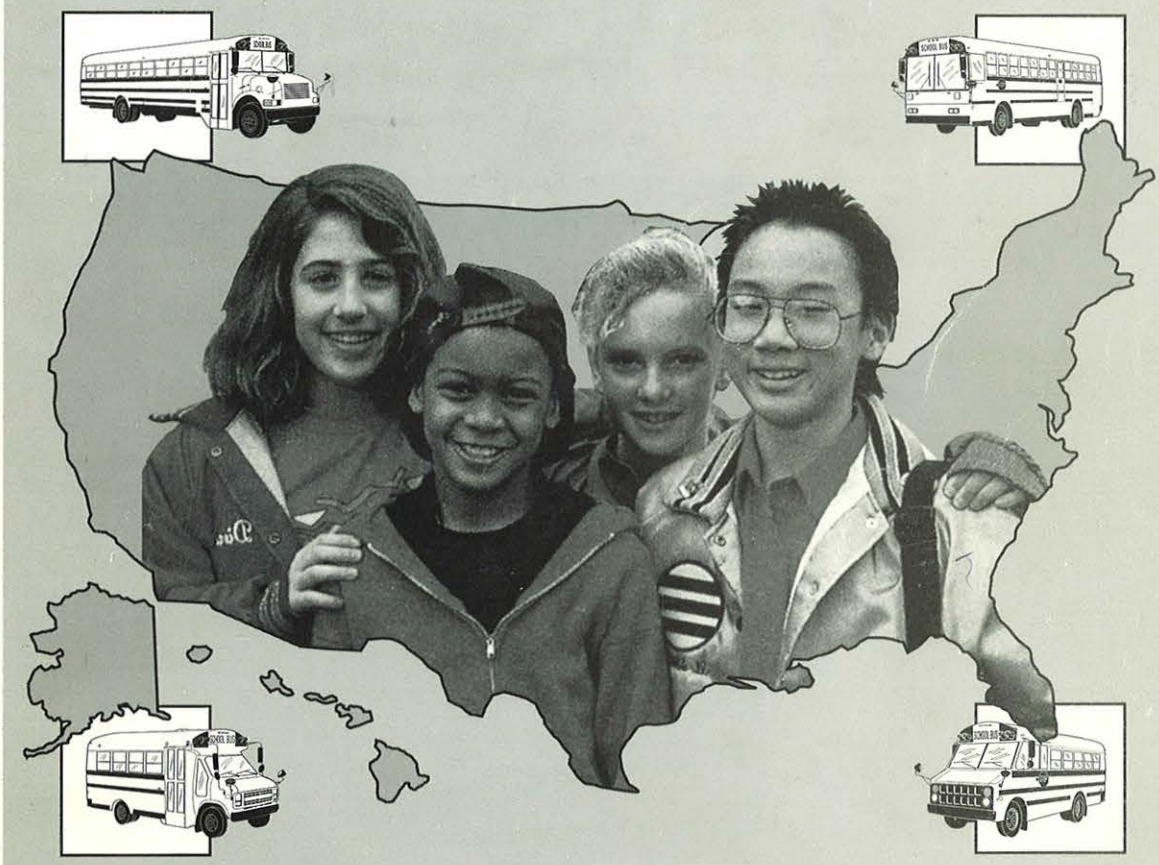
1995
NATIONAL STANDARDS
FOR SCHOOL TRANSPORTATION



NATIONAL STANDARDS FOR SCHOOL BUSES
and
SCHOOL BUS OPERATIONS

1995 Revised Edition

Recommendations of

THE TWELFTH NATIONAL CONFERENCE ON SCHOOL TRANSPORTATION

Central Missouri State University
Warrensburg, Missouri
May 21 - 26, 1995

Co-Sponsored by:

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CONTENTS

FOREWORD

The 1995 National Conference on School Transportation was the latest in a series beginning in 1939 and continuing in 1945, 1948, 1951, 1954, 1959, 1964, 1970, 1980, 1985 and 1990. All conferences have been made up of official representatives of State Departments of Education, Public Safety, Motor Vehicles, and Police or other state agencies having statewide responsibilities for the administration of pupil transportation, local school district personnel, contract operators, advisors from industry and from other interested professional organizations and groups. Each conference has resulted in one or more publications that contain the recommendations of that particular conference.

The recommendation of standards for school buses and their operation has been a major purpose of all conferences. The 1939 Conference was called for this sole purpose and formulated a set of recommended standards for school buses of 20 or more passengers. The 1945 Conference revised the 1939 recommendations and added standards for small vehicles of 10 to 18 passengers. Both standards were further revised by the 1948 Conference. There were additional revisions in 1959, and the 1964 Conference added standards for school buses to be used in transporting handicapped children. In addition to revising standards for larger vehicles, the 1970 Conference refined the standards for school buses designed to transport fewer than 24 passengers.

Other major problems in pupil transportation have received attention at these National Conferences. On several occasions, recommendations concerned primarily with overtaking and passing of school buses were transmitted to the National Committee on Uniform Traffic Laws and Ordinances for consideration in connection with revisions of the Uniform Vehicle Code. The 1948 Conference made recommendations on uniform records and reports for pupil transportation. The major purpose of the 1948 Conference was the formulation of recommendations related to standards and training programs for school bus drivers. These recommendations were revised by the 1959 Conference, and a new publication on the topic was issued. The 1954 Conference gave considerable time to the discussion of the extended use of the school buses in the school program. The 1970 Conference also adopted standards for school bus operation (issued in a separate report).

The 1980 Conference updated the standards for school bus chassis and bodies, rewrote the complete standards for the special education bus, and included definitions for the Type A, B, C and D bus. One of the major tasks of the 1980 Conference was to revise the standards to remove any conflicts with superseding federal regulations, many of which were mandated by sections of the Motor Vehicle and School Bus Safety Amendments of 1974 (Public Law 93-492).

The 1985 Conference updated the standards for school bus chassis, body, special education and operations procedures. A major project was completed in the adoption of a uniform school bus accident report form. This form was designed to standardize school bus accident data reporting throughout the school transportation industry. Major issues such as safety inside the vehicle,

loading and unloading, emergency procedures, and special education were discussed with appropriate resolutions passed for future research and implementation.

The 1990 Conference removed the word "minimum" from the title of the Conference publication. The format of the Conference publication was reorganized into two parts, "Standards for School Buses and Standards for Operations". All sub-parts such as accident reporting and special education transportation were incorporated into the section on the school bus or the section on operations.

A major change was incorporated into the procedures for the 1990 Conference. Any mandatory standard could be recommended for a special vote for forwarding action to the appropriate federal agency with a request for rulemaking. This rulemaking request would be an attempt to have the standard, adopted at the Conference, become a federally mandated requirement. For this forwarding action to be approved, any such item had to receive two-thirds affirmative vote. The delegation approved forwarding action on standards for mirrors, emergency exits, accident reporting and special education transportation. This procedural change was carried forward for the 1995 Conference.

The 1995 Conference was the first to begin to address the expanded role of pupil transportation as prescribed in the revised Highway Safety Program Guideline #17 - Pupil Transportation Safety. The revised guidelines became effective May 29, 1991 and this was the first Conference convened since its adoption. Transportation of pre-kindergarten age students including infants and toddlers was addressed for the first time. A comprehensive section dealing with the use of alternative fuels in school bus operations was discussed and included in the publication. A new section, Terms and Definitions was added to the appendices to promote consistency throughout the industry, to consolidate into one resource the acronyms, abbreviations, and standard terms used in the industry, and to provide easy access to definitions of terms used or referenced within the document.

One writing committee spent significant time and energy developing materials for discussion, and possible adoption, related to the safety considerations for students who are now or who may be transported to and from school in Urban Transit System buses. While the conference delegations adopted many new and far-reaching standards, they were not ready to entertain the section on transit use. Discussion was terminated without a full presentation of the prepared materials.

With the enactment in 1966 of the National Traffic and Motor Vehicle Safety Act, the federal government was given responsibility for developing and promulgating motor vehicle safety standards for motor vehicles sold in the United States. These Federal Motor Vehicle Safety Standards (FMVSS) are continually evaluated and revised as needed. Such standards in their present form or as subsequently amended will void any action taken during the 1995 Conference wherever there is a conflict. Whenever standards adopted by the 1995 Conference, go beyond, or are in addition to the FMVSS, they remain valid.

The structure for the 1995 Conference and its operating guidelines was carried out by the Steering Committee. Funding for the conference was shared solely by each individual participant of the Steering Committee, Writing Committees and all delegates at the conference.

Don M. Carnahan
General Conference Chairman

OBJECTIVES AND GUIDING PRINCIPLES

Since the first National Conference on School Bus Standards in 1939, certain objectives and guiding principles had a vital role in the development of the standards for school buses and their operation. Objectives and guiding principles have been reaffirmed and emphasized at the subsequent National Conferences. The two major objectives, safety and economy, along with the following principles, have served as guideposts for making decisions on the standards and in arriving at sound and common agreement.

OBJECTIVES

The transportation of pupils in safety and comfort on safe, economical vehicles can be assured through adequate state regulations governing school bus construction and their mode of operation. Safety includes all those factors relating to the school bus construction and modes of operation which may directly or indirectly affect the safety and welfare of pupils transported.

Economy includes the construction, procurement, operation, management, and maintenance of school buses and staff consistent with the safety and welfare of the pupils.

GUIDING PRINCIPLES

1. Uniform state standards for school buses and their mode of operation should:
   a. Be consistent with the objectives of safety and economy.
   b. Eliminate the construction and use of unsafe buses.
   c. Reduce conflicting standards wherever possible among states in the interest of production efficiency and operation effectiveness.
   d. Specify exact dimensions where necessary to increase the efficiency of volume production.
   e. Eliminate unnecessary luxury consistent with the safety and welfare of pupils transported.

2. Any adaptation of the nationally recommended standards should only be made by states in order to permit desirable adjustments to local needs and only when such adaptations do not:
   a. Conflict with the recommended National Standards.
   b. Conflict with FMVSS.
   c. Conflict with the National Highway Traffic Safety Administration's Highway Safety Guideline #17 - Pupil Transportation Safety.
   d. Otherwise unduly increase operation or production costs.

3. Uniform state standards for school buses should specify results desired in terms of safety and economy, and these performance specifications must be defined when necessary to make the regulation enforceable.

4. Provisions should be made for periodic review and revision of uniform state standards for school buses and their operation through cooperation of the states.

5. Uniform state standards for school buses and their operation should permit opportunities for the use of new inventions and improvements which are consistent with safety and economy.

6. Uniform state standards for school bus construction should provide for a degree of flexibility within which sound construction is possible (consistent with safety and economy) to accommodate the various manufacturers.

7. Uniform state standards for school bus construction should recognize that the actual designing of school buses is a responsibility of the manufacturers.

8. The current National Standards for School Buses are considered in full force and effect as recommendations to the states. Revisions of these standards are made only when evidence indicates that such revisions are needed.

BUS CHASSIS STANDARDS

USING THESE STANDARDS FOR SCHOOL BUSES

In order that these standards for school buses may be put into effect, each state legislature, which has not already done so, should confer upon the appropriate state agency the general responsibility for setting up statewide rules and regulations regarding the construction of school bus chassis, bodies and equipment. Detailed standards for school buses or their operations should not be written into state law.

The standards for school buses appearing in the report must be officially adopted by the appropriate state agency to become legally effective within that state.

These standards are intended to apply primarily to new vehicles, including all types of school buses as defined in the section entitled, Definitions, School Bus (Type A, Type A1, Type B, Type C and Type D). It should be noted here that vehicles with a capacity for less than 10 passengers cannot be certified as school buses under federal regulations.

These standards are not intended to apply to buses used primarily as public carriers rather than to transport pupils to and from school.

States should normally allow at least six (6) months lead time between publication of specifications and effective date. The effective date should be expressed: "These specifications apply respectively to chassis and bodies placed in production after month, date, year."

Requests for interpretation of these Standards should be mailed to the chairman of the Interpretation Committee, addressed as follows: Mr. Donald Fowler, President, Fowler Bus Company, Inc., 1213 East Main Street, Richmond, MO 64085.

The Interim Committee succeeds the Conference Steering Committee between conferences. Requests for modifications of the Standards and development of new Standards should be directed to the chairman of the Interim Committee, addressed as follows: Mr. Don M. Carnahan, Director, Pupil Transportation, Office of the Superintendent of Public Instruction, Old Capitol Building, PO Box 47200, Olympia, WA 98504-7200.

INTRODUCTION TO SCHOOL BUS STANDARDS

This portion of the book is divided into four sections: Chassis Standards, Body Standards, Standards for Specially Equipped School Buses and Standards for Alternative Fuel for School Buses. There are two basic reasons for this format: (1) to define minimum chassis and body standards, and (2) to assign responsibility for providing the defined equipment. Items in the chassis standards are to be provided by the chassis manufacturer. Items in the body standards are to be provided by the body manufacturer. Most of the items in the Specially Equipped School Bus Section are related to the body manufacturer and most of the requirements for Standards for Alternative Fuel for School Buses are related to the chassis manufacturer. There are a few exceptions to the general rule previously stated regarding the specially equipped and the alternative fueled buses. Therefore, whenever such vehicles are specified, special attention must be given by both the chassis and the body manufacturer.

Every attempt has been made by the Writing Committees, the Conference itself, and the Editing Committee to eliminate conflicts between these specifications and federal regulations. Should conflicts be found or arise through new federal regulations or legally binding interpretations of those regulations that should be brought to the attention of the Interpretation Committee.

For new vehicles, it is the responsibility of the vehicle manufacturers to certify compliance with applicable federal standards by installing a certification plate in the driver's area on each vehicle. However, as the vehicle is maintained over its useful life, it is the responsibility of those who supervise and perform work on the vehicle to assure on-going compliance with all applicable standards. For this reason, maintenance personnel training, quality components, quality workmanship and thorough maintenance records are absolutely essential.

Finally, in order to insure that specifications are being met by manufacturers, states are urged to adopt and carry out effective pre-delivery inspection programs. This will promote safety, as well as, uniformity of compliance with specifications.

DEFINITIONS, SCHOOL BUS

Type A

The Type "A" school bus is a conversion or body constructed upon a van-type or cutaway front-section vehicle with a left side driver's door, designed for carrying more than 10 persons. This definition shall include two classifications: Type A-I, with a Gross Vehicle Weight Rating (GVWR) over 10,000 pounds; and Type A-II, with a (GVWR) of 10,000 pounds and under.

Type B

A Type "B" school bus is a conversion or body constructed and installed upon a van or front-section vehicle chassis, or stripped chassis, with a gross vehicle weight rating of more than 10,000 pounds, designed for carrying more than 10 persons. Part of the engine is beneath and\or behind the windshield and beside the driver's seat. The entrance door is behind the front wheels.

Type C

A Type "C" school bus is a body installed upon a flat-back cowl chassis with a gross vehicle weight rating of more than 10,000 pounds, designed for carrying more than 10 persons. All of the engine is in front of the windshield and the entrance door is behind the front wheels.

Type D

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

BUS CHASSIS STANDARDS

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. The intake air system for diesel engines shall have an air cleaner restriction indicator properly installed by the chassis manufacturer to meet engine specifications.

AXLES

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

BRAKES

1. The braking system shall include the service brake, an emergency brake that is a part of the service brake system and controlled by the service brake control, and a parking brake.

2. Buses using air or vacuum 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 or the vacuum in the system available for braking is eight (8) inches of mercury or less.

   An illuminated gauge shall be provided that will indicate to the driver the air pressure in pounds per square inch or the inches of mercury vacuum available for the operation of the brakes.

   a. Vacuum-assist brake systems shall have a reservoir used exclusively for brakes that shall adequately ensure a full stroke application that loss in vacuum shall not exceed 30 percent with the engine off. Brake systems on gas-powered engines shall include suitable and convenient connections for the installation of a separate vacuum reservoir.

   b. 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 or vacuum, the stored dry air or vacuum shall not be depleted by the leakage or failure.

3. 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.

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

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

6. Antilock brake systems for either air or hydraulic brakes shall include control of all axles in compliance with Federal Motor Vehicle Safety Standard (FMVSS) 105 or 121.

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 an energy absorbing bumper is used, the front bumper shall be of pressed steel channel or equivalent material at least 3/16" thick and not less than 8" 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. Tow eyes or hooks shall be furnished and attached so as not to project beyond the front bumper. Tow eyes or hooks attached to the frame chassis shall 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.

BUMPER, FRONT - ENERGY ABSORBING (OPTIONAL EQUIPMENT)

An energy absorbing front bumper may be used, providing its design shall incorporate a self-restoring energy absorbing system of sufficient strength to:

1. Push another vehicle of similar GVWR without permanent distortion to the bumper, chassis, or body; and

2. Withstand repeated impacts without damage to the bumper, chassis, or body according to the following performance standards:

   a. 7.5 MPH fixed barrier impact (FMVSS cart & barrier test)

   b. 4.0 MPH corner impact at 30 degrees (Part 581 CFR Title 49, Ch V)

   c. 20.0 MPH into parked passenger car (class B, C, and D buses of 18,000 lbs GVWR or more)

The manufacturer of the energy absorbing system shall provide evidence from an approved test facility (capable of performing the above FMVSS tests) that their product conforms to the above standards.

CERTIFICATION

1. Chassis manufacturer will, upon request, certify to the state agency having pupil transportation jurisdiction that their product meets minimum standards on items not covered by certification issued under requirements of the National Traffic and Motor Vehicle Safety Act.

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.

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 black or national school bus yellow. (See Appendix B).

2. Demountable rims, if used, may be, silver, gray or black as received from the wheel manufacturer.

DRIVE SHAFT

1. Drive shaft shall be protected by a metal guard or guards around the circumference of the drive shaft to reduce the possibility of its whipping through the floor or dropping to the ground if broken.

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 SBMI Design Objectives Booklet, 1990 edition, 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.

2. Alternator

   a. All Type A buses and Type B buses up to 15,000 lbs GVWR shall have a minimum 60 ampere alternator.

   b. Types A-I and Type B 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 meeting SAE J 180, having a minimum output rating of 100 amperes.

Alternators of 100 through 145 ampere design shall produce a minimum of 50 amperes output at engine idle speed.

c. All buses equipped with an electrical power lift shall have a minimum 100 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.

Refer to SBMI Design Objectives, 1990 edition for estimating required alternator capacity.

3. Wiring

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

(1) 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:

(1) Main 100 amp body circuit

(2) Tail lamps

(3) Right turn signal

(4) Left turn signal

(5) Stop lamps

(6) Back up lamps

(7) Instrument panel lights (rheostat controlled by head lamp 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.

ENGINE FIRE EXTINGUISHER

1. Manufacturer may provide an automatic fire extinguisher system in the engine compartment.

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 or at the left side of the bus body no more than 18" forward of the front edge of the rear wheel house opening. If designed to exit at the rear of the bus, the tailpipe shall extend at least five 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 and B chassis may be furnished with the manufacturer's standard tailpipe configuration.

4. Exhaust system on a chassis shall be adequately insulated from the fuel system.

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.

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.

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 wheel base.

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 SBMI Design Objectives, 1990 edition, except where body and chassis manufacturer are the same or have established mutual design criteria for the vehicle.

FUEL TANK

1. Fuel tank or tanks having a 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.

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 SBMI Design Objectives, 1990 edition, and all Federal Motor Vehicle Safety Standards in effect on the date of manufacture of the bus.

   a. 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 SBMI Design Objectives, 1990 edition.

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.

   a. Installation of LPG tanks shall comply with National Fire Protection Association (NFPA) 58.

GOVERNOR

1. An engine governor is permissible. When it is desired to limit road speed, a road speed governor should be installed.

2. When engine is remotely located from driver, the governor shall be set to limit engine speed to maximum revolutions per minute recommended by engine manufacturer, and a tachometer shall be installed so the engine speed may be known to the driver.

HEATING SYSTEM, PROVISION FOR

1. 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. (SBMI Standard No. 001--Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating Equipment.)

HORN

1. 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.

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

        (1) 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

    h. Brake indicator gauge (vacuum or air)

        (1) Light indicator in lieu of gauge is permitted on vehicle equipped with hydraulic-over-hydraulic brake system.

    i. Turn signal indicator

    j. Glow-plug 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 in accordance with SBMI Design Objectives, 1990 edition.

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

OIL FILTER

1. 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.

OPENINGS

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

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. State agency shall, in turn, transmit such ratings to other state agencies responsible for development or enforcement of state standards for school buses.

POWER AND GRADE ABILITY

1. GVWR shall not exceed 185 pounds per published net horsepower of the engine at the manufacturer's recommended maximum number of revolutions per minute.

RETARDER SYSTEM (OPTIONAL EQUIPMENT)

1. 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.

SHOCK ABSORBERS

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

SPRINGS

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

2. Steel 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 a wrapped leaf in addition to the main leaf.

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.

THROTTLE

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

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 December 31, 1995.

2. Dual rear tires shall be provided on Type A-I, Type B, 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 FMVSS 120.

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.

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.

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.

UNDERCOATING

1. 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 of paragraph 3.4 of Federal Specification TT-C-520B, using modified tests.

BUS BODY STANDARDS

BUS BODY STANDARDS

AISLE

1. All emergency doors shall be accessible by a 12" minimum aisle. Aisle shall be unobstructed at all times by any type of barrier, seat, wheelchair or tiedown, unless a flip seat is installed and occupied. A flip seat in the unoccupied (up) position shall not obstruct the 12" minimum aisle to any side emergency door.

2. The seat backs shall be slanted sufficiently to give aisle clearance of 15" at tops of seat backs.

BACK-UP WARNING ALARM

1. An automatic audible alarm shall 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.

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 securely attach the battery 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 an adequate and conveniently-operated latch or other type fastener. 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.

BUMPER (FRONT)

1. 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.

2. An optional energy-absorbing front bumper may be used, providing its design shall incorporate a self-restoring energy absorbing system of sufficient strength to:

a. Push another vehicle of similar GVWR without permanent distortion to the bumper, chassis, or body; and

b. Withstand repeated impacts without damage to the bumper, chassis, or body according to the following performance standards:
   (1) 7.5 MPH fixed-barrier impact (FMVSS cart and barrier test)

   (2) 4.0 MPH corner impact at 30 degrees (Part 581, CFR Title 49)

   (3) 20.0 MPH into parked passenger car (class B, C, and D buses of 18,000 lbs. GVWR or more)

c. The manufacturers of the energy-absorbing system shall provide evidence from an approved test facility (capable of performing the above FMVSS tests) that their product conforms to the above standard.

BUMPER (REAR)

1. Bumper shall be pressed steel channel or equivalent material, at least 3/16" thick, and shall be a minimum of 8" wide (high)) on Type A-II and a minimum of 9 1/2"wide (high) on Types A-I, B, 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", 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" beyond rear-most part of body surface measured at the floor line.

5. An optional energy-absorbing rear bumper may be used, providing a self-restoring energy absorbing bumper system attached to prevent the hitching of rides and of sufficient strength to:

   a. Permit pushing by another vehicle without permanent distortion to the bumper, chassis, or body;

   b. Withstand repeated impacts without damage to the bumper, chassis, or body according to the following FMVSS performance standards.

(1) 2.0 MPH fixed barrier impact (FMVSS cart & barrier test)

(2) 4.0 MPH corner impact at 30 degrees (Part 581, CFR Title 49)

(3) 5.0 MPH center impact (Part 581, CFR Title 49)

c. The manufacturer of the energy-absorbing system shall provide evidence from an approved test facility (capable of performing the above FMVSS test) that their product conforms to the above standard.

CEILING

See Insulation and Interior, Body section.

CERTIFICATION

1. Body manufacturer shall, upon request, certify to the state agency having pupil transportation jurisdiction, that their product meets state standards on items not covered by certification issued under requirements of the National Traffic and Motor Vehicle Safety Act.

CHAINS (TIRE)

See Wheelhousing, Body section.

COLOR

1. The school bus body shall be painted National School Bus Yellow (NSBY). (See Appendix B).

2. The body exterior paint trim shall be black.

3. Optionally the roof of the bus may be painted white extending down to within 6" above the drip rails on the sides of the body, except that front and rear roof caps shall remain.

CONSTRUCTION

1. Construction shall be of prime commercial quality steel or other metal or material with strength at least equivalent to all steel, as certified by the bus body manufacturer.

2. Construction shall be reasonably dust-proof and watertight.

3. Body joints present in that portion of the Type A-II school bus body furnished exclusively by the body manufacturer shall conform to the performance requirements of FMVSS 221. This does not include the body joints created when body components are attached to components furnished by the chassis manufacturer.

CROSSING CONTROL ARM (OPTIONAL)

1. Buses may be equipped with a crossing control arm mounted on the right side of the front bumper, which shall not open more than 90°.

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).

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" 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.

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 stepwell may be of the recirculating air type.

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

5. Portable heaters shall not be used.

DOORS

1. Service door

   a. Service door shall be in the driver's control, and designed to afford easy release and provide a positive latching device on manual operating doors to prevent accidental opening. When a hand lever is used, no part shall come together that will shear or crush fingers. Manual door controls shall not require more than 25 pounds of force to operate at any point throughout the range of operation.

   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" and a minimum vertical opening of 68". Type A-II vehicles shall have a minimum opening area of 1200 square 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" from the top surface of bottom step. Top of each upper glass panel shall not be more than 3" 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. Type A-II vehicles may be equipped with chassis manufacturer's standard entrance door.

   g. There shall be no door to left of driver on Type B, 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" wide and 1" thick and extend the full width of the door opening.

DRIVER COMPARTMENT

1. Driver's seat supplied by the body company shall be a high back suspension 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 FMVSS 208. The driver's 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.

EMERGENCY EXITS

1. Emergency door(s) and other emergency exits shall comply with the requirements of FMVSS 217 and any of the requirements of these standards that exceed FMVSS 217.

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-I, B, 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" 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" wide and 1" 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 FMVSS 217, 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.

3. Emergency exit requirements

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

0 to 42 Passenger = 1 emergency exit per side and 1 roof hatch.

43 to 78 Passenger = 2 emergency exits per side and 2 roof hatches.

79 to 90 Passenger = 3 emergency exits per side and 2 roof hatches.

Each emergency exit above shall comply with FMVSS 217. These emergency exits are in addition to the rear emergency door or exit.

In addition to the audible warning required on emergency doors by FMVSS 217, additional emergency exits may also be equipped with an audible warning device.

EMERGENCY EQUIPMENT

1. Fire extinguisher

a. The bus shall be equipped with at least one UL-approved pressurized, dry chemical fire extinguisher complete with hose. Extinguisher shall be mounted in a bracket, located in the driver's 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's 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 state standards.

   b. Suggested contents include:

      2 - 1" x 2 1/2 yards adhesive tape rolls
      24 - sterile gauze pads 3"x 3"
      100 - 3/4" x 3" adhesive bandages
      12 - 2" bandage compress
      12 - 3" bandage compress
      2 - 2" x 6' sterile gauze roller bandages
      2 - non-sterile triangular bandages approximately 40" x 36" x 54" with 2 safety pins
      3 - sterile gauze pads 36" x 36"
      3 - sterile eye pads
      1 - rounded-end scissors
      1 - pair latex 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 be in compliance with state standards.

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 FMVSS 125.

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.

FLOORS

1. Floor in under-seat area, including tops of wheelhousing, driver's compartment and toeboard, shall be covered with rubber floor covering or equivalent, having a minimum overall thickness of .125". The driver's 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" 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 A-I, B, C and D buses a screw-down plate that is secured and insulated shall be provided to access the fuel tank sending unit.

HEATERS

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 recirculating 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 permitted, provided they comply with the following:

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

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

    c. Auxiliary heating system, when connected to the engine's coolant system, may be used to preheat the engine coolant or preheat and add supplementary heat to the bus's heating system.

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

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

f. The auxiliary heating system shall be low voltage.

g. Auxiliary heating systems shall comply with all applicable Federal Motor Vehicle Safety Standards, including FMVSS 301, as well as, SAE test procedures.

6. All heaters installed by body manufacturers shall bear a name plate that indicates the heater rating in accordance with SBMI 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 J20c. 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 Types A and B 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's heater.

HINGES

1. 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.

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 its 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. Required lettering and numbering shall include:

    a. District or company name or owner of the bus shall be displayed at the beltline.

    b. Bus identification number shall be displayed on the sides, on the rear, and on the front.

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

    a. Bus identification number on the top of the bus, in addition to required numbering on sides, rear, and front.

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

    c. Symbols or letters near the service door displaying information for identification by the students of the bus or route served. Such symbols or lettering, if used, shall not exceed 36 square inches in size.

    d. Manufacturer, dealer or school identification or logos.

    e. Symbols identifying the bus as equipped for or transporting students with special needs (see Specially Equipped School Bus section)

    f. Lettering on the rear of the bus relating to school bus flashing signal lamps or railroad stop procedures.

INSIDE HEIGHT

1. Inside body height shall be 72" or more, measured metal to metal, at any point on longitudinal center line from front vertical bow to rear vertical bow. Inside body height of Type A-II buses shall be 62" or more.

INSULATION (OPTIONAL)

1. If thermal insulation is specified, it shall be fire-resistant, UL approved, and approximately 1 1/2" thick with minimum R-value of 5.5. Insulation shall be installed to prevent sagging.

2. If floor insulation is required, it shall be either 5 ply nominal 5/8" 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. Type A-II buses may be equipped with nominal 1/2" thick plywood meeting above requirements.

INTERIOR

1. Interior of bus shall be free of all unnecessary projections, which include luggage racks and attendant hand rails, to minimize the potential for injury. This standard requires inner lining on ceilings and walls. If ceiling is constructed to contain lapped joints, forward panel shall be lapped by rear panel and exposed edges shall be beaded, hemmed, flanged, or otherwise treated to minimize sharp edges. Buses may be equipped with a storage compartment for tools, tire chains, and/or tow chains (see *Storage Compartment* later in this section).

2. Interior overhead storage compartments may be provided if they meet the following criteria:

    a. Meet head protection requirements of FMVSS 222, where applicable.

    b. Have a maximum rated capacity displayed for each compartment.

    c. Be completely enclosed and equipped with latching doors. Doors and latches must be sufficient to withstand a force of five (5) times the maximum rated capacity of the compartment.

    d. Have all corners and edges rounded with a minimum radius of 1" or padded equivalent to door header padding.

e. Must be attached to the bus sufficiently to withstand a force equal to twenty (20) times the maximum rated capacity.

f. Shall have no protrusions greater than 1/4".

3. The driver's 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 according to the procedure found in the Appendix B.

LAMPS AND SIGNALS

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

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 red lamps at the rear of vehicle and two red lamps at the front of the vehicle.

b. In addition to the four red lamps described above, four 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" 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" 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" may be provided.

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

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 lamps that are at least 7" 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" below the rear window. Type A-II conversion vehicle lamps must be at least 21 square inches in lens area and be in manufacturer's standard color.

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:

(1) Two combination lamps with a minimum diameter of 7", 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.

(2) Two combination lamps with a minimum diameter of 4", 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's 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" 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.

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 as provided for in latest revision of ASTM Standard B-117 shall not lose more than 10 percent of material by weight.

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 a 6" x 16" mirror and Types B, C, and D buses shall have a minimum of a 6" x 30" mirror.

2. Each school bus shall be equipped with exterior mirrors meeting the requirements of FMVSS 111. Mirrors shall be easily adjustable, but shall be rigidly braced so as to reduce vibration.

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-I, B, C, and D buses, and shall be so attached to the chassis frame or body that it will not move under severe operating conditions.

OVERALL LENGTH

1. Overall length of bus shall not exceed 40 feet, excluding accessories.

OVERALL WIDTH

1. Overall width of bus shall not exceed 102", excluding accessories.

PUBLIC ADDRESS SYSTEM

1. Buses may be equipped with a public address system having interior and exterior speakers.

REFLECTIVE MATERIAL *(see also reflective material Appendix B)*

1. Front and/or rear bumper may be marked diagonally 45 degrees down to centerline of pavement with 2" $\pm$1/4" 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 FMVSS 571.131 Table 1. The perimeter marking of rear emergency exits per FMVSS 217 and/or the use of reflective "SCHOOL BUS" signs partially accomplish the objective of this requirement. To complete the perimeter marking of the back of the bus, strips of at least 1 3/4" 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" in width, extending the length of the bus body and located (vertically) between the floor line and the beltline.

NOTE: 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 as specified by each state.

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 wheelhousing, 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" or more in width in their finished form, shall be of 16-gauge steel or suitable material of equivalent strength, and shall be constructed in corrugated or ribbed fashion.

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 Type A-II vehicles using

chassis manufacturer's body, or for Types A-I, B, 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.

SEAT BELT FOR DRIVER

1. A Type 2 lap belt/shoulder harness seat belt shall be provided for the driver. The assembly shall be equipped with an emergency locking retractor (ELR) for the continuous belt system. On all buses except Type A equipped with standard chassis manufacturer's driver's seat, the lap portion of the belt shall be guided or anchored 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.

SEAT AND CRASH BARRIERS

1. All seats shall have a minimum depth of 15". All seat backs shall be a minimum of 24" high and a minimum 20" from seating reference point.

2. In determining seating capacity of bus, allowable average rump width shall be:

   a. 13" where 3-3 seating plan is used.

   b. 15" where 3-2 seating plan is used.

3. 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 (See Appendix B).

4. Each seat leg shall be secured to the floor by a minimum of two (2) bolts, washers, and nuts. Flange-head nuts may be used in lieu of nuts and washers, or seats may be track-mounted in conformance with FMVSS 222. If track seating is installed, the manufacturer shall supply minimum and maximum seat spacing dimensions applicable to the bus, which comply with FMVSS 222. This information shall be on a label permanently affixed to the bus.

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

6. Type A-II school bus bodies shall be equipped with restraining barriers conforming to FMVSS 222.

7. Use of a flip seat at any side emergency door location in conformance with FMVSS 222, including required aisle width to side door, is acceptable. Any flip seat shall be free of sharp projections on the underside of the seat bottom. The underside of the flip-up seat bottoms shall be padded or contoured to reduce the possibility of snagged clothing or injury during use. Flip seats shall be constructed to prevent passenger limbs from becoming entrapped between the seat back and the seat cushion when in upright position. The seat cushion shall be designed to rise to a vertical position automatically when not occupied.

