof and dust-proof first aid kit in an accessible place in the driver compartment. It shall be properly mounted and identified as a first aid kit. The location for the first aid kit shall be marked. Contents of first aid kit shall be in compliance with the following standards.

(b) A first-aid kit for all school buses is described as follows: 2 - 1 inch x 2 1/2 yards adhesive tape rolls, 24 - sterile gauze pads 3 inches x 3 inches, 100 - 3/4 inches x 3 inches adhesive bandages, 8 - 2 inches bandage compress, 10 - 3 inches bandage compress, 2 - 2 inches x 6 yds. sterile gauze roller bandages, 2 - non-sterile triangular bandages approximately 40 inches x 36 inches x 54 inches with 2 safety pins, 3 - sterile gauze pads 36 inches x 36 inches, 3 - sterile eye pads, 1 - rounded-end scissors, 1 - pair of medical examination gloves, 1 - mouth-to-mouth airway.

(3) Body fluid clean-up kit: Each bus shall have a removable and moisture-proof body fluid clean-up kit accessible to the driver. It shall be properly mounted and identified as a body fluid clean-up kit. Contents of body fluid clean-up kit shall include: 1 - Disposable bag with securement device, 1 - Scoop, 1 - Scraper, 1 - Disinfectant, 1 - Surface wipe, 1 - Pair of medical examination gloves.

(4) Warning devices: Each school bus shall contain at least three (3) reflectorized triangle road-warning devices mounted in an accessible place. These devices must meet requirements in 49 CFR 571.125 (FMVSS) and must be mounted in an accessible location in the driver compartment.

(5) Any of the emergency equipment may be mounted in an enclosed compartment, provided the compartment is labeled in not less than one inch letters, stating the piece(s) of equipment contained therein. The enclosed compartment shall be located in the driver compartment.

(6) Fuses are not permitted.

**Q. FLOORS**

(1) Floor in under-seat area, including tops of wheel housing, driver compartment and toeboard, shall be covered with rubber floor covering or equivalent, having a minimum overall thickness of .125-inches. The driver area on all type A buses may be manufacturer's standard flooring and floor covering.

(2) Floor covering in aisles shall be of aisle-type rubber or equivalent, wear-resistant and ribbed. Minimum overall thickness shall be .187-inches measured from tops of ribs.

(3) 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 a type recommended by the manufacturer of floor-covering material. All seams must be sealed with waterproof sealer.

(4) On types C and D buses a flush-mounted screw-down plate that is secured and insulated shall be provided to access the fuel tank sending unit or fuel pump.

**R. GLAZING:** Glazing shall not exceed 28% and shall be installed in all doors, windows, and windshields consistent with federal, state, and local regulations.

**S. HANDRAILS:** At least one handrail shall be installed. The handrail(s) shall assist passengers during entry or egress, and be designed to prevent entanglement, as evidenced by passage of the NHTSA string and nut test.

**T. HEATING AND AIR CONDITIONING SYSTEMS**

(1) Heater shall be hot-water and/or combustion type.

(2) If only one heater is used, it shall be fresh-air or combination fresh-air and recirculation type.

(3) If more than one heater is used, additional heaters may be re-circulating air type.

(4) The heating system shall be capable of maintaining bus interior temperatures as specified in SAE test procedure J2233.

(5) Auxiliary fuel-fired heating systems are not permitted.

(6) All heaters installed by body manufacturers shall bear a nameplate that indicates the heater rating in accordance with SBMTC Standard No. 001. The plate shall be affixed by the heater manufacturer and shall constitute certification that the heater performance is as shown on the plate.

(7) 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 any sharp edges and shall not interfere with or restrict the operation of any engine function. Heater hoses shall conform to SAE Standard J20. Heater lines on the interior of bus shall be shielded to prevent scalding of the driver or passengers.

(8) 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 buses, the valves may be installed in another accessible location.

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

(10) All combustion heaters shall be in compliance with current federal motor carrier safety regulations.

(11) 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.

(12) 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 heater.

(13) Air conditioning (optional) may be equipped.

**U. HINGES:** All exposed metal door hinges subject to corrosion shall be designed to allow lubrication to be channeled to the center 75% of each hinge loop without disassembly.

**V. IDENTIFICATION**

(1) 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 visibility. Letters shall conform to "Series B" of standard alphabets for highway signs. "SCHOOL BUS" lettering shall have a reflective background, or as an option, may be illuminated by backlighting.

(2) The name of the school district shall be displayed in the belt line.

(3) Optional lettering may be displayed as follows:

(a) The name of the owner or operator identification may be displayed on the side of the bus but cannot be more than 10X10 inches.

(b) The location of the battery(ies) may be identified by the word "BATTERY" or "BATTERIES" on the battery compartment door in 2-inch lettering.

(c) Manufacturer, dealer or school identification or logos. Team logos of team colors may be painted on the sides of the school bus, not to interfere with driver(s) visibility.

(d) Symbols identifying the bus as equipped for or transporting students with special needs may display (on the front and/or side of the bus as close to the special service entrance where it is visible when the door is in its open position) the international symbol of accessibility. 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 U.S. department of transportation FHA FP-85 standards.

(e) Lettering on the rear of the bus relating to school bus flashing signal lamps, railroad stop procedures and no right turn.

(f) Identification of fuel type shall be in 2-inch lettering adjacent to the fuel filler opening.

(4) A school bus numbering system is required.