STEERING WHEEL

See *Chassis* section

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 that 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". 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.

5. A suitable device (or devices) shall be designed and installed to prevent injury or fatality to passengers from being dragged. At least one such device shall assist passengers during entry or egress, and be of such design to eliminate entanglement.

STEP TREADS

1. All steps, including floor line platform area, shall be covered with 3/16" 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" ribbed step tread shall have a 1 1/2" 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 1/2" mandrel both at 130 degrees Fahrenheit and 20 degrees Fahrenheit without breaking, cracking, or crazing.

   c. Show a durometer hardness 85 to 95.

STIRRUP STEPS

1. 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.

STOP SIGNAL ARM

1. The stop signal arm(s) shall comply with the requirements of FMVSS 131.

STORAGE COMPARTMENT

1. 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.

SUN SHIELD

1. Interior adjustable transparent sun shield not less than 6" X 30" for Types B, 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.

TAILPIPE

1. Tailpipe shall extend out to but not more than 2" 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 Types A and B may be manufacturer's standard.

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 shall be furnished by either the chassis or body manufacturer. The installation shall be in accordance with the chassis manufacturer's specifications.

TRACTION ASSISTING DEVICES (OPTIONAL)

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.

TRASH CONTAINER AND HOLDING DEVICE

1. Where required or used, the trash container shall:

   a. Be of UL classified fire resistant polyethylene or equivalent material

   b. Be no greater than 14 quart capacity

   c. Be secured by a holding device that is designed to prevent movement and to allow easy removal and replacement

   d. Be installed in an accessible location in the driver's compartment, not obstructing passenger use of the service door

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

   *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.

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

VENTILATION

1. Auxiliary fans shall meet the following requirements:

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

   b. Fans shall be a nominal 6" 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, regardless of the exterior weather conditions, may be provided.

WHEELHOUSING

1. The wheelhousing opening shall allow for easy tire removal and service.

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

3. The inside height of the wheelhousing above the floor line shall not exceed 12".

4. The wheelhousing 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 wheelhousing shall extend into the emergency door opening.

WINDOWS

1. Each full side window, other than emergency exits designated to comply with FMVSS 217, shall provide an unobstructed emergency opening of at

least 9" but not more than 13" high and 22" wide, obtained by lowering window. One side window on each side of the bus may be less than 22" wide.

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

WINDSHIELD WASHERS

1. A windshield washer system shall be provided.

WINDSHIELD WIPERS

1. A windshield wiping system, two-speed or variable speed, with an intermittent feature, 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.

WIRING

1. All wiring shall conform to current SAE standards.

2. Circuits:

   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:

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

The color of cables shall correspond to SAE J 1128.

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

(1) Head, tail, stop (brake) and instrument panel lamps

(2) Clearance and stepwell lamps (stepwell lamp shall be actuated when service door is opened)

(3) Dome lamp

(4) Ignition and emergency door signal

(5) Turn signal lamps

(6) 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.

STANDARDS FOR SPECIALLY EQUIPPED SCHOOL BUSES

STANDARDS FOR SPECIALLY EQUIPPED SCHOOL BUSES

INTRODUCTION

Equipping buses to accommodate students with special needs is discretionary depending upon the needs of the passengers. While one bus may be fitted with a lift, another may have seat belts installed to secure child seats. Buses so equipped are not to be considered a separate class of school bus, but simply a regular school bus which is equipped for special accommodations.

The specifications in this section are intended to be supplementary to specifications in the chassis and body sections. In general, specially equipped buses shall meet all the requirements of the preceding sections plus those listed in this section. It is recognized by the entire industry that the field of special transportation is characterized by varied needs for individual cases and by a rapidly emerging technology for meeting those needs. A flexible, "common-sense" approach to the adoption and enforcement of specifications for these vehicles, therefore, is prudent.

As defined by Code of Federal Regulations (CFR) 49§571.3, "*Bus* means a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons" (11 or more including the driver). This definition also embraces the more specific category, *school bus*. Vehicles with 10 or fewer passenger positions (including the driver) cannot be classified as buses. For this reason, the federal vehicle classification *multipurpose passenger vehicle* (CFR 49 § 571.3), or MPV, must be used by manufacturers for these vehicles in lieu of the classification *school bus*. This classification system, while requiring compliance with a less stringent set of federal standards for MPVs, does not preclude state or local agencies or these national standards from requiring compliance of school bus-type MPVs with the more stringent federal standards for school buses.

The following standards address modifications as they pertain to school buses that, with standard seating arrangements prior to modification, would accommodate more than 10 persons (11or more including the driver). If by addition of a power lift, mobile seating device positions or other modifications, the capacity is reduced such that vehicles become MPVs, the intent of these standards is to have these vehicles be required to meet the same standards they would have had to meet prior to such modifications, and such MPVs are included in all references to school buses and requirements for school buses which follow.

DEFINITION

A specially equipped school bus is any school bus which is designed, equipped, or modified to accommodate students with special needs.

GENERAL REQUIREMENTS

1. School buses designed for transporting students with special transportation needs shall comply with National Standards and with Federal Motor Vehicle Safety Standards applicable to their GVWR category.

2. Any school bus to be used for the transportation of children who are confined to a wheelchair or other mobile positioning device, or who require life support equipment which prohibits use of the regular service entrance, shall be equipped with a power lift, unless a ramp is needed for unusual circumstances related to passenger needs.

AISLES

1. 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.

COMMUNICATIONS

1. All school buses which are used to transport individuals with disabilities should be equipped with a two way electronic voice communication system which can be used at any point in the vehicle's route. Where no such service exists, vehicles would be exempt.

GLAZING

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

IDENTIFICATION

1. Buses with power lifts used for transporting individuals with disabilities shall display below the window line 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's Federal Highway Administration (FHWA) FP-85 Standards.

PASSENGER CAPACITY RATING

1. 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.

POWER LIFTS AND RAMPS

1. Power lift shall be located on the right side of the bus body when not extended. Exception: 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 one way streets.

2. a. 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 © Vehicle ramp (See Appendix D).

   b. A ramp device which does not meet the specifications of ADA but does meet the specifications of paragraph 3 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. a. All vehicles covered by this specification shall provide a level-change mechanism or boarding device (e.g., lift or ramp) complying with paragraph b. or c. of this section and sufficient clearances to permit a wheelchair or other mobility aid user to reach a securement location.

   b. Vehicle lift

      (1) Design load. The design load of the lift shall be at least 600 pounds. Working parts, such as cables, pulleys, and shafts, which can be expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least 6 (six), based on the ultimate strength of the material. Nonworking parts, such as platform, frame, and attachment hardware which would not be expected to wear, shall have a safety factor of at least 3 (three), based on the ultimate strength of the material.

      Lift capacity. The lifting mechanism and platform shall be able to lift a minimum 800 pounds.

(2) Controls

(a) Requirements

Controls shall be provided that enable the operator to activate the lift mechanism from either inside or outside the bus. The controls should be interlocked with the vehicle brakes, transmission, or door, or shall provide other appropriate mechanisms or systems to ensure the vehicle cannot be moved when the lift is not stowed and so the lift cannot be deployed unless the interlocks or systems are engaged. The lift shall deploy to all levels (i.e., ground, curb, and intermediate positions) normally encountered in the operating environment. Where provided, each control for deploying, lowering, raising, and stowing the lift and lowering the roll-off barrier shall be of a momentary contact type requiring continuous manual pressure by the operator and shall not allow improper lift sequencing when the lift platform is occupied. The controls shall allow reversal of the lift operation sequence, such as raising or lowering a platform that is part way down, without allowing an occupied platform to fold or retract into the stowed position.

(b) Exception

Where the lift is designed to deploy with its long dimension parallel to the vehicle axis and which pivots into or out of the vehicle while occupied (i.e., "rotary lift"), the requirements of this paragraph prohibiting the lift from being stowed while occupied shall not apply if the stowed position is within the passenger compartment and the lift is intended to be stowed while occupied.

(3) Emergency operation

The lift shall incorporate an emergency method of deploying, lowering to ground level with a lift occupant, and raising and stowing the empty lift if the power to the lift fails. No emergency method, manual or otherwise, shall be capable of being operated in a manner that could be hazardous to the lift occupant or to the operator when operated according to manufacturer's instructions and shall not permit the platform to be stowed or folded when occupied, unless the lift is a rotary lift and is intended to be stowed

while occupied. No manual emergency operation shall require more than 2 (two) minutes to lower an occupied wheelchair to ground level.

(4) Power or equipment failure

Platforms stowed in a vertical position, and deployed platforms when occupied, shall have provisions to prevent their deploying, falling, or folding any faster than 12" per second or their dropping of an occupant in the event of a single failure of any load carrying component.

(5) Platform barriers

The lift platform shall be equipped with barriers to prevent any of the wheels of a wheelchair or mobility aid from rolling off the platform during its operation. A movable barrier or inherent design feature shall prevent a wheelchair or mobility aid from rolling off the edge closest to the vehicle until the platform is in its fully raised position. Each side of the lift platform which extends beyond the vehicle in its raised position shall have a barrier a minimum 1 ½" high. Such barriers shall not interfere with maneuvering into or out of the aisle. The loading-edge barrier (outer barrier), which functions as a loading ramp when the lift is at ground level, shall be sufficient when raised or closed, or a supplementary system shall be provided, to prevent a power wheelchair or mobility aid from riding over or defeating it. The outer barrier of the lift shall automatically raise or close, or a supplementary system shall automatically engage, and remain raised, closed, or engaged at all times that the platform is more than 3" above the roadway or sidewalk and the platform is occupied. Alternatively, a barrier or system may be raised, lowered, opened, closed, engaged, or disengaged by the lift operator, provided an interlock or inherent design feature prevents the lift from rising unless the barrier is raised or closed or the supplementary system is engaged.

(6) Platform surface

The platform surface shall be free of any protrusions over 1/4" high and shall be slip resistant. The platform shall have a minimum clear width of 28 ½" at the platform, a minimum clear width of 30" measured from 2" above the platform surface to 30" above the

surface of the platform, and a minimum clear length of 48" measured from 2" above the surface of the platform to 30" above the surface of the platform. (See "Wheelchair or Mobility Aid Envelop" figure in Appendix.D).

(7) Platform gaps

Any openings between the platform surface and the raised barriers shall not exceed 5/8" in width. When the platform is at vehicle floor height with the inner barrier (if applicable) down or retracted, gaps between the forward lift platform edge and the vehicle floor shall not exceed ½ inch horizontally and 5/8 inch vertically. Platforms on semi-automatic lifts may have a hand hold not exceeding 1 ½" by 4 ½" located between the edge barriers.

(8) Platform entrance ramp

The outboard entrance ramp or loading-edge barrier used as a ramp and the transition plate from the inboard edge of the platform to the vehicle floor shall not exceed a slope of 1:8, measured on level ground, for a maximum rise of 3", and the transition from roadway or sidewalk to ramp may be vertical without edge treatment up to 1/4". Thresholds between 1/4" and ½" high shall be beveled with a slope no greater than 1:2.

(9) Platform deflection

The lift platform (not including the entrance ramp) shall not deflect more than 3 degrees (exclusive of vehicle roll or pitch) in any direction between its unloaded position and its position when loaded with 600 pounds applied through a 26" by 26" test pallet at the centroid of the platform.

(10) Platform movement

No part of the platform shall move at a rate exceeding 6" per second during lowering and lifting an occupant, and shall not exceed 12" per second during deploying or stowing. This requirement does not apply to the deployment or stowage cycles of lifts that are manually deployed or stowed. The maximum platform horizontal and vertical acceleration when occupied shall be 0.3 g.

(11) Boarding direction

The lift shall permit both inboard and outboard facing of wheelchair and mobility aid users.

(12) Use by standees

Lifts shall accommodate persons using walkers, crutches, canes or braces, or who otherwise have difficulty using steps. The platform may be marked to indicate a preferred standing position.

(13) Handrails

Platforms on lifts shall be equipped with handrails on two sides, which move in tandem with the lift, and which shall be graspable and provide support to standees throughout the entire lift operation. Handrails shall have a usable component at least 8" long with the lowest portion a minimum 30" above the platform and the highest portion a maximum 38" above the platform. The handrails shall be capable of withstanding a force of 100 pounds concentrated at any point on the handrail without permanent deformation of the rail or its supporting structure. The handrail shall have a cross-sectional diameter between 1 1/4" and 1 ½" or shall provide an equivalent grasping surface, and have eased edges with corner radii of not less than 1/8". Handrails shall be placed to provide a minimum 1 ½" knuckle clearance from the nearest adjacent surface. Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

(14) Circuit breaker

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

(15) Excessive pressure

Lift design shall prevent excessive pressure that could damage the lift system when the platform is fully lowered or raised, or that could jack the vehicle.

(16) Documentation

The following information shall be provided with each vehicle equipped with a lift:

(a) 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.)

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

(17) Training materials

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

(18) Identification and certification
Each lift shall be permanently and legibly marked or incorporate a non-removable label or tag which states that it conforms to all applicable requirements of the current National Standards for School Buses. In addition, the lift manufacturer, or an authorized representative, upon request of the original titled purchaser, shall provide a notarized Certificate of Conformance, either original or photocopied, which states that the lift system meets all the applicable requirements of the current National Standards for School Buses.

c. Vehicle ramp

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

(2) Floor of ramp shall be constructed of non-skid material.

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

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

REGULAR SERVICE ENTRANCE

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

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

RESTRAINING DEVICES

1. On power-lift equipped vehicles, seat frames may be equipped with attachments or devices to which belts, restraining harnesses or other devices may be attached. Attachment framework or anchorage devices, if installed, shall conform to FMVSS 210.

2. Seat belt assemblies, if installed, shall conform to FMVSS 209.

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 FMVSS 213 and 222.

SEATING ARRANGEMENTS

1. Flexibility in seat spacing to accommodate special devices shall be permitted to meet passenger requirements. All seating shall be forward-facing.

SECUREMENT AND RESTRAINT SYSTEM FOR WHEELCHAIR/MOBILITY AID AND OCCUPANT

For purposes of better understanding the various aspects and components of this section, the term *securement* 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 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 both 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 FMVSS 222. 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, in accordance with FMVSS 222. (See §2 and §3 of this section.)

   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 §4.4(a) of FMVSS 209. (See §2 and §3 of this section.)

   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" 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:

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

(2) 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 of a non-corrosive material or treated to resist corrosion in accordance with §4.3(a) of FMVSS 209.

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 FMVSS 302.

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

FMVSS requirements, as well as, the current National Standards 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 FMVSS 222 and the current National Standards for School Buses.

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

(1) 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).

(2) 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" by 48". 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 FMVSS 222. 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 strap assembly, shall comply with the requirements for Type 1 safety belt systems, in accordance with §4.2, §4.3, and §4.4(a) of FMVSS 209.

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 FMVSS 209.

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 FMVSSs 209 and 210 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.

(1) The 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 FMVSS 222.

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

(1) Each floor anchorage shall be capable of withstanding a minimum force of 3,000 pounds (13,344 Newtons) when applied as specified in FMVSS 222.

(2) 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 FMVSS 222.

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.

4. Dynamic testing

a. The wheelchair/mobility aid securement and occupant restraint system shall be subjected to, and successfully pass, a dynamic sled test at a minimum impact speed/deceleration of 30 mph/20g's.

b. The dynamic test shall be performed by experienced personnel using an impact simulator with proven ability to provide reliable, accurate, and test results which can be replicated.

c. The dynamic test shall be performed in accordance with the procedures set forth in Appendix A of SAE J2249 "Test for Frontal Impact Crash Worthiness."

d. The wheelchair/mobility aid used for testing purposes shall be a rigid, reusable surrogate wheelchair that complies with the requirements of Appendix D of SAE J2249 "Specification for Surrogate Wheelchair."

e. The dynamic test shall be performed using system assemblies, components and attaching hardware which are identical to the final installation in type, configuration and positioning. The body structure at the anchorage points may be simulated for the purpose of the sled test.

f. When tested, the wheelchair/mobility aid securement and occupant restraint system shall pass the criteria specified in Section 6.2 of SAE J2249 "Performance Requirements of Frontal Sled Impact Test." Following is an abridged summary of the criteria.(See appendix D).

(1) Retain the test dummy in the test wheelchair and on the test sled with the test wheelchair in an upright position.

(2) Not show any fragmentation or complete separation of any load carrying part.

(3) Not allow the horizontal excursions of the test dummy and the test wheelchair to exceed specified limits.

(4) Prevent the test wheelchair from imposing forward loads on the test dummy.

(5) Allow removal of the test dummy and the test wheelchair, subsequent to the test, without the use of tools.

SPECIAL LIGHT

1. 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.

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 so as 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 used primarily to deliver students to the left side of one way streets and its use is 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.

SPECIAL SERVICE ENTRANCE DOORS

1. A single door or double doors may 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. If double doors are used the system shall be designed to prevent the door(s) from being blown open by the wind resistance created by the forward motion of the bus, and/or incorporate a safety mechanism to provide secondary protection should the primary latching mechanism(s) fail.

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

4. All doors shall be weather sealed.

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

6. 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.

7. 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.

8. 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.

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

10. Special service entrance doors shall be equipped with padding at the top edge of the door opening. Padding shall be at least 3" wide and 1" thick and extend the full width of the door opening.

SUPPORT EQUIPMENT AND ACCESSORIES

1. Each bus which is set up to accommodate wheelchair/mobility aids or other assistive or restraint devices which utilize belts, 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 any 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 then 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).

TECHNOLOGY AND EQUIPMENT, NEW

It is the intent of these standards to accommodate new technologies and equipment which will better facilitate the transportation of students with special needs. 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. It (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. It shall not diminish the safe environment of the interior of the bus.

3. It shall not create additional risk to students who are boarding or exiting the bus or are in or near the school bus loading zone.

4. It shall not create undue additional activity and/or responsibility for the driver.

5. It 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.

ALTERNATIVE FUELS

ALTERNATIVE FUELS

INTRODUCTION

This standard is designed to be used as an overview of the alternative fuels being utilized for school transportation. The standard is not designed to replace current applicable federal, state, manufacturing or safety standards that may exceed requirements within this standard. There will be advancements in engineering and improvements in equipment fabrication methods and operating practices that differ from those specifically called for in this standard. Such deviations or improvements may provide safety and may meet the intent of and be compatible with this standard. Entities wishing to purchase alternative fuel school buses should use this section only as a starting point. More detailed specifications, including specific design and performance criteria and safety standards, should be researched by prospective purchasers of alternative fuel school buses.

GENERAL REQUIREMENTS

Alternative fuel school buses shall meet the following requirements:

1. Chassis shall meet all standards previously mentioned in BUS CHASSIS STANDARDS.

2. Chassis shall meet all applicable FMVSS standards.

3. Fuel system integrity shall allow zero (0) leakage when impacted by a mobile barrier in accordance with test conditions specified in FMVSS 301 or FMVSS 303, as applicable.

4. Original equipment manufacturers (OEMs) and conversion systems using compressed natural gas (CNG) shall comply with NFPA Standard 52 "Compressed Natural Gas Vehicular Fuel Systems" in effect at the time of installation. Fuel systems using liquefied petroleum gas (LPG) shall comply with the NFPA Standard 58 "Liquefied Petroleum Gases Engine Fuel Systems" in effect at the time of installation.

5. All alternative fuel buses shall travel a loaded range of not less than 200 miles, except those powered by electricity which shall travel not less than 80 miles.

6. Natural gas-powered buses shall be equipped with an interior/exterior gas detection system. All natural gas-powered buses shall be equipped with a fire detection and suppression system.

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

8. All Types C and D buses using alternative fuel shall meet the same base requirements of BUS CHASSIS STANDARDS for Power and Grade ability, i.e., at least one published net horsepower per each 185 pounds of GVWR.

9. The total weight shall not exceed the GVWR when loaded to rated capacity.

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

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

12. All on-board fuel supply containers shall meet all appropriate requirements of the ASME code, the DOT regulations, or applicable FMVSS and NFPA Standards.

13. All fuel supply containers shall be securely mounted to withstand a static force of 8 times their weight in any direction.

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

15. A positive quick acting (1/4 turn) shut-off control valve shall be installed in the gaseous fuel supply lines as close to the fuel supply containers as possible. The controls for this valve shall be placed in a location easily operable from the exterior of the vehicle. The location of the valve control shall be clearly marked on the exterior surface of the bus.

16. A grounding system shall be required for grounding of the fuel system during maintenance related venting.

CHARACTERISTICS OF ALTERNATIVE FUELS

For the purpose of this standard, alternative fuels refer to the specific fuels listed below. A brief description of each fuel and the advantages and disadvantages of each fuel are shown. Also see Appendix C, Alternative Fuels Comparison Chart.

Note: There are two other more exotic fuels being examined, hydrogen and solar power. These two energy sources are in their infancy as alternative fuels for motor vehicles, and are not covered within the scope of this document.

1. Liquid alternative fuels

a. Methanol

Methanol, a liquid at normal ambient temperatures, is colorless, and is made primarily from natural gas or coal. Extensive experiments have been conducted with auto and truck engines powered by methanol. There are a number of urban transit bus fleets currently using methanol; California has experience with methanol as an alternative fuel for school buses through their School Bus Demonstration Project.

(1) Advantages:

(a) The principal advantage to methanol is that the emissions produced are quite low in particulates and NOx.

(b) Another major advantage is that it mixes with gasoline and can be used as M85 which is 15% gasoline and 85% Methanol. Also, flexible fuel vehicles run on a blend of the two fuels.

(c) Methanol has a high cetane rating which assists diesel engine performance.

(d) Methanol is biodegradable and readily assimilates with water.

(e) Methanol burns smokeless.

(f) Methanol is a domestically produced energy source.

(2) Disadvantages:

(a) Methanol is corrosive, particularly to aluminum; engines and fuel systems specially designed to handle it use different materials, such as stainless steel.

(b) Methanol has less than half the power per equivalent gallon (BTU value) as that of diesel fuel. For an equivalent range, this requires storage tanks twice the size of diesel tanks.

(c) Methanol is quite toxic. Direct exposure to the human body has the potential of causing blindness and kidney failure. Since it is tasteless and colorless, it cannot be easily detected should it get into a water supply.

(d) Methanol combustion generates high amounts of formaldehyde, a potential cancer causing substance. This can be offset with exhaust after-treatment, such as special catalytic converters.

(e) In its pure state, methanol burns with a colorless flame, so a fire is hard to see. In addition, it is highly volatile and has a relatively low flash point.

(f) The distribution system and infrastructure for methanol fueling are considerably less widespread than for gasoline and diesel.

b. Ethanol

Ethanol is a distilled agricultural alcohol product that is a liquid at normal ambient temperatures and is colorless. Corn is the current primary grain source. It has many of the same characteristics as methanol. Currently ethanol is used primarily currently in a mixture with gasoline, usually no more than 10% ethanol.

(1) Advantages:

(a) Ethanol emissions are quite low in particulates and NOx.

(b) Like methanol, ethanol readily mixes with gasoline.

(c) Ethanol is biodegradable and readily assimilates with water.

(d) Ethanol is less corrosive and less toxic than methanol.

(e) Ethanol is a domestically produced energy source.

(2) Disadvantages:

(a) The production process is extensive and the steps involved, i.e., planting, fertilizing, harvesting, shipping, processing, consume nearly as much energy as is created.

(b) The energy output of ethanol, though higher than methanol, is still only about half that of diesel fuel, thus the range of ethanol powered vehicles is limited for a given fuel storage capacity.

(c) Ethanol emissions have some visible smoke.

(d) Ethanol produces formaldehyde; however, this can be offset with an exhaust after-treatment.

(e) The distribution system and infrastructure for ethanol fueling are considerably less widespread than for gasoline and diesel.

c. Clean diesel

Clean diesel was one of the alternative fuels approved in the Clean Air Act Amendments of 1990. The first step being undertaken is further refining to reduce sulfur content and hence the significant particulate emissions caused by the sulfur. Further steps are being developed to add cetane boosters which increase efficient combustion. Additives are also being developed to reduce aromatic hydrocarbons in the exhaust.

(1) Advantages:

(a) The additional processing costs are small, so clean diesel is cost effective.

(b) All existing diesel engines currently in service can use clean diesel without modification.

(c) The present systems for distribution of diesel fuel are unchanged and are fully usable with clean diesel.

(d) Clean diesel retains the low level of diesel fuel volatility. This makes it safer than many of the other alternatives.

(e) Clean diesel has a higher BTU value per gallon or equivalent gallon than any other alternative fuel, and thus provides more engine efficiency as well as more vehicle range.

(2) Disadvantages:

(a) Clean diesel is still relatively high in particulates and NOx.

(b) Clean diesel is a fossil fuel and, as such, leaves us still dependent on foreign sources.

(c) When operating under cold conditions, starting is a problem, as with all diesel fuels

d. Reformulated gasoline

Reformulated Gasoline is a specially blended fuel with the following properties: a lower vapor pressure that reduces evaporation during operation and refueling; more efficient combustion through the addition of high-octane oxygenates. Reformulated gasoline aromatic levels have been lowered, which provides less in the way of hydrocarbon tail pipe emissions.

(1) Advantages:

(a) Reformulated gasoline is compatible with all existing gasoline engines.

(b) The existing fuel-delivery infrastructure is unchanged by this change in fuel properties.

(c) Reformulated gasoline is a cost-effective alternative in spite of some additional refining costs.

2) Disadvantages:

(a) Currently there is insufficient oxygenate production and storage (as well as transportation) to provide the oxygenate when and where it is needed.

(b) Like regular gasoline, reformulated gasoline has a lower caloric (BTU) value than diesel and, thus, provides less

engine efficiency than diesel and less range for a given fuel capacity.

(c) Reformulated gasoline is a fossil fuel and, as such, leaves us still dependent on foreign sources.

(d) Present technology and federal emissions and energy standards will allow reformulated gasoline to be viable to the year 2000. Significant improvements must take place if gasoline is to be used after that time, assuming present planned regulations remain in place.

2. Gaseous alternative fuels

a. Natural gas

Natural gas is primarily methane as it comes from the well, and it burns quite cleanly in its unprocessed state. Natural gas has a higher ignition point (temperature) and a narrower fuel/oxygen mixture combustion range than other fuels. Energy is consumed in processing natural gas to achieve sufficient vehicle storage (i.e., compression or cryogenic processes). See Compressed Natural Gas and Liquid Natural Gas below.

b. Compressed natural gas (CNG)

Compressed Natural Gas, or CNG, consists primarily of mixtures of hydrocarbon gases and vapors, consisting principally of methane (CH_4) in gaseous form, which is compressed for use as a vehicular fuel.

(1) Advantages:

(a) Natural gas is readily available as a domestic energy source, is inexpensive, and has generally lower emissions than most other alternative fuels.

(b) CNG already is in use as a viable alternative for light-duty vehicles. The American Gas Association reports over 700,000 natural gas vehicles in operation in 38 countries.

(c) The cleaner burning minimizes carbon buildup thus, increasing oil change intervals and reducing maintenance.

(2) Disadvantages:

(a) The pressure of CNG requires heavy storage tanks. The tanks are large even for short-range use. Those two factors reduce cargo capacity. Maintaining reasonable cargo capacity restricts tank size and limits range. Lower caloric (BTU) value per equivalent gallon than diesel also limits engine efficiency and vehicle range.

(b) The high pressure which the CNG fuel storage system must endure requires careful design and location on the vehicle, protection from damage, plus periodic maintenance and upkeep. Periodic tank testing for structural safety is required and replacement during the life cycle of the vehicle may be necessary.

(c) Refueling time is dependent on the type of fueling system used, and can be quite lengthy. There are two methods: "slow-fill" which takes from 5 to 8 hours and is typically called "overnight" or "time-fill" refueling and "fast-fill" which takes about 5 to 10 minutes and requires high-volume compression and special filling apparatus.

(d) Natural gas compression and refueling equipment is expensive and must be maintained. Fast fill capability requires an additional "cascade" of high volume storage cylinders, which adds considerable expense to the fueling station.

(e) There are composition variations in natural gas and percentage of methane content from one area to another. Additional processing is required to get uniform natural gas available in all areas.

(f) Natural gas has poor lubricative properties.

c. Liquid natural gas (LNG)

Liquid natural gas utilizes the same natural gas source (primarily methane) as CNG, but requires purification of the gas and cooling and storage below -260 degrees Fahrenheit to liquefy the natural gas. Converting natural gas to liquid form provides storage of a much greater amount on the vehicle than can be achieved in the gaseous state.

(1) Advantages:

(a) Liquid natural gas has all of the combustion advantages of compressed natural gas, is readily available, clean burning and generally produces lower emissions than alternatives other than CNG.

(b) An engine will operate just as easily on LNG as it does on CNG. Though one is stored by compression and the other by cryogenics, when either gets to the point of combustion, it is natural gas.

(c) The range of an LNG is greater than that of CNG due to the fuel density.

(d) The LNG fuel system pressure is less than 100 psig as compared to 3000 psig in a CNG system.

(e) LNG provides almost pure methane with known performance characteristics.

(2) Disadvantages:

(a) Maintaining the super-cool temperature requires large, heavy, highly insulated tanks which still forces compromise between vehicle range and cargo carried.

(b) Equipment to super-cool and liquefy gas is expensive to purchase, operate, and maintain.

(c) Liquid natural gas can be kept in the insulated storage tank for 7 to 10 days. After that, it must be bled off to maintain the cold temperature required to hold the gas in liquid form.

(d) The bleeding-off process releases hydrocarbons which, in turn, requires treatment to avoid direct release into the atmosphere.

(e) Natural gas has poor lubricative properties.

d. Propane (also known as LIQUEFIED PETROLEUM GAS or LPG)

Propane, or LPG, is sometimes available directly from wells, but is normally produced as a by-product of the gasoline refining process. It has

been used for a number of years in light-duty commercial vehicles in urban areas around the world.

(1) Advantages:

(a) Propane burns relatively clean. It emits less NOx and contains less particulate matter than diesel; and emits less carbon monoxide and fewer hydrocarbons than gasoline.

(b) The cleaner burning minimizes carbon buildup in the engine and hence resulting in less maintenance.

(c) Propane starts better in cold weather than either diesel or gasoline.

(d) The infrastructure for distribution and storage of propane is relatively widespread.

(2) Disadvantages:

(a) As with CNG, propane requires large and heavy fuel tanks to achieve reasonable driving range, due to reduced engine efficiency per equivalent gallon.

(b) Propane requires the use of relatively low compression ratios hence, has lower economy.

(c) Propane vapors, like gasoline, are heavier than air and volatile. These explosive mixtures settle in service pits or other spots; therefore, indoor storage can be a safety concern.

(d) As a by-product, propane, is dependent on the gasoline process which limits supply. Further, it does little toward the reduction of dependency of foreign oil.

(e) Propane has poor lubricative properties.

3. Electric power

The use of electricity as a power source for school buses is an emerging technology that is under considerable research due to the potential for reduced overall emissions. Research is centering on ways to increase the capacity and reduce the

weight of batteries, as well as improving the motors used to power the vehicles and the associated electronics. Recharging technology is also developing rapidly. Most of these efforts have the goals of improving the range and performance of electric vehicles, reducing their cost, and addressing operational concerns, such as recharging.

(1) Advantages:

(a) Electric power vehicles produce no tail pipe emissions.

(b) The electricity distribution system is currently available; power lines are already in place.

(c) Electricity can be, and often is, produced from renewable, domestic energy sources.

(d) Electric power vehicles are extremely quiet, due to the lack of internal combustion engines.

(e) Electric school buses can be produced as hybrid vehicles, which would have a small internal combustion engine to recharge batteries, or to supply heating systems or various other chassis accessories.

(f) The cost per mile to operate electric power vehicles is low; power source maintenance is practically nil, compared to internal combustion engines.

(2) Disadvantages:

(a) Electric power vehicles have low range, due to battery weight and limited electrical storage capacity of current batteries.

(b) Electric power vehicles may not eliminate overall emissions and/or foreign oil dependency if electricity to charge vehicle batteries is produced from coal or oil.

(c) Current cost of electric power systems for vehicles, including batteries, is extremely high.

(d) Battery disposal is an environmental concern.

(e) Significant weight of current batteries limits passenger carrying capacity.

USING THESE STANDARDS FOR SCHOOL BUS OPERATIONS

USING THESE STANDARDS FOR SCHOOL BUS OPERATIONS

In order that these standards for the operation of school buses may be put into effect, each state legislature which has not already done so should confer upon the appropriate state agency the general responsibility for setting up statewide rules and regulations regarding the mode of operation of school buses. Detailed standards for the mode of operation of school buses should not be written into state law.

The standards for school bus operations appearing in the report must be officially adopted by the appropriate state agency to become legally effective within that state.

These standards are intended to apply primarily to new vehicles, including all types of school buses as defined in the section entitled, Definitions, School bus (Type A, Type A-I, Type A-II, Type B, Type C and Type D). It should be noted here that vehicles with a capacity for less than 10 passengers cannot be certified as school buses under federal regulations.

These standards are intended to apply to the operation of buses used primarily to transport pupils to and from school, not to buses used primarily as public carriers.

States should normally allow at least six (6) months lead time between publication of changes to standards for the operation of school buses and the effective date.

Requests for interpretation of these Standards should be mailed to the chairman of the Interpretation Committee, addressed as follows: Mr. Donald Fowler, President, Fowler Bus Company, Inc., 1213 East Main Street, Richmond, MO. 64085.

The Interim Committee succeeds the Conference Steering Committee between conferences. Requests for modifications of these Standards and development of new Standards should be directed to the chairman of the Interim Committee, addressed as follows: Mr. Don M. Carnahan, director, Pupil Transportation, Office of the Superintendent of Public Instruction, Old Capitol Building, PO Box 47200, Olympia, WA 98504-7200.

OPERATIONS INTRODUCTION

INTRODUCTION

The success of any school transportation operation depends largely on the performance and degree of dedication displayed by those involved. These recommendations are designed to assist school administrators and private operators in understanding their pupil transportation programs and developing applicable policies, including those for transporting students with special needs.