(a) Location: Side-on the panel immediately below the first passenger window on each side; or on the first passenger window if there is a need for changing numbers; or placed above the service door on the right side and above the driver window on the left side. Front and rear - on each bumper or other location that would be readily visible; or in the right-hand corner of the windshield and right-hand rear window so as not to obstruct driver vision, if there is need for changing numbers.

(b) Size: Numbers a minimum of five inches (5") in height.

(c) Color: Black on national school bus yellow background or national school bus yellow on black background. In addition the operator may have a vehicle control # displayed on the front and/or back of the bus, but not larger than 1-inch black lettering. Buses purchased exclusively for activities may be of a team color and have school district logo on the side or the roofline of the bus. A school bus identified as an "activity bus" may have a lighted front sign, which may allow for a "logo" or team name in lieu of school bus. These buses are prohibited from use for to and from school. Logos may be school district team colors.

**W. INSIDE HEIGHT:** Inside body height shall be 72-inches or more, measured metal to metal, at any point on longitudinal center line from front vertical bow to rear vertical bow.

**X. INSULATION**

(1) Ceiling and walls shall be insulated with the proper material to deaden sound and to reduce vibration to a minimum. If thermal insulation is specified, it shall be fire-resistant, UL approved, and approximately 1-1/2-inch thick with minimum R-value of 5.5. Insulation shall be installed to prevent sagging and shall not be of an animal origin.

(2) Floor insulation is required and shall be either 5 ply 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 the exterior-type softwood plywood, C-D grade as specified in standard issued by U.S. department of commerce. When plywood is used, all exposed edges shall be sealed.

**Y. INTERIOR**

(1) Interior of bus shall be free of all unnecessary projections, which include luggage racks and attendant handrails, to minimize the potential for injury. (Attendant rails may be permitted in wheelchair lift equipped buses) 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. Buses may be equipped with a storage compartment for tools, tire chains, and/or tow chains (See storage compartment section WW).

(2) Interior overhead storage compartments may be provided on an activity school bus if they meet the following criteria:

- (a) meet head protection requirements of 49 CFR 571.222 (FMVSS), where applicable;
- (b) have a maximum rated capacity displayed for each compartment;
- (c) have all corners and edges rounded with a minimum radius of 1-inch or padded equivalent to door header padding;
- (d) must be attached to the bus sufficiently to withstand a force equal to twenty (20) times the maximum rated capacity;
- (e) shall have no protrusions greater than 1/4-inch.

(3) The driver area forward of the foremost padded barriers will permit the mounting of required safety equipment and vehicle operation equipment.

(4) 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.

#### **Z. LAMPS AND SIGNALS**

(1) Interior lamps shall be provided which adequately illuminate aisle and step well. Step well light shall be illuminated by a service door operated switch, to illuminate only when headlights and/or clearance lights are on and service door is open.

(2) Body instrument panel lights shall be controlled by an independent rheostat switch.

(3) School bus alternately flashing signal lamps:

(a) Bus shall be equipped with two light emitting diodes (LED) red lamps at the rear of vehicle and two LED red lamps at the front of the vehicle.

(b) In addition to the four red lamps described above, four LED amber lamps shall be installed so that one amber lamp is located 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 amber lamps are energized manually, and red lamps are 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.

(c) Area around lens of each alternately flashing signal lamp and extending outward approximately 3-inches shall be black in color. In installations where there is no flat vertical portion of body immediately surrounding entire lens of lamp, a circular or square band of black approximately 3-inches wide, immediately below and to both sides of the lens, shall be black in color on body or roof area against which signal lamp is seen (from distance of 500 feet along axis of vehicle). Visors or hoods, black in color, with a minimum depth of 4-inches shall be provided.

(d) Red lamps shall flash at any time the stop signal arm is extended. An optional headlight wig-wag warning system may be installed to operate only when the red lamps are flashing.

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

(4) Turn signal and stop/tail lamps:

(a) Bus body shall be equipped with amber rear turn signal LED lamps that are at least 7-inches in diameter or if a shape other than round, a minimum 38 square inches of illuminated area and meet SAE specifications. These signal lamps 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 as wide apart as practical and their centerline shall be approximately 8 inches below the rear window.

(b) Buses shall be equipped with amber side-mounted turn signal lights. The turn signal lamp on the left side shall be mounted rearward of the stop signal arm and the turn signal lamp on the right side shall be mounted rearward of the service door.

(c) Buses shall be equipped with four combination red stop/tail lamps: Two combination lamps with a minimum diameter of 7-inches, or if a shape other than round, a minimum 38 square inches of illuminated area shall be mounted on the rear of the bus just inside the turn signal lamps. Two combination lamps with a minimum diameter of 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-II buses with bodies supplied by chassis manufacturer may have manufacturer's standard stop and tail lamps.

(5) 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 against any short circuit or intermittent shorts.

(6) An optional white flashing strobe light may be installed on the roof of a school bus, not to exceed 1/3 the body length forward from the rear of the roof edge. Light shall have a single clear lens emitting light 360 degrees around its vertical axis and may not extend above the roof more than maximum legal height. A manual switch and a pilot light shall be included to indicate when light is in operation. Optionally, the strobe light may be mounted on the roof in the area directly over the driver side crash barrier, and may be wired to activate with the amber alternately flashing signal lamps, continuing through the full loading or unloading cycle, with an override switch to allow activation of the strobe at any time for use in inclement weather.

(7) Backup lamps: Bus body shall be equipped with two white rear backup lamp signals that are at least 4-inches in diameter or, if a shape other than round, a minimum of 13 square inches of illuminated area, meeting SAE specifications. If backup lamps are placed on the same line as the brake lamps and turn signal lamps, they shall be to the inside.

#### **AA. METAL TREATMENT**

(1) All metal used in construction of bus body shall be zinc-coated or aluminum-coated or treated by equivalent process before bus is constructed. Included are such items as structural members, inside and outside panels, door panels and floor sills. Excluded are such items as door handles, grab handles, interior decorative parts and other interior plated parts.

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

(3) In providing for these requirements, particular attention shall be given lapped surfaces, welded connections of structural members, cut edges punched or drilled hole areas in sheet metal, closed or box sections, unvented or undrained areas and surfaces subjected to abrasion during vehicle operation.

(4) As evidence that above requirements have been met, samples of materials and sections used in construction of the bus body subjected to 1,000-hour salt spray test and shall not lose more than 10 percent of material by weight.

#### **BB. MIRRORS**

(1) 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 6-inches x 16-inches mirror and types C and D buses shall have a minimum of 6-inches x 30-inches mirror.

(2) Each school bus shall be equipped with exterior mirrors meeting the requirements of 49 CFR 571.111 (FMVSS) Exterior rearview mirrors shall be mounted to the school bus body. Mirrors shall be electrical remote, but shall be braced with up to one (1") inch mounting brace so as to reduce vibration. The mirror system shall be an independent system consisting of one (1) flat glass mirror assembly and one (1) convex mirror assembly separated by a minimum of two inches per side of the vehicle.

(3) The cross view mirror, reflective surface shall be of a type for maximum, low light, visibility. The lens shall present the driver with a flat, horizontal top surface, which limits the upward view of the sky and solar glare and shall provide for lateral adjustment only.

(4) Heated external mirrors may be used.

#### **CC. MOUNTING**

(1) Chassis frame shall support 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 the body from the chassis under severe operating conditions.

(2) Insulation material shall be placed at all contact points between body and chassis frame on types A-II, C, and D buses, and shall be so attached to the chassis frame or body that it will not move under severe operating conditions.

**DD. OVERALL LENGTH:** Overall length of bus shall not exceed 45 feet, excluding accessories.

**EE. OVERALL WIDTH:** Overall width of bus shall be a minimum of 95 inches and shall not exceed 102-inches excluding accessories.

**FF. PASSENGER CAPACITY RATING:** In determining the passenger capacity of a school bus for purposes other than actual passenger load (i.e., vehicle classification, or various billing/reimbursement models), any location in a school bus 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.

**GG. POWER LIFTS AND RAMPS:** Power lift shall be located on the right rear side of the bus body and shall comply with the requirements of the implementing regulation to the Americans with Disability Act (ADA) as found in 36 CFR 1192.23. Exception: Buses exclusively used for special education may place lift on front side of the bus. The lift may be located on the left side of the bus if, and only if, the bus is primarily used to deliver students to the left side of the one way streets.

(1) A ramp device may be used in lieu of a mechanical lift if the ramp meets all the requirements of the Americans with Disability Act (ADA) as found in 36 CFR 1192.23 (c) Vehicle ramp.

(2) A ramp device which does not meet the specifications of ADA but does meet the specifications of paragraph C3 of this section may be installed and used, when, and only when a power lift system is not adequate to load and unload students having special and unique needs. A readily accessible ramp may also be installed for emergency exit use. If stowed in the passenger compartment, the ramp must be properly secured and located away from general passenger contact. It must not obstruct or restrict any aisle or exit while in its stowed or deployed position.

(3) All vehicles covered by this specification shall provide a level-change mechanism or boarding device (e.g., lift or ramp) complying with (b) or (c) of 36 CFR 1192.23 and sufficient clearances to permit a wheelchair or other mobility aid user to reach a securement location.

**HH. PUBLIC ADDRESS SYSTEM (optional equipment)**

(1) Buses may be equipped with an AM/FM/Audio and/or public address system having interior and exterior speakers.

(2) No internal speakers, other than driver's communication systems may be installed within four feet of the driver's seat back in its rearmost upright position.

**II. REFLECTIVE MATERIAL**

(1) Front and/or rear bumper may be marked diagonally 45 degrees down to centerline of pavement with 2-inches "1/4-inch wide strips of non-contrasting reflective material.

(2) Rear of bus body shall be marked with strips of reflective NSBY material to outline the perimeter of the back of the bus using material which conforms with the requirements of 49 CFR 571.571 (FMVSS). The perimeter marking of rear emergency exits per 49 CFR 571.217 (FMVSS) and/or the use of reflective "SCHOOL BUS" signs below partially accomplishes the objective of this requirement. To complete the perimeter marking of the back of the bus, strips of at least 1 3/4-inches reflective NSBY 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.

(3) "SCHOOL BUS" signs, if not of lighted design, shall be marked with reflective NSBY material comprising background for lettering of the front and/or rear "SCHOOL BUS" signs.

(4) Sides of bus body shall be marked with reflective NSBY 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. Reflectivity of stop signal arm is to be addressed under stop signal arm section. Signs, if used, placed on the rear of the bus relating to school bus flashing signal lamps or railroad stop procedure may be of reflective material.

**JJ. REGULAR SERVICE ENTRANCE:** On power-lift equipped vehicles, step shall be full width of the step well, excluding the thickness of doors in open position.

**KK. RESTRAINING DEVICES**

(1) 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 with 49 CFR 571.210 (FMVSS).

(2) Seat belt assemblies, if installed, shall conform to 49 CFR 571.209 (FMVSS).