ADMINISTRATION

1. The state agency(ies) responsible for pupil transportation shall provide the following:

    a. Leadership in the development of a comprehensive pupil transportation program for state-wide application.

    b. A State Director of Pupil Transportation with the staff and other resources necessary for optimal job performance.

    c. Clear, concise pupil transportation policies.

    d. A cost accounting system for all expenditures in the area of pupil transportation.

    e. A state-wide management information system to accommodate pupil transportation data, e.g., costs, information gleaned from the uniform school bus accident reporting criteria, manpower availability, etc.

    f. Promotion of a pupil transportation safety program utilizing community, school districts, school bus contractors, legislation, media, law enforcement and state agencies concerned with pupil transportation.

    g. A manual or handbook for local pupil transportation supervisors, school administrators and private contractors containing detailed instructions for implementing the state's pupil transportation laws, regulations and policies.

    h. A manual or handbook for each school bus driver containing the state pupil transportation regulations and recommended safety practices.

i. A comprehensive school bus driver program for both pre-service and in-service instruction, including documentation of successful completion of classroom and behind-the-wheel instruction.

j. A manual or handbook for school bus maintenance personnel.

k. Workshops, seminars and/or conferences for all pupil transportation personnel.

l. Encouragement for state institutions of higher learning to provide undergraduate and graduate courses acceptable for certification purposes in pupil transportation, operation and safety.

m. Comprehensive safety and ridership curricula for pupil passengers.

n. Annual visits to local school systems to evaluate transportation systems and provide necessary direction.

o. Bus and equipment standards that ensure safe and efficient student transportation.

p. Appropriate school bus preventive maintenance procedures and ongoing maintenance programs.

q. Coordination with other agencies having responsibility for pupil transportation services, including the uniform school bus accident reporting criteria.

r. A comprehensive education program to train instructors of school bus drivers.

2. Local administrators shall:

a. Ensure compliance with federal and state pupil transportation laws, regulations and policies, including drug/alcohol testing programs as required in the Omnibus Transportation Employee Testing Act of 1991, and in compliance with 49 CFR, parts 40 and 382.

b. Participate in pupil transportation operations within their jurisdiction, including training programs for all transportation personnel; review of school bus routes; investigation and reporting of accidents and other transportation problems; and evaluation of the pupil transportation system.

c. Ensure that instruction in passenger safety, including student participation in emergency evacuation drills, is an integral part of the school curriculum.

Instruction shall comply with state requirements and/or Federal Highway Safety Guideline 17. (See appendix E).

d. Provide continuous supervision of loading and unloading areas at or near the school, and provide ongoing evaluation of route pickup and drop off locations for safety.

e. Provide adequate supervision for pupils whose bus schedules necessitate their early arrival or late departure from school.

f. Promote public understanding of, and support for, the school transportation program in general.

g. Develop and implement local pupil transportation policies and regulations, including those for special education.

h. Provide transportation personnel the opportunity for growth in job-related activities.

PUPIL TRANSPORTATION DIRECTOR

1. State Pupil Transportation Director's specific duties include, but are not limited to:

   a. Assisting in the implementation, interpretation and understanding of pupil transportation laws, regulations and policies.

   b. Managing the state's pupil transportation program which includes planning, budgeting and forecasting requirements for the operation.

   c. Supervising the preparation of manuals, handbooks and information for distribution to local transportation personnel and private operators.

   d. Providing assistance and direction to local school administrators on request.

   e. Assisting in evaluation of state and local operations, including bus routes, and providing recommendations for policies and procedures.

f. Planning, directing and participating in safety education for pupil transportation personnel.

g. Assisting local personnel in planning and conducting pupil safety education programs.

h. Requiring and maintaining appropriate reports and records.

i. Assisting/consulting with groups involved in pupil transportation safety.

j. Representing the interests of the pupil transportation industry.

k. Working cooperatively with school transportation associations, school districts, parents and private contractors to promote school bus safety and efficiency.

2. Local Pupil Transportation Director and/or Private Operator's specific duties include, but are not limited to:

a. Providing assistance in planning, budgeting and forecasting for the pupil transportation system.

b. Assisting in school site selection and facility planning.

c. Providing, when appropriate, chassis, body and related equipment procurement.

d. Developing and implementing a plan for equipment preventive and on-going equipment maintenance.

e. Recruiting, selecting, instructing and supervising personnel.

f. Routing and scheduling buses for safe, efficient and economical transportation service.

g. Assisting in the development and implementation of pupil safety education programs.

h. Working with administrators, teachers, transportation personnel, students, parents and various public and private agencies to improve their knowledge and the quality of the transportation system.

i. Investigating and reporting accidents, when applicable, using the uniform school bus accident reporting criteria.

j. Investigating reported problems.

k. Maintaining records and preparing reports, as required.

l. Developing and supervising an ongoing evaluation plan for the pupil transportation system.

m. Implementing a Drug/Alcohol testing program in compliance with federal regulations for persons in safety-sensitive positions and Commercial Driver's License (CDL) drivers.

3. The pupil transportation director and/or private operator shall have a basic understanding of the educational process and the corresponding role of transportation. Qualifications shall include:

a. A satisfactory driving record as revealed through checks with the National Driver Register Service and the State Department of Motor Vehicles.

b. A satisfactory work history and a record free of criminal convictions. (Suggestions as to how this information may be obtained appear in the Section DRIVER.

c. An undergraduate degree or equivalent experience in one or more of the following fields of study:

(1) Education

(2) Business administration

(3) Management

(4) Transportation or related field

d. The ability to manage personnel and resources.

e. Basic knowledge of computers.

f. The ability to communicate effectively with school administrators, teachers, parents, students, bus drivers, law enforcement, etc.

g. Knowledge of state and federal regulations applicable to transportation of pupils.

4. The school transportation director and/or private operator shall receive formal instruction in pupil transportation management. This training shall include classroom work and field experience.

DRIVER

1. Each employer shall provide a driver's manual or handbook to each school bus driver at the time of employment. This manual shall include the following subjects:

   a. The state transportation laws, regulations and policies

   b. Motor vehicle rules and regulations applicable to school bus operation

   c. Vehicle operation and maintenance

   d. Procedures for the driver to perform when involved in an accident, when witnessing an accident and when involved with post-accident reporting

   e. Elements of basic first aid procedures plus any local practices and policies that may vary from, but should not conflict with, state requirements

   f. Elements of pupil management

   g. Requirements of the federal drug and alcohol testing program

2. Procedures for selection of school bus drivers shall include:

   a. An appropriate application form (See Appendix E).

   b. A check of applicant's driving record. (Checks of the National Driver Register and files of the appropriate State Department of Motor Vehicles are considered essential in the case of an individual who is applying for a position as a school bus driver).

      Note: The applicant shall be told that these checks will be made before being asked to complete the application for employment. Establish criteria for rejection of those with unacceptable driving records.

c. A check to determine if applicant has a record of criminal convictions, through both state and national criminal identification agencies. Establish criteria for rejecting those with unacceptable records.

d. One or more personal interviews. (A properly conducted interview can be one of the most important of the selection procedures).

e. A physical examination administered by a physician licensed in medicine or osteopathy. Tests for tuberculosis (TB) and other communicable diseases should occur. Drug testing should be included even though the driving position may not require a commercial driver's license. The physical examination should be conducted annually or as required by state law, regulation or policy and at such times as the superintendent of schools may deem necessary.

f. A determination of educational attainment. A school bus driver applicant shall demonstrate the ability to follow detailed, written instructions and be able to record and report data accurately.

3. Instructional program for school bus drivers:

a. Prior to transporting pupils, a state approved pre-service program which includes classroom and behind the wheel training enabling safe and efficient vehicle operation shall be required.

b. An annual state-approved in-service program shall be required.

c. Prior to transporting students with disabilities, the driver shall receive appropriate training in compliance with I.D.E.A.

d. Drivers shall receive drug and alcohol education as required in the Omnibus Transportation Employee Testing Act of 1991.

4. Behind-the-wheel instruction shall be given in the same type and size bus the driver will be operating. When a driver is expected to operate more than one size and type vehicle, instruction shall be given related to the specific handling characteristics of each. All instruction should include:

a. Familiarization with the bus and its equipment.

b. Procedures for performing pre-trip and post-trip vehicle inspections.

c. Techniques for safe driving, including mirror use and adjustment, smooth starts and stops, shifting, turning, and backing.

d. Defensive driving skills.

e. Techniques for reference point driving.

f. Procedures for loading and unloading pupils at bus stops including moving the bus only after all children are safely out of the danger zones and are at least 10 feet from the bus.

g. Procedures for railroad crossings and other specialized driving requirements for school bus operations.

h. Techniques to identify and avoid practices that result in driver-related vehicle abuse.

i. Procedures for en-route emergencies, including driving emergencies, emergency evacuations, and use of emergency equipment. (See Appendix E)

j. Guidelines for safely running a route, including entrance to and departure from the bus garage and yard, following a route sheet and map, entrance to and departure from school zones, proper radio usage, mechanical difficulties and breakdown.

k. Procedure for fueling buses and handling/preventing fuel spills.

5. All school bus drivers shall be adequately prepared, both physically and mentally each day to perform certain duties. These shall include:

a. Operating the vehicle in a safe and efficient manner.

b. Conducting thorough pre-trip and post-trip inspections of the vehicle and special equipment.

c. Ensuring the safety, welfare and orderly conduct of passengers while on the bus.

d. Handling emergency situations in accordance with operating procedures.

e. Communicating effectively with school staff, students, parents, law enforcement officials and the motoring public.

f. Completing required reports.

g. Completing required training programs successfully.

h. Providing maximum safety for passengers during loading and unloading.

i. Wearing driver's seat belt whenever the bus is in motion.

j. Checking that all students have disembarked from the bus at the end of the route.

6. School bus drivers shall be evaluated at regular intervals. These evaluations may include:

a. Written tests

b. Road performance checks

c. Evaluation interviews

BUS ATTENDANT

1. Bus attendants shall receive instruction in the following areas:

a. The bus and its equipment.

b. Use of emergency exits.

c. The safe loading and unloading of pupils at their stops.

d. Pupil management training and policy training, including state and federal regulations related to the transportation of students with disabilities, consistent with those required for school bus drivers.

e. The safety, welfare and orderly conduct of passengers while on the bus.

f. Emergency situations in accordance with operating procedures.

g. Effective communications with school staff, students, bus drivers, parents, law enforcement officials and the motoring public.

h. The completion of required written reports.

i. Checking that all students have disembarked from the bus at the end of the route.

2. Bus attendant, Special Education (See Special Education Operation, driver/attendant)

MAINTENANCE AND SERVICE PERSONNEL

1. Adequate staff shall be employed to perform maintenance functions on a timely basis consistent with safe transportation practices.

   a. Maintenance, service personnel, and anyone else performing safety sensitive functions shall be subject to drug/alcohol testing.

   b. Personnel shall receive drug and alcohol education as required by DOT regulations.

2. Instructional program for maintenance and service personnel:

   a. The transportation system shall make available to their maintenance and service personnel the necessary maintenance and service publications for the equipment serviced.

   b. The transportation system shall arrange, at regular intervals, for pre-service and in-service training for maintenance and service personnel. It shall also require or encourage maintenance personnel to attend state-sponsored or approved workshops or training institutes.

   c. The training procedures shall include instruction in:

      (1) Preventive maintenance procedures.

      (2) Repair and/or installation procedures for each type of fleet vehicle and its varied equipment.

      (3) Procedures for specialized equipment.

      (4) Inspection of the vehicle and its equipment.

      (5) Recovery procedures for vehicles involved in an accident or breakdown.

      (6) Preparation of maintenance records.

(7) Maintaining planned parts and equipment inventory.

(8) Establishment of parts inventory control procedures.

(9) Repair and installation of adaptive equipment.

(10) Environmental compliance.

PUPIL MANAGEMENT

PUPIL MANAGEMENT

An effective pupil management program is a collaborative effort with many groups of people in the school community involved. Parents, students, school bus drivers, school administrators, contract managers in districts where contract transportation is provided, law enforcement, and social service agencies must be part of the on going process to motivate students to good behavior. It is the responsibility of the school district to ensure that a comprehensive student management program is developed so all persons involved in the process are familiar with their responsibilities.

SCHOOL DISTRICT RESPONSIBILITIES:

1. Establish the policies and procedures by which the program functions. These should include, yet not be limited to, the examples in Appendix E.

2. Establish pupil regulations governing the behavior and safety of pupils at the bus stop and while boarding, riding, and disembarking from the school bus. The rules students are expected to follow should be limited in number and either posted in the bus and/or made available to all riders (See Appendix E).

3. Institute and administer an instructional program that teaches pupils proper conduct and safety procedures. (See Appendix E)

4. Conduct a training program for school bus drivers to ensure that all policies, procedures, regulations and their enforcement are understood.

5. Ensure that parents receive written copies of the bus rules and regulations. Clearly establish their roles and obligations with respect to pupil promptness, attitude and behavior.

6. Initiate procedures to ensure open lines of communication and cooperation between school administrators, bus company officials, state agencies and bus drivers.

7. Train drivers in specific skills that will enable them to maintain order, safety, and respect for the rights of others. These skills should include at least the following:

    a. Specific verbal intervention techniques used to maintain order and safety.

    b. Communication skills that promote rapport, mutual respect, and encourage pupil compliance.

8. Ensure that administrators support and enforce disciplinary procedures, policies and reasonable actions by the driver.

9. If appropriate, assist individual school districts in developing a weapons policy for their school buses.

DRIVER RESPONSIBILITIES :

1. Drivers shall be familiar with and abide by all rules, policies and procedures affecting pupil transportation.

2. Drivers should recognize the importance of establishing rapport with parents, their supervisor, and school administrators when working to ensure proper pupil conduct.

3. Drivers should establish proper rapport with pupils

4. Drivers should instruct pupils in proper behavior, consequences of improper behavior, general procedures and evacuation drills. (See Appendix E)

5. Drivers should maintain order, safety, and secure the rights of others on the school bus. They should exercise good judgement and prudence in this pursuit, using appropriate verbal intervention. This includes, but is not limited to, the following:

   a. Minimizing interior noise.

   b. Controlling passenger movement.

   c. Requiring an orderly entrance and exit.

   d. Eliminating movement or potential movement of objects.

   e. Requiring silence at railroad crossings.

   f. Prohibiting transportation of unauthorized materials.

6. Drivers should handle minor infractions with school district approved, on-board consequences and discussions.

7. Drivers, in instances of serious or recurring misconduct, should follow school district policy pertaining to the misconduct and submit written reports on appropriate forms to administrators or other persons designated to deal with discipline problems. (See Appendix E)

8. Drivers should be aware that they represent the school system and/or the bus company, and should present a positive image in dress, language, and manner while on duty.

9. Drivers should be familiar with the assigned routes and designated school bus stops.

PUPIL RESPONSIBILITIES:

Proper pupil behavior is important. The distraction of the driver can contribute to accidents. Pupils and parents should be made aware of and abide by reasonable regulations to enhance safety. The consequences of unacceptable behavior should be clearly understood. The following will protect the pupil's rights and maintain order on the bus:

1. Pupils must be aware that they are responsible for their actions and behavior.

2. Pupils must know the rules and procedures and abide by them.

3. Pupils must display respect for the rights and comfort of others.

4. Pupils should realize that school bus transportation can be denied if they do not conduct themselves properly.

5. Pupils should be aware that any driver distraction is potentially hazardous to their safety.

6. Pupils should be aware of the dangers involved in and around loading and unloading zone, including the dangers of loose clothing, clothing accessories and other loose personal items.

PARENT / GUARDIAN RESPONSIBILITIES:

1. Understand and support district rules and policies, regulations and principles of school bus safety.

2. Assist children in understanding safety rules and encourage them to abide by them.

3. Recognize their responsibilities for the actions of their children.

4. Support safe riding practices and reasonable discipline efforts.

5. Teach children proper procedures for safely crossing the roadway before boarding and after leaving the bus. (See Appendix E)

6. Support procedures for emergency evacuation as prescribed by states and school districts.

7. Respect the rights and privileges of others.

8. Communicate safety concerns to school administrators.

9. Monitor bus stops, if possible.

10. Support all efforts to improve school bus safety.

11. Parents/guardians should be aware of the dangers involved in and around loading and unloading zone, including the dangers of loose clothing, clothing accessories and other loose personal items.

PROCEDURES

1. Policies and Guidelines:

   The responsible state agency and the local school district should have clear and concise policies and guidelines for the operation of their pupil transportation programs. These are important for two reasons: (1) they have the effect of law when laws or regulations do not specifically address a situation; (2) they serve as the rule book for persons charged with the administration of transportation services within the district.

   Once established, these policies and guidelines become the basis for development of operating procedures. This allows decisions about operational details to be made at the administrative level rather than by the school board. These polices and guidelines should be precise, in writing, and cover the following topics:

   a. A statement of philosophy.

   b. A definition of the agency's goals and objectives.

   c. Procedures for determining eligibility for transportation.

   d. A description of all types of transportation provided.

   e. The days on which service will be available.

f. School starting and closing times.

g. Administrative responsibilities related to program service.

h. Essential routing constraints.

i. The extent of special transportation service.

j. A compilation of pupil rules and regulations.

k. Provisions for the use of contract transportation and/or charter buses.

l. Acceptable purchasing procedures.

m. Desired limits of insurance coverage.

n. The essentials of an accident prevention program including the uniform school bus accident reporting criteria.

o. A system to communicate procedures between administrators and parents, and administrators and bus company or drivers, including student discipline procedure and compliance.

p. Emergency procedures and/or contingency plans to be followed in the event of an accident, unexpected school closing, or unforeseen route change.

q. Use of special lighting and signaling equipment:

(1) Alternately flashing amber lights are to be used to warn motorists that the bus is preparing to stop to take on or discharge passengers.

(2) Alternately flashing red lights are to be used to inform motorists that the bus is stopped on the roadway to take on or discharge passengers.

(3) The stop arm must be operated in conjunction with the flashing red signal lamps.

(4) The use of a white flashing strobe light to increase the visibility of the school bus on the roadway during adverse visibility conditions is permitted.

(5) Crossing control arms may be used, where appropriate, to encourage children to cross properly in front of school buses.

(6) Outside public address systems may be used for instructing children in crossing roadways and for informing them of potentially life threatening situations.

(7) Motion sensors may be used, where appropriate, to alert the driver of an impending safety hazard to students near the bus.

r. Personnel:

(1) An organization chart, identifying the flow of responsibility from the board of education to the school bus driver, should be provided.

(2) Employees should be provided with job specifications and descriptions at the time of employment.

s. Pre-service and in-service training requirements:

(1) All new school bus drivers should be provided with a minimum of 40 hours pre-service training before transporting students or shall be trained to a defined and demonstrated level of performance as certified through state specified competency testing.

(2) All school bus drivers should be provided with a minimum of eight hours of in-service training annually.

t. Use of video monitoring systems:

School systems should promulgate, communicate and enforce polices and procedures to be followed when using on-board video monitoring systems. The video camera on a school bus should be used only as an aid to monitor student and driver behavior. It should not replace the discipline policy, the authority of the driver, or the responsibility of the school officials. The basic safe riding rules must prevail and the consequences of misconduct must be carried out.

(1) All students and drivers shall be notified that they are subject to being videotaped on the school bus at any time. Notification to parents of all students shall be made by the school district. Prior to actual taping, parents and students shall be advised that student conduct prohibited by state and school district student disciplinary

code will result in appropriate consequences as defined in policy. The actual taping shall be audio and video.

(2) Ongoing notification regarding videotaping must occur, addressing the continued need for personal awareness of safety issues. This communication is particularly important to warn against a false sense of security, especially when cameras are moved between buses. Newsletters, student handouts, and notices posted in the bus should be considered.

(3) If video cameras are to be used for monitoring drivers, the drivers must be notified as to the extent of their use and for what purpose they will be used.

(4) Cameras should be scheduled on a rotation basis so as not to select only certain buses. Based on the number of incidents of misconduct or the seriousness of these reports, video monitoring of a bus route may be done more frequently. The transportation supervisor may decide if more frequent monitoring is needed. Such additional monitoring is meant to supplement the written disciplinary reports by the bus driver, not take the place of reports.

(5) After videotaping has been conducted, the tapes are to be stored at a secure location for a period of time designated by the local school district, unless a specific tape is being used in an ongoing action. The transportation supervisor or designee shall periodically review video tapes randomly selected to ensure proper pupil conduct. If no incidents are reported within a period defined by local policy, the tapes will be recycled. If incidents are reported, or if incidents are viewed during random selection, the video tapes are to be kept until final resolution and time for any appeals.

Tapes must be dated and have the bus number and driver's name in order to ensure proper identification. A log shall be maintained on the use of the video camera.

(6) When action is taken as a result of information obtained from the videotape, the driver, supervisor, school administrator, student, and parents or guardians will be contacted. A meeting of the aforementioned parties may be necessary to achieve a resolution of the problem. The videotape may be used as evidence in that meeting. All requests for review shall be made in writing.

(7) Each district must designate by policy, persons allowed to review the tapes.

u. Harassment:

(1) School districts should develop written policies and procedures dealing with all forms of harassment on the school bus. Harassment is the use or tolerance of verbal or physical behavior which serves to threaten, demean, annoy or torment another person. Harassment would include unwanted activities or comments based on race, gender, personal attributes, and others as determined in local policy.

(2) School districts should develop training programs to assist drivers in recognizing harassment and identifying appropriate intervention and reporting strategies.

(3) School districts should develop and implement guidelines for administering appropriate disciplinary actions resulting from an act of harassment.

2. Seating:

a. All student passengers must remain seated on the seat cushion or mobility devices while the school bus is in motion.

3. School site selection and plant planning: when school sites are being selected, consideration should be given to the safety of the pupils riding school buses. School buses will be required to utilize the roads in and around the school site, plus public roadways leading into and from the school area. High-density traffic flow near school exits and entrances should be avoided. Proper site selection and plant planning for improved school transportation is extremely important. (See Appendix E). More specifically, school officials should provide:

a. Separate and adequate space for school bus loading zones.

b. Clearly marked and controlled walkways through school bus zones.

c. Traffic flow and parking patterns for the public and non-bused students separate from the loading zone.

d. A designated loading area for disabled passengers with special needs, if required.

e. An organized schedule of loading areas with stops clearly marked.

f. A loading and unloading site to eliminate the backing of transportation equipment.

Note: Appendix E may be used to evaluate school bus driveways in the vicinity of the school.

4. Routing and scheduling:

It is necessary to procure a map of the area served by a particular school or school system in order to establish bus routes that will adequately meet the needs of pupils in a particular area. Information on the road conditions, railroad crossings and other factors that might affect the particular operation should be recorded along with the location of homes and the number of school-age children in each. Recommended procedures for school bus drivers at railroad crossings appear in Appendix E. Satisfactory school bus stops must be identified along streets and highways where buses can travel with the least amount of risk. The number of pupils to be transported and the distance to be traveled are primary factors in allocating equipment for a particular area. Pupils should be assigned to specific stops according to walking distances, grade level and the school attended. Consideration should be given to the distances between stops to comply with the minimum distance required to activate the red and amber lighting systems.

a. Routing techniques: There are an infinite number of routing techniques that can be used. The following are examples:

(1) A circular route circumscribes an area by using different roads on outgoing and incoming trips. It has the advantage of equalizing time in transit for transported pupils since the first child on in the morning is the first child off in the evening.

(2) A shoestring route extends from the school to some terminal point in the district. If the bus is stored at the school, the same road or roads are used on the outgoing and incoming trips; consequently, children are always traveling more or less directly toward the school.

(3) A feeder route extends from a point farther out in the district to a transfer point on the main route. It may be advisable for one or more of the following reasons:

(a) To limit the use of large buses to improved roads.

(b) To reduce travel time on the main route.

(c) To provide some form of transportation on roads which at times may be impassable by larger, more desirable motor vehicles.

(4) A shuttle route extends between two or more school buildings. Such routes are often required for the transfer of pupils in districts operating two or more schools.

(5) Retracing routes can eliminate the need for pupils to cross the roadway.

(6) Emergency routes should be established and utilized in all school systems when weather or road conditions dictate that it is not safe to travel on other than hard-surfaced roads. Announcements can be made by radio or other means when such routings are to be used.

(7) Computer-assisted routing may be an effective tool.

b. Methods of serving bus routes:

(1) The single trip plan involves a morning and an afternoon trip by one bus on each route. This form of service is well adapted to sparsely settled areas. It also meets the needs of schools where the instructional program requires both elementary and secondary pupils to arrive at the same time.

(2) The double trip plan calls for each bus to cover two different routes in the morning and afternoon. This plan is suited to districts of relatively dense population where distances are not great. As children of all grades are carried on each trip, program adjustments in the instructional schedule are necessary to avoid idle waiting time at the school. If these adjustments can be made without sacrificing the interests of the children, the double trip may be economical by requiring fewer buses.

(3) The multiple or dual trip plan calls for more than two trips each morning and afternoon over the same route by each bus. This arrangement is feasible only where route distances are relatively short or time differences between locations are great. High school pupils may be brought to school on the first morning trip with

elementary children arriving on the second trip. In the afternoon the elementary children should be brought home first if it is desired that the elementary day be shorter than the high school day. Districts whose program requires a day of equal lengths for both groups may transport the high school pupils on the first trip in the morning and return them on the first trip in the afternoon.

c. Survey and stops:

A survey should be conducted by the pupil transportation director for the purpose of identifying factors that might indicate the need for a route change. After the survey is completed, a time study should be made by driving over the route in the same equipment that will be used in the actual operation. The driver(s) who will operate over the route(s) should regard the trip as a dry run. All scheduled stops and times between stops should be indicated. This data, if accurately obtained, will permit the development of a schedule which probably will need little revision once it is placed into effect. After the route has been established, a schedule showing individual stops should be available in the bus for the information of substitute drivers. Requests for new or additional service should be investigated thoroughly before a change is made. Stops should be established only after thorough investigation has revealed the location to be the most desirable in the area. It is considered poor practice to negotiate a U-turn on main arteries of traffic even though provisions for such turns may have been made. The projection of the rear end of the bus into inside traffic lanes from medians that are too narrow to accommodate bus length often creates traffic interference that places the lives of transported pupils in jeopardy. Stops should always be located at a distance from the crest of a hill or curve to allow motorists traveling at the posted speed to stop within the sight distance. Additional precautions should include, but may not be limited to, the following:

(1) Determine the location and destination of all pupils to be transported.

(2) Provide the driver, attendance officer and the transportation office with the following information:

(a) A list of pupils on the bus(es).

(b) Approximate times for pick up and return of pupils.

(c) A map indicating routing of the bus and pupil locations.

(d) Identification of pupils with dormant medical problems that may require specific actions from the driver in the event the problem becomes active.

d. Provide parents or guardians of all pupils with the driver's name, bus number, pick up and return times, school closing information, school calendar, procedures to challenge routing decisions, etc.

e. Determine the advisability of utilizing computer-assisted route scheduling.

f. Plan routes that will permit optimum pupil safety, program efficiency and operational economy.

5. Inspection of Equipment:

A thorough and systematic inspection procedure is the essence of a planned preventive maintenance program. Daily inspections of the vehicle will alert the driver to the need for minor repairs and adjustments. Inspections should be documented and signed prior to each trip. Failure to conduct such inspections for any sustained period of time could result in more extensive repairs at a later date. Inspection, therefore, is an indispensable factor in a safe school transportation system.

The school bus driver is the key to an effective daily inspection program. It is the driver's responsibility to make a planned and systematic inspection of the bus before each route and/or trip, or assure it has been completed properly. A recommended procedure requires the conducting of both stationary and operating inspections. The following outline is not suggested as a model for use, but is included as a guide for transportation personnel to use in developing a systematic inspection procedure.

Although this section identifies most items to be inspected, state CDL requirements may include additional items. All items should be inspected in the method prescribed by CDL requirments, and any other applicable regulations.

a. Stationary inspection:

(1) Pre-starting inspection: to be conducted by driver or other designated personnel.

(2) Observe the bus for evidence of oil, fuel, coolant, grease or water leaks, vandalism, or damage to the vehicle.

(3) Observe areas around the vehicle for hazards detrimental to vehicle movement.

(4) Raise the hood and make sure the safety latch or hinge is in hold position; check oil, water, power steering fluid, battery fluid, automatic transmission fluid, coolant level in radiator, belts, hoses, and wiring for frayed, cracked, and/or deteriorated conditions.

b. Walk-around inspection:

Place the transmission in neutral and set the parking brake. Fully depress the clutch pedal in manual transmission-equipped vehicles. Start the engine and inspect the bus from top to bottom and end to end. Check for:

(1) Tires (under inflated, flat, excessively worn or damaged, valve stems, and caps).

(2) Wheels (loose or missing nuts, excessive corrosion, cracks or other damage, and any sign of misalignment).

(3) Fluid leaks (evidence of wetness on inner wheels and tires).

(4) Windows (all should be cleaned, check for other obstructions to vision; stickers, dirt, etc.).

(5) Mirrors (clean, properly aimed and tightly adjusted).

(6) Warning systems (clean, properly working running lights, back-up lights, signals and signs, reflectors, turn signals, stop lights and warning flashers).

(7) Exhaust system (sagging exhaust pipes, short and leaky tailpipes and defective mufflers).

(8) Emergency exits must be tightly sealed to prevent possible entrance of dangerous carbon monoxide fumes. Check by opening and closing to keep hinges operational and to observe functioning of warning buzzer.

(9) Fuel systems include fittings and attachments that must be inspected for leaks, wear, or undue stress at quarterly intervals; container valves, appurtenances and connections must be inspected for damage from accidental contact with stones, ice or other loose objects; fuel lines must be inspected for damaged or missing rubber

grommets and bulkhead fittings; all bolts in mounting brackets must be checked for proper torque on a systematic basis; all inspections must be conducted in accordance with Federal Highway Administration requirements and other applicable regulations.

c. Inside safety check:

(1) Passenger compartment, seats, frames, emergency exits and windows must be carefully checked.

(2) Inspect instruments and controls. With the engine operating, check the following:

(a) Vacuum or air pressure gauge or hydraulic indicator lights; these should indicate adequate capacity to operate brakes. Loss of air or hydraulic pressure or vacuum indicates a braking deficiency that must be corrected immediately. For buses equipped with electric hydraulic brakes, the driver will depress the brake pedal with the engine off to check the operation of the backup system.

(b) Oil pressure gauge; the engine should be turned off in the event of inadequate pressure and reported immediately.

(c) Warning lights:

i. Oil pressure warning light: prolonged display of the warning light is a signal of oil pressure problems and should be reported immediately.

ii. Service brake warning light: a light on during brake application indicates that the brake system is not operating properly.

iii. Alternator/Generator warning light: A continuous light "on" after the engine is running indicates a malfunction in the charging system.

iv. Ammeter and/or voltmeter: any continuous discharge should be reported immediately.

v. Water temperature gauge or warning light: the indicator should always read "cool" or "warm". If it indicates "hot", the engine should be stopped immediately. The same action should be taken if the temperature warning light goes on.

d. Check each of the following for proper operation, adjustments or condition:

(1) Lights and signals: turn signals, stop lights, special warning lights, emergency flashers, clearance (markers) lights, headlights, interior lights, and stop arm lights

(2) Stop arm control

(3) Windshield fan, defrosters and heaters

(4) Horns

(5) Service door and control

(6) Mirrors: rear view, side view, convex and elliptical

(7) Three emergency triangles

(8) Driver's seat and seat belt

(9) Fire extinguisher

(10) First aid kit

(11) Wipers/washers

(12) Sanders, when equipped

(13) Power lift should be checked when equipped

(14) Spare electrical fuses

(15) Body fluid kit

(16) Adaptive equipment devices

2. Operating inspection:

A planned road check enables the driver to evaluate the steering, suspension, clutch, transmission, drive line, engine and brakes. The following items should be included when performing a road check of the vehicle prior to transporting pupils:

a. The parking brake: check by slowly engaging the clutch while the parking brake is "on". (In some air brake systems, the parking brake will remain

applied if there is a partial or complete air pressure loss in the service brakes.

b. Transmission operation: an automatic transmission should not slip and a manual transmission should allow for easy and smooth gear changes throughout the entire shifting range.

c. The clutch: the clutch should engage easily and smoothly without jerking, slipping excessively or chattering. A properly adjusted clutch should have some free play when the pedal is fully released.

d. Service brakes: test at low speeds; bring the bus to a complete stop. It should stop in a straight line, without skidding or swerving to one side.

e. The engine: never race a cold engine. Instead, increase speed slowly so that all parts may be properly lubricated. Require the cooling of diesel engines before turning off, as recommended by the engine manufacturer.

f. The steering: report any unusual riding or handling characteristics.

g. The suspension: report any unusual riding or handling characteristics.

NOTE: Not all drivers have the ability to spot every problem. They should, however, make a thorough stationary and operating inspection of their bus each day. Inspection should become an integral part of driving and they must always be alert to any warning signal that indicates something is wrong. This alertness will permit them to spot trouble and act accordingly before it causes serious damage or results in an accident

6. Maintenance of equipment:

a. Teamwork and written policies are essential to a well organized maintenance program.

(1) Strong and reasonable school bus maintenance policies should be adopted that will provide efficient guidelines for the transportation supervisor, maintenance personnel, and operators of the vehicles, including appropriate training.

(2) Such policies should include the maintenance responsibilities of each person involved and should provide for a planned preventive maintenance program.

b. Preventive maintenance is a carefully organized system of inspections at regular mileage or time intervals combined with the immediate attention to all reported defects.

(1) Manufacturer's service manuals and warranty protection guidelines, as well as state inspection guidelines, contain valuable information for successful preventive maintenance programs. These instructions and procedures should be followed carefully for maximum efficiency and safety in fleet operation. Vehicle and component manufacturers (transmission, electrical, etc.) offer training for fleet mechanics. Those interested in efficient operation will take advantage of these training programs.

(2) Objectives of a planned maintenance program:

(a) Keeping the vehicles in safe and efficient operating condition.

(b) Preventing road failures.

(c) Conserving fuel.

(d) Lowering the maintenance cost by reducing the need for major repairs or overhaul.

(e) Extending the useful life of the vehicle and its components.

(f) Enhancing vehicle appearance.

c. School districts or private contractors should develop a system whereby written communication would allow interchange and feedback relative to maintenance work needed and maintenance work completed. An efficient system should include:

(1) Driver's report form to initiate needed maintenance.

(2) Mechanic certification of completed work.

(3) Method of permanently recording repairs and maintenance history of each vehicle.

(4) Inspection by state agency or its designee.

7. Records:

a. Accident records function as the data base for statistical analysis which, in turn, provides material for accident prevention programs. In addition to the uniform school bus accident reporting criteria, additional accident records may include:

(1) A list of all pupils injured, their home addresses phone numbers, the extent of their injuries and appropriate explanations.

(2) A list of bus occupants and witnesses including addresses, phone numbers and statements.

(3) Extent of damage and estimate of repair costs.

(4) Post accident data: i.e., disposition of litigation and/or summonses, driver deposition, net effect of personal injuries, etc.

(5) A signed statement from the bus driver concerning the particulars of the accident.

(6) Complaints, challenges and disposition of hearings, etc.

b. Personnel records should contain the following types of information:

(1) Applications from all employees which include the following:

(a) Confirmed work history.

(b) Driving record.

(c) Criminal record.

(d) Military record, if applicable.

In considering application formats, districts should verify acceptable questions with the state's human rights division. Most states do not permit questions relative to age, sex, marital status, etc.

(2) Physical examination.

(3) Alcohol and drug testing information in compliance with the Omnibus Transportation Employee Drug Testing Act of 1991.

(4) Training and testing records.

(a) Behind the wheel.

(b) Classroom Training.

(c) Hours of instruction.

(d) Name(s) of instructor(s).

(5) Payroll records.

(a) Absences and their causes.

(b) Current wages.

(c) Years of service.

(6) Complaints, commendations, evaluations, etc.

(7) Organizational records.

(a) Number of employees.

(b) Wage scales.

(c) Other records as required.

(8) Accidents, violations, etc.

c. Route records should contain:

(1) Types of routes (urban, suburban, rural).

(2) Route descriptions including accurate route maps.

(3) Route miles.

(4) Information about the needs of special education pupils.

(5) Information pertaining to road conditions, hazards etc.

d. Maintenance records should contain the following:

(1) Line setting tickets.

(2) Work orders.

(3) Preventive maintenance records.

(4) Vehicle depreciation.

(5) Equipment specifications.

(6) Inspection reports.

e. Cost records should contain data in the following categories:

(1) Vehicles.

(2) Labor cost.

(3) Parts cost.

(4) Inventory cost.

(5) Administrative costs.

8. Emergency Procedures:

Emergency and Rescue Procedures: A Guideline Manual For School Bus Involvement has been developed and disseminated to each State Director of Transportation for reproduction in each state. The manual dissemination includes all police, fire, ambulance, emergency medical technician, and any other entity designated to respond to a school bus accident, emergency, or disaster.

This manual is a reference for each school system in developing its own specific emergency plan. Copies of the school system's plan should be carried in each bus. This plan should be developed in cooperation with the personnel in those agencies that will render service during emergencies. The school transportation director, school administrators, teachers, drivers, maintenance and service personnel, pupils and others should be instructed in the procedures to be followed in the event of:

a. Accident:

(1) How to evacuate and control pupils.

(2) How to evaluate the need for medical assistance.

(3) How to get help from the police, fire department and garage.

(4) How to collect and record data essential to the preparation of the required accident reports. An operational plan to provide two-way communication with parents and/or guardians is imperative.

(5) How to prevent further accidents.

b. Sudden disability of driver:

(1) Procedures for handling situations resulting in the fatal injury or disability of the bus driver should be established and communicated to appropriate persons. A list including the bus operator, emergency telephone numbers, list of students assigned to the bus, and the special needs of students should be on the bus.

c. Bus breakdown. The emergency plan should cover procedures for:

(1) Securing the bus.

(2) Controlling the passengers.

(3) Diagnosing the cause(s) of the bus breakdowns.

(4) Notifying school officials.

(5) Recovering the disabled school bus.

(6) Providing replacement transportation of passengers.

d. Inclement weather conditions: The emergency plan should provide procedures for determining:

(1) When schools are to be closed.

(2) Who is to make such decisions.

(3) How decisions are to be relayed to parents, pupils, school officials and staff (including teachers and cafeteria manager), drivers, contractors, maintenance and service personnel, the news media and others.

(4) How to react to such natural phenomena as floods, hurricanes, tornadoes, earthquakes and tsunami, etc.

e. Other types of emergency situations. The emergency plan should include communication norms, data collection, stress reduction and cover such conditions and events as:

(1) Defense/disaster drills.

(2) Strikes by school staff, teachers, drivers or contractors.

(3) Road or bridge washouts and landslides that might block school bus routes.

(4) Bus hijacking.

(5) Weapons on board or at bus stops.

(6) Unauthorized boarding.

9. Communication

It is necessary to keep those in charge of the system, bus companies, parents and pupils informed of all operational procedures. The school district must ensure that the channels of communication are set up so that information can be disseminated quickly and effectively. The school district must ensure that inquiries, requests, suggestions and recommendations are given prompt and appropriate attention and are handled efficiently. Some of the ways information can be disseminated and their purposes are:

a. Bulletins: To explain the school district's transportation policy to school administrators, teachers, bus companies, drivers, parents, pupils and others associated with the operation and to clarify new laws and safety policies so that everyone knows what is expected of them.

b. Meetings: To provide an opportunity for those associated with the school transportation program to share their views and to help build broad community support for safe transportation.

c. Public Press: To inform parents of policy, route, stop and schedule changes; of the safety record of the operation; and positive driver achievement records.

d. Conferences: To discuss solutions to disciplinary problems with drivers, disruptive pupils and their parents; to review policy decisions affecting drivers, contractors, pupils and school administrators.

e. Letters: To inform parents of all school and state regulations, new routes, etc.; reply to more urgent inquiries regarding pupil transportation safety, policy and procedures.

f. Telephone Calls: To provide quick contact between bus drivers and the school, or between parents and the school in the event of urgent or emergency situations.

g. Radio, Television: To inform the public of procedures the schools will follow in case of severe weather conditions or other natural phenomena, new policies, laws, etc.

h. Formal Hearings: To be used, as required, for student suspensions from transportation, route challenges, serious complaints against driver, etc.

10. Accident Reporting

The following data should be integrated into a state's generic traffic collision report for motor vehicle accidents, if not currently documented:

Carrier's name, school district, school bus contractor, etc.

Driver's name, driver's license number, birth date, sex, driving record

Vehicle make, body make, chassis make, model year, vehicle identification number

Engine location, forward, beneath, or behind windshield (specify)

GVWR and rated seating capacity -- Mark W if bus is wheelchair equipped

Number of passengers on the bus, excluding driver

Date, time, and location of accident

Police report number (if applicable)

Citation issued _____ Yes _____ No

School Bus Physically Involved

1. Type of Accident?

____Between motor vehicles
____Non-collision pedestrian
____Railroad Train
____Fixed object
____Pedalcycle
____Other collision

2. Complete if fixed object accident

____Embankment
____Utility pole
____Tree
____Fence
____Fire hydrant
____Culvert or head wall
____Sign
____Guardrail
____Bridge rail
____Median barrier
____Curb or wall
____Parked vehicle

3. Did Accident Result In?

____Fatality
____Incapacitating injury (serious)
____Property damage only (no one was killed or injured, but property damage equaled or exceeded $500)
____Non-incapacitating injury(moderate)
____Possible injury (minor)

4. Manner of Collision Between Vehicles or Objects?

____Angle
____Head-on
____Other
____Rear-end
____Broadside

5. Bus Direction Analysis
Collision with Pedestrian

Intersection
____Bus going straight
____Bus turning right

Non-Intersection
____Bus going straight
____Bus turning right

____Bus turning left	____Bus turning left
____Bus backing	____Bus backing
____Other action	____Other action

Collision with Other Vehicle

Intersection	**Non-Intersection**
____Entering at angle, both moving	____Same direction, both moving
____Entering same direction both moving	____Opposite direction both moving
____Entering opposite direction both moving	____One vehicle stopped

All Other Collisions

Intersection	**Non-Intersection**
____Fixed object	____Fixed object
____Other road vehicle, train, pedalcycle	____Other road vehicle, train, pedalcycle
____Other object, animal	____Other object, animal

Non-Collision

Intersection	**Non-Intersection**
____Overturn	____Overturn
____Other non-collision	____Other non-collision

6. First Point of Impact? (Diagram on state collision report)

7. Contributing Circumstances?

Driver Action	**Other Driver**
____Speed	____Speed
____Failed to yield right-of-way	____Failed to yield right-of-way
____Passed stop sign	____Passed stop sign
____Disregarded signal	____Disregarded signal
____Drove left of center	____Drove left of center
____Improper overtaking	____Improper overtaking
____Made improper turn	____Made improper turn
____Followed too closely	____Followed too closely
____Backing	____Backing
____Sudden movement	____Sudden movement
____No improper action	____No improper action
____Improper distance judgment	____Improper distance judgment

Other factors

Roadway	**Vehicle Defect**
____Defective surface	____Tires
____Slippery	____Brakes
____Inoperative traffic signal	____Lights
____View obstructed by object	____Steering
	____No vehicle defect
	____Other

8. Total number of lanes on roadway?

9. Posted speed limit?

10. Approximate speed of the bus?

11. Was bus driver's lap belt in use when the accident occurred?

12. School bus use at time of accident?

____Regular Route	____Special Education use
____Field/Activity Trip	____Other use

13. Condition of road at time of accident?

____Dry	____Under Repair
____Icy	____Snow packed
____Holes or ruts	____Muddy
____Wet	____Other

14. Light Condition?

____Dawn	____Dark (lighted)
____Daylight	____Dark (not lighted)
____Dusk	

15. Weather condition?

____Clear	____Raining
____Sleeting	____Fog
____Snowing	____Dust
____Smog/Smoke	____Other

Loading/Unloading Accidents

1. At the time of the accident, where was the bus?
   _____Approaching the zone _____Leaving the zone
   _____Stopped in the zone _____Not in sight

2. Was the pupil(s)
   _____Hit by bus? _____Hit by other vehicle?

3. Number injured (See Part III)

4. Location of injured pupil(s)
   _____On side of road _____In roadway
   _____On sidewalk _____Other

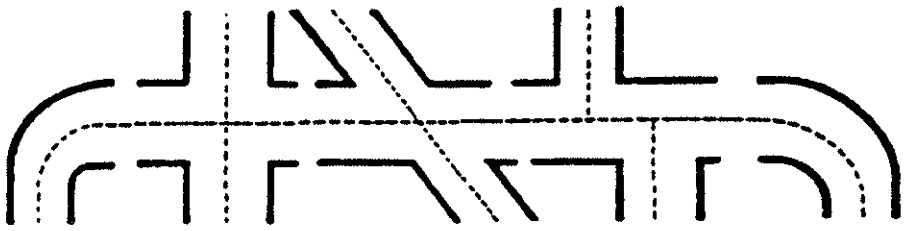
5. Description of behavior of pupil(s)

6. Description of accident

7. Diagram of accident

   Complete the following diagram showing direction and position of vehicles involved, designating clearly the point of contact. (If this diagram will not serve for the accident in question, use adjacent space provided).

INDICATE BY ARROW
DIRECTION OF NORTH



Injury Tally Sheet

1. Ages and injury severities for all persons on bus?

2. Ages and injury severities for person(s) off bus, in loading/unloading area?

SCHOOL TRANSPORTATION-RELATED PERSONNEL

	Age	On Board Bus								Off Bus Loading/Unloading Area							
		Killed			Injured					Killed			Injured				
					Serious		Moderate		Minor				Serious		Moderate		Minor
			M	F		All		All	All		M	F		All		All	All
Pupils	Under 5	01		02	03		04		05	06		07	08		09		10
	5	11		12	13		14		15	16		17	18		19		20
	6	21		22	23		24		25	26		27	28		29		30
	7	31		32	33		34		35	36		37	38		39		40
	8	41		42	43		44		45	46		47	48		49		50
	9	51		52	53		54		55	56		57	58		59		60
	10	61		62	63		64		65	66		67	68		69		70
	11	71		72	73		74		75	76		77	78		79		80
	12	81		82	83		84		85	86		87	88		89		90
	13	91		92	93		94		95	96		97	98		99		100
	14	101		102	103		104		105	106		107	108		109		110
	15	111		112	113		114		115	116		117	118		119		120
	16	121		122	123		124		125	126		127	128		129		130
	17	131		132	133		134		135	136		137	138		139		140
	18	141		142	143		144		145	146		147	148		149		150
	Over 18	151		152	153		154		155	156		157	158		159		160
	Driver	161		162	163		164		165	166		167	168		169		170
	Others	171		172	173		174		175	176		177	178		179		180
	Totals	181		182	183		184		185	186		187	188		189		190

REPORT SUBMITTED BY:

Signature _____ Name (Print) _____

Date _____ Position _____

Supplemental Accident Data

All accident data which is not integrated into a state's generic motor vehicle traffic collision report should be documented on a supplemental school bus accident report and tabulated by the appropriate state agency.

In addition to the standard generic accident data, the following information should also be included in documenting school bus accidents.

1. Bus Driver's Experience

   _____Hours of pre-service training

   _____Hours of in-service training in past 12 months

   _____Number of accidents in past three years

2. Types of Buses (see definition, school bus)

____Type A ____Type B

____Type C ____Type D

3. Seat Back Height

4. Local Variable

EVALUATION OF THE PUPIL TRANSPORTATION SYSTEM

1. Each school district should have a plan for evaluating its pupil transportation program. Such evaluations should enable school districts to:

   a. Verify compliance with rules, regulations and laws.

   b. Audit the efficiency of program service.

   c. Monitor operational economy.

   d. Ensure the safety of the program in operation.

   e. Improve the quality of service.

2. Major types of evaluations:

   a. Informal reviews by district personnel.

   b. Formal evaluations:

      (1) Private consultant.

      (2) State agency.

   c. Periodic evaluations:

      (1) Monthly

      (2) Annually

      (3) Biannually

3. Areas subject to evaluation include:

a. Board of Education policy.

b. Routing procedures.

c. Types of service provided.

d. Financial obligations.

e. Quality of service.

f. Training of staff.

g. Maintenance of the buses and equipment.

TRANSPORTATION OTHER THAN TO AND FROM SCHOOL

1. School-Related Activity Operations

Each school system providing activity bus operations shall have comprehensive policies and guidelines for this type of transportation which delegate responsibility for this function to the supervisor of pupil transportation. To provide safe and efficient activity transportation, lines of responsibility and authority need to be defined and personnel involved must have an understanding of their respective responsibility.

In the interest of providing the safest means of transportation available, students should be transported to school-sponsored activities in school buses which meet state and federal standards.

These school-related activity trips may include: field trips which are extensions of the instructional program, athletic trips, vocational and/or trade training, volunteer activities and recreational outings such as dances, picnics and overnight camping trips. These trips range from a few miles to those extending over several days and covering large distances.

The following items need to be considered when developing criteria for activity trip transportation:

a. Policies and guidelines:

(1) Purpose of trip (instructional, athletic, pupil/spectator's recreation, etc).

(2) Funding source (district or individual school funds, individual charge, parent group, etc).

(3) Administrative approval:
(a) Person who has authority to approve trip.

b. A priority guideline should be developed for trip scheduling if all requests cannot be accommodated.

(1) Advance notification (allow adequate time for approval process and for making driver and vehicle arrangements).

(2) Methods of travel (may include district-owned or contracted bus, commercial carrier or local transit equipment, air, boat, rail or combination of the above, private or school passenger automobile), when required by special or unique needs.

(3) Trip Request Form (should include all necessary information from trip arrangements, payroll, reimbursement and other local needs). (See Appendix E)

(4) Chaperones (An adult chaperone should be required on all activity trips. Responsibilities include passenger control with driver having final authority).

(5) Discipline and emergency medical procedures (a trip release to be signed by parents should include procedures concerning difficult or severe behavioral and medical problems and emergency policies).

c. Communication (drivers, pupils, chaperones and parents should be made aware of applicable rules and regulations. Parents should have destination information, mode of transportation, chaperones, departure and return times, appropriate dress and what the pupils should bring with them. A signed note from the parent or guardian is important. A detailed itinerary for all persons involved may be advisable. Identification of special medical problems in the event of an emergency en route, is necessary).

(1) Luggage (a procedure for transporting luggage or equipment prohibited in the passenger compartment by state law and/or local regulations is necessary. Loose luggage or equipment which could cause injury or block passageways should never be transported in the passenger compartment).

(2) Out-of-state trips (Policies should detail whether out-of-state trips are permitted and any applicable restrictions. Regulations for states to be visited should be reviewed prior to the trip).

(3) Insurance policies (policies should be reviewed or agents contacted to determine adequacy of coverage. This is an absolute necessity for trips scheduled to another state or country. If vehicles other than district-owned are used, the Board of Education should determine the minimum insurance coverage to be carried. A current copy of the contract or commercial carrier's insurance should be on file with the school district).

(4) Road and weather check (a person responsible for checking road conditions should be designated. School transportation personnel from other districts, state patrols, highway divisions and auto clubs are generally cooperative in supplying road information. If warranted, the weather bureau should also be contacted. A planned route and any contingent route for trips should be determined prior to initiation of the trip).

(5) Contingency plans (policies should detail who has authority to make decisions if the unexpected happens during a trip. Impassable roads, accidents or mechanical breakdowns are examples. Drivers and chaperones should have access to that authority's phone number. It is also advisable to obtain phone numbers of transportation personnel in various communities and school districts where activity vehicles regularly travel. Provisions should include plans for staying overnight if conditions do not permit a safe trip home. It is advisable to develop a mutual aid directory for contact within athletic league boundaries which could provide assistance in the event of mechanical emergencies. Drivers should be trained in procedures and regulations relating to trip accidents).

(6) Driving hours (School districts should have regulations based on a common sense application of the Bureau of Motor Carriers Safety Manual: 15 hours on duty of which 10 hours are driving time; 8 hours continuous off-duty prior to a long trip; no more than 60 hours driving in a week).

(7) Driver selection (Criteria for driver assignments are necessary to avoid conflict and confusion. The criteria should include a driver's knowledge, skill, experience and familiarity with activity trip vehicles. The area to be traveled should also be a consideration.

Drivers should be notified at least 3 days in advance of trip date. Drivers who only drive trips occasionally should be periodically tested for driving ability and vehicle familiarity. They shall hold the same license and certification as regular school bus drivers).

(8) A list of all students and passengers being transported should be kept by the driver and left with proper authorities at the school or institution.

(9) An emergency evacuation drill or at least verbal instructions should be given by the driver before each trip. (See Appendix E)

d. Vehicle and equipment:

(1) The following should be taken into consideration when selecting trip vehicles:

(a) Miles to be traveled.

(b) Terrain and climate conditions.

(c) Number and age group of pupils.

(d) Luggage and equipment.

(e) Driver familiarity with the vehicle and route.

(f) Federal Motor Carrier Safety Standards if contract operated and crossing state lines.

(2) Consideration should be given for specialized equipment needed such as:

(a) Luggage storage.

(b) Chains or sanders (Chains should be prefitted prior to trip).

(c) Extra heaters.

(d) Public address system.

(e) Radio (am/fm, tape deck, two-way, cellular telephone).

(f) Tires (off-road tread or recaps; recaps on front axle are prohibited).

(g) Spare tire.

(h) Tool requirements (A kit containing items such as flashlight, pliers, screwdrivers, de-icer, extra chain tighteners, etc., is advisable).

(i) To determine equipment requirements for an extended trip, it is advisable to communicate with transportation personnel at the destination.

(j) The driver should carry cash for telephone, fuel, bridge tolls, parking fees and personal needs.

(3) Inspection (Vehicles should pass the same inspections as regular route buses and a detailed check prior to activity trips).

e. Training

(1) Specialized training should be provided for activity trip drivers. Training should include, but not be limited to, the following:

(a) State laws and applicable policies and rules.

(b) Familiarity with activity trip vehicle and its components.

(c) Familiarity with specialized equipment and how to use it.

(d) Familiarity with local and state trip requirements.

(e) Route familiarization (This might include a dry run prior to the trip date, especially if extreme conditions, terrain or road difficulties may be encountered).

(f) Discipline procedures on trips.

(g) Driving under adverse conditions (night driving, slippery roads or unfamiliar mountainous driving).

(h) Destination location and parking areas. (Maps should be made available to drivers).

(i) Parking location if other than pupil destination.

(j) Provisions for bus security at destination.

3. Non-School Related Activity Operations

a. Introduction

This sub-section is intended to address the various uses of a yellow school bus for operations other than to and from school and school-related activities.

b. Use, procedures, and policies

(1) The school bus operator, in accordance with state regulations and/or laws governing school bus use, should establish procedures whereby school buses can be scheduled for non-routine use. Such scheduling should not conflict with, or be given priority over, the regular class-related demands for school buses by the school system.

(2) The school system, as part of local government or in cooperation with transportation contractors, may utilize buses during times of community emergency or crisis, when demand for other public vehicles, such as trains and transit buses, is so great as to exceed available supply.

c. Legal Requirements

(1) School buses operating on public roads and crossing state and national boundaries must adhere to the rules of the road in the jurisdictions in which they are operating.

(2) All permits and fees need to be procured in accordance with applicable state and local laws before the trip is undertaken.

d. Operational requirements

(1) Vehicle equipment used for activities must be in good working order, well-maintained, and otherwise capable of withstanding the demands of the trip.

(2) All school buses and drivers operating under this section, shall comply with all state and federal requirements including Federal

Motor Carrier Safety Regulations applicable to inter- and intra-state passenger transportation.

(3) Aisles and exits must be kept free of blockages at all times.

SPECIAL NEEDS STUDENT TRANSPORTATION

SPECIAL NEEDS STUDENT TRANSPORTATION

The purpose of this section is to recommend standard policies, procedures, and guidelines for persons entrusted with the responsibility of managing transportation for students with special needs. The term "SPECIAL EDUCATION" means "specially designed instruction to meet the unique needs of a child with a disability." Transportation is one of the "related services" required when necessary to provide such instruction.

The guidelines, policies, and procedures recommended, though general in nature, do contain adequate information to guide those persons responsible for pupil transportation in developing an action plan for the safe delivery of transportation services for students with special needs.

This section reviews the current laws governing special transportation related to the individualized education program process, recommended staff training, and policy development.

The transportation administrator and pertinent staff shall become familiar with the following laws, guidelines, policies and procedures:

LAWS AFFECTING SPECIAL NEEDS STUDENT TRANSPORTATION

1. Laws

   a. Section 504 of P.L. 93-112, a part of the Rehabilitation Act of 1973, states in part:

      "No otherwise qualified handicapped individual in the United States shall, solely by reason of his handicap, be excluded from participating in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." In general terms, Section 504 of P.L. 93-112(1), a part of the Rehabilitation Act of 1973, "requires that all students with disabilities (regardless of age) are eligible for a free, appropriate public education." It also requires the facility, services, and activities provided to the disabled be comparable with those provided to the non-handicapped, and that students with disabilities must have an equal opportunity for participation in any nonacademic and extracurricular services and activities provided by a school district. It is possible for a school district to be required to provide specialized transportation services to a student with disabilities who is not in special education.

b. "Education of the Handicapped Act", P.L. 94-142, was passed by Congress in 1975, and regulations were promulgated by implementation of Part B of the Education of the Handicapped Act, effective October 1, 1977. A free and appropriate public education is required for all students deemed handicapped who are determined capable of benefiting from special education, and meet specific age limits. While Federal law had specified ages 5 through 21, the age range changed to 3-21 with the 1990-1991 school year. Some states and court rulings require service to extend ages from birth to beyond 21 years.

c. The reauthorization of the Education of the Handicapped Act changed the name to Individuals with Disabilities Education Act (IDEA). P.L. 101-746., passed in 1990. This reauthorization increased the number of related services from 13 to 17. It did not change transportation's status as a related service. The reauthorization did not change the original definitions of transportation that were listed in the Education of the Handicapped Act.

Of note for transporters; the "Non-Academic Services" section, under the Free Appropriate Public Education component of IDEA requires the public agency to "provide non-academic and extracurricular services and activities in such manner necessary to afford children with disabilities an equal opportunity for participation in those services." Obviously, one of those non-academic services is transportation. This continues the emphasis to integrate children with disabilities as much as possible with children without disabilities.

2. Characteristics:

To be handicapped under IDEA, a student must have certain characteristics which adversely affect educational performance, and need special education and related services. There are thirteen categories. The disabilities are defined in the IDEA under Part B Regulations. They appear in 34 C.F.R., Part 300, Section 300.7 to 300.18, Children with Disabilities. The terms will be listed in this section as they appear in the C.F.R. The definitions can be found in the Appendix F.

a. Autism (New Category)

b. Deaf-Blind

c. Deaf

d. Hearing Impairment

e. Mental Impairment

f. Multiple Impairment

g. Orthopedic Impairment

h. Physical and Health Impairment

i. Behavior Disorder/Emotional Disorder

j. Specific Learning Disability

k. Speech and/or Language Disability

l. Traumatic Brain Injury (New Category)

m. Visual Impairment

3. Related services

As part of the mandate of a free appropriate public education, "Related services" are required when determined necessary to assist a child with a disability to benefit from special education. Transportation is a related service under IDEA, and is defined to include:

a. Travel to and from school and between schools.

b. Travel in and around school buildings.

c. Specialized equipment (such as special or adaptive buses, lifts, and ramps) if required to provide special education for a handicapped child.

THE IMPLEMENTATION PROCESS FOR IDEA

1. Identification and Referral of Students for Special Education:

a. A child, suspected of having a disability, can be referred to a school district for evaluation to determine if the student is eligible for special education by several interested persons, but most frequently, it is a school instructional staff person, parent, or guardian. Transportation staff should recommend to appropriate school administrators that a referral be initiated or the IEP team reconvene if there is reason to suspect a child has a disability or, if the

child already is identified as having a disability, there are changes in the child's behavior or performance.

b. An evaluation team should include a teacher, psychologist, speech therapist, physical and/or occupational therapist as needed. A transportation representative can be included in the assessment process and/or should be consulted prior to the IEP meeting. As the evaluation team gathers information for appropriate evaluation of the suspected disability, indications will be evident as to whether the student will qualify for special education, will need transportation as a related service, the type of specialized transportation service required, and if specialized care, intervention or training in blood borne pathogens and universal precautions is required as a result of a medical or health problem, a chronic disease, a contagious or communicable disease, or other reasons.

2. The Role of Transportation Staff in the Assessment Process:

When the evaluation team determines that a student may need transportation as a related service, and has characteristics which could require care, or intervention, which would exceed that required for a student without a disability, or require the use of adaptive or assistive equipment, the pupil transportation administrator shall be notified and the appropriate transportation staff invited to participate in the evaluation process as a resource person.

a. The transportation staff person could be expected to serve two major functions as a member of the evaluation team.

(1) The primary function would be to gather information regarding the student's expected transportation needs so as to properly plan for a timely, efficient, and safe initiation of transportation service.

(2) The secondary function would be to educate the evaluation team members regarding the transportation environment. This could include such things as the type and configuration of the vehicle the student would likely be assigned to ride, the probable length of ride, conditions with respect to temperature extremes during loading/unloading and on the bus (as an example, the lift door might be open for ten minutes on numerous occasions during pick up/drop off during sub-zero temperature), the type of device/occupant securement system to be used, if the vehicle is equipped with an emergency communication system, the degree of training and skills of the driver, if a bus attendant would be assigned without specific suggestion from the evaluation team, etc.

3. Evaluation and Planning Relative to a Student's Special Transportation Needs:

Assuming information being developed by the evaluation team indicates a need for transportation as a related service, and the student will likely need special care or intervention during transportation, or has adaptive or assistive equipment needs, transportation staff participation on the assessment team is essential in helping develop information which could address the following concerns:

a. Can the student be safely transported, given the transportation environment, including the length of the ride, without undue risk to the student or others?

b. Does the student have medical health, physical or behavioral concerns which would expose the student to unreasonable risk given the anticipated transportation environment?

c. Can assistive or adaptive equipment identified as necessary to accommodate the student during the transportation process be safely secured and transported, and are there adequate instructions regarding its use? For example, every effort should be made to avoid transporting a student on a gurney or stretcher-type mobility device, or one that reclines more than 45 degrees.

d. Education and transportation staff may lack the professional expertise and skills to make expert decisions regarding the above issues. The IEP meeting may include participants who are qualified to assist in determining transportation needs, particularly where significant medical or behavioral concerns are identified. When appropriate, a health care plan for the student should be developed which specifies the type and frequency of care required or expected, the skill level of the person expected to give the care, recommendation when general observation of the student by the driver would be adequate, or if a staff person independent of the vehicle driver is needed for the care or intervention of the student's needs.

e. Questions regarding the effect of necessary transportation services, (i.e., length of ride and/or time spent on the bus) on the student's ability to benefit from the planned program should be addressed.

f. Questions regarding appropriate and safe use of assistive or adaptive equipment, including mobile seating devices, ventilator or oxygen equipment, can be referred to such persons as physical therapists, occupational therapists, rehabilitation engineers, or equipment vendors for advice.

INDIVIDUALIZED EDUCATION PROGRAM (IEP) - INDIVIDUALIZED FAMILY SERVICE PLAN (IFSP)--TEAM

The IEP Team is the formal group that designs a student's educational plan, establishes goals and objectives, and determines the related services that are necessary for a student to benefit from special education. The IEP Team report most often serves as the basis for IEP Team discussions and decisions regarding a student's program content. If it is determined that a student needs transportation as a related service, and needs care or intervention exceeding that required for a non-disabled student, or needs adaptive or assistive equipment, transportation staff shall be invited to be a participant on the IEP.

1. Legal Considerations: By law, this committee must consider several issues related to the student's educational program. When transportation is considered as a related service, there are a number of questions which must be addressed:

   a. Can the student utilize regular transportation?

   b. If not, can regular transportation be safely utilized if supplementary staff, equipment, and/or services are provided?

   c. If not, what type of specialized transportation is required?

   d. Is an attendant or other qualified personnel available?

   e. Is a responsible adult available for pick-up and delivery of students?

2. Options : In addition to the above considerations, it is often necessary to review various alternative transportation options to meet a student's needs. Some alternatives frequently considered, and which must be allowable when determined appropriate are:

   a. Parent or relative providing transportation.

   b. Public or private transportation.

   Note: Consideration needs to be given to the Continuum of Transportation Services available to students with disabilities. A sample Continuum of Services is provided in Appendix F.

3. Service Statement: The Individualized Education Program is a written statement of services a student is to receive. The IEP can only be changed by the IEP team. With regard to transportation, the IEP should provide the necessary specificity so the driver, school, parent and student know what services to expect.

4. IEP Staff: While participating on an IEP Team, a transportation staff member should be particularly vigilant so as to challenge transportation requirements that would be impossible to provide (such as a maximum riding time of 30 minutes when the student lives 45 minutes from school), or appears to be unsafe, or is not understood.

5. Discussion of Concerns: If at some point after transportation has been implemented, the driver, attendant, or transportation director find the transportation plans unsafe, a student's behavior changes so dramatically as to create an unsafe environment, or the transporters need more information or assistance from the special education staff, any of the personnel listed can call an IEP meeting to discuss the concerns.

GUIDELINES

The following guidelines are intended to assist in establishing a training program for transportation staff that will enable them to respond to the concerns presented by special needs students (which is required by IDEA) and provide transportation staff with the skills needed to respond to routine and emergency circumstances during transportation.

1. School/Education Administration:

   School administrators and education staff who make program decisions for special education students, including the requirement for transportation as a related service, are frequently unfamiliar with transportation capabilities and limits. Those persons should have training in areas which would include:

   a. Situations under which transportation staff would be consulted, or included in the IEP Team process.

   b. A knowledge of state and local transportation policies and procedures, including communications and reporting procedures.

   c. A general knowledge of transportation regulations which could assist in determining if transportation would be appropriate as a related service.

   d. A general knowledge of alternative transportation options.

   e. A general knowledge of current legislative, legal, and administrative decisions.

f. A general knowledge of the application of Least Restrictive Environment (LRE) regulations to transportation placements.

g. A general knowledge of the extent of training and skill levels available within the transportation staff.

h. The types of vehicles used for special transportation.

i. The types of equipment and occupant securement systems used.

j. A general knowledge of Do Not Resuscitate (DNR) Policies for local school districts as well as current legislative and administrative decisions concerning this topic.

2. Transportation Administration:

With increased responsibility being imposed on special education transportation providers through actions taken by legislative, legal, and administrative authorities, transportation administrator/supervisors must involve themselves in the leadership role to a greater degree than that which is usually necessary for other types of transportation.

While the duties and responsibilities of a transportation administrator/supervisor most likely would differ between various transportation providers, there are common areas of knowledge that are necessary to satisfactorily perform the responsibilities of an administrator/supervisor. Some are:

a. Knowledge of federal, state, and local laws and regulations regarding the equipment required on vehicles used for special education student transportation.

b. Knowledge of federal, state, and local laws and regulations regarding special education staff.

c. Knowledge of operational regulations such as student pick up/drop off, including whether curb to school, or door to school.

d. A general knowledge of special education transportation regulations, such as student riding time, and suspension period limitations.

e. A general knowledge of a special education student's due process rights and procedures.

f. A general knowledge of the student referral, evaluation and IEP process.

g. A general knowledge of the identity of resource persons and the location and availability of appropriate training.

h. A general knowledge of vehicle staffing requirements, including when an attendant might be needed.

i. A general knowledge of the availability of emergency medical services in the community who could assist if such an emergency were to occur during transportation.

j. A general knowledge of state and local laws relating to child abuse and reporting procedures.

k. A general knowledge of state or local laws relating to limits of liability and policies and procedures for risk management.

l. A general knowledge of federal and state rules of confidentiality.

m. A general knowledge of legislative and administrative decisions and procedures concerning DNR.

3. Drivers and Attendants:

Drivers and attendants, as the direct service providers with hands-on responsibility, must operate special equipment, manage student behavior, administer health care, according to their qualifications, and serve as a seating specialist in positioning and securing adaptive and assistive devices and occupants.

a. Selection and retention of transportation staff

The responsibilities frequently differ so substantially between the role of the non-disabled student transportation staff and the student with disabilities transportation staff that while some staff feel comfortable transporting and associating with one category of student, they prefer not to be associated with the other category of student. Thus, it is important to explain fully to applicants for special education transportation staff positions the full implications of the duties expected. By eliminating applicants prior to hiring who would not feel comfortable performing some required services, staff retention level for this group will be relatively high. Staff retention is critical given the considerable costs associated with the extra training

required. Having staff who have a continuing personal knowledge of the specific needs of individual students is a tremendous asset to their care.

b. Training components

To perform the responsibilities assigned in a safe and effective manner requires a substantial degree of specific training. Some training components which would be beneficial to transportation's staff are:

(1) Introduction to special education, including characteristics of handicapping conditions, the student referral, assessment, IEP process, and protecting confidentiality of student information.