(3) 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 49 CFR 571.213 (FMVSS).

(4) School buses designated for transporting children weighing less than 50 pounds shall be equipped with the appropriate number of child safety restraint system (CSRS) anchorage's in accordance with applicable federal motor vehicle safety standards (FMVSS).

(a) School bus seats designated for child safety restraint systems shall be located at the front of the bus. If seats are shared with a child safety restraint system the child safety restraint system shall be placed in the window seating position.

(b) The maximum spacing specified under FMVSS No. 222, school bus passenger seating and crash protection is recommended for seats designated for child safety restraint systems.

(c) Instructions shall be provided by the school bus or seat manufacturer on how to install the restraint systems.

(5) (Optional equipment). Integrated child restraint seats may be provided which are rated for children 20 - 85 lbs and must contain; two separate shoulder belt adjustment slots to allow shoulder belt to be adjusted higher for taller children and lower for shorter children; a two piece fold under insert pad for "booster seat" style cushion; a seat back maximum width of 3.5 inches; and an insert and complete three or four point belt assembly that is easily removable for maintenance or replacement by removing a maximum of 4 anchors in the front of the insert without having to unfasten or remove the cover or foam.

#### **LL. RUB RAILS**

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

(2) There shall be one rub rail located approximately at floor line which shall cover the same longitudinal area as upper rub rail, except at wheel housing, and shall extend only to radii of right and left rear corners.

(3) Both rub rails shall be attached at each body post and all other upright structural members.

(4) Both rub rails shall be 4-inches or more in width in their finished form, shall be of 16-gauge steel or suitable material of equivalent strength.

(5) Both rub rails shall be applied outside body or outside body posts. Pressed-in or snap-on rub rails do not satisfy this requirement. For types A-II, C and D buses using rear luggage or rear engine compartment, rub rails need not extend around rear corners.

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

**MM. SEATING ARRANGEMENTS:** Flexibility in seat spacing to accommodate special devices shall be permitted to meet passenger requirements. All seating shall be forward-facing. No seating position shall be placed within an aisle and no seating position shall be placed in front of an emergency door.

#### **NN. SEAT AND CRASH BARRIERS**

(1) All seat frames shall be of the type and construction adaptable for seat belts and other adaptive assistive equipment.

(2) All seats shall have a minimum depth of 15-inches. All seat backs shall be a minimum of 28 inches high and a minimum 20-inches from seating reference point.

(3) In determining seating capacity of bus, allowable average rump width shall be:

(a) 13-inches where 3-3 seating plan is used.

(b) 15-inches where 3-2 seating plan is used.

(4) All restraining barriers and passenger seats shall be constructed with materials that enable them to meet the criteria contained in the school bus seats upholstery fire block test.

(5) Each seat leg shall be secured to the floor by a minimum of two (2) bolts, washers, and nuts. Flange-head nuts may be used in lieu of nuts and washers, or seats may be track-mounted in conformance with 49 CFR 571.222 (FMVSS). If track seating is installed, the manufacturer shall supply minimum and maximum seat spacing dimensions applicable to the bus, which comply with 49 CFR 571.222 (FMVSS). This information shall be on a label permanently affixed to the bus.

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

(7) Type A-II school bus bodies shall be equipped with restraining barriers conforming to 49 CFR 571.222 (FMVSS).

(8) A flip seat is not permitted, with the exception of the activity vehicle.

**OO. SECUREMENT AND RESTRAINT SYSTEM FOR WHEELCHAIR/MOBILITY AID AND OCCUPANT:** Track seating is required. For purposes of better understanding the various aspects and components of this section, the term securement or phrase securement system is used exclusively in reference to the device(s) which secure the wheelchair/mobility aid. The term restraint or phrase restraint system is used exclusively in reference to the device(s) used to restrain in the occupant of the wheelchair/mobility aid. The phrase securement

and restraint system is used to refer to the total system, which secures and restrains of the wheelchair/mobility aid and the occupant.

**(1) Securement and restraint system--general**

**(a)** The wheelchair/mobility aid securement and occupant restraint system shall be designed, installed, and operated to accommodate passengers in a forward-facing orientation within the bus and shall comply with all applicable requirements of 49 CFR 571.222 (FMVSS). Gurney type devices shall be secured parallel to the side of each bus.

**(b)** The securement and restraint system, including the system track, floor plates, pockets, or other anchorages shall be provided by the same manufacturer, or be certified to be compatible by manufacturers of all equipment/systems used.

**(c)** When a wheelchair/mobility aid securement device and an occupant restraint share a common anchorage, including occupant restraint designs that attach the occupant restraint to the securement device or the wheelchair/mobility aid, the anchorage shall be capable of withstanding the loads of both the securement device and occupant restraint applied simultaneously.

**(d)** When a wheelchair/mobility aid securement device (webbing or strap assembly) is shared with an occupant restraint, the wheelchair/mobility aid securement device webbing or strap assembly shall be capable of withstanding a force twice the amount as specified in 49 CFR 571.209 (FMVSS).

**(e)** The bus body floor and sidewall structures where the securement and restraint system anchorages are attached shall have equal or greater strength than the load requirements of the system(s) being installed.

**(f)** The occupant restraint system shall be designed to be attached to the bus body either directly or in combination with the wheelchair/mobility aid securement system, by a method which prohibits the transfer of weight or force from the wheelchair/mobility aid to the occupant in the event of an impact.