(2) Legal issues, including federal and state law, administrative rules, and local policy.

(3) Operational policies and procedures, including:

(a) Loading/unloading.

(b) Pick up/drop off (curb to curb-door to door).

(c) Evacuation procedures.

(d) Lifting procedures.

(e) Student accountability and observation, including evidence of neglect, abuse.

(f) Post trip vehicle interior inspections for students, medicine, and other articles left prior to parking vehicle.

(g) Reporting procedures and report writing.

(h) Record keeping.

(i) Lines of responsibility relative to role as educational team member.

(j) Lines of communication, including parents and educational staff.

(k) Route management, including medical emergencies, no adult at home, inclement weather, field trips.

(l) Behavior management, including:

i. Techniques for the development of appropriate behavior.

ii. Techniques for the management and extinguishing of inappropriate behavior.

iii. Techniques and procedures for the response to unacceptable behavior.

iv. Procedures for dealing with inappropriate or unacceptable student behavior that creates emergency conditions, or poses a risk to health and safety.

v. Procedures for documenting and reporting inappropriate or unacceptable student behavior.

vi. Techniques and procedures for the response to unacceptable behavior including the possession and transportation of illegal weapons or drugs, gang activities, and harassment.

(m) Blood borne pathogens and universal precaution procedure including the use of personal protective equipment.

(n) Policies and procedures that ensure the confidentiality of personal identifying information.

4. Special Equipment Use and Operation:

There is a wide variety of equipment being identified to accommodate special education students that is required to be part of the transportation vehicle's environment. It is necessary for the transportation staff to be familiar with the design and operating procedure for this special equipment, as well as knowing how to conduct equipment inspection and make simple "field adjustments" during breakdowns. Some examples are:

a. Power lifts or ramps.

b. Emergency escape exits, including doors, windows and roof hatches.

c. Special fire suppression systems.

d. Power cut-off switch.

e. Emergency communications system.

f. Air conditioning system.

g. Mobile seating device, including trays and accessories, securement system hardware, and occupant securement systems.

h. Adaptive and assistive devices used to support or secure students, mobility aids, special belts, harnesses and devices (such as special crutches, braces, or wheelchairs, and including assistive technology devices).

i. All specially equipped school buses should be equipped with electronic voice communication systems which may be provided and installed by the body manufacturer, distributor, school district, operator or other party.

j. Service animals can be transported to assist the student with disabilities. District policies and procedures, as well as training, need to be established prior to transport.

5. Medical/Health Issues:

As a result of new regulations, which are making educational opportunities available to more special education students who have severe medical/health conditions, the transportation staff is finding it necessary to provide both routine and emergency health care to students during the transportation process. Additionally, transportation staff may be exposed to infectious or communicable diseases which could be debilitating, or in extreme circumstances, fatal. Training regarding medical/health issues can be divided reasonably into two categories; precautionary handling, and care and intervention.

a. Precautionary handling

All transportation staff, including drivers, attendants, mechanics, and service personnel, such as washing and cleaning staff, should be trained in universal precautions relative to the handling and exposure to contagious and communicable disease, including available immunizations. Suggested topics could include:

(1) Characteristics of contagious and communicable diseases.

(2) Disease management techniques.

(3) Use of protective equipment and devices.

b. Care, intervention, and management.

Medically fragile, technology dependent, and highly disruptive students require specific care and intervention. Proficiency in basic first aid and cardiopulmonary resuscitation provides adequate training to care for most health concerns during transportation. For those students who need additional care, management, or intervention, or present specific health risks, a care plan shall be developed during the assessment/evaluation process by the IEP Team which would specify and provide the transportation department the following:

(1) A brief description of the student's current medical, health, or behavioral status, as well as an emergency care card with information on address, emergency phone numbers, etc.

(2) A description of the medical/health care or intervention necessary during transportation, including the frequency required.

(3) A description of who should provide the care or intervention.

(4) The type and extent of training or skills necessary for the driver and/or attendant.

(5) The inspection, operation, use and care of the student's special adaptive/assistive equipment including items such as oxygen containment systems, suctioning equipment, Apnea monitors, ventilation equipment, etc.

(6) A description of emergency procedures to be implemented during a medical/health crisis, including communication with medical staff.

(7) A description of the procedures to be followed in changing the care plan when conditions indicate a change is warranted.

CONFIDENTIALITY

Information provided to transportation staff to assist in the orderly and safe transportation of a student, including handicapping condition, medical/health issues, or other personal characteristics or information, is protected by the provisions of the Family Educational Rights and Privacy Act (FERPA), and transportation staff shall be trained regarding confidentiality requirements.

DEVELOPMENT

In special education, there are any number of laws, rules, and regulations which dictate the service that must be provided, but few of them offer directions or suggestions as to how the service is to be provided. To guarantee a uniform and safe delivery of transportation service, and provide consistent directions to a transportation staff made up of persons with different personalities, temperament, and decision-making capabilities, an adopted written local school board adopted transportation policy and procedure directives shall be required.

1. Subjects Which Need Policy and Procedure Directives:

    a. Control of student medicine transported between home and school on a vehicle.

    b. Student suspension.

    c. Physical intervention and management.

    d. Authority to use special harnesses, vest, and belts.

    e. Early closing of school due to inclement weather or other emergencies.

    f. Authority to operate special equipment (driver, attendant, parent, students, school staff, others).

    g. When no adult is home to receive students.

    h. When to exclude special equipment which has a different design or configuration than that last used, has tears or breaks in the fabric or metal.

    i. When students are referred for transportation without sufficient information being available to transportation staff to protect their safety.

j. Student pick up/drop off location (one location specified, or unlimited alternative locations allowed).

k. Control and management of confidential information.

l. When and how to involve community emergency medical/law enforcement personnel.

m. When to use wheelchairs and mobility aids as pupil seating on school buses if the manufacturer of said device does not endorse its use as such; recognizing that in many situations the safe, economical and prudent way to transport a child is in his/her wheelchair/mobility aid.

n. District policy for Do Not Resuscitate (DNR) requests from parents, to include all appropriate school and transportation personnel. (Classroom and school bus policies may be different).

o. Driver and attendant responsibilities regarding DNR orders.

2. Policy Approval:

All policies shall be in writing, and formally approved by the appropriate education authority. Procedures shall include establishing time lines for periodic reviews or revisions.

INFANTS TODDLERS AND PRESCHOOL CHILDREN

INFANTS/TODDLERS, AND PRESCHOOL CHILDREN

INTRODUCTION

Infants, toddlers, and preschool children are our youngest passengers on school buses. These children are our youngest most vulnerable passengers and depend on transportation personnel to provide a safe ride to and from early intervention programs and Head Start. Transportation is a critical component for children and their families accessing services to support a child's growth and development. Transportation should be established as the mutual responsibility of parents, transportation and service providers.

Programs supported and funded by federal, state, and local governments have made great strides in developing, designing, and providing services for young children and their families to develop each child's full potential. The school bus, for many children, is the primary vehicle that provides access to programs and services designed to meet individual needs of children and families.

Transportation providers need to be knowledgeable and develop skills to adequately provide for the safety of young children while being transported on school buses. Infants, toddlers, and preschool children with special physical, cognitive, or behavioral needs present new challenges and responsibilities for transportation providers. These children require a great deal of supervision during the time they are on the school bus. Some issues that must be addressed to assure safe transportation on the school bus include: physical handling, communication with young children, behavior management, child safety seats, restraint systems, safety vests, wheelchairs and occupant securement systems, special equipment management, medically fragile conditions, length of ride, personnel training, and parental responsibilities.

Young children in rural, suburban, and urban areas under the age of five are daily passengers on school buses. The exact numbers of children riding on school buses under the age of five may be as high as 500,000. This estimate is based on the number of children serviced in federal, state, and local programs. The absence of transportation data on this population is in need of study. This population includes children served in several programs for children from birth through age five. These programs include the Program for Infants and Toddlers with Disabilities (Part H), and the Preschool Grant Program (Section 619 of Part B), the Early Education Program for Children with Disabilities, Head Start, Bureau of Indian Affairs Programs, and Teenage Parent programs. In addition, federal programs support a number of discretionary projects that are designed to promote services for young children with disabilities and their families.

Because of the numbers of young children under the age of five on school buses, it is essential to recommend guidelines for child safety seats and occupant restraints and tie down systems in the absence of testing. While there have been recent revisions to Federal Motor Vehicle Safety Standard 222, there has been no Federal attention dedicated to the revision process dedicated to

the use of child restraint equipment on school buses for children with and without special needs other than occupant restraints for wheelchairs. Federal Motor Vehicle Safety Standard 213 does set forth guidelines for the design and performance of car safety seats, but this standard does not provide a basis for assessing the crash-worthiness of this equipment when used inside a school bus. The absence and importance of this information for use of car safety seats on school buses is recognized by professionals serving this age population.

The purpose of this section is to assist transportation personnel by recommending policies, procedures, and guidelines, while simultaneously recognizing the need for further testing and studies to meet the needs of young children birth to five riding school buses nationwide. Refer to Appendix G for Listings of Laws, and Appendix F for Characteristics of Disabilities.

ELIGIBILITY CRITERIA

Under the *Head Start Program Performance Standards Services for Children with Disabilities* there are descriptions of eligibility criteria used to identify a child with disabilities. The criteria are as follows:

1. § 1308.7 Eligibility criteria: Health impairment.

    a. A child is classified as health impaired who has limited strength, vitality or alertness due to a chronic or acute health problem which adversely affects learning.

    b. The health impairment classification may include, but is not limited to, cancer, some neurological disorders, rheumatic fever, severe asthma, uncontrolled seizure disorders, heart conditions, lead poisoning, diabetes, AIDS, blood disorders, including hemophilia, sickle cell anemia, cystic fibrosis, heart disease and attention deficit disorder.

    c. This category includes medically fragile children such as ventilator dependent children who are in need of special education and related services.

    d. A child may be classified as having an attention deficit disorder under this category who has chronic and pervasive developmentally inappropriate inattention, hyperactivity, or impulsivity. To be considered a disorder, this behavior must affect the child's functioning severely. To avoid overuse of this category, grantees are cautioned to assure that only the enrolled children who most severely manifest this behavior must be classified in this category.

(1) The condition must severely affect the performance of a child who is trying to carry out a developmentally appropriate activity that requires orienting, focusing, or maintaining attention during classroom instructions and activities, planning and completing activities, following simple directions, organizing materials for play or other activities, or participating in group activities. It also may be manifested in over activity or impulsive acts which appear to be or are interested in physical aggression. The disorder must manifest itself in at least two different settings, one of which must be the Head Start program site.

(2) Children must not be classified as having attention deficit disorders based on:

(a). Temporary problems in attention due to events such as a divorce, death of a family member or post-traumatic stress reactions to events such as sexual abuse or violence in the neighborhood;

(b). Problems which occur suddenly and acutely with psychiatric disorders such as depression, anxiety, and schizophrenia.

(c). Behaviors which may be caused by frustration stemming from inappropriate programming beyond the child's ability level or developmentally inappropriate demands for long periods of inactive, passive activity;

(d). Intentional noncompliance or opposition to reasonable requests that are typical of good preschool programs; or

(e). Inattention due to cultural or language differences.

(3) An attention deficit disorder must have had its onset in early childhood and have persisted through the course of child development when children normally mature and become able to operate in a socialized preschool environment. Because many children younger than four have difficulty orienting, maintaining, and focusing attention and are highly active, when Head Start is responsible for the evaluation, attention deficit disorder applies to four and five year-old children in Head Start programs, but not to three year-olds.

(4) Assessment procedure must include teacher reports which document the frequency and nature of indications of possible attention deficit disorders and describe the specific situations and events occurring just before the problems manifested themselves. Reports must indicate how the child's functioning was impaired and must be confirmed by independent information from a second observer.

2. § 1308.8 Eligibility Criteria: Emotional/Behavioral Disorders

a. An emotional/behavioral disorder is a condition in which a child's behavioral or emotional responses are so different from those of the generally accepted, age-appropriate norms of children with the same ethnic or cultural background as to result in significant impairment in social relationships, self-care, educational progress or classroom behavior. A child is classified as having an emotional/behavioral disorder who exhibits one or more of the following characteristics with such frequency, intensity, or duration as to require intervention:

(1) Seriously delayed social development including an inability to build or maintain satisfactory (age appropriate) interpersonal relationships with peers or adults (e.g., avoids playing with peers);

(2) Inappropriate behavior (e.g., dangerously aggressive towards others, self-destructive, severely withdrawn, non-communicative);

(3) A general pervasive mood of unhappiness or depression, or evidence of excessive anxiety or fears (e.g., frequent crying episodes, constant needs for reassurance); or

(4) Has a professional diagnosis of serious emotional disturbance.

The eligibility decision must be based on multiple sources of data, including assessment of the child's behavior or emotional functioning in multiple settings.

The evaluation process must include a review of the child's regular Head Start physical examination to eliminate the possibility of misdiagnosis due to an underlying physical condition.

3. § 1308.9 Eligibility criteria: Speech or language impairments

A speech or language impairment means a communication disorder such as stuttering, impaired articulation, a language impairment, or a voice impairment, which adversely affects a child's learning.

a. A child is classified as having a speech or language impairment whose speech is unintelligible much of the time, who has been professionally diagnosed as having speech impairments which require intervention or who is professionally diagnosed as having a delay in development in his or her primary language which requires intervention.

b. A language disorder may be receptive or expressive. A language disorder may be characterized by difficulty in understanding and producing language, including word meanings (semantics), the components or words (morphology), the components of sentences (syntax), or the conventions of conversation (pragmatics).

c. A speech disorder occurs in the production of speech sounds (articulation), the loudness, pitch or quality of voice (voicing), or the rhythm of speech (fluency).

d. A child should not be classified as having a speech or language impairment whose speech or language differences may be attributed to:

(1) Cultural, ethnic, bilingual, or dialectical differences or being non-English speaking; or

(2) Disorders of a temporary nature due to conditions such as a dental problem; or

(3) Delays in developing the ability to articulate only the most difficult consonants or blends of sounds within the broad general range for the child's age.

4. § 1308.10 Eligibility criteria: Mental Retardation

a. A child is classified as mentally retarded who exhibits significantly sub-average intellectual functioning and exhibits deficits in adaptive behavior which adversely affect learning. Adaptive behavior refers to age-appropriate coping with the demands of the environment through independent skills in self-care, communication and play.

b. Measurement of adaptive behavior must reflect objective documentation through the use of an established scale and appropriate behavioral/anecdotal

records. An assessment of the child's functioning must also be made in settings outside the classroom.

c. Valid and reliable instruments appropriate to the age range must be used. If they do not exist for the language and cultural group to which the child belongs, observation and professional judgement are to be used instead.

d. Determination that a child is mentally retarded is never to be made on the basis of any one test alone.

5. § 1308.11 Eligibility criteria: Hearing impairment including deafness

a. A child is classified as deaf if a hearing impairment exists which is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, and learning is affected. A child is classified as hard of hearing who has a permanent or fluctuating hearing impairment which adversely affects learning; or

b. Meets the legal criteria for being hard of hearing as established by the state of residence; or

c. Experiences recurrent temporary or fluctuating loss caused by otitis media, allergies, or eardrum perforations and other outer or middle ear anomalies over a period of three months or more. Problems associated with temporary or fluctuating hearing loss can include impaired listening skills, delayed language development, and articulation problems. Children meeting these criteria must be referred for medical care, have their hearing checked frequently, and receive speech, language or hearing services as indicated by the IEPs. As soon as special services are no longer needed, these children must no longer be classified as having a disability.

6. § 1308.12 Eligibility criteria: Orthopedic impairment

a. A child is classified as having an orthopedic impairment if the condition is severe enough to adversely affect a child's learning. An orthopedic impairment involves muscles, bones, or joints and is characterized by impaired ability to maneuver in educational or non-educational settings, to perform fine or gross motor activities, or to perform self-help skills and by adversely affected educational performance.

b. An orthopedic impairment includes, but is not limited to, spina bifida, cerebral palsy, loss of or deformed limbs, contracture caused by burns, arthritis, or muscular dystrophy.

7. § 1308.13 Eligibility criteria: Visual impairment including blindness

a. A child is classified as visually impaired when visual impairment, with correction, adversely affects a child's learning. The term includes both blind and partially seeing children. A child is visually impaired if:

(1) The vision loss meets the definition of legal blindness as established in the state of residence; or

(2) Central acuity does not exceed 20/200 in the better eye with corrective lenses, or visual acuity is greater than 20/200, but is accompanied by a limitation in the field of vision such that the widest diameter of the visual field subtends an angle no greater than 20 degrees.

b. A child is classified as having a visual impairment if the central acuity with corrective lenses is between 20/70 and 20/200 in either eye, or if visual acuity is undetermined, but there is demonstrated loss of visual function that adversely affects the learning process, including faulty muscular action, limited field of vision, cataracts, etc.

8. § 1308.14 Eligibility criteria: Learning disabilities.

a. A child is classified as having a learning disability who has a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in imperfect ability to listen, think, speak or, for preschool age children, acquire the precursor skills for reading, writing, spelling or doing mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, and aphasia.

b. An evaluation team may recommend that a child be classified as having a learning disability if:

(1) The child does not achieve commensurate with his or her age and ability levels in one or more of the areas listed in (a) above when provided with appropriate learning experiences for the age and ability; or

(2) The child has a severe discrepancy between the achievement of developmental milestones and intellectual ability in one or more of these areas: oral expression, listening comprehension, pre-reading, pre-writing and pre-mathematics; or

(3) The child shows deficits in such abilities as memory, perceptual and perceptual-motor skills, thinking, language and non-verbal activities which are not due to visual, motor, hearing or emotional disabilities, mental retardation, cultural or language factors, or lack of experiences which would help develop these skills.

c. This definition for learning disabilities applies to four and five year-old children in Head Start. It may be used at a program's discretion for children younger than four or when a three year-old is referred with a professional diagnosis of learning disability. Because of the difficulty of diagnosing learning disabilities for three year-olds, when Head Start is responsible for the evaluation it is not a requirement to use this category for three year-olds.

9. § 1308.15 Eligibility criteria: Autism

A child is classified as having autism when the child has a developmental disability that significantly affects verbal and non-verbal communication and social interaction, that is generally evident before age three and that adversely affects educational performance.

10. § 1308.16 Eligibility criteria: Traumatic brain injury

A child is classified as having traumatic brain injury whose brain injuries are caused by an external physical force, or by an internal occurrence such as stroke or aneurysm, with resulting impairments that adversely affect educational performance. The term includes children with open or closed head injuries, but does not include children with brain injuries that are congenital or degenerative or caused by birth trauma.

11. § 1308.17 Eligibility criteria: Other impairments.

a. The purposes of this classification, "Other impairments," are:

(1) To further coordination with Local Education Agencies (LEA) and reduce problems of record keeping;

(2) To assist parents in making the transition from Head Start to other placements; and

(3) To assure that no child enrolled in Head Start is denied services which would be available to other preschool children who are considered to have disabilities in their state.

b. If the State Education Agency (SEA) eligibility criteria for preschool children include an additional category which is appropriate for a Head Start child, children meeting the criteria for that category must receive services as children with disabilities in Head Start programs. Examples are "preschool disabled," "in need of special education," "educationally handicapped," and "non-categorically handicapped."

c. Children ages three to five, inclusive, who are experiencing developmental delays, as defined by their State and measured by appropriate diagnostic instruments and procedures, in one or more of the following areas: physical development, cognitive development, communication development, social or emotional development, or adaptive development, and who by reason thereof need special education and related services may receive services as children with disabilities in Head Start programs.

d. Children who are classified as deaf-blind, whose concomitant hearing and visual impairments cause such severe communication and other developmental problems that they cannot be accommodated in special education programs solely for deaf or blind children are eligible for services under this category.

e. Children classified as having multiple disabilities whose concomitant impairments (such as mental retardation and blindness), in combination, cause such severe educational programs that they cannot be accommodated in special education problems solely for one of the impairments are eligible for services under this category. The term does not include deaf-blind children, for record keeping purposes.

12. § 1308.18 Disabilities/Health services coordination.

a. The grantee must ensure that the disabilities coordinator and the health coordinator work closely together in the assessment process and follow up to assure that the special needs of each child with disabilities are met.

b. The grantee must ensure coordination between the disabilities coordinator and the staff person responsible for the mental health component to help teachers identify children who show signs of problems, such as possible serious depression, withdrawal, anxiety, or abuse.

c. Each Head Start director or designee must supervise the administration of all medications, including prescription and over-the-counter drugs, to children with disabilities in accordance with state requirements.

d. The health coordinator under the supervision of the Head Start director or designee must:

(1) Obtain the doctor's instructions and parental consent before any medication is administered.

(2) Maintain an individual record of all medications dispensed and review the record regularly with the child's parents.

(3) Record changes in a child's behavior which have implications for drug dosage or type and share this information with the staff, parents and the physician.

(4) Assure that all medications, including those required by staff and volunteers, are adequately labeled, stored under lock and key and out of reach of children, and refrigerated, if necessary.

TRANSPORTATION SERVICES FOR INFANTS AND TODDLERS WITH DISABILITIES

The Individualized Family Service Plan (IFSP) under Part H of IDEA is the mechanism for addressing the unique needs of infants and toddlers with disabilities and their families. The IFSP process has two main parts: (1) the IFSP meeting, where parents and interagency personnel jointly make decisions about an eligible child's early intervention program, and (2) the IFSP document itself, which is a written plan for the provision of early intervention services for the child and family. The decision to provide the early intervention service transportation is made on a case-by-case basis and is directly related to the need for this service. Given the significance of the IFSP process, there are numerous requirements concerning the IFSP document. The decision for a transportation representative to attend the IFSP meeting should be made on a case-by-case basis when a school bus is considered as the vehicle to transport an infant or toddler to and from a program location. This decision should be based on the individual needs of the child and family, as well as the service provider. The transportation representative should be a member of the IFSP team whenever the unique needs of an individual child requires specialized service beyond the scope of what is traditionally provided. The involvement of transportation personnel should occur as soon as it is known that a child with a specialized need requires transportation on a school bus.

TRANSPORTATION SERVICES FOR PRESCHOOL CHILDREN WITH DISABILITIES

Preschool children who ride school buses include children with and without disabilities. All preschool children require that careful planning occur when a school bus is selected as the mode of transportation to and from a Special Education or Head Start program. These two programs have significantly different requirements governing transportation. If a child is identified as eligible for special education and the related service transportation under Part B of IDEA the mechanism for addressing transportation services is the I.E.P.

The IEP process has two main parts: (1) the IEP meeting(s),. when parents and school personnel jointly make decisions about a child's special educational program, and (2) the IEP itself, which is a written record of the decisions agreed upon at the IEP meeting. The IEP document is a written commitment and management tool for the school district.

The IEP defines resources and services to be provided to the student at no cost, and it states when and for how long these services will be provided. As such, the IEP becomes the tool to monitor compliance.

One of the major differences between the IFSP services and IEP is that the early intervention program under Part H for infants and toddlers is a year round program, whereas special education services under Part B represent a school-year program unless otherwise specified by the IEP committee. The decision for transportation personnel to attend IFSP and IEP meeting should be made on a case-by-case basis.

This decision should be based on the individual needs of the child and family, and the need of transportation personnel to provide this service.

Young children require careful planning prior to initiating transportation services on school buses. The ages of these children require that the type of service required, frequency, and duration of transportation be determined on a case-by-case basis. Prior to initiation of service, the following questions and concerns should be addressed:

Is the child medically stable to be transported? This decision should be made by a physician or nurse whenever the question arises.

What is the length of the ride? Does the length of ride place the child at risk based upon the child's age, development and functional level, and environmental factors such as weather and temperature on the bus?

Which physical, cognitive, communication, social-emotional, and behavioral concerns should be addressed prior to initiating transportation services? Each of these areas should be addressed by qualified personnel.

Which assistive or adaptive devices are necessary to accommodate the special needs of a child during the provision of transportation services? This should be addressed by qualified personnel.

What type of supervision is necessary to assure safe transportation? What parent responsibilities are to be addressed on the IFSP or IEP documents?

When a child is medically fragile and requires special handling, who is responsible for emergency procedures? Who is responsible for monitoring universal precautions on the school bus if it is known that a child has an infectious disease which requires special precautions?

If a child is provided with a private-duty non IEP nurse, how are the services addressed on an IEP?

It is recommended that authorized transportation and special education personnel converse prior to the IFSP or IEP team committing to special services. The mechanism for all special services is the IFSP or IEP for children receiving services under IDEA.

HEAD START

Head Start programs are required to provide special services for 3-through 5-year old children with disabilities. Head Start programs are required to have a "Disabilities Coordinator" who is responsible for developing a disabilities service plan that provides for the special needs of children with disabilities and their parents. This plan must specify those services to be provided directly by Head Start and those that are provided by other agencies. Transportation is one of the related services addressed under §1308.4(o)(5).

Transportation. Transportation is a related service to be provided to children with disabilities. When transportation to the program site and to special services can be accessed from other agencies, it should be used. When it is not available, program funds are to be used. Use of taxis or an allowable expense if there are not alternatives available and they are necessary to enable a child to be served.

GUIDELINES

The following guidelines are designed specifically to assist with transportation decision-making for infants, toddlers, and preschool children.

1. Administrators Role

   The transportation supervisors or their designee should be responsible for the supervision of transportation services for infants, toddlers, and preschool children. It is essential that this individual be knowledgeable about the unique needs of this age group. Transportation personnel responsible for the daily transportation of young children should receive appropriate training from professionals qualified to make decisions regarding child safety, seating, communication, physical handling, and health and medical needs and other special circumstances. Each school district should have policies and procedures in place regarding the transportation of children from birth to five. The policies and procedures should specify when it is required that the transportation supervisor or a designee attend IFSP, IEP, or Head Start meetings. Transportation of children with special needs should be addressed on the IFSP or IEP when this service is provided. The transportation supervisor should be responsible for the following:

a. Vehicle selection for infants, toddlers, and preschool children.

b. Personnel training for infants, toddlers, and preschool children.

c. Selection of equipment and occupant securement on governing the transportation of infants, toddlers, and preschool children.

d. Dissemination of "parent's responsibilities" information.

e. Knowledge about appropriate practices when transporting young children with special needs.

f. Establishing emergency policies and procedures.

g. Establishing staffing requirements.

h. Assuring that transportation decisions for a child are made on a case-by-case basis and appropriate to meet individual needs of a child in accordance with what is recorded on a child's IFSP or IEP.

2. Drivers

The driver must be knowledgeable about their responsibility for each child on the school bus. This includes safely operating the school bus and supervising the safety of all young passengers. In addition to their regular duties, the drivers should be responsible for the following:

a. General knowledge about the development of young children including specific disability conditions

b. Age appropriate physical handling, communication, and behavior management of young children.

c. Appropriate use of all the equipment (e.g., power lifts, child restraint systems, safety vests, wheelchairs, securement devices/occupant restraints and safety belts).

d. Loading and unloading of children that are ambulatory or non-ambulatory.

e. Evacuation and evacuation drills.

f. Knowledge about transportation requirements on a child's IFSP or IEP.

g. Knowledge about special needs on the vehicle (e.g., apnea, assistive devices, communicable diseases, g-tubes, oxygen, achildren who are technology dependent, tracheostomy tubes, medical devices, medically fragile conditions, uncontrollable seizure disorders, and "Do Not Resucitate orders").

h. Knowledge about child protection laws (e.g., abuse and neglect).

i. Exhibiting effective communication skills with school staff, students, parents, law enforcement officials and the motoring public.

3. Bus Attendants

The bus attendant on school buses transporting young children daily should assume primary responsibility for the supervision and safety of passengers on the school bus during its operation. Bus attendants should be knowledgeable and well informed about infant, toddler, and preschool child development for both children with and without special needs. Attendants should be responsible for the following:

a. Being knowledgeable about the cognitive, communication, physical, social-emotional, behavioral development and functional level of young children including the unique needs of specific children in relationship to their disability condition.

b. Using age-appropriate physical handling, communication, and behavior management of young children.

c. Appropriate use of equipment on the school bus (e.g., power lifts, child restraint systems, safety vests, wheelchairs, securement devices/occupant restraints and safety belts).

d. Loading and unloading of children that are ambulatory or non-ambulatory.

e. Evacuation and evacuation drills.

f. Being knowledgeable about transportation requirements on the IFSP or IEP.

g. Being knowledgeable about special needs on the vehicle (e.g., apnea, assistive devices, communicable diseases, g-tubes, oxygen technology, children who are technology dependant, tracheostomy tubes, medical

devices, medically fragile conditions, uncontrollable seizure disorders, and "Do Not Resucitate orders").

h. Being knowledgeable about Child protection laws (e.g., abuse and neglect).

i. Communicating effectively with school staff, students, parents, law enforcement officials and the motoring public.

4. Training

It is essential that all transportation personnel responsible for infants, toddlers, and preschool children receive training and should include the following recommendations:

a. Training should be conducted by staff knowledgeable about the needs of young children transported. And may include: child development specialists, manufacturer representatives of specialized equipment, nurses, occupational therapists, physical therapists, psychologists, respiratory therapists, special educators, transportation supervisor, and other personnel depending on the unique needs of the individuals being transported.

b. Training should take place both in a classroom and on the school bus.

c. There should be a checklist for the purpose of recording specific skills that have been mastered.

d. It is essential that all first-aid training be specifically designed for the infants, toddlers, and preschool children.

e. All personnel transporting young children should be required to have a first-aid course. Ongoing training should be conducted by certified personnel in their respective areas of expertise. The type of training provided should be directly related to the specific special needs that the driver and assistant are required to provide. At a minimum, drivers and assistants should be able to operate any special equipment of which they are responsible, know how to manage infants, toddlers, and preschool children, be capable of administering an IFSP or IEP approved health care service, and be trained about seating and securing adaptive and assistive devices. Comprehensive training for transportation personnel providing daily services should include the following topics to support safety and appropriate transportation services for this young population and their families:

(1) Assistive device management

(2) Confidentiality

(3) Communicable diseases management practices

(4) Communication (supervisors, school personnel, parents)

(5) Emergencies

(6) Emergency evacuation drills

(7) Emergency information management requirements

(8) Equipment

(9) Evacuation

(10) Federal and State regulations

(11) First-aid training

(12) Individual Family Service Plans

(13) Individualized Education Programs

(14) Knowledge regarding the development of infants, toddlers, and preschool children with developmental delays and disabilities

(15) Loading and unloading

(16) Medically fragile children

(17) Medicine transport

(18) Pickup and drop off including provision for when an adult is not at the scheduled drop off

(19) Required record-keeping

(20) Reports

(21) Special medical conditions

(22) Technology dependent conditions

(23) Vehicle selection

5. Equipment

Great strides have been made in the type of equipment used to assist infants, toddlers, and preschool children with special needs. These children present new challenges to providers of transportation. The school bus vehicle is significant because it is the mechanism for transporting young children who have special needs to and from support and development programs. To assure child passenger safety on the school bus, transportation personnel will need training to work with infants, toddlers, and pre-school children who use a variety of equipment.

It is important to acknowledge the existing limitations regarding child safety seats in that they were not designed for use in school buses and there are no federal standards for their use in school buses. Additional challenges arise relating to proper use and installation of child safety seats or restraint systems. These challenges include: limited space between bus seats which makes it difficult for transportation personnel to position the child and to secure the restraint to the bus seat, the upright angle and firm smooth surface of the bus seat which allows for little flexibility to adjust the recline angle and secure the restraint system. School buses that lack approved safety belts necessary for securing child safety seats raise concern about the retrofitting of safety belts onto seats that may not be reinforced. While there have been recent revisions to FMVSS 222, there has been no revision to the process dedicated to the use of restraint equipment on the school bus for children with special needs. During this time of new directions and expanded services for infants, toddlers, and preschool children, it is essential to use the best practices available. It is a reality that school buses transport infants, toddlers, and preschool children to programs daily to support their growth, development, and education needs. Transportation personnel should not compromise the safety of young children on school buses by selecting and using an inappropriate safety seat, restraint system, or using and installing equipment incorrectly.

Infants, toddlers, and preschool children with special needs present a challenge for transportation personnel as conventional school bus seats do not accommodate these children's body size. This population includes children who sit upright, but require a safety belt or vest to provide upper body support and to keep the child from moving off the bus seat.

Note: The following standards are applicable to this section.

FMVSS 208	FMVSS 209	FMVSS 210
FMVSS 213	FMVSS 222	

All child restraint systems used on the school bus must meet the following specifications:

a. Meet requirements of FMVSS 213

b. Be used and installed according to manufacturers instructions.

c. Not be under a recall which recommends non-use of the seat

d. Have all parts intact and in working order

e. Be secured to vehicle seat with a safety belt that meets FMVSS 209

f. Safety belts should only be installed on bus seats that meet FMVSS 210.

Note: The following list of devices are unacceptable for seating during transport on the school bus vehicle unless proven to meet applicable specifications and performance requirements for a crash worthy mobile seating device. Infant feeder seats, Tumble Form Positioning seats, strollers, Home Booster seats, foam cushion accessories placed behind head, shoulders or back of child placed in a car seat.

6. Child Restraint Systems

Child restraint systems used on school buses must be appropriate for the individual child and must be used correctly. All of the restraint systems used for transportation must be secured to the bus seat in the manner prescribed and approved by both the school bus manufacturer and child restraint system.

a. The safety belt must be routed through the appropriate belt path specified by the manufacturers instructions to secure car seat to bus seat.

b. Decisions regarding positional support should be made by a qualified professional.

c. Installer of car seat must apply weight to child restraint while pulling firmly on safety belt to secure.

d. Safety belts must be in their locked position when anchoring the car seat and should be checked by pulling firmly on the car seat in a forward and side to side motion. Significant movement of the car seat in any direction will warrant further modifications as approved by the manufacturer of the car seat.