**(g)** When an occupied wheelchair/mobility aid is secured in accordance with the manufacturer's instructions, the securement and restraint system shall limit the movement of the occupied wheelchair/mobility aid to no more than 2-inches in any direction under normal driving conditions.

**(h)** The securement and restraint system shall incorporate an identification scheme, which will allow for the easy identification of the various components and their functions. It shall consist of one of the following, or combination thereof:

**(i)** The wheelchair/mobility aid securement (webbing or strap assemblies) and the occupant restraint belt assemblies shall be of contrasting color or color shade when available.

**(ii)** The wheelchair/mobility aid securement device (webbing or strap assemblies) and occupant restraint belt assemblies shall be clearly marked to indicate the proper wheelchair orientation in the vehicle, and the name and location for each device or belt assembly, i.e., front, rear, lap belt, shoulder belt, etc.

**(i)** All attachment or coupling devices designed to be connected or disconnected frequently shall be accessible and operable without the use of tools or other mechanical assistance.

**(j)** All securement and restraint system hardware and components shall be free of sharp or jagged areas and shall be a non-corrosive material or treated to resist corrosion in accordance with 49 CFR 571.209 (FMVSS).

**(k)** The securement and restraint system shall be located and installed such that when an occupied wheelchair/mobility aid is secured, it does not block access to the lift door.

**(l)** A device for storage of the securement and restraint system 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.

**(m)** The entire securement and restraint system, including the storage device, shall meet the flammability standards established in 49 CFR 571.302 (FMVSS).

**(n)** Each securement device (webbing or strap assembly) and restraint belt assembly shall be permanently and legibly marked or incorporate a non-removable label or tag which states that it conforms to all applicable 49 CFR 571 (FMVSS) requirements, as well as the current national recommendations for school buses. In addition, the system manufacturer, or an authorized representative, upon request by the original titled purchaser, shall provide a notarized certificate of conformance, either original or photocopied, which states that the wheelchair/mobility aid securement and occupant restraint system meets all of the requirements as specified in 49 CFR 571.222 (FMVSS).

**(o)** The following information shall be provide with each vehicle equipped with a securement and restraint system:



(i) 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.

(ii) 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.

(p) The system manufacturer shall make available training materials to ensure the proper use and maintenance of the wheelchair/mobility aid securement and occupant restraint system. These may include instructional videos, classroom curriculum, system test results, or other related materials.

(2) Wheelchair/mobility aid securement system

(a) Each securement system location shall consist of a minimum of four anchorage points. A minimum of two anchorage points shall be located in front of the wheelchair/mobility aid and a minimum of two anchorage points shall be located in the rear. The securement anchorages shall be attached to the floor of the vehicle and shall not interfere with passenger movement or present any hazardous condition.

(b) Each securement system location shall have a minimum clear floor area of 30-inches by 48-inches. Additional floor area may be required for some applications. Consultation between the user and the manufacturer is recommended to ensure adequate area is provided.

(c) The securement system shall secure common wheelchair/mobility aids and shall be able to be attached easily by a person having average dexterity and who is familiar with the system and wheelchair/mobility aid.

(d) As installed, each securement anchorage shall be capable of withstanding a minimum force of 3,000 pounds (13,344 Newtons) when applied as specified in 49 CFR 571.222 (FMVSS). When more than one securement device share a common anchorage, the anchorage shall be capable of withstanding the force indicated above, multiplied by the number of securement devices sharing that anchorage.

(e) Each securement device, if incorporating webbing or a strop assembly, shall comply with the requirements for type 1 safety belt systems, in accordance with 49 CFR 571.209 (FMVSS).

(f) The securement system shall secure the wheelchair/mobility aid in such a manner that the attachments or coupling hardware will not become detached when any wheelchair/mobility aid component deforms, when one or more tires deflate, and without intentional operation of a release mechanism (e.g., a spring clip on a securement hook).

(g) Each securement device (webbing or strap assembly) shall be capable of withstanding a minimum force of 2,500 pounds when tested in accordance with 49 CFR 571.209 (FMVSS).

(h) Each securement device (webbing or strap assembly) shall provide a means of adjustment, of manufacturer's design, to remove slack from the device or assembly.

(3) Occupant restraint system

(a) A type 2A occupant restraint system which meets all applicable requirements of 49 CFR 571.209 and 571.210 (FMVSS) shall provide for restraint of the occupant.

(b) The occupant restraint system shall be made of materials, which do not stain, soil, or tear an occupant's clothing, and which are resistant to water damage and fraying.

(c) Each restraint system location shall have not less than one anchorage, of manufacturer's design, for the upper end of the upper torso restraint. Each anchorage for each occupant's upper torso restraint shall be capable of withstanding a minimum force of 1,500 pounds (6,672 Newtons) when applied as specified in 49 CFR 571.222 (FMVSS).

(d) Each wheelchair/mobility aid location shall have not less than two floor anchorages for the occupant pelvic and the connected upper torso restraint.

(i) Each floor anchorage shall be capable of withstanding a minimum force of 3,000 pounds (13,344 Newtons) when applied as specified in 49 CFR 571.222 (FMVSS).

(ii) When more than one occupant restraint share a common anchorage, the anchorage shall be capable of withstanding a minimum force of 3,000 pounds (13,344 Newtons) multiplied by the number of occupant restraints sharing the common anchorage in accordance with 49 CFR 571.222 (FMVSS).

(e) Each floor and wall anchorage which secures the occupant restraint to the vehicle and which is not permanently attached, shall be of a "positive latch" design, and shall not allow for any accidental disconnection.