(1) Infant-Only Car Seats

(a) Must be oriented rearward for a child up to 20 pounds and as close as possible to age one year old.

(b) The infant's head must be completely inside the safety seat.

(c) Decisions regarding positional support should be made by a qualified professional.

(d) Retainer clip should be positioned mid-chest or at armpit level on a child. Do not remove the retainer clip as it keeps the harness straps on the infant's shoulders and prevents ejection from the seat. The harness should fit snugly.

(e) Harness straps must lie flat and fit snugly against the infant's body, as specified by the manufacturer.

(2) Car Beds

Note: Car bed for infants up to 20 pounds allows the infant to lie flat. The use of a car bed should only be after consultation with a physician and approved by qualified personnel at an IFSP team meeting.

(a) Lateral support can be added at both sides of the infant. Avoid placing padding around the infant's head to prevent airway blockage.

(b) Beds must be secured to the bus seat with the seat belt passing through both slide loops.

(c) Adjust the harness system to a snug fit as specified by the manufacturer. Harness straps should lie flat, not twisted.

(3) Convertible Child Safety Seats: Infant Position

(a) A convertible seat faces backward for an infant less than twenty pounds in weight or 26 inches in height (rearward facing on the seat).

(b) Harness straps should be in the lowest slots.

(c) Check to determine if the crotch strap is in the proper position for the infant.

(d) Retainer clip should be positioned mid-chest or armpit level.

(e) Do not use tray shield or tray shield seat for an infant if the shield contacts the infant's face and neck or if the child has a tracheostomy.

(f) Observe the location of a gastronomy-tube or tracheostomy and check the harness straps to make certain the straps are not irritating the gastronomy-tube or tracheostomy area.

(g) Decisions regarding positional support should be made by a qualified professional.

(4) Convertible Child Safety Seats: Toddler Position

(a) A convertible seat faces forward for a toddler between twenty and forty pounds in weight and 26-40 inches in height (forward facing on the seat).

(b) Harness straps should be in the upper slots.

(c) Check to determine if the crotch strap is in the proper position for the toddler.

(d) Retainer clip should be positioned mid-chest or armpit level.

(e) Do not use a tray shield with a child who has a tracheostomy or wears eyeglasses.

(f) Observe the location of a gastronomy-tube or tracheostomy and check the harness straps to make certain the straps are not irritating the gastronomy-tube or tracheostomy area.

Note: The child's hips should be positioned against the back padding of a car seat. Check the manufacturer's directions.

(5) Specialized Positioning Seats

(a) Used only when a child does not fit in a standard child safety seat or has a particular condition warranting more support or added features.

(b) May require additional tether strap or locking clip to secure on bus seat.

(c) The safety belt must be routed through the appropriate belt path specified by the manufacturers instructions to secure car seat to bus seat.

(d) Decisions regarding positional support should be made by a qualified professional.

(e) If a retainer clip is used it should be positioned mid-chest or armpit level.

(f) Observe the location of a gastronomy-tube or tracheostomy and check the harness straps to make certain the straps are not irritating the gastronomy-tube or tracheostomy area.

(6) Booster Safety Seats

(a) A booster seat should be used only if children are between 40 and 60 pounds and has outgrown their convertible seat.

(b) If a small booster seat is used, a shield must be used in conjunction with the lap belt.

(c) Follow manufacturer's direction for proper position.

(d) When mid-point of the child's head is above the back of the bus seat, do not use a booster seat, position the child directly on the bus seat.

(e) The use of a booster seat for a special needs student should be specified on the IFSP or IEP. Qualified personnel should be a part of the decision-making team.

(7) Safety Vests

(a) Vest selection should be appropriate for the height, weight, and waist of the child.

(b) The decision to use a vest should be made by an IFSP or IEP team that includes qualified personnel and the parent.

(c) The use of safety vests should be noted on the IFSP or IEP.

(d) Vests should be anchored as specified by the manufacturer.

(e) The decision to use vests for wheelchair usage must be made by an IFSP or IEP team that includes qualified personnel and the parent and should be noted on the IFSP or IEP.

(f) Observe the location of a g-tube or tracheostomy and check the harness straps to make certain the straps are not irritating the g-tube or tracheostomy area.

(g) Metal hardware near the head of the child should not make contact with placement of child's shunt.

(h) Children who are found to slide under vest/safety belt or "submarine" should be securely fitted with a crotch strap supplied by the manufacturer.

(8) Wheelchair

(a) All decisions regarding the use of wheelchairs on the school bus must be made by an IFSP or IEP team that includes qualified personnel and the parent and should be noted on the IFSP or IEP.

(b) Appropriate positioning of a child in a wheelchair should be made by qualified personnel including IFSP or IEP committee members and should be noted on the IFSP or IEP.

(c) The IFSP or IEP committee including qualified personnel should determine when it is appropriate to transfer a child from a wheelchair and placed on the original manufacturer's seat using age appropriate child safety seats or vest.

(9) Bus Seat Designated For a Child Restraint System

(a) The bus seat designated for a child restraint system:

(b) Should be positioned at maximum knee room. (This information can be obtained from the school bus dealer. Caution - All other seat spacing must be within the minimum and maximum).

(c) Should comply with FMVSS 210, Seat Belt Anchorages.

(d) Should not be adjacent to an emergency exit such as a side emergency door and should not be adjacent to a push-out window unless no other seat is available.

(e) Should have either:

i. A seat back structure that, during the deceleration portion of a 30 MPH/20 g sled test, prevents the forward knee excursion of two 165 lb. unrestrained test dummies, placed in the seat immediately behind, from exerting any additional forward force on the child restraint system, or

ii. The seat immediately behind comply with FMVSS 210 and equipped with seat belts meeting FMVSS 209, or

iii. The seat or area immediately behind unoccupied.

(f) Should have the wall position unoccupied, by any passenger, if only one child restraint is used and positioned next to the aisle (so as not to block access to the main aisle).

7 Medical equipment

All decisions regarding medical equipment on the school bus should be made in accordance with state laws and regulations. Decisions regarding medical equipment should be the joint decision of trained personnel knowledgeable about the type of medical assistance and support an infant, toddler, or preschool child may need while on a school bus. Decisions should be made by qualified team members in attendance at IFSP or IEP meetings including the parent. The IFSP or IEP document should include all the appropriate information. Safe transportation specifications should be documented on the IFSP or IEP. Some special considerations and recommendations are as follows:

a. All medical support equipment should be secured appropriately.

b. Latched compartments are the preferred methods of transport.

c. All medical equipment should be secured below the window.

d. Liquid oxygen should be approved by the manufacturer for transport and securely mounted and fastened to prevent damage and exposure to intense heat levels.

8. Special Considerations

Because of the dependency of young children and the need to make decisions on a case-by-case basis, the following section on special considerations is provided for guidance on a variety of issues related to the transportation of infants, toddlers, and preschool children.

a. Confidentiality

Confidentiality of information should be assured in accordance with the requirements of the Individuals with Disabilities Education Act, Part B and Part H, Head Start Regulations, and the Family Education Rights and Privacy Act.

All transportation personnel should receive annual training regarding confidentiality requirements.

b. Emergency information

All parents should be requested to fill out emergency transportation cards prior to initiating services. At minimum each emergency information card should request the following information: child's name, date of birth, program attending, height, weight,parents' names, address, emergency contacts (two), child's doctor, hospital preferences, allergies, current medications, medical concerns, bus equipment required, and special conditions. This information should be updated annually or more frequently if necessary. The bus driver and assistant should have access to this information on the school bus.

c. Evacuation

All school buses transporting infants, toddlers, and preschool children should have a written evacuation plan. Evacuation drills should be practiced on a scheduled basis, but no less than for school-age children.

d. Accessory adaptive equipment

All lap boards or trays, augmentative communication devices and ambulation equipment that attach to wheel chairs should be removed and secured during the time the child is transported on the school bus. The child should board and leave the school bus with the lap board or tray off of the wheelchair.

e. Medically fragile children

Decisions regarding the safe transportation of medically fragile children should be made by qualified personnel and addressed on the child's IFSP or IEP prior to initiating transportation services. All school buses transporting medically fragile children should have personnel knowledgeable about an individual child's specific medical needs and be trained to administer first aid for young children.

f. Transporting medications

There should be a policy and procedure for transporting medication between home and the school. In no instance should a child be allowed to transport medicine to and from the school.

g. Radios/two way communication

All school buses transporting infants, toddlers, and preschool children should have two-way communications and designated contact persons during the time the children are transported on the school bus.

h. Supervision

All infants, toddlers, and preschool children should be supervised on the school bus using the appropriate child staff ratios as required. Additional supervisory personnel required to transport individual students should be determined on a case-by-case basis by qualified

personnel. This information should be recorded on the IFSP or IEP document.

i. Seating

All school buses transporting infants, toddlers, and preschool children should have a seating chart that is kept on the school bus. This is necessary in the event there is an emergency and there is a substitute driver or assistant. Decisions regarding seating should be done on an individual child basis using information known about the child's special needs.

j. Technology dependent children

Decisions regarding the safe transportation of technology dependent children should be made by qualified personnel and addressed on child's IFSP or IEP. On all school buses transporting children who are technology dependent, there should be qualified personnel knowledgeable about an individual child's specific medical needs trained to administer first-aid or carry out procedures specified on the child's IFSP or IEP. All medical service provisions should be in accordance with federal and state laws.

k. Universal precautions

All transportation personnel involved in direct service delivery for infants, toddlers, and preschool children should be directly trained in universal precautions related to the physical day to day handling of young children and potential exposure to contagious and communicable diseases.

APPENDICES
A - H

APPENDIX A

TERMS AND DEFINITIONS

APPENDIX A

Terms and Definitions

INTRODUCTION

This glossary was developed with three purposes in mind:

1) to provide easy access to the definition of terms used or referenced within the document;

2) to consolidate, in one resource, the acronyms, abbreviations, and standard terms commonly used in the industry; and

3) to promote consistency throughout the industry by providing standard definitions or preferred usages for terms that may be used differently in different parts of the country.

It is not intended to be definitive. There are and will be terms that are excluded and definitions that differ from regional usages. It is an attempt to reflect the language of pupil transportation which, like all language, is ever-changing.

Access panel: A body panel which must be moved or removed to provide access to one or more serviceable components.

Accessibility: Ability of vehicles and facilities to accommodate people with disabilities.

Accident, school bus: (1) A motor vehicle accident involving a school bus with or without a pupil on board, resulting in any personal injury or death, or disabling damage to one or more motor vehicles requiring the vehicles(s) to be transported away from the scene by a tow truck or other vehicle; or (2) A collision involving any vehicle or any pupil or school bus at any time during the loading or unloading process; or (3) injury of any pupil inside the school bus as a result of negligent/unsafe acceleration, deceleration, or other movement of the school bus.

Preventable: An accident which could have been prevented by reasonable action on the part of the school bus driver.

Reportable: An accident required to be reported under FMCSR, i.e. an accident involving a CMV on a public road in which there is a fatality or an injury treated away from the scene, or that requires a vehicle to be towed from the scene.

Activity trip: The transportation of students to any event sanctioned for pupil

attendance or authorized by an officer, employee or agent of a public or private school, other than to-and-from school transportation. See also *field trip.*

ADA: The Americans with Disabilities Act, PL 101-336, 42 USC 12101, *et seq.*.

Adaptive device: any item or piece of equipment used to increase, maintain , or improve functional capabilities of children with disabilities. Also known as *assistive technology device.*

Aide: See *attendant*

Alcohol: The intoxicating agent in beverage alcohol, ethyl alcohol, or other low molecular weight alcohols including methyl and isopropyl alcohol.

Alternately flashing signal lamps: A system of red or red and amber signal lights mounted horizontally both front and rear, intended to identify a vehicle as a school bus and to inform other users of the highway that the bus is about to stop or is stopped to load or unload children. Also known as *SOS lights, school bus traffic warning lights.*

Alternative fuel vehicle: A vehicle designed to operate on an energy source other than gasoline or regular grades of diesel. Such fuels include, but are not limited to, CNG, LNG, LPG, advanced diesel fuel formulations, and electricity.

Bi-fuel: A vehicle designed to operate on two different fuels, but not simultaneously.

Dual fuel: A vehicle designed to operate on a mixture of two different fuels.

Hybrid power: The use of two or more power sources to provide the motive force for the vehicle, e.g. electricity to drive the wheels with internal combustion to supplement the battery.

Anchorage point: The point of attachment of a securement system or occupant restraint to the vehicle structure.

ANPR: Advanced Notice of Proposed Rulemaking. Notice published in the Federal Register by a federal agency such as NHTSA requesting information and inviting comment on a proposed change of regulation.

ANSI: American National Standards Institute

Antilock brakes: Brake systems with sensors that automatically control the degree of wheel slip during braking and relieve brake pressure on wheels that are about to lock up.

Aspect ratio: Percentage used to express the ratio of a tire's height to its width. Also known as *tire profile.*

Assessment team: A group of persons, including the parent or guardian of a student with disabilities, who develop a profile of the student in terms of his or her mental and physical functioning in order to determine the student's eligibility for special education. See also *MDC.*

Assistive device: See *adaptive device.*

Attendant: A person assigned to assist one or more individual student(s) with disabilities on a school bus or school vehicle. Also known as *aide* or *paraprofessional.* See also *monitor.*

BAC: Blood or breath alcohol concentration; the measure used to determine alcohol impairment.

BAT: Breath Alcohol Technician. An individual who instructs and assists persons in the alcohol testing process and operates and EBT.

Behavior management: Methods of influencing student conduct on the school bus.

Biodiesel: Vehicle fuel made from plant matter and commonly mixed with diesel in engines.

Bloodborne Pathogens: Common name for standards adopted by OSHA in 29 CFR 1910, to protect workers against the health hazards of exposure to blood and other potentially infectious body fluids or materials. Also refers to the pathogenic microorganisms present in human blood.

Boarding: The process of loading passengers into a school bus.

Body fluids cleanup kit: Package of materials including but not limited to latex gloves, disposal bag, and absorbent material, used to clean up spills of potentially infected bodily fluids, under OSHA's Blood borne Pathogens regulations and Universal Precautions practices. Also known as *hygiene kit.*

Brake: A device or mechanism used to retard and stop the speed of a moving vehicle or to prevent the movement of a stopped vehicle.

Emergency brake: a mechanism designed to stop a motor vehicle after a failure of the service brake system.

Retarder: An auxiliary braking device used to reduce brake wear.

Service brake: The primary mechanism designed to retard and stop a moving vehicle.

Parking brake: A mechanism designed to prevent the movement of a stationary motor vehicle.

Brake fade: A condition that occurs as brakes become less effective.

Bus: A motor vehicle with motive power, except a trailer, designed for carrying more than ten persons.

Activity bus: A bus owned, leased, or contracted by a school district and regularly used to transport students on field trips, athletic trips, or other curricular or extracurricular activities, but not used for to-and-from school transportation. Must meet all FMVSS for school buses.

Charter bus: A bus that is operated under a short-term contract with a school district or other sponsor who has acquired the exclusive use of the vehicle at a fixed charge to transport students to a school-related event.

DOT bus: A school bus that meets the FMCSR standards for interstate transportation set forth in 49 CFR 390.

Intercity bus: A large bus with front doors only, high-back seats and under-floor luggage storage for high-speed, long distance trips. Also known as *motor coach* and *over-the-road coach.*

School bus: A bus owned, leased, contracted or operated by a school or school district and regularly used to transport students to and from school or school-related activities, but not including a charter bus or transit bus. Must meet all applicable FMVSS, and is readily identified by alternately flashing lights, National School Bus Yellow paint, and legend School Bus.

Type A: A conversion or body constructed upon a van-type or cutaway front-section vehicle, with a left side driver's door, designed for carrying more than 10 persons. Type A-I has a GVWR of 10,001 pounds or more, and Type A-II has a GVWR of 10,000 pounds or less.

Type B: A conversion or body constructed and installed upon a van or front-section vehicle chassis, or stripped chassis, with a GVWR of 10,001 pounds or more, designed for carrying more than 10 persons. Part of the engine is beneath

and/or behind the windshield and beside the driver's seat. Then entrance door is behind the front wheels.

Type C: A body installed upon a flat back cowl chassis, with a GVWR of 10,001 pounds or more, designed for carrying more than 10 persons. All of the engine is in front of the windshield and the entrance door is behind the front wheels. Also known as a *conventional school bus.*

Type D: A body installed upon a chassis, with the engine mounted in the front, midship, or rear, with a GVWR of 10,001 pounds or more, designed for carrying more than 10 persons. The engine may be behind the windshield and beside the driver's seat; it may be at the rear of the bus, behind the rears wheels, or midship between the front and rear axles. The entrance door is ahead of the front wheels. Also known as *transit-style school bus.*

Specially equipped: A school bus designed, equipped, or modified to accommodate students with special needs.

Transit bus: A bus designed for frequent stops, with front and back-center doors and low-back seating operated on a fixed schedule and route to provide public transportation by indiscriminately taking on passengers.

Bus body: The portion of a bus that encloses the bus' occupant space exclusive of the bumpers, the chassis frame, and any structure forward of the forward most point of the windshield mounting.

Bus pass: Authorization to ride a school bus other than the student's assigned bus; or prepayment for transit bus rides.

Bus stop: An area on the street or highway designated by school officials for picking up and discharging students.

Bus yard: An area for storage and maintenance of buses.

CAA: Clean Air Act. Also known as CAAA, the Clean Air Act Amendments of 1990.

Capacity: See *seating capacity.*

Capital costs: Long-term costs associated with the purchase of vehicles, buildings, and property.

Captive: Refers to a non-removable attachment, part, or fitting on a securement system.

Carrier: Any public school district, any public or private educational institution providing preschool, elementary or secondary education, or any person, firm or corporation under contract to such a district or institution, engaged in transporting students.

Casualty insurance: See *liability insurance*.

CDIP: Commercial Drivers Instructional Permit. The learner's permit that a CDL applicant receives when he/she passes the knowledge tests; it allows the applicant to drive a CMV when accompanied by a CDL driver.

CDL: Commercial Drivers License

CFR: Code of Federal Regulations

Chassis: Vehicle frame with all operating parts including engine frame, transmission, wheels and brakes.

Chassis starting interlock circuit: A device which prevents the engine of a bus from starting if any of the emergency exits are locked.

Child safety seat: A restraint system meeting the requirements of FMVSS 213, generally intended for use by children under four years of age and forty pounds. Also known as *child restraint system* and *car seat.*

CMV: Commercial motor vehicle.

CMVA: Commercial Motor Vehicle Safety Act of 1986; among other things, authorization for CDL.

CNG: Compressed natural gas.

Common carrier: A public bus, train, or airplane that travels on a prescribed route and schedule, and accepts passengers indiscrimately.

Communicable disease: Any illness that can be transmitted from one person to another, including most common childhood diseases, the common cold, and serious illnesses such as hepatitis and AIDS.

Community transportation: Services that address all transit needs of a community, including general and special populations, such as the elderly and disabled.

Companion animal: An animal trained to provide assistance for persons with disabilities; can be a guide animal, assistive animal, or service animal.

Completed vehicle: A vehicle that requires no further manufacturing operation to perform its intended function, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting.

Conduct report: Form authorized by school officials for use by drivers to report instances of unacceptable behavior by school bus passengers. Also known as *discipline report.*

Continuum of services: The range of possible options, from least restrictive to most restrictive, available to students with disabilities for transportation services.

Conspicuity: The ability of an object to be noticed and recognized without any confusion or ambiguity. (SAEJ1967)

Crash test: See *impact test.*

Criminal record check: the investigation of a person's criminal history through submission of fingerprints to state and/or federal authorities. Also known as *background check.*

Crossing arm: Device attached to the front bumper of a school bus, activated during loading and unloading, designed to force the students to walk far enough away from the front of the bus to be seen by the driver. Also known as *crossing control arm.*

Curb cut: Area where the street curb has been cut and sloped to allow the sidewalk to lead smoothly to the roadway.

Curb weight: The weight of a motor vehicle with standard equipment, maximum capacity of engine fuel, oil, and coolant, and, if applicable, air conditioning and additional weight of optional engine, but without passengers.

Danger zone: A ten foot area immediately surrounding the stopped school bus.

Deadhead: Movement of bus without passengers, e.g. from school to bus yard.

Deadtime: The period between arriving at an activity trip destination and leaving the destination for the trip home. Also known as *waiting time* and *stand-by time.*

Dealer: Any person who is engaged in the sale and distribution of new motor vehicles or motor vehicle equipment primarily to purchasers who, in good faith, purchase any such vehicle or equipment for purposes other than resale.

Distributor: Any person primarily engaged in the sale and distribution of motor vehicles or motor vehicle equipment for resale.

Dispatch: To relay service instructions to drivers.

DNR: Do Not Resuscitate. An order from a parent, legal guardian, or court that prohibits the use of emergency measures to prolong the life of an individual.

DOT: United States Department of Transportation.

DOT driver: Driver who meets the FMCSR standards, set forth in 49 CFR 391.

Double run: One bus making two trips over the same route each morning and afternoon, e.g. first picking up high school students and then returning for elementary students.

Downtime: Period when a vehicle is inoperative, e.g. due to mechanical failure.

Driver applicant: A person who applies for a position as a school bus driver.

Driver training: Instructional program designed to impart and improve the skills necessary for school bus drivers, including but not limited to knowledge of the vehicle, safe driving practices, emergency procedures, and passenger control.

In-service: Training provided annually, or more often, to school bus-certified drivers.

Pre-service: Training provided to driver applicants prior to school bus certification and/or transporting students.

Driver qualifications: Restrictions of state and federal law which determine a person's eligibility to become a school bus driver, e.g. age limits, physical condition, criminal record, driving history, etc.

Drug: Any substance other than alcohol considered to be controlled substance listed on schedules I through V in 21 CFR 1308.

Dry run: A trip on a route without student passengers for driver training or familiarization of the route.

Dual brake system: See *split brake system.*

Dual fuel system: See *alternative fuel.*

DVIR: Driver vehicle inspection report. Federal, state, or local approved form for reporting results of pre-trip and post-trip inspections. Also known as *daily vehicle inspection report* and *pre-trip inspection form.*

Dynamic testing: The process of subjecting vehicle, mobility aid, or mobility aid/securement system components to a simulated crash condition at a minimum impact speed/deceleration of 30 mph/20G's.

EAP: Employee Assistance Program. A program of education and counseling required by 49 CFR 391 as part of a carrier's drug and alcohol testing program. May also include optional rehabilitation services.

EBT: Evidential Breath Testing device; a device approved by NHTSA for testing drivers for alcohol use.

EHA: The Education for all Handicapped Children Act, passed in 1975 as P.L.94-142.

Electronic voice communication system: A means by which the driver of a vehicle can communicate with a dispatcher or other person at a remote location, e.g. two-way radio, cellular phone.

Emergency roof exit: An opening in the roof of the bus meeting the requirements of FMVSS 217 which provides emergency egress and sometimes ventilation. Also known as *roof hatch.*

Emergency response plan: A detailed approach to identifying and responding to potential accidents involving hazardous substances, required for every community by the Emergency Planning and Right-to-Know Act of 1986.

EPA: The United States Environmental Protection Agency

Early bus: A bus scheduled to run prior to the regular morning run, e.g. to take children to day care programs located in schools.

Early intervention service: Education and related services provided to infants and toddlers from birth through two years of age.

Effective date: The date at which a regulation or standard takes effect, on or after which compliance is legally required.

Ergonomics: The study of the design of equipment to reduce human fatigue and discomfort.

Ethanol: Grain alcohol, distilled from fermented organic matter and used as a vehicle fuel.

Evacuation drill: Performance of a mock school bus evacuation in order to teach

students proper emergency procedures and provide practice in the use of emergency exits Also known as *bus safety drills*.

Extended year service: Transportation provided for students subsequent to the end of the traditional school year.

Extraboard driver: See *substitute driver.*

FAPE: Free Appropriate Public Education. Guaranteed by the EHA for all handicapped children, it includes special education and related services, including transportation.

FBI background check: The national criminal record check.

FERPA: The Family Educational Rights and Privacy Act of 1974, 20 USC 1232. Requires confidentiality of student records in public schools, but allows access to necessary information regarding student disabilities and/or health needs to those who have a need to know, including school bus drivers.

FHWA: Federal Highway Administration. An agency of the U.S.DOT.

Field trip: The transportation of students to an event or destination which is an extension of classroom activity, i.e. a part of the curriculum. A field trip is one type of *activity trip*.

FMCSR: Federal Motor Carrier Safety Regulations, 49 CFR 383, 390-397, and 399. Motor vehicle safety and construction standards under FHWA that apply to commercial motor vehicles and drivers transporting passengers in interstate commerce.

FMLA: Family and Medical Leave Act. Requires employers to grant time off to employees for medical reasons or to care for family members.

FMVSS: Federal Motor Vehicle Safety Standards, 49 CFR 571. Construction standards under NHTSA that apply generally to all new motor vehicles and motor vehicle equipment.

Final stage manufacturer: A person who performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle.

First aid: Emergency treatment given to an ill or injured person before regular medical help is available.

Fixed route: Transportation service that runs on regular, prescheduled routes, usually with bus schedules and designated bus stops.

Forward control bus: a school bus in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length. Also known as *transit-style.*

Forward-facing: Installation of the securement system in such a way that the mobile seating device and its occupant face the front of the vehicle when secured.

Four point tiedown: A securement system in which four strap assemblies attach to the wheelchair frame at four separate points, and anchor to the vehicle floor at four separate points.

FSS: Fire suppressant system. A fire extinguisher system installed in the engine compartment of a vehicle and activated automatically in response to a fire sensor or manually in response to an alarm.

FTA: Federal Transit Administration, part of U.S. DOT. Formerly *UMTA.*

Fuel injection: System that uses no carburetor but sprays fuel directly into cylinders or into intake manifold.

Glazing: The glass or glass-like portion of a window.

Laminated glass: Any glazing material that consists of one or more sheets of glass and an inboard-facing surface sheet of plastic, the components being held together by intervening plies of plastic interlayer or by the self-bonding characteristic of the inboard plastic layer.

Safety glass: Glazing material constructed, treated, or combined with other materials so as to reduce, in comparison with ordinary glass, the likelihood of injury to persons as a result of contact with the glass, either broken or unbroken.

Storm window: Two or more sheets of safety glazing material separated by an airspace to provide insulating properties and fixed in a common frame or mounting.

Tempered glass: Glazing which consists of glass that has been tempered to meet the properties of safety glass.

GAWR: Gross axle weight rating. The value specified by the manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Guideline 17: A highway safety program guide for pupil transportation safety issued by NHTSA in 23 CFR 1204. Formerly *Standard 17.*

GVWR: Gross vehicle weight rating. The value specified by the manufacturer as the loaded weight, with passengers, of a single vehicle.

Hazard lights: Lamps that flash simultaneously to the front and rear on the right and left sides of a vehicle, used to indicate caution. Also known as *four way flashers*.

Head protection zone: The empty space above and in front of each school bus passenger seat which is not occupied by side wall, window, or door structure, the dimensions of which are detailed in FMVSS 222.

Head Start: Program initiated in 1965 to provide comprehensive child development services to preschool children of predominantly low income families.

Headsign: Sign above the windshield of the bus, which can be changed from *School Bus* to other wording such as *Charter*.

Health care plan: A plan of action used to outline the care for a medically fragile individual.

Highway: Any public highway, road, street, alley, parkway, or other place open to public motor vehicle travel.

Horsepower: The measurement of an engine's ability to do work. One horsepower is the ability to lift 33,000 lbs. one foot in one minute.

HOV: High Occupancy Vehicle; a vehicle that can carry two or more passengers.

ICC: Interstate Commerce Commission, the agency that provides economic regulation of transportation of products passengers in interstate commerce.

IDEA: The Individuals with Disabilities Education Act, passed in 1990 as P.L. 101-476 (Part B) to replace the EHA.

IEP: Individualized Education Program. A plan including information for each child with disabilities required under P. L. 101-476 (Part B)

IFSP: Individualized Family Service Plan; a written plan similar to the IEP for the family of a child receiving early intervention services required under P.L. 102-119.

Impact test: A simulated crash condition which evaluates the ability of a vehicle or any component or device to withstand a force of 20 G's at 30 mph. Also known as *sled test* and *crash test*.

Inclusion: Integration of a student with disabilities into a regular classroom and onto a regular school bus. Also known as *mainstreaming*.

Incomplete vehicle: An assemblage consisting, as a minimum, of frame and chassis structure, power train, steering system, suspension system, and braking system (to the extent that those systems are to be part of the completed vehicle) and requiring further manufacturing operations other than the addition of readily attachable components, such as mirrors and tire and rim assemblies, or minor finishing operations such as painting, to become a completed vehicle.

Inspection: A close examination of a motor vehicle, performed in accordance with state and/or federal requirements, by an authorized agent of the state or federal government.

Integrated restraint system: A system in which the occupant restraint of an individual in a wheelchair/mobility aid connects directly to and is dependent upon the mobility aid's securement system's rear strap assemblies.

Intermediate manufacturer: A person, other than the incomplete vehicle manufacturer or the final-stage manufacturer, who performs manufacturing operations on an incomplete vehicle.

International symbol of accessibility: A white emblem on blue background used to indicate that a vehicle can accommodate individuals with disabilities.

Kneeling bus: A bus on which the front or rear end is lowered to allow easier access for passengers with disabilities.

Lap belt: A Type 1 seat belt assembly meeting the requirements of FMVSS 209, intended to limit movement of the pelvis.

Lap tray: An accessory for a wheelchair or other mobile seating device, to offer support and convenience for the occupant.

Late bus: A bus scheduled to leave school at a time subsequent to the end of the school day, usually to provide transportation for students involved in after school activities.

Layover time: Time built into a trip schedule between arrival and departure.

Liability insurance: Protection against the claims of others for injury or property damage. Also known as *casualty insurance*.

Life cycle procurement: Procurement contract based on both the initial capital cost

and the cost of operation over the life of a vehicle.

Lift: See *power lift*.

Live time: The time when students are on the bus, beginning when the first passenger boards and ending when the last passenger leaves.

LNG: Liquid Natural Gas.

Load: To pick up students at a designated bus stop or at school.

Load factor: The ratio of passengers actually carried to the vehicle's passenger capacity.

Loading zone: Any area where students are boarding or leaving a school bus.

Low-bid procurement: Competitive procedure in which the lowest bidder is awarded the contract.

Low-floor vehicle: A bus in which the floor and entrance are closer to the ground, for easier access by students with disabilities or preschoolers.

Longitudinal: Parallel to the longitudinal centerline of the vehicle, front to rear.

LPG: Liquid Petroleum Gas, also known as *propane*.

LRE: Least Restrictive Environment. A concept embodied in IDEA which requires that children with disabilities be integrated as fully as possible into situations and settings with their nondisabled peers.

Mainstreaming: See *inclusion*.

Manufacturer: Any person engaged in the manufacturing or assembling of motor vehicles or motor vehicle equipment, including any person importing motor vehicle equipment for resale.

MDC: Multi-Disciplinary Conference. An assessment meeting for a student with disabilities which leads to an IEP. See also *assessment team*.

Mediation: Efforts by a third party to bring about agreement between dissenting parties, e.g. labor and management or parents and school administration. Usually less formal than arbitration.

Medical support equipment: Portable equipment used by students to maintain life

functions, such as oxygen bottles, intravenous or fluid drainage apparatus.

Medically fragile: Refers to students who require specialized technological health care procedures for life support and/or health support.

Minibus: A small school bus, usually a Type A-I, Type A-II or Type B.

Minivan: An MPV designed to carry seven to ten passengers, which does not meet FMVSS for school buses.

Mirrors: The system of mirrors required to be installed on school buses in accordance with FMVSS 111 and applicable state laws.

Crossview: Convex mirrors mounted on the front of the vehicle and designed for student detection during loading and unloading, including *elliptical, quadri spherical, banana, or standard convex*. Also known as *System B mirrors*.

Driving: Flat and convex mirrors mounted on each side of the bus designed for viewing the road along the sides to the rear while driving. Also known as *rearview, double nickel, west coast, or System A mirrors*.

MIS: Management Information System. Means of data collection for analysis by management.

Mobility aid: A wheelchair or other device, either battery-powered or manual, that is used to support and convey a person with a physical disability. Also known as *mobile seating device*.

Modesty panel: A panel located in front of a seat or row of seats, usually supported by a stanchion and cross bar, which does not meet the performance standards of a barrier as defined in FMVSS 222; or a short panel which extends from the bottom of a barrier to or near to the floor for the purpose of reducing the draft from the entrance door. Also known as *kick panel*.

Monitor: A person assigned to assist the driver on a school bus or school vehicle.

Discipline: A monitor whose primary responsibility is to control behavior of students on the bus.

Safety: A monitor whose primary responsibility is to ensure the safety of students getting on and off the bus and to check the loading zone before the driver pulls out.

MPV: Multipurpose Passenger Vehicle. Any vehicle with a seating capacity of ten or

Paratransit: Public transit service which is more flexible than fixed route, commonly providing special service for elderly and disabled passengers.

Part B: Refers to the section of the EHA applicable to special education and related services for children with disabilities, and the implementing regulations at 34 CFR 300.

Part H: Refers to the section of the IDEA related to early intervention services for infants and toddlers, and the implementing regulations at 34 CFR 303.

Particulate trap: A device on diesel buses to clean the exhaust of particulate matter.

Passenger miles: The total number of miles traveled by the aggregate number of passengers on a vehicle; e.g. ten students traveling ten miles on one bus equals 100 passenger miles.

P.L.94-142: see *EHA.*

Postural support: A seat, belt, or other component used to support a child with disabilities in a desired position, but not designed or intended to provide occupant restraint in a crash. Also known as *positioning device.*

Power base: A powered wheeled platform used to mount a seating device for carrying an individual with a disability; usually characterized by smaller diameter tires.

Power cut-off switch: A device that cancels all power from the vehicle batteries.

Power lift: A mechanized platform designed to provide access to a vehicle for an occupied mobility aid/wheelchair. Also known as a *wheelchair lift.*

Positive-locking: A design feature of the mobility aid securement and occupant restraint system where the attachment and anchoring hardware cannot be inadvertently released or disengaged once properly installed.