**PP. 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 bus immediately adjacent to the lift, and on the lift, when deployed at the vehicle floor level.

**QQ. SPECIAL SERVICE ENTRANCE**

(1) Power lift equipped bodies shall have a special service entrance to accommodate the power lift. 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 bus are not impeded in any way, a special service entrance shall not be required.

(2) The special service entrance and door shall be located on the right side of the bus and shall be designed not to obstruct the regular service entrance. Exception: A special service entrance and door may be located on the left side of the bus if, and only if, the bus is primarily used to deliver students to the left side of one way streets and its limited to that function.

(3) The opening may extend below the floor 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.

(4) A drip molding shall be installed above the opening to effectively divert water from entrance.

(5) 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.

#### **RR. SPECIAL SERVICE ENTRANCE DOORS**

(1) A single door shall be used for the special service entrance.

(2) 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.

(3) All doors shall have positive fastening devices to hold doors in the open position.

(4) All doors shall be weather sealed.

(5) 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.

(6) Each door shall have windows set in rubber which are 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.

(7) 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 not securely closed and ignition is in "on" position.

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

(9) 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.

#### **SS. STEPS**

(1) First step at service door shall be not less than 10" and not more than 14" from the ground when measured from top surface of the step to the ground, based on standard chassis specifications, except on type D vehicles, the first step at the service door shall be 12" to 16" from the ground.

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

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

(4) Steps shall not protrude beyond the side body line.

#### **TT. STEP TREADS**

(1) All steps, including floor line platform area, shall be covered with 3/16-inch rubber floor covering or other materials equal in wear and abrasion resistance to top grade rubber.

(2) Metal back of tread, minimum 24-gauge cold roll steel, shall be permanently bonded to ribbed rubber; grooved design shall be such that said grooves run at 90-degree angles to long dimension of step tread.

(3) 3/16 inch ribbed step tread shall have a 1 1/2-inches white nosing as an integral piece without any joint.

(4) Rubber portion of step treads shall have the following characteristics:

(a) Special compounding for good abrasion resistance and high coefficient of friction.

(b) Flexibility so that it can be bent around a 2-inch mandrel both at 130 degrees fahrenheit and 20 degrees fahrenheit without breaking, cracking, or crazing.

(c) Show adurometer hardness 85 to 95.

**UU. STIRRUP STEPS:** Unless the windshield and lamps are not easily accessible from the ground, there may be at least one folding stirrup step or recessed foothold and suitably located handles on each side of the

front of the body for easy accessibility for cleaning. 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.

**VV. STOP SIGNAL ARM:** All stop signal arm(s) shall comply with the requirements of 49 CFR 571.131 (FMVSS) and shall be double faced except for the rear stop arm. Stop arm signals shall be equipped with red flashing LED lamps connected to the alternating red flashing signal lamp circuits and visible to the front and rear.

**WW. STORAGE COMPARTMENT:** A storage container for tools, tire chains, and/or tow chains may be located either inside or outside the passenger compartment but, if inside, it shall have a cover (seat cushion may not serve this purpose) capable of being securely latched and fastened to the floor, convenient to either the service or emergency door.

**XX. SUN SHIELD**

(1) Interior adjustable transparent sun shield not less than 6-inches X 30-inches for types C, and D vehicles, with a finished edge, shall be installed in a position convenient for use by driver.

(2) On all type A buses the sun shield shall be manufacturer's standard.

**YY. SUPPORT EQUIPMENT AND ACCESSORIES**

(1) Each bus shall contain at least one 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 durable and designed to eliminate the possibility of the operator or others being cut during use.

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

(a) wheelchairs and other mobile seating devices (see section on securement system for mobile seating devices/occupant);

(b) crutches, walkers, canes, and other ambulating devices;

(c) 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.

(3) All portable equipment and special accessory items, including the equipment listed above, 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).

**ZZ. TAILPIPE**

(1) Tailpipe shall extend out to but not more than 1-inch beyond perimeter of the body or the bumper.

(2) Tailpipe shall exit to the left of the emergency exit door in the rear of vehicle or to the left side of the bus. Tailpipe shall not exit beneath any fuel filler location or beneath any emergency door. All type A buses may be manufacturer's standard.

**AAA. TECHNOLOGY AND NEW EQUIPMENT:** It is the intent of these standards to accommodate new technologies and equipment, which will better facilitate the transportation of students. When a new technology, piece of equipment, or component is desired to be applied to the school bus, and it meets the following criteria, it may be acceptable.

(1) The technology, equipment or component shall not compromise the effectiveness or integrity of any major safety system, unless it completely replaces the system. (Examples of safety systems include, but are not limited to, compartmentalization, the eight light warning system, emergency exit opportunity, and the uncluttered yellow color scheme.)

(2) The technology, equipment or component shall not diminish the safe environment of the interior of the bus.

(3) The technology, equipment or component shall not create additional risk to students who are boarding or exiting the bus or are in or about the school bus loading zone.

(4) The technology, equipment or component shall not create undue additional activity and/or responsibility for the driver.

(5) The technology, equipment or component shall generally increase efficiency and/or safety of the bus, or generally provide for a safer or more pleasant experience for the occupants and pedestrians in the vicinity of the bus, or generally assist the driver or make his/her many tasks easier to perform.

(6) The inspection technology sensory equipment including the GPS and emergency notification systems shall be provided which meets the standard established by previous state procurement.

(7) An electronic child check system shall be provided which will provide for notification when a school bus is not inspected for any students being left unattended inside the school bus at the end of the school bus route.