Post-trip interior inspection: A check of the interior of the bus by the driver at the end of the run to ensure that no sleeping children or student belongings have been left behind.

Powertrain: The group of components used to transmit engine power to the wheels. Includes transmission, universal joints, driveshaft, drive axles, and gears. Also known as *drivetrain.*

Preschool: Refers to a child between the ages of three and five years who is not yet in kindergarten; or to a program serving children in that age range.

Pre-trip inspection: A systematic inspection of the bus by the driver before every trip or shift to ensure that the bus is in safe operating condition. The same procedure performed after the trip/shift is the *post-trip inspection.*

Privatization: The process of transferring the operation of public services from the public agencies to private companies or nonprofit organizations. Also known as *contracting* or *outsourcing.*

Pusher: A school bus in which the engine is mounted in the rear of the vehicle. Also known as *rear engine bus.*

Pushout window: A bus window that is hinged at the top or front to enable the window to be swung upward or outward relative to the side of the bus and provide a means of emergency egress from the bus. Also known as *emergency window.*

Railroad crossing: The intersection of a highway, street or roadway and railroad tracks. Also known as *grade crossing.*

Ramp: An inclined plane for use between the ground and the floor of the vehicle to permit access by persons in wheelchairs/mobility aids.

Reflective: Refers to the property of materials that cause them, when they are illuminated, to reflect the light to some extent.

Related services: Transportation and other supportive services that are required to assist a child with a disability to benefit from special education.

Remanufactured: Refers to a vehicle that has been structurally restored and has new or rebuilt major components.

RESNA: Rehabilitation Engineering Society of North America.

Restraining barrier: An assembly similar to a seat back located immediately in front of a single school bus passenger seat or row of seats to provide crash protection in accordance with FMVSS 222. Also known as *barrier, crash barrier, and seat barrier.*

Restraint system: A generic term for one or more devices intended to secure and protect a passenger with or without a mobility aid in a vehicle, including seat belts, occupant restraints, child safety seats, safety vests, etc.

Restraint/securement system: See *securement and restraint system.*

Retractor, automatic-locking: A retractor incorporating adjustment by means of a

positive self-locking mechanism which is capable of withstanding restraint forces.

Retractor, emergency-locking: A retractor incorporating adjustment by means of a locking mechanism that is activated by vehicle acceleration, webbing movement relative to the vehicle, or automatic action during an emergency, and is capable of withstanding restraint forces.

Retroreflective: Refers to material that is designed to return illumination of the material directly or generally back to the source of illumination.

RFP: Request For Proposals. An invitation to submit a contract proposal, less restrictive than an invitation to bid on a contract.

Ridership: The number of passengers using a transportation system during a given time period.

Rim: The part of the wheel on which the tire is mounted and supported.

Risk management: Practices and procedures designed to protect against losses from accidents, passenger and worker injuries, vehicle damage and other losses, and reduce insurance costs.

Rolling stock: The vehicles in a transportation system.

Roof hatch: See *emergency roof exit.*

Route: A designated course regularly traveled by a school bus to pick up students and take them to school, or to deliver students from school to their homes or designated bus stops.

Route miles: The total number of miles in all the routes in the system.

Route sheet: A list of all the designated stops on a route.

Run: A complete trip on a route. (To illustrate the difference between a run and a route: it is possible to have six daily runs on the same route, i.e. one high school, one middle school, and one elementary run both morning and afternoon.)

Running gear: The wheels, axles, springs, frames, and other carrying parts of the vehicle.

Running lights: Head lights that operate automatically at half voltage during the day to increase the vehicle's visibility. Also known as *daytime running lights.*

SAE: Society of Automotive Engineers.

SAP: Substance Abuse Professional. A licensed physician, psychologist, social worker, or alcohol and drug counselor who is required to evaluate any employee who violates a carrier's drug and alcohol testing program.

Safety vest/harness: An upper torso restraint that supports and secures a child by attachment to the vehicle seat.

Safety patrol: Student monitors whose duties may include acting as crossing guards and safety monitors.

Safety training: Educational programs provided for students to teach proper behavior while waiting for, riding in, boarding, or leaving school buses. Also known as *ridership programs*.

SBMI: School Bus Manufacturers Institute. See *School Transportation Manufacturing Technical Committee.*

School: An educational institution for children at the pre-primary, primary, elementary, or secondary level, including nursery schools and head start programs, but not including day care programs.

School bus equipment: Equipment designed primarily as a system, part, or component of a school bus, or any similar part or component manufactured or sold for replacement or as an accessory or addition to a school bus.

School Transportation Manufacturing Technical Committee: Formerly SBMI.

School trip: See *activity trip*.

School van: A vehicle smaller than a bus, designed to carry seven to ten passengers and used to transport students, that does not meet FMVSS for school buses. See *minivan.*

School vehicle: Any vehicle owned, leased, contracted or operated by a school or school district and regularly used to transport students to and from school or school-related activities. Includes school buses, activity buses, vans, and passenger cars, but does not include transit or charter buses.

Scooter: A motorized mobility aid with three wheels, handle bar or tiller, and a swiveling seat.

Seat: A device designed and installed to provide seating accommodations.

Activity seat: A seat designed for passenger comfort with contoured seats and backs with the result that passengers positions are distinctly separate; characterized by fixed seat backs; may have arm rests and head rests. Can be manufactured to meet FMVSS 222.

Bench seat: A seat designed to accommodate more than one passenger with no apparent partitioning between positions, which is characterized by fixed legs and a fixed back, i.e. the standard school bus seat which meets FMVSS 222.

Davenport seat: A bench seat that extends from side wall to side wall at the rearmost seating position in the bus; not permitted in school buses.

Flip seat: A school bus bench seat designed so that the cushion flips up when the seat is not occupied, similar to a theater seat; used to provide aisle clearance when a passenger seat is located adjacent to a side emergency door.

Integrated child safety seat: A child safety seat meeting the requirements of FMVSS 213 which is built into and an integral part of a bench seat.

Jump seat: A seat designed to fold down to provide supplemental seating in a bus, e.g. in the aisle, in front of the door or along the side wall; not permitted in school buses.

Reclining seat: An activity seat with a reclining seat back; not permitted in school buses.

Seat belt: A passenger restraint system incorporating lap belts or lap and shoulder belts and meeting the requirements of FMVSS 208, 209, and 210. Also known as *seat restraints.*

Seating capacity: The number of designated seating positions provided in a vehicle, including the driver's position. In determining seating capacity, each wheelchair securement location shall be counted as 4 designated seating positions.

Designed seating capacity: The theoretical passenger capacity that a vehicle would have if it were constructed with the maximum number of seating positions according to standard seating plans. Also known as *manufacturer's seating capacity.*

Reduced capacity: The capacity that is achieved when one or more seats are removed from the standard design during or after manufacture of the vehicle.

Seating position: The space on a school bus bench seat designated for one

student. The number of such positions per seat is determined by dividing the width of the seat by 15" and rounding to the nearest whole number.

Seating reference point: The manufacturer's design point, with coordinates relative to the vehicle structure, which establishes the rearmost normal driving or riding position of each designated seating position and simulates the position of the pivot center of the human torso and thigh.

Seat restraints: See *seat belt*

Section 402: Section of 23 CFR that authorizes grant funds for highway safety projects.

Section 504: Section of the Rehabilitation Act of 1973, PL 93-112, which prohibits discrimination against individuals with disabilities by any recipient of federal funding.

Securement points: Locations on the base or seat frame of the wheelchair/mobility aid where the securement system should be attached.

Securement system: The means of securing a mobile seating device to a vehicle in accordance with FMVSS 222, including all necessary buckles, anchors, webbing/straps, and other fasteners.

Securement and restraint system: The total system which secures and restrains both a wheelchair/mobility aid and its occupant. Also known as *WTORS*.

Self-insured: Refers to a company or school district which provides reserved funds against claims or losses.

Sensor: An electronic device installed on a school bus for the purpose of detecting animate objects in the loading zone. Also known as *object detection system.*

Seizure: A reaction to an electrical discharge in the brain, resulting in symptoms which can range from a blank stare of a few seconds to full convulsions.

Shuttle: A trip run back and forth over a short route, e.g. between two schools.

Skid plate: Stout metal plate attached to the underside of a vehicle to protect the oil pan, transmission, step well, or fuel tank from scraping on rocks, curbs and road surface.

Slack adjuster: Adjustable device connected to the brake chamber pushrod used to make up for brake shoe wear.

SOS lights: Stop on Signal lights. See *alternately flashing signal lights.*

SOWAT: The Subcommittee on Wheelchairs and Transportation, a group acting under the auspices of RESNA to develop transportable wheel chair standards.

Special education: Specially designed instruction to meet the unique needs of a child with disabilities.

Specially equipped school bus: Any school bus designed, equipped, or modified to accommodate students with special needs.

Split-brake system: A service brake system with two separate hydraulic circuits which, upon failure of either, retains full or partial braking ability.

Stanchion: An upright post or bar, usually installed from floor to ceiling in a bus, that provides support for other structural members and/or provides a hand-hold for passengers.

State director: The chief government administrator in charge of a state's pupil transportation program and responsible for oversight of regulatory functions.

Stop arm: A device in the form of a red octagon extending outward from the side of a school bus to signal that the bus has stopped to load or unload passengers and meeting FMVSS 131. Also known as *stop semaphore* and *stop signal arm.*

Stopping distance: Braking distance plus reaction distance.

Braking distance: The distance a vehicle travels between the time the brakes are applied and the time forward motion ceases.

Reaction distance: Distance a vehicle travels during the time it takes for a driver to recognize the need to stop and to apply the brakes.

Strobe light: A bright short duration light that flashes as a result of an electronic discharge of electricity through a gas.

Stroller: A light weight folding mobility aid.

Student: Any child who attends a school, as previously defined.

Student rides: The number of students transported in a given system multiplied by the number of one-way trips in a school bus, e.g. a school district that transports 1000 students provides 2000 student rides daily, or 360,000 students rides to and from school annually. To determine the total number of student rides annually, the district would add

the actual or estimated number of students transported on activity trips (times 2) to the figure above.

Substitute driver: A driver who is not assigned to a regular route, but is employed to provide immediate coverage when necessary due to driver absences or emergencies. Also known as *spare driver* and *extraboard driver.*

Surrogate wheelchair: A prototype which is subjected to impact tests.

Suspension system: The components of the vehicle that transmit the load of the vehicle's weight from the chassis framework to the ground, including the springs, axles, wheels, tires, and related connecting components.

TDD: Telecommunication devices for the deaf.

Temperature control system: The means of heating or cooling the interior of the vehicle.

Tether: An anchor strap used in addition to a seat belt to hold certain types of restraint devices in place.

Tie-down system: See *securement system.*

Tire: The continuous solid or pneumatic rubber elastomeric cushion encircling a wheel intended for contact with the road.

Bias ply: A pneumatic tire in which the ply cords extending to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tire.

Low profile: A tire that has a section height that is less than 85% of its nominal section width, i.e. a tire with an aspect ration of less than 0.85.

Radial: A pneumatic tire in which the ply cords which extend to the beads are laid substantially at 90 degrees to the centerline of the tread.

Retread: A worn tire casing to which tread rubber has been affixed to extend the usable life of the tire. Also known as *re-capped or retreaded tire.*

Siped: A tire which has been scored or cut perpendicular to the direction of rotation (across the tread) to improve traction.

Snow: A tire with an obvious aggressive or lug type tread across the entire width which is designed to be self-cleaning.

Studded: A tire to which metal protrusions have been added to improve traction.

Tire cords: The strands forming the reinforcement structure in a tire.

To-and-from school: Transportation from home to school and from school to home; also transportation from school to school or from school to job training site.

Tour: Transportation of a group on a longer trip, usually by *charter bus,* e.g. senior class trip to Washington.

Track seating: Seating system in which seating units, including mobility aids, are secured to the vehicle structure by attaching them to tracks on the vehicle floor.

Traffic lights: Traffic signals which control the flow of traffic at intersections.

Transverse: Perpendicular to the longitudinal centerline of the vehicle, i.e. from side to side.

Trip: The transportation of students from school to any destination, followed by a *return trip* back to school. The two together make a *round trip.*

Tripper service: Regularly scheduled mass transit service which is open to the public, and which is designed or modified to accommodate the needs of school students and personnel, using various fare collections or subsidy systems. Must be part of the regular route service as indicated in published route schedules.

Turbocharger: a device which uses the pressure of exhaust gases to drive a turbine that, in turn, pressurizes air normally drawn into the engine's chambers.

Turnkey: Partial privatization in which a school district hires a company to supply drivers, maintenance management, and/or vehicles. Also known as *management contract.*

Two-way radio: Electronic communication system which uses a designated airway for transmission between a bus and a base station.

UMTA: Urban Mass Transit Administration, predecessor to FTA.

Unload: To discharge passengers from a school bus.

Unloaded vehicle weight: the weight of vehicle with maximum capacity of all fluids necessary for operation, but without cargo or occupants or accessories that are ordinarily removed from the vehicle when they are not in use.

Universal precautions: Method of infection control designed to protect the individual

from exposure to disease, which requires that all bodily fluids and secretions are treated as though they were infectious.

UST: Underground Storage Tank.

Vaporlock: Boiling or vaporization of fuel in the lines from excessive heat, which interferes with liquid fuel movement and in some cases stops the flow.

Vehicle miles: The aggregate number of miles a vehicle travels in a given period.

Video system: A means of monitoring student behavior in a school bus. The system includes one or more video cameras to tape activity. Camera housing units mounted in each bus appear to hold a camera, whether or not one is actually in place. Also known as *surveillance.*

VIN: Vehicle Identification Number. A series of Arabic numbers and Roman letters which is assigned to a motor vehicle for identification purposes.

Viscosity: A measure of internal resistance to flow or motion offered by a fluid lubricant.

Walking distance: The maximum distance a student can be required to walk to school before transportation must be provided.

Weather emergencies: Weather conditions that require a deviation from normal transportation procedures, e.g. flooding, snowstorm.

Weight distribution: The distribution proportion of the vehicle load divided between the front and rear axles.

Wheel: A rotating load-carrying member between the tire and the hub, usually consisting of two major parts, the rim and the wheel disc, which may be integral, permanently attached, or detachable.

Ball seat nut mounting: A wheel mounting system wherein the wheel centering is provided by the wheel mounting studs and the ball seat nuts which, when properly tightened, assure the centering alignment of the wheel.

Disc: The part of the wheel which is the supporting member between the hub and the rim.

Disc wheel: A permanent combination of a rim and wheel disc.

Hub: The rotating outer member of the axles assembly which provides for wheel disc mounting.

Locking ring: A removable, split rim ring that holds the rim flange in place on a multi-piece rim.

Piloted hub mounting: A wheel mounting system wherein the wheel centering is provided by a close fit between the wheel disc and the hub.

Rim: The part of the wheel on which the tire is mounted and supported.

Spoke wheel: A rotating member which provides for mounting and support of one or two demountable rims. Also known as *wheel for demountable rim.*

Wheelbase: The distance between the front and rear axles.

Wheelchair: A seating system comprising at least a frame, seat, and wheels, for the support and mobility of a person with physical disabilities. Also known as *mobile seating device.*

Wheelchair lift: See *power lift.*

ZEB: Zero-emissions bus.

ZEV: Zero-emissions vehicle.

APPENDIX B

SCHOOL BUS CHASSIS AND BODY

- ✔ Statement of "School Bus Yellow"
- ✔ Reflective Materials
- ✔ School Bus Seat Upholstery Flammability Performance Test
- ✔ Bus Body Heating System Test
- ✔ Noise Test Procedure

APPENDIX B

School Bus Chassis And Body

NATIONAL SCHOOL BUS YELLOW

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

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

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

COLOR METRIC (CIE) DATA

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

NOISE TEST PROCEDURE

A. The vehicle is located so that no other vehicle or signboard, building, hill, or other large reflecting surface is within 15.2 m (50 feet) of the occupant's seating position.

B. All vehicle doors, windows, and ventilators are closed.

C. All power-operated accessories are turned off.

D. The driver is in the normal seated driving position and the person conducting the test is the only other person in the vehicle.

E. A sound level meter is used that is set at the "A-weighting fast" meter response and meets the requirements of:

1. The American National Standards Institute, Standard ANSI S1.4-1971. "Specifications for Sound Level Meters," for Type 1 Meters; or

2. The International Electrotechnical Commission (IEC), Publication No. 179 (1973). "Precision Sound Level Meters".

F. The microphone is located so that it points vertically upward 6 inches to the right and directly in line with and on the same plane as the occupant's ear adjacent to the primary noise source.

G. If the motor vehicle's engine radiator fan drive is equipped with a clutch or similar device that automatically either reduces the rotational speed of the fan or completely disengages the fan from its power source in response to reduced engine cooling loads, the vehicle may be parked before testing with its engine running at high idle or any other speed the operator chooses for sufficient time, but not more than 10 minutes, to permit the engine radiator fan to automatically disengage.

H. With the vehicle's transmission in neutral gear, the engine is accelerated to:

1. its maximum governed speed, if it is equipped with an engine governor, or

2. its speed at its maximum rated horsepower, if it is not equipped with an engine governor, and the engine is stabilized at that speed.

I. The A-weighted sound level reading on the sound level meter for the stabilized engine speed condition referred to in H.1. or H.2. above is observed and, if it has not been influenced by extraneous noise sources, is recorded.

J. The vehicle's engine speed is returned to idle and the procedures set out in paragraphs H. and I. are repeated until two maximum sound levels within 2 dbA of each other are recorded, the two maximum sound level readings are then averaged; and

K. The average obtained in accordance with paragraph J., with a value of 2 dbA subtracted there from to allow for variations in the test conditions and in the capabilities of meters, is the vehicle's interior sound level at the driver's seating position for the purposes of determining compliance with the requirements of this test procedure.

Subtracted there from to allow for variations in the test conditions and in the capabilities of meters, is the vehicle's interior sound level at the driver's seating position for the purposes of determining compliance with the requirements of this test procedure.

Sufficient to withstand a force of five (5) times the maximum rated capacity of the compartment.

RETRO REFLECTIVE SHEETING
DAYTIME COLOR SPECIFICATION PROPOSAL

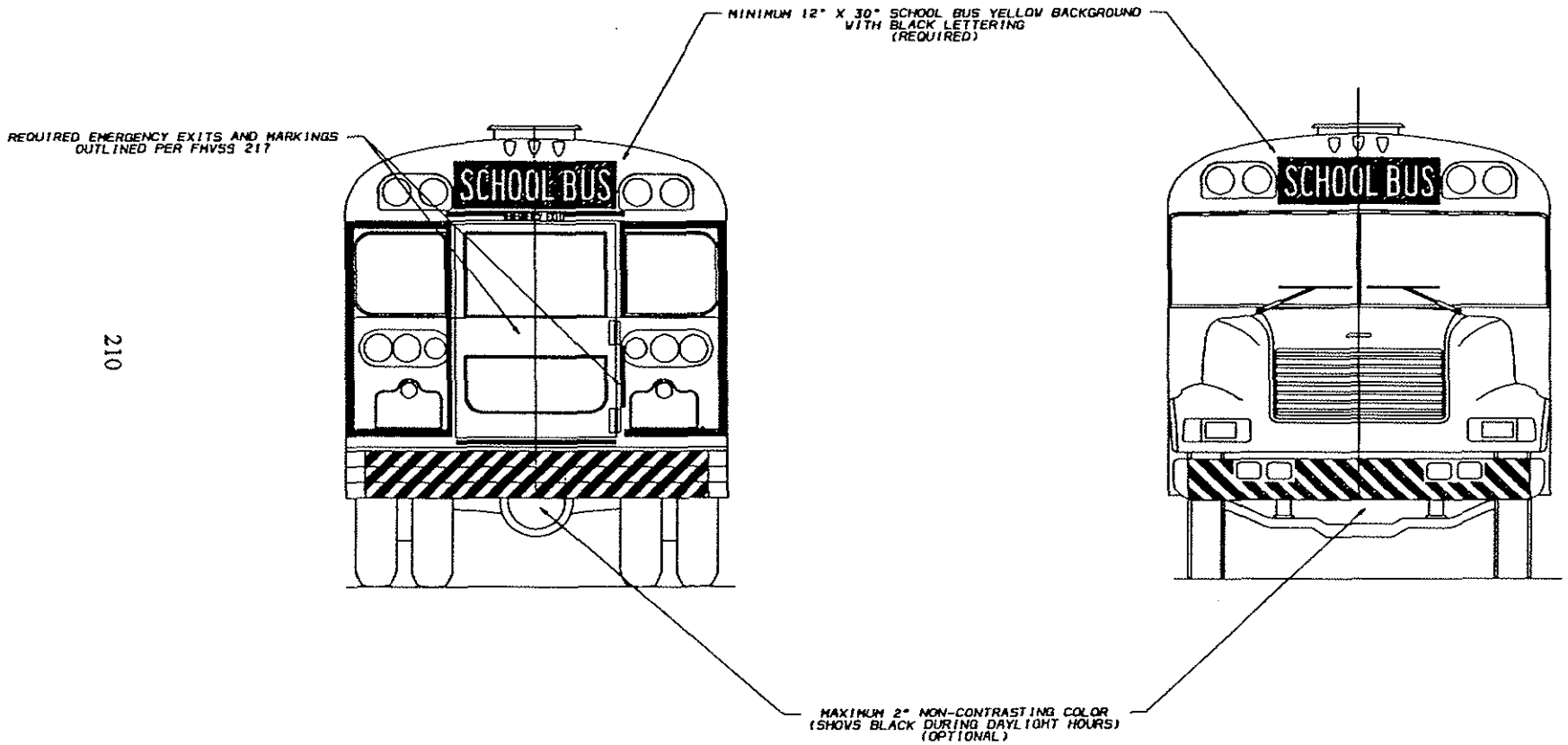
The daytime color of the RETRO REFLECTIVE sheeting used to enhance school bus safety requires different color tolerances in order to assure optimum safety benefit as well as to be consistent with the color of the school bus.

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

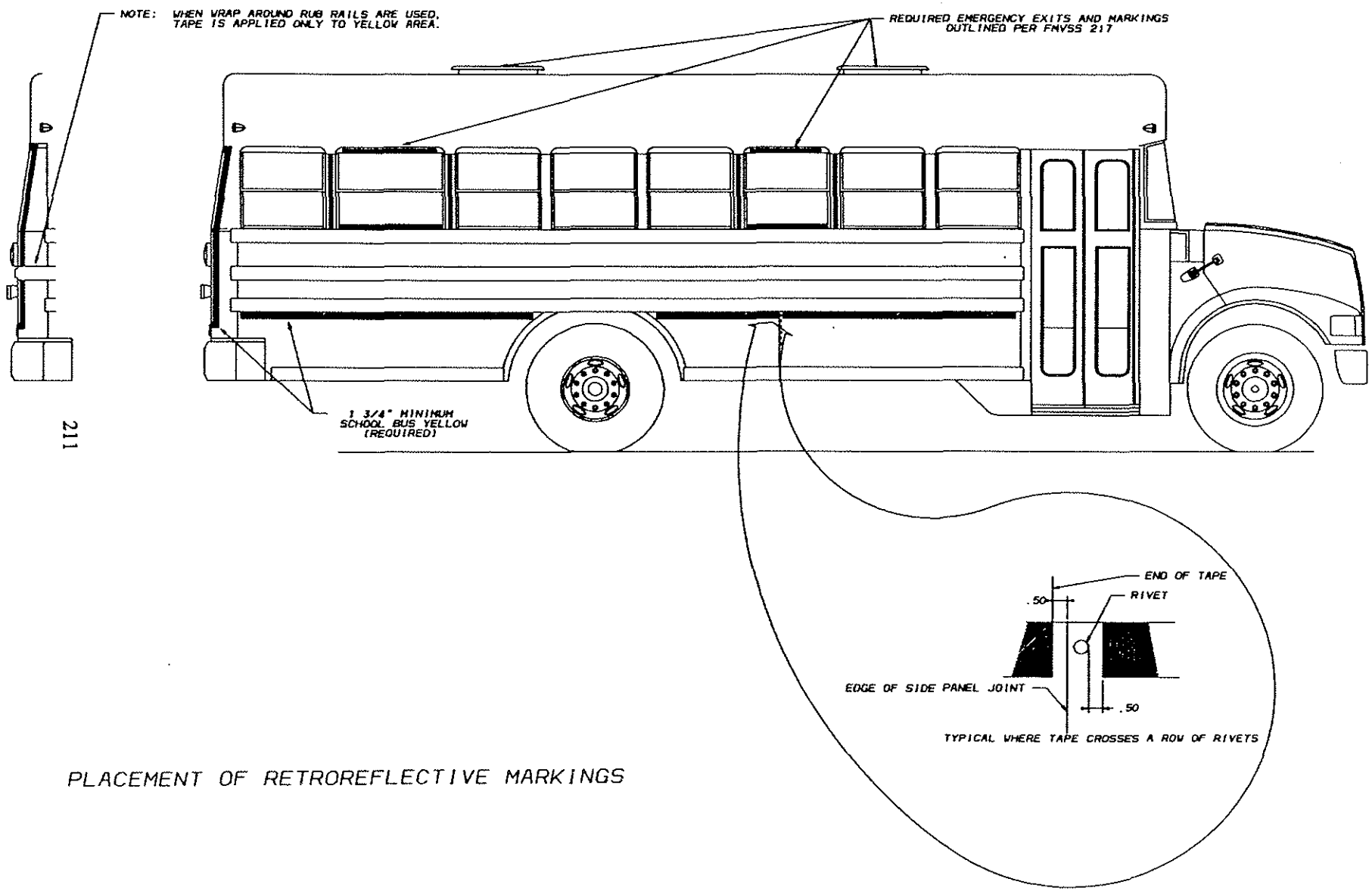
RETRO REFLECTIVE SHEETING DAYTIME COLOR CHROMATICITY COORDINATES OF CORNER POINTS DETERMINING THE PERMITTED COLOR AREA

		1	2	3	4
Yellow	X	0.484	0.513	0.517	0.544
	Y	0.455	0.426	0.482	0.455

Luminance Factor (Y%)	Minimum	10.0
	Maximum	36.0



PLACEMENT OF RETROREFLECTIVE MARKINGS



PLACEMENT OF RETROREFLECTIVE MARKINGS

A. Test Chamber

Cross Section

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

Length

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

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

Ventilation

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

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

A forced air ventilation system may not be used.

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

Camera View Area

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

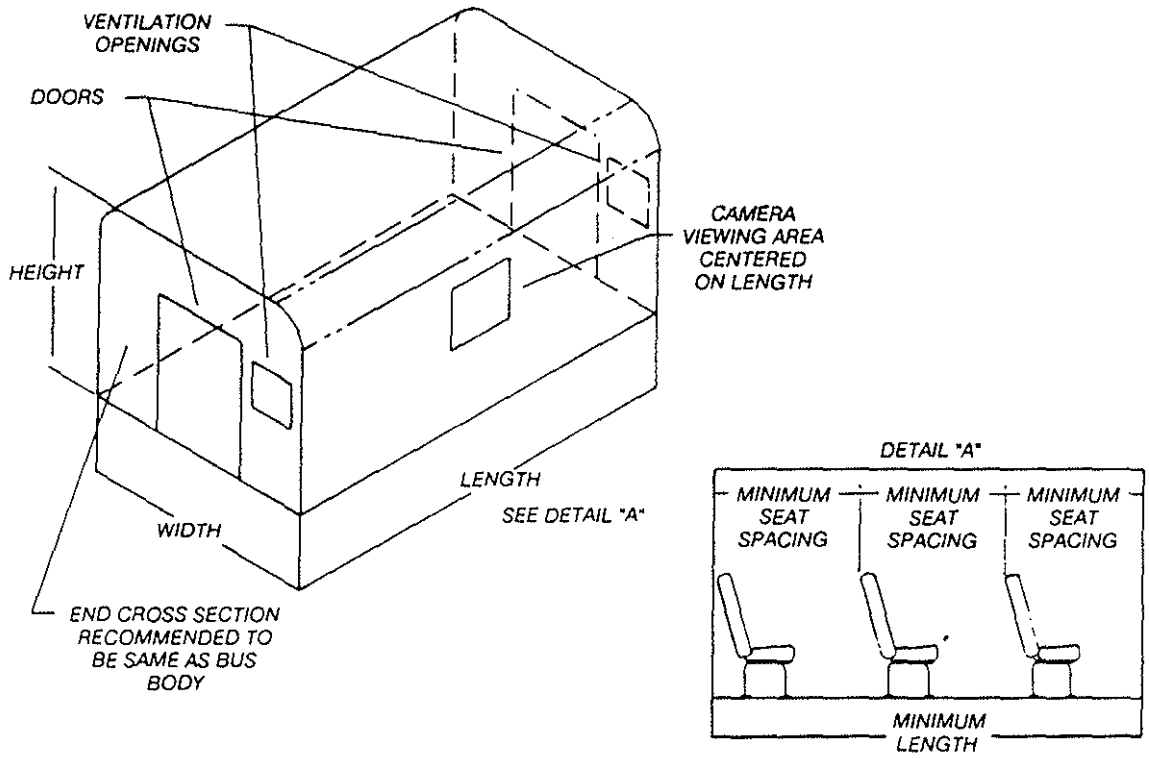

VENTILATION OPENINGS
DOORS
HEIGHT
CAMERA VIEWING AREA CENTERED ON LENGTH
LENGTH
SEE DETAIL "A"
WIDTH
END CROSS SECTION RECOMMENDED TO BE SAME AS BUS BODY
DETAIL "A"
MINIMUM SEAT SPACING
MINIMUM SEAT SPACING
MINIMUM SEAT SPACING
MINIMUM LENGTH

FIGURE 1

B. Test Sample

Sample shall be fully-assembled seat.

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

C. Ignition Source

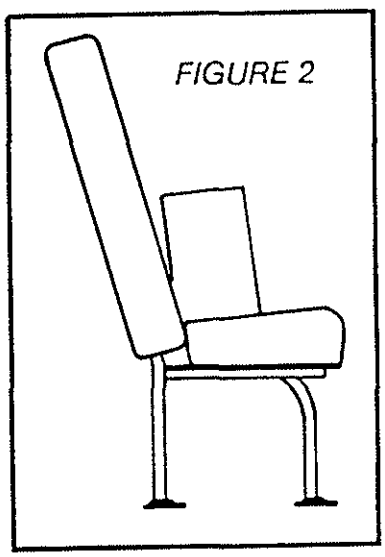
A paper grocery bag whose dimensions are approximately 7" x 11" x 18" is used to contain double sheets of newsprint (black print only, approximately 22" x 28"). The total combined weight of bag and newspaper shall be 7 oz. +/-.5 oz.

D. Test Procedure

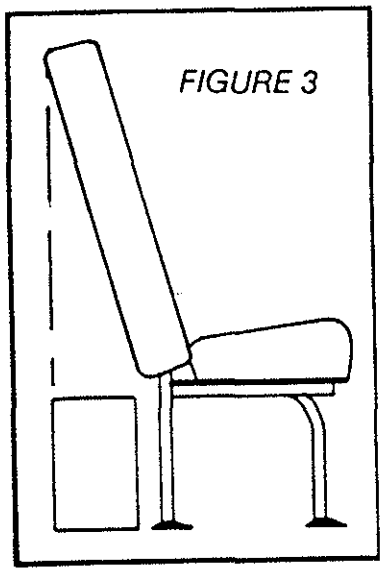
1. Install 3 seats in test chamber at minimum spacing per installer recommendation or FMVSS requirement. Seats shall be perpendicular to the dimension indicated as "length" in Figure 1. Install so that seat frames will not fall during test. Seat width shall be determined so that maximum passenger capacity per row (2 seats) for the seat style shall be tested.

2. For each test, position ignition source in the following positions outlined. Widest seat in the center row shall be tested.

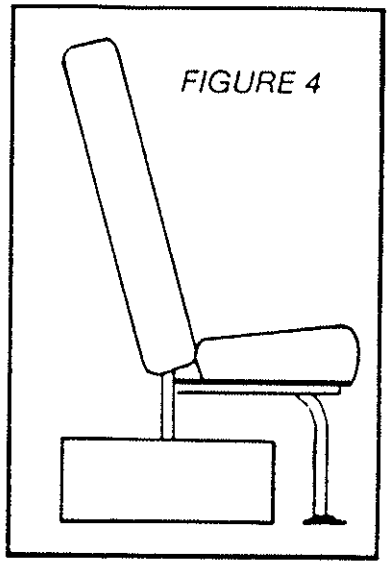
Position A.
Position ignition source with 18" dimension in contact with seat cushion and touching seat back. Center bag on top of cushion. See Figure 2.



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



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



3. A wooden match shall be used to light the ignition source. Time the test beginning where the ignition source is on fire until all flame is out.

4. After each ignition source position test, weigh seat assembly including loose material which has fallen off the seat onto the floor.

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

1. Maximum time from ignition to flameout shall be 8 minutes.

2. Flame shall not spread to any other seat with ignition source in Position A and Position C.

3. Weight loss may not exceed 10% of the pretest weight of padding upholstery.

Bus Body Heating System Test

1. **Scope**

This procedure, limited to liquid coolant systems, establishes uniform cold weather bus vehicle heating system test procedures for all vehicles designed to transport 10 or more passengers. Required test equipment, facilities and definitions are included. Defrosting and defogging procedures and requirements are established by SAE J381 and SAE J382, which are hereby included by reference.

1.1 **Purpose**

This procedure is designed to provide bus manufacturers with a cost effective, standardized test method to provide relative approximations of cold weather interior temperatures.

2. **Definitions**

2.1 **Heat Exchanger System** - Means will exist for providing heating and windshield defrosting, and defogging, capability in a bus. The system shall consist of an integral assembly, or assemblies, having a core assembly or assemblies, blower(s), fan(s), and necessary duct systems and controls to provide heating, defrosting and defogging functions. If the bus body structure makes up some portion of the duct system this structure or a simulation of this structure must be included as part of the system.

2.2 **Heat Exchanger Core Assembly** - The core shall consist of a liquid to air heat transfer surface(s), liquid inlet and discharge tubes or pipes.

2.3 **Heat Exchanger-Defroster Blower** - An air moving device(s) compatible with energies available on the bus body.

2.4 **Coolant** - A 50-50 solution of commercially available glycol antifreeze and commercial purity water. Commercial purity water is defined as that obtained from a municipal water supply system.