(8) All doors shall be equipped when manufacturing technology becomes available with a keyless remote locking device, to include primarily the emergency and service doors.

**BBB. TOW EYES OR HOOKS:** Optional tow eyes or hooks may be furnished on the rear and attached so they do not project beyond the rear bumper. Tow eyes or hooks attached to the chassis frame may be furnished by either the chassis or body manufacturer. The installation shall be in accordance with the chassis manufacturer's specifications.

**CCC. TRACTION ASSISTING DEVICES (optional equipment)**

(1) Where required or used, sanders shall:

- (a) be of hopper cartridge-valve type;
- (b) have metal hopper with all interior surfaces treated to prevent condensation of moisture;
- (c) be of at least 100 pound (grit) capacity;
- (d) have cover on filler opening of hopper, which screws into place, sealing unit airtight;
- (e) have discharge tubes extending to front of each rear wheel under fender;
- (f) have no-clogging discharge tubes with slush-proof, non-freezing rubber nozzles;
- (g) be operated by an electric switch with telltale pilot light mounted on the instrument panel;
- (h) be exclusively driver controlled;
- (i) have gauge to indicate that hopper needs refilling when it is down to one-quarter full.

(2) Automatic traction chains may be installed.

**DDD. TRASH CONTAINER AND HOLDING DEVICE:** A trash container shall be required that meets the following requirements:

- (1) be no greater than 14-quart capacity;
- (2) be secured by a holding device that is designed to prevent movement and to allow easy removal and replacement;
- (3) be installed in an accessible location in the driver compartment, not obstructing passenger use of the service door.

**EEE. UNDERCOATING**

(1) 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 compound 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 using modified test procedures\* for following requirements:

- (a) salt spray resistance-pass test modified to 5% salt and 1000 hours;
- (b) abrasion resistance-pass;
- (c) fire resistance-pass.

(2) \*Test panels to be prepared in accordance with paragraph 4.6.12 of TT-C-520b with modified procedure requiring that test be made on a 48-hour air cured film at thickness recommended by compound manufacturer.

(3) Undercoating compound shall be applied with suitable airless or conventional spray equipment to recommend film thickness and shall show no evidence of voids in cured film.

**FFF. VENTILATION**

(1) Auxiliary fans shall meet the following requirements.

- (a) All fans shall be placed in a location where they can be adjusted for maximum effectiveness and do not obstruct vision to any mirror.
- (b) Fans shall be a nominal 6-inches diameter.
- (c) Fan blades shall be covered with a protective cage; each fan shall be controlled by a separate switch.

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

(3) Static-type non-closeable exhaust ventilation shall be installed in low-pressure area of roof.

(4) Roof hatches designed to provide ventilation shall be provided with an escape hatch/roof ventilator with a minimum 10 year warranty.

**GGG. WHEELHOUSING**

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

(2) The wheel housing shall be attached to floor sheets in such a manner as to prevent any dust, water or fumes from entering the vehicle body. Wheel housing shall be constructed of at least 16-gauge steel.

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

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

(5) No part of a raised wheel housing shall extend into the emergency door opening.

**HHH. WINDOWS**

(1) Each full side window, other than emergency exits designated to comply with 49 CFR 571.217 (FMVSS), shall provide an unobstructed emergency opening of at least 9-inches but not more than 13-inches high and 22-inches wide, obtained by lowering window. One side window on each side of the bus may be less than 22-inches wide.

(2) Glazing shall be installed in all doors, windows, and windshields consistent with federal and state motor vehicle code.

(3) The driver's side windows shall consists of transition glass when manufacturing technology becomes available that darkens in daylight conditions and clears in dark conditions consistent with the glazing standard.

**III. WINDSHIELD:** Option - A multi-piece windshield shall be provided.

**JJJ. WINDSHIELD WIPERS**

(1) A windshield wiping system, two-speed or variable speed, with an intermittent feature, shall be provided. A windshield washer system shall be provided.

(2) The wipers shall be operated by one or more air or electric motors of sufficient power to operate wipers. If one motor is used, the wipers shall work in tandem to give full sweep of windshield to allow for full visibility of the driver view and outside mirrors.

**KKK. WIRING**

(1) All wiring shall conform to current SAE requirements.

(2) Circuits: Two (2) additional circuits shall be provided for a two-way radio communication system and video camera surveillance equipment.

(a) Wiring shall be arranged in circuits, as required, with each circuit protected by a fuse or circuit breaker. 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: The color of cables shall correspond to SAE J 1128.

FUNCTION	COLOR
Left Rear Directional Light	Yellow
Right Rear Directional Light	Dark Green
Stoplights	Red
Back-up Lights	Blue
Taillights	Brown
Ground	White
Ignition Feed, Primary Feed	Black

(b) Wiring shall be arranged in at least six regular circuits as follows:

(i) head, tail, stop (brake) and instrument panel lamps;

(ii) clearance and step well lamps (step well lamp shall be actuated when service door is opened);

(iii) dome lamp;

(iv) ignition and emergency door signal;

(v) turn signal lamps;

(vi) alternately flashing signal lamps.

(c) Any of the above combination circuits may be subdivided into additional independent circuits.

(d) Whenever heaters and defrosters are used, at least one additional circuit shall be installed.

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

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

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

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

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

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

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

(8) 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 equally effective connectors, which shall be water-resistant and corrosion-resistant.

[7-01-96; 6.40.2.10 NMAC - Rn, 6 NMAC 9.2.11 & A, 7-31-2000; A, 07-15-2003; A, 11-15-2005; A, 12-30-2010]

#### **6.40.2.11 SCHOOL BUS ADVERTISEMENTS**

##### **A. SCHOOL BUS ADVERTISEMENT ADMINISTRATION**

(1) The right to sell advertising space on school buses shall be within the sole discretion of the local school board, except as required by Paragraph (4) of Subsection A of 6.40.2.11 NMAC.

(2) Local school boards may sell advertising space on the interior and exterior of school buses. The local board shall develop guidelines for the type of advertisements that will be permitted.

(3) No advertisement shall involve obscenity, sexual material, gambling, tobacco, alcohol, political campaigns or causes, religion or promoting the use of drugs; or general content that is harmful or inappropriate for school buses as determined by the local board of education.

(4) All school bus private owners that have legal title to school buses used and operated pursuant to an existing bus service contract with a school district may lease space on their buses to the school district for the purpose of selling commercial advertisements. In exchange for leasing the space, the school bus owner-operators shall receive ten percent of the total value of the amount of the contract between the school district and the commercial advertiser.

(5) A school district shall be permitted to solicit offers from commercial advertisers for the use of space on the school buses that services its school district. The school district may enter into a lease agreement with a commercial advertiser for the use of any designated advertising space on a school bus that services the school district.

(6) The contract must include the time schedule permitted for placement and removal of the advertisement, the term of the agreement, the rental amount and the signatures of authorized parties. These agreements must be filed and maintained for a period of five years from the expiration date of the advertisement contract.

##### **B. ADVERTISEMENT TERM**

(1) In a lease agreement with a commercial advertiser, the school district shall establish the rental amount, schedule and term. The term of any lease agreement shall not be for a period longer than the time remaining on the school district's bus service contract with a school bus operator who owns the bus that is the subject of the lease agreement.

(2) A school district shall not enter into a lease agreement with a commercial advertiser that seeks to display an advertisement that is prohibited by local school board guidelines or by Paragraph (3) of Subsection A of 6.40.2.11 of this regulation.

##### **C. EXTERIOR ADVERTISEMENT SPACE REQUIREMENTS AND RESTRICTIONS**

(1) All school bus advertisements shall be painted or affixed by decal on the bus in a manner that does not interfere with national and state requirements for school bus markings, lights and signs. The commercial advertiser that contracts with the school district for the use of the space for advertisements shall be required to pay the cost of painting or affixing a decal for the advertisements on the bus and shall pay for its removal after the term of the contract has expired.

- (2) No advertisements shall be displayed on the front, rear or left (driver) side of the school bus.
- (3) No advertisement shall interfere with national and state requirements for school bus markings, lights, signs, emergency exits, service doors, windows and ventilation area of rear engines.
- (4) The amount of space that will be permitted for commercial advertisements on the exterior portion of a school bus will be limited to 18-inches from the rear most portion of the bus and 6-inches from the window base line, service door(s), wheel well opening, required lettering or bus body reflectors. Advertisements will be permitted above the window drip rail leading toward the roof of the school bus.

**D. INTERIOR ADVERTISEMENT SPACE REQUIREMENTS AND RESTRICTIONS**

- (1) The amount of space that will be permitted for commercial advertisements on the interior portion of school buses will be limited to the area above every other window not to exceed 24-inches wide by 12-inches in height.
- (2) No advertisement shall interfere with national and state requirements for school bus markings, lights, signs, emergency exits, service doors and windows.
- (3) No advertisements shall be displayed on the front or rear of the school bus.
- (4) Advertisements shall be limited to health and safety related messages.

**E. DISTRIBUTION OF FUNDS**

- (1) Funds raised from commercial advertisement shall be distributed from the school bus advertising fund after the required payment is made to school bus private owners.
- (2) Sixty percent of the proceeds raised shall be distributed to each school district to use in accordance with the school district's technology plan in amounts proportionate to the amount that each school district contributed to the school bus advertising fund.
- (3) Forty percent of the proceeds raised shall be distributed on a per membership basis of middle and junior high schools by the secretary of education to school districts for extracurricular activities. If a school district does not expend money from the school bus advertising fund for extracurricular activities, it shall revert to the fund.

**F. REPORTING AND ACCOUNTABILITY**

- (1) Funds raised by a school district from lease agreements relating to the use of advertising space on school buses by commercial advertisers shall be remitted to the public education department, accounted for and subject to review and examination.
- (2) School districts shall report to the public education department on how the funds were used in the technology plans and for extracurricular activities.

[7-01-96, 7-31-97; 6.40.2.11 NMAC - Rn, 6 NMAC 9.2.12 & A, 7-31-2000; A, 11-15-2005]

**HISTORY OF 6.40.2 NMAC:**

**Pre-NMAC HISTORY:** Material in this part was derived from that previously filed with the Commission of Public Records - State Records Center and Archives:

Regulations filed prior to 1967 were filed with the Supreme Court Law Library

SDE 67-1, Minimum Standards for School Buses 1967 Revised Edition, 4-21-67

SDE 71-7, Minimum Standards for School Buses 1971 Revised Edition, 8-31-71

SDE 78-1, Minimum Standards for School Buses 1978 Revised Edition, 2-6-78

SBE 81-1, Minimum Standards for School Buses, 3-17-81

SBE 86-1, New Mexico Minimum Standards for School Buses, 2-5-86

6 NMAC 9.2 Transportation of Students - New Mexico School Bus Standards and School Bus Phase-Out, 5-17-96