2.5 **Heat Exchanger-Defroster Duct System** - Passages that conduct inlet and discharge air throughout the heater system. The discharge outlet louvers shall be included as part of the system.

2.6 **Heater Test Vehicle** - The completed bus as designed by the manufacturer with, or without, a chassis, engine and driver train, including the defined heat exchanger system. If the vehicle is without a chassis, it shall be placed on the test site in such a way that the finished floor of the body is at a height, from the test site floor, equal to its installed height when on a chassis, and all holes and other openings normally filled when installed on a chassis will be plugged.

2.7 **Heat Transfer** - The transfer of heat from liquid to air is directly proportional to the difference between the temperatures of the liquid and air entering the transfer system, for a given rate of liquid and air flow measured in pounds per minute, and that heat removed from liquid is equal to heat given to air.

3. Equipment

3.1 **Test Site** - A suitable location capable of maintaining an average ambient temperature not to exceed 25°F (-3.9°C) for the duration of the test period. The maximum air velocity across the vehicle shall be 5 mph (8 kph).

3.2 **Coolant supply** - A closed loop system, independent of any engine/drivetrain system, capable of delivering a 50-50 (by volume) solution of antifreeze-water, as defined in 2.4, at 150°+/-5° (65.5°+/-1.7°C) above the test site ambient temperature, and 50 lbs (22.7 kg) per minute flow. The coolant supply device shall be equipped with an outlet diverter valve to circulate coolant within the device during its warm up period. The valve will then permit switching the coolant supply to the bus heat exchanger system at the start of the test.

3.3 **Power Equipment Supply** - A source capable of providing the required test voltage and current for the heater system.

3.4 **Heat Exchange Units** - The heat exchangers used shall be labeled as specified by the School Bus Manufacturer's Institute No. 001 (Revised 4/94). The test rating of each unit, and quantity used, shall be recorded.

4. Instrumentation

4.1 **Air Temperature**

4.1.1 Interior - Recommended air temperature measuring instrumentation are thermocouples or RTD's. Thermometers are not recommended because of their slow response to rapid temperature changes. Measuring instrumentation shall be placed on alternate seat rows beginning 39 in +/- 5 in (99 cm +/- 13 cm) from the rear of the body, at 36 in +/- 2 in (91 cm +/- 5 cm) from the finished floor of the body, and on the longitudinal centerline of the body.

4.1.2 Ambient - A set of four (4) of electrically averaged temperature measuring devices shall be placed 18 in +/- 5 in (46 cm +/- 13 cm) from the nearest body surface, 96 +/- 5 in (243 cm +/- 13 cm) above the floor of test site. One measuring device shall be placed at each of the following locations:

1) mid line of body forward of windshield;
2) mid line of body aft of the rear surface;

3) mid way between the axles on the right and left sides of the body.

4.1.3 Driver - Measuring devices shall be placed at appropriate locations to measure ankle, knee, and breath level temperatures with the driver's seat in rearmost, lowest and body center-most position.

(1) Ankle Level - Place a minimum of four (4) electrically averaged temperature measuring devices at the corners of a 10 X 10 in (25 X 25 cm) square area, the rearmost edge of which begins 8 in (20 cm) forward of the front edge of, and centered on, the seat cushion. The devices shall be located 3 in +/- 0.5 in (7.5 cm +/- 1.3 cm) above floor surface.

(2) Knee Level - Place a minimum of one measuring device at the height of the front top edge of the seat cushion and on the centerline of the seat. This measurement shall be 4 in +/- 1 in (10 cm +/- 2.5 cm) forward of the extreme front edge of the seat cushion and parallel to the floor.

(3) Breath Level - Place a minimum of one measuring device 42 in +/- 2 in (107 cm +/- 5 cm) above the floor and 10 in +/- 2 in (25 cm +/- 5 cm) forward of the seat back. The forward dimension shall be measured from the upper edge of the seat back and parallel to the floor.

4.1.4 (Optional) Heat Exchanger Inlet and Outlet Temperature - A minimum of four (4) electrically averaged temperature measuring devices shall be used to measure the inlet air temperature of each heat exchange unit. Additionally, a minimum of four (4) electronically averaged temperature measuring devices shall be used to measure the outlet air temperature of each heat exchange unit.
These sensors shall be placed no closer than 2.0 in (5.1 cm) from the face of any heater core, to prevent any incidence of radiant heat transfer. Outlet sensors shall be distributed throughout the outlet air stream(s) 1.0 in +/- .25 in (2.5 cm +/- .6 cm) from the outlet aperture(s) of the unit heater.

4.1.5 (Optional) Defrost Air Temperature - The temperature of the defrost air shall be measured at a point inthe defroster outlet(s) that is in the main air flow and which is at least 1 in (2.54 cm) below (upstream of) the plane of the defroster outlet opening. At least one temperature measurement shall be made in each outlet unit. The interior surface temperature(s) of the windshield shall be measured at a point located on the vertical and horizontal centerline(s) of the windshield.

4.1.6 (Optional) Entrance Area Temperature - The temperature of the vehicle entrance area shall be measured by two (2) sets of three (3) each electricallyaveraged temperature measuring devices. One set of three devices shall be placed 1 in (2.54 cm) above the lowest tread of the entrance step, equally spaced on the longitudinal centerline of the tread.

The second set of devices shall be placed on the next horizontal surface above the lowest entrance step, 4 in (10.2 cm) from the outboard edge of that surface, spaced identically to the first set of sensors, and placed parallel with the outboard edge of the surface being measured.

4.2 **Coolant Temperature** - The temperature entering and leaving the heat exchanger/defroster system shall be measured as close to the entrance and exit points of the bus body as possible with an immersion thermocouple or RTD device which can be read within +/- 0.5°F (+/- 0.3°C).

4.3 **Coolant Flow** - The quantity of coolant flowing shall be measured by means of a calibrated flow meter or weighing tank to an accuracy of at least 2% of setpoint.

4.4 **Coolant Pressure** - The coolant differential pressure shall be measured by suitable connection as close as possible to the inlet and outlet of the heat exchanger/defrosting system. Pressure may be read as inlet and outlet pressure and the differential calculated, or read directly as PSID. Pressure readings shall be made with the use of guages, manometers or transducers capable of reading within +/- 0.1 psi (689.5 Pa), accurate to +/- 0.5% of full scale.

4.5 **Additional Instrumentation** - Additional instrumentation required for vehicle heat exchanger system testing is a voltmeter and a shunt type ammeter to read the voltage and current of the complete system. The ammeter and voltmeter shall be capable of an accuracy of +/- 1% of the reading.

5. **Test Procedures**-Install the heater test vehicle on the test site. Testing shall be conducted in such a was as to prevent the effects of solar heating. At an outdoor test site, testing shall commence and data shall be recorded during the hours following sunset and prior to sunrise, regardless of cloud cover or facility roof. Instrumentation is required to obtain the following readings:

(a) Vehicle interior (4.1.1).
(b) Inlet coolant temperature, at entrance to the bus body (4.2).
(c) Discharge coolant temperature, at exit from the bus body (4.2).
(d) Voltage and current at main bus bar connection of driver's control panel.
(e) Ambient temperature (4.1.2).
(f) Rate of coolant flow (4.3).
(g) Coolant flow pressure (4.4).
(h) Elapsed time (stop watch).
(I) Driver's station temperatures (4.1.3).
(j) (Optional) Heat Exchanger Inlet and Outlet Temperatures (4.1.4).
(k) (Optional) Defrost Air Temperature (4.1.5)
(l) (Optional) Entrance Area Temperature (4.1.6)

Soak the test vehicle, with doors open, for the length of time necessary to stabilize the interior temperature for a 30 minute period as recorded by the vehicle interior temperature measuring devices, and the coolant temperature as measured by the inlet and outlet coolant temperature measuring devices, at the test site temperature, +/- 5°F (+/- 2.5°C), not to exceed 25°F (-3.9°C). Warm up the coolant device to the test temperature immediately prior to the start of the test. Use the coolant supply outlet diverter valve to prevent heated coolant from entering the bus heating system prior to the start of the test. At this time, set the heater controls and all fan controls at maximum, close all doors. A maximum of two windows may be left open a total of 1 in (2.5 cm) each. A maximum of two occupants may be in the body during the test period. Record all instrumentation readings at five minute intervals for a period of 1 h. Recording time shall begin with the initial introduction of heated coolant from the independent coolant supply. The electrical system shall be operated at a maximum of 115% of nominal system voltage +/- 0.2 volts, for example: 13.8 VDC +/- 0.2 volts for a 12 VDC system, and the heat exchanger system shall be wired with the normal vehicle wiring.

Optional - Additional flow rates and/or coolant temperatures may also be used to generate supplementary data. Test procedure 5 shall be repeated for each additional flow rate and/or coolant temperature.

6. Computations

6.1 Chart and Computations-Customary Units-Data shall be recorded on Chart 6.1 or equivalent. Temperature data shall be recorded at the actual temperatures occurring at the time of testing. Air temperature data shall then be adjusted to a 0°F base prior to the construction of graphs. This data reduction shall be directly proportional to the difference between the actual ambient temperature, at the time of test, and 0°F i.e., actual ambient of 18°F shall result in a reduction of all air temperatures by 18°F, actual ambient temperature of -8°F shall result in an increase of all air temperatures by8°F. Temperature data shall be presented in graph form as well as tabular form. One graph shall be constructed for the body interior air temperatures (4.1.1) wherein the recording intervals shall be the X-axis and the °F the Y-axis. A separate graph shall be constructed for the driver's temperatures (4.1.3) using the same units for the axes. Optional temperature data (4.1.4, 4.1.5, 4.1.6) may be similarly graphed separate from the interior data.

6.1.1 Optional Computations BTU/Hr. Coolant

1. Flow of Coolant (Ww)-lb/min-measured to +/- 2%.
2. Temperature of Coolant into System (T-in)- °F -measured.
3. Temperature of Coolant out of System (T-out)- °F -measured.
4. Heat Removed From Coolant (Qw)-Btu/h-calculated.
   Qw = CpWw(T-in - T-out) X 60

Cp = Specific Heat of Coolant - Given as 0.85 x 1.0018 BTU/lb/°F
= .8515
Ww = No. 1
T-in = No. 2
T-out = No. 3

6.2 Chart and Computations-Metric Units - Data shall be recorded on Chart 6.2 or equivalent. Temperature data shall be recorded at the actual temperatures occurring at the time of testing. Air temperature data shall then be adjusted to a -18°C base prior to the construction of graphs. This data reduction shall be directly proportional to the difference between the actual ambient temperature, at the time of test, and -18°C i.e., actual ambient of -7.8°C shall result in a reduction of all air temperatures by 10.2°C, actual ambient temperature of -22.2°C shall result in an increase of all air temperatures by 4.2°C. Temperature data shall be presented in graph form as well as tabular form. One graph shall be constructed for the body interior air temperatures (4.1.1) wherein the recording intervals shall be the X-axis and °C the Y-axis. A separate graph shall be constructed for the driver's temperatures (4.1.3) using the same units for the axes. Optional temperature data (4.1.4, 4.1.5, 4.1.6) may be similarly graphed separate from the interior data.

6.2.1 Optional Computations BTU/Hr - Coolant

1. Flow of Coolant (Ww) - kg/min - measured to +/-2%.
2. Temperature of Coolant into System (T-in) - °C - measured.
3. Temperature of Coolant out of System (T-out) - °C -measured.
4. Heat Removed From Coolant Flow (Qw) - J/h - calculated.
   Qw =CpWw(T-in - T-out) X (60)

Cp =Specific Heat of Coolant - Given as (0.85 x 4187j)/(kg/c)
Ww =No. 1
T-in =No. 2
T-out =No. 3

Chart 6.1

Description of Unit _____

Purpose of Test _____

Date Location Observers

Readings/Calculations Water		5	10	15	20	25	30	35	40	45	50	55	60
Flow-lb/min													
Flow Pressure-PSID													
T-in °F													
T-out °F													
Air Temperature													
T1 rear- °F													
T2- °F													
T3- °F													
T4- °F													
T5- °F													
T6-front- °F													
T7-ambient- °F													
T8-Driver Ankle- °F													
T9-Driver Knee- °F													
T10-Driver Breath-°F													
Electrical System													
Volts													
Amps													

Chart 6.1-Optional Measurements

Readings/Calculations	0	5	10	15	20	25	30	35	40	45	50	55	60
T11-Windshield CL Left- °F													
T12-Windshield CL Right- °F													
T13-Defrost Outlet Left- °F													
T14-Defrost Outlet Right °F													
T15-Heater-Inlet °F													
T15-Heater-Outlet °F													
T16-Heater-Inlet °F													
T16-Heater-Outlet °F													
T17-Heater-Inlet °F													
T17-Heater-Outlet °F													
T18-Heater-Inlet °F													
T18-Heater-Outlet °F													
T19-1st Entrance Step													
T20-2nd Entrance Step													
Heat Transfer-BTU/Hr-coolant													

Chart 6.2

Description of Unit _____

Purpose of Test _____

Date Location Observers

Readings/Calculations Water		5	10	15	20	25	30	35	40	45	50	55	60
Flow-kg/min													
Flow Pressure-PaD													
T-in °C													
T-out °C													
Air Temperature													
T1 rear- °C													
T2- °C													
T3- °C													
T4- °C													
T5- °C													
T6-front- °C													
T7-ambient- °C													
T8-Driver Ankle- °C													
T9-Driver Knee- °C													
T10-Driver Breath-°C													
Electrical System													
Volts													
Amps													

Chart 6.2-Optional Measurements

Readings/Calculations	0	5	10	15	20	25	30	35	40	45	50	55	60
T11-Windshield CL Left- °C													
T12-Windshield CL Right- °C													
T13-Defrost Outlet Left- °C													
T14-Defrost Outlet Right °C													
T15-Heater-Inlet °C													
T15-Heater-Outlet °C													
T16-Heater-Inlet °C													
T16-Heater-Outlet °C													
T17-Heater-Inlet °C													
T17-Heater-Outlet °C													
T18-Heater-Inlet °C													
T18-Heater-Outlet °C													
T19-1st Entrance Step													
T20-2nd Entrance Step													
Heat Transfer-J/Hr-coolant													

APPENDIX C

ALTERNATIVE FUELS

- ✔ Bibliography
- ✔ Comparison Chart
- ✔ Glossary of Alternative Fuel Terms

APPENDIX C

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GLOSSARY

ALTERNATIVE FUEL TERMS

GLOSSARY OF ALTERNATIVE FUEL TERMS

These definitions and explanations are related to their use in alternative-fueled engines or related products:

1. **BTU**- A unit of work or energy known as a British Thermal Unit. One BTU is the energy required to increase the temperature of one pound of water by one degree Fahrenheit.

2. **BI-FUEL** - Used to describe a bus capable of running on either of two fuels, although not simultaneously. Engines which can be switched to run on either CNG or gasoline are examples.

3. **CARB** - The abbreviation for the California Resources Board, the state agency in California, which sets their emission standards.

4. **CARBON MONOXIDE**- A product of incomplete combustion; this gas is colorless, odorless and very poisonous. It does not contribute to smog.

5. **CATALYTIC CONVERTER** - An exhaust after-treatment device containing a catalyst material that is used to burn off, or reduce, unburned fuel or gases and thus reduce emissions, particularly NOx and hydrocarbons. Diesel converters run at cooler temperatures than gasoline and require different catalysts.

6. **CETANE NUMBER** - A measure of self-ignition properties of a fuel after injection in a diesel engine. It relates to the knock properties of fuel. The higher the number, the more easily the fuel will ignite under compression. Therefore, higher cetane fuels are usually better in diesels.

7. **COMBUSTIBLE GAS SENSOR** - Detector capable of sensing the presence at natural gas.

8. **CRYOGENIC** - Relates to storage and use at very low temperatures. LNG requires cryogenic systems.

9. **DUAL-FUEL ENGINE** (or Flex-Fuel) - Used to describe a gasoline-methanol dual-fuel engine using mixtures of gasoline and methanol, such as M85, which is 15% gasoline and 85% Methanol, Dual-fuel engine can also refer to engines operating on any other mixture of fuels simultaneously, such as engines which runs on a mixture of CNG and diesel.

10. **FMVSS** - Federal Motor Vehicle Safety Standard(s).

11. **FORMALDEHYDE** - A chemical compound that is a by-product of combustion from engines, but is particularly high from methanol. It is suspected to be a cancer-causing substance by EPA.

12. **FUMIGATE**- Literally means to form a gas or disperse one gas in another. The term is used to describe the injecting of gas-usually CNG--into the intake air of the engine.

13. **G/bhp-hr** - The amount of a pollutant generated in one hour measured in grams per brake horsepower.

14. **GVWR**- Gross Vehicle Weight Rating means the value specified by the manufacturer as the loaded weight in pounds of a single vehicle, which shall not be less than the sum of the unloaded vehicle weight, plus the rated cargo load. For school buses, the rated cargo load is 120 pounds times the vehicle's designated seating capacity, plus 150 pounds for the driver.

15. **HYDROCARBONS** - A gaseous compound formed by incomplete combustion and comprised of unburned and partially burned fuel. It combines with NOx to form ozone and is a major contributor to smog.

16. **LEAN BURN** - Uses more air than is needed for theoretical complete combustion. This added air allows combustion to take place at a lower temperature, thus reducing the emissions NOx and CO.

17. **NEBULA COMBUSTION CHAMBER** - A unique high-turbulence combustion chamber in the top of a piston, which is particularly effective in efficient burning of lean gas-air mixtures.

18. **NFPA** - National Fire Protection Agency

19. **NOx** - Short for "nitrogen oxides," the gaseous compounds which combine with hydrocarbons to form ozone, an air pollutant that contributes to smog.

20. **OCTANE NUMBER** - A measure of anti-knock properties of a fuel that relates to spark ignition engines. The higher the number, the more resistance to knocking. Higher output and more efficient engine designs can be used with higher octanes. Higher octane fuels are generally more expensive.

21. **OZONE** - A pollutant formed from NOx and hydrocarbons. This gas has an irritating odor, is poisonous, and is used as an oxidizing agent for bleaching.

22. **PARTICULATE TRAPS** - An exhaust treatment device used to collect (trap) and periodically burn off particulates and other potential problem emission gases formed in

engine exhaust. Currently, the systems under development require electronic controls, are very expensive, and have poor reliability.

23. **PARTICULATES** - Small solid particles (soot, etc.) Formed by engine combustion. Visible particulates are what is seen in smoke, but even in smokeless exhaust there are some small invisible particles.

24. **PILOT IGNITION ENGINE** - One using a small quantity of diesel fuel to provide an ignition source for the alternative fuel being used, which will not ignite on its own in a diesel cycle.

25. **PORT INJECTION** - Similar to the throttle body system except the fuel is injected close to each cylinder intake port. Thus, more injectors and their controls are required, but they can then be individually controlled for maximum performance and emissions control.

26. **REFORMULATED GASOLINE** - also known as oxygenated gasoline, reformulated gasoline has oxygen added to improve combustion and reduce emissions.

27. **REPOWER INSTALLATION** - A dedicated natural gas or other engine which was not part of the original chassis at the time of manufacturing.

28. **STOICHIOMETRIC BURN** - Uses fuel and air (or oxygen) in the exact ratio needed for complete combustion to generate maximum efficiency and power.

29. **THROTTLE BODY INJECTION** - A gasoline fuel injection system where the fuel is injected directly into the air intake pipe or manifold. No carburetor is required; electronics monitor engine variables and control the rate of fuel injected.

30. **UL** - Underwriters' Laboratory

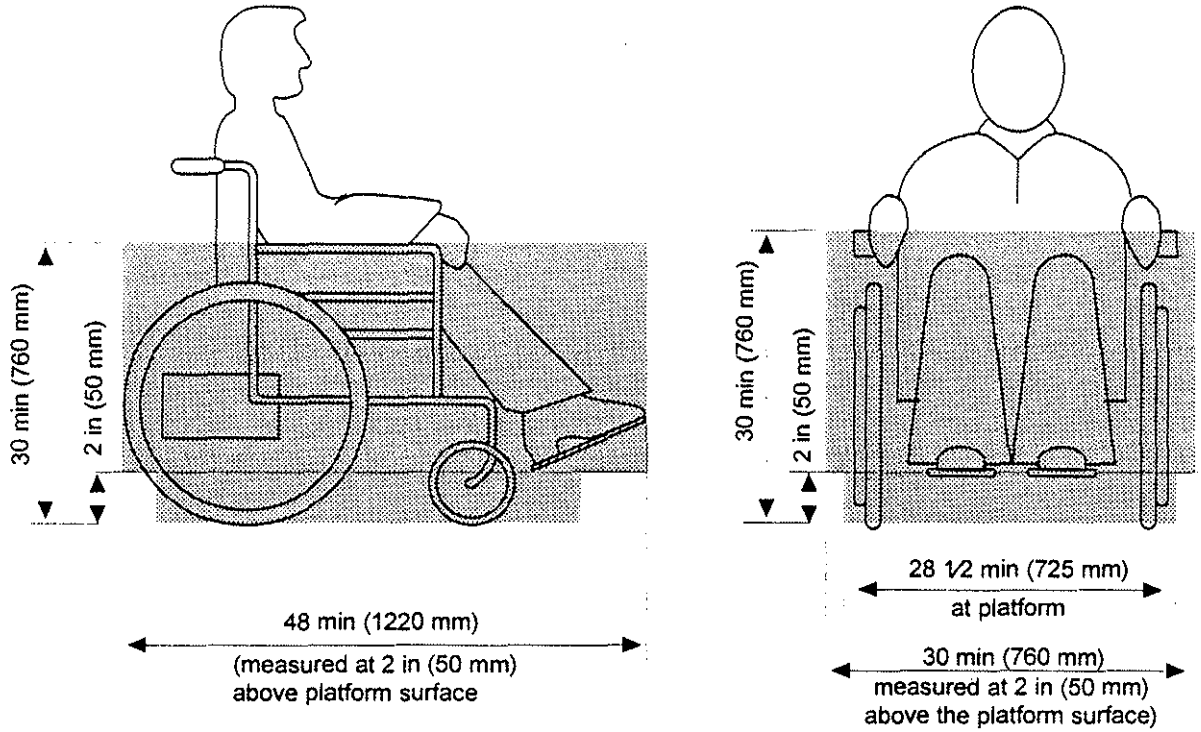
ALTERNATIVE FUELS COMPARISON CHART

	Clean Diesel	Reformulated Gasoline	Methanol	Ethanol	Compressed Natural Gas (CNG)	Liquid Natural Gas (LNG)	Propane	Electric Power
Environmental Issues								
Pro	Reduced emissions Reduces particulate material 20%-30% in older engines Few safety problems	Should meet emission regulations through year 2000 Reduced emissions in older engines	Low NOx particulates Disperses in water and bio-degradable Diverse fuel sources	Low NOx and particulates Disperses in water and bio-degradable Renewable resource	Low emissions Smokeless Available from the well, minimum processing	Low emissions Smokeless Available from the well, minimum processing	Low emissions Smokeless	Zero emissions Electricity often produced from renewable domestic energy sources Extremely quiet
Con	Needs particulates and NOx reduction Still some smoke (cold and high altitude) Spill/leakage contamination	Still high in smog-forming emissions Spill/leakage contamination Non-renewable resource	Generates formaldehyde Very toxic	Slight smoking Generates formaldehyde, but less than methanol Uses about the same energy to produce as it generates	Needs NOx reduction Requires energy to compress	Needs NOx reduction Requires energy to liquify and cool	Needs NOx reduction Requires energy to liquefy	Electric power from coal or oil does not eliminate overall emissions Battery disposal is a concern
Operational Issues								
Pro	Readily available and uses current distribution Minimal cost increase Very efficient, good mileage Usable in older engines Ample basic worldwide supply	Will be readily available when required Minimal cost increase Usable in older engines Ample basic worldwide supply	High octane for efficient Spark ignition combustion Liquid hence easy to distribute Blends well with gasoline	High octane for efficient Spark ignition combustion Liquid hence easy to distribute Blends well with gasoline	Gasoline conversions available Attractive fuel cost Ample domestic supply Low engine maintenance Minimum explosion hazard Vapors lighter than air, disperse quickly	Basic engine same as CNG Attractive fuel cost potential Ample domestic supply Less than 1/2 tank space of CNG Low engine maintenance Minimal explosion hazard Vapors lighter than air, disperse quickly	Fairly wide distribution Long-term experience in vehicle Good cold starting	Distribution system already in place (power generation and transmission system) Can be produced as hybrid vehicles Extremely quiet Low cost per mile to operate
Con	Hard cold starting Foreign oil dependency	May require new catalytic converters Over twice the cost per mile vs. diesel Foreign oil dependency	Corrosive Invisible flame Explosive vapors Hard cold starting with spark ignition Limited production capability Limited fuel locations 45% energy of diesel (low range or large fuel tanks)	High cost to produce Limited production capability Limited fuel locations 50% of energy of diesel (low range or large fuel tanks)	Slow refueling Limited vehicle fuel distribution Fuel quality variation High-pressure on-board fuel storage, heavy and complex Limited energy and range, relative to diesel	Slow refueling Limited availability today Cryogenic handling (-260°F) Must vent fuel system after 7 to 10 hours High-pressure on-board fuel storage, heavy and complex Limited energy and rang, relative to diesel	Slow refueling Limited energy and range, relative to diesel Vapors heavier than air, explosion potential	Low range due to weight and storage capacity of batteries Current cost for vehicles extremely high Overall vehicle weight limits passenger capacity Current technology requires battery replacement during life of vehicle

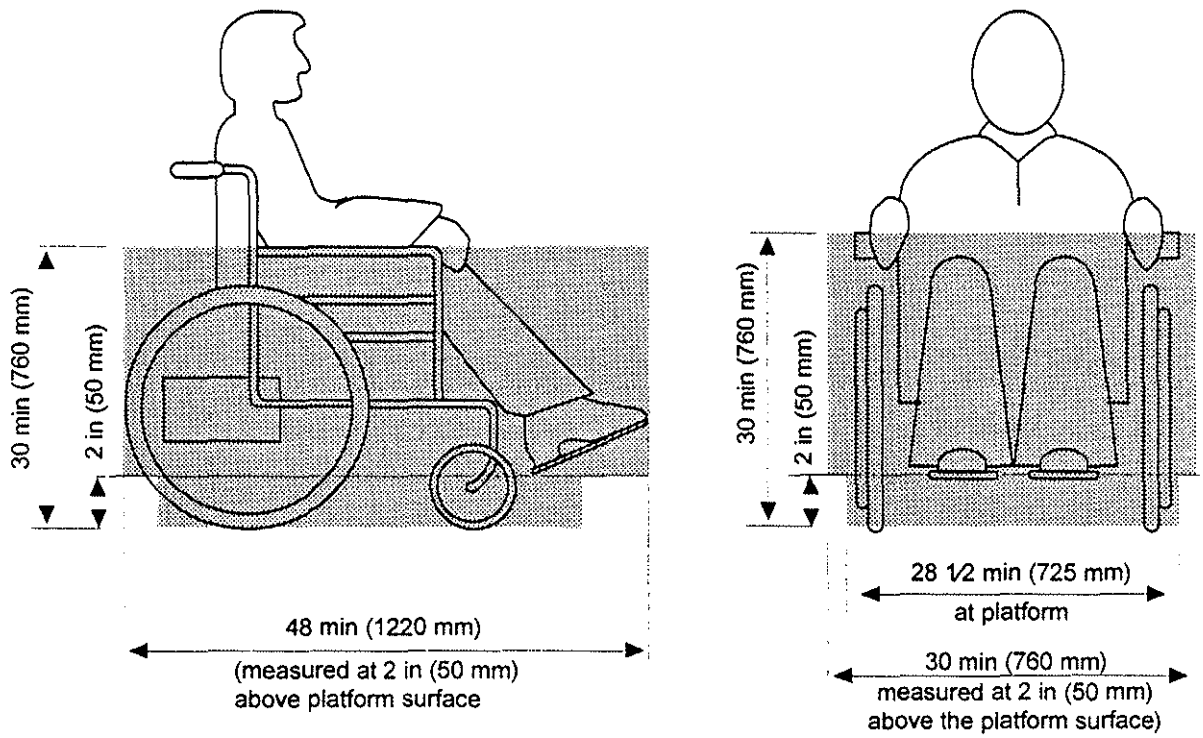
APPENDIX D

SPECIALLY EQUIPPED SCHOOL BUSES

- ✔ Wheelchair or Mobility Aid Envelope
- ✔ Frontal Sled Impact Test
- ✔ Specifications for Surrogate Wheelchair
- ✔ Vehicle Ramp



WHEELCHAIR OR MOBILITY AID ENVELOPE



WHEELCHAIR OR MOBILITY AID ENVELOPE

Appendix A (normative)
Test for Frontal Impact Crashworthiness

A.1 Purpose

This appendix specifies equipment, conditions, and procedures for conducting a sled impact test to simulate the dynamic loading that WTORS components used with forward-facing wheelchairs and occupants can be expected to experience in a 48-km/hr frontal crash. For WTORS designed for use with a range of wheelchair types and sizes, the test procedures specify use of a rigid, reusable surrogate wheelchair (SWC) that complies with the specifications documented and illustrated in Appendix D. For WTORS designed only for use with a specific wheelchair having unique design features or components required by the WTORS, the test procedures provide for conducting the test with the appropriate production or prototype wheelchair. The surrogate, production, or prototype wheelchair is referred to as the *test wheelchair.*

A.2 Equipment To Be Tested

A complete, unused WTORS, including all fittings, anchorages, fasteners, and instructions for installation and use, shall be provided for testing. If a WTORS is designed to make use of the OEM vehicle restraint system, the WTORS manufacturer shall provide a representative vehicle restraint system for testing. If modifications to the WTORS are necessary to interface with the test wheelchair, or if changes from recommended installation geometry and/or hardware are required to interface with the sled platform, such modifications shall be made or approved by the WTORS manufacturer and shall not affect the basic structural design and dynamic strength of the WTORS.

For WTORS designed to be used with a specific wheelchair, or for WTORS designed to rely on the wheelchair structure to transfer occupant restraint loads to the vehicle, a production or prototype wheelchair of the type and model required shall be provided for each test, weighted with actual or simulated components such as batteries, motors, and electronic components, as is appropriate to the style of wheelchair.

A.3 Test Equipment

The frontal impact test shall be performed with impact simulator equipment that includes:

A.3.1 an impact sled with a flat, structurally rigid platform, suitably reinforced to accept WTORS anchorages, and capable of producing the impact conditions specified in A.4,

A.3.2 a rigid structure for anchorage of upper restraint hardware,

A.3.3 a track or guide path to permit only unidirectional movement of the sled during the impact event,

A.3.4 an anthropomorphic test dummy (ATD) with a total mass of 73.5 $\pm$ 1 kg.
(The ATD shall simulate the response of a human occupant and shall be of a type that has proven to produce repeatable results when used in crash testing. Suitable ATDs at the time of publication are Hybrid II, Hybrid III, OPAT, and TNO-10)

A.3.5 a test wheelchair consisting of either a surrogate wheelchair that complies with the specifications of Appendix D, or a production or prototype wheelchair as required for a specific WTORS design.

A.3.6 high-speed camera or video equipment for recording the kinematics of the test wheelchair and the ATD at a minimum of 500 frames per second,

A.3.7 equipment to measure the ATD and test wheelchair horizontal excursions specified in A.7.2 to an accuracy of $\pm$ 5 mm,

A.3.8 a means to process the sled accelerometer signals as specified in A.4.2 in order to measure and record the acceleration-time history of the sled platform in the direction of sled travel during the impact event to an accuracy of $\pm$ 0.5 g, and

A.3.9 a means to measure the horizontal velocity change (delta V) during the impact deceleration/acceleration event. Mathematical integration of the deceleration-time pulse is recommended to determine the sled delta V:

$$\text{delta V} = \Delta V =$$

where: $a(t)$ is the sled deceleration time history (i.e., sled pulse) in the impact direction,

t_o is time-zero, the time when the sled starts to decelerate, as indicated by a sudden and final departure of $a(t)$ from zero g,

t_f is the time at which the sled deceleration pulse returns to zero (see Figure A.1).

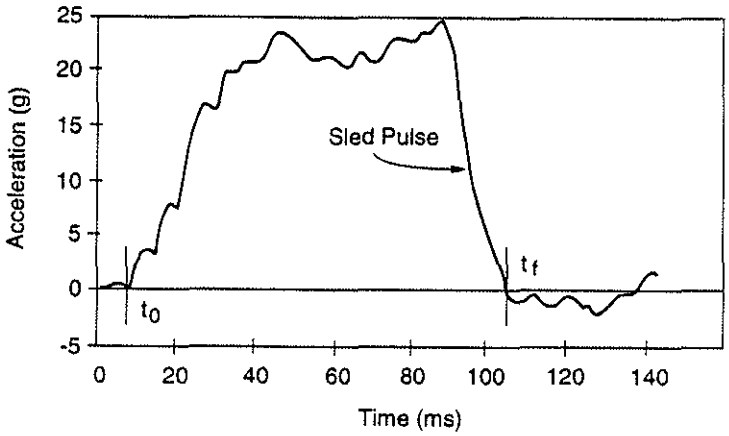


Figure A.1 - Integration limits for determining delta V.

A.4 Sled Performance

A.4.1 The sled platform with WTORS, test wheelchair, and ATD installed as described in A.6 shall be subjected to a horizontal velocity change of 48 km/h (+2/-0) in the direction of impact using a sled acceleration/deceleration pulse that complies with

A.4.2 The sled accelerometer signal shall be processed according to SAE J211 as follows:

A.4.2.1 prefilter to Channel Class 1000 (- 4 dB at 1650 Hz),

A.4.2.2 digitize at 10,000 Hz, and

A.4.2.3 filter digitized signal to Channel Class 60 (- 4 dB at 100 Hz).

A.4.3 The processed sled deceleration-time pulse shall:

A.4.3.1 fall within the shaded corridor of Figure A.2,

A.4.3.2 exceed 20 g's for a cumulative time period of at least 15 ms,

A.4.3.3 exceed 15 g's for a cumulative time period of at least 40 ms, and

A.4.3.4 have a duration of at least 75 ms from t_0 to t_f.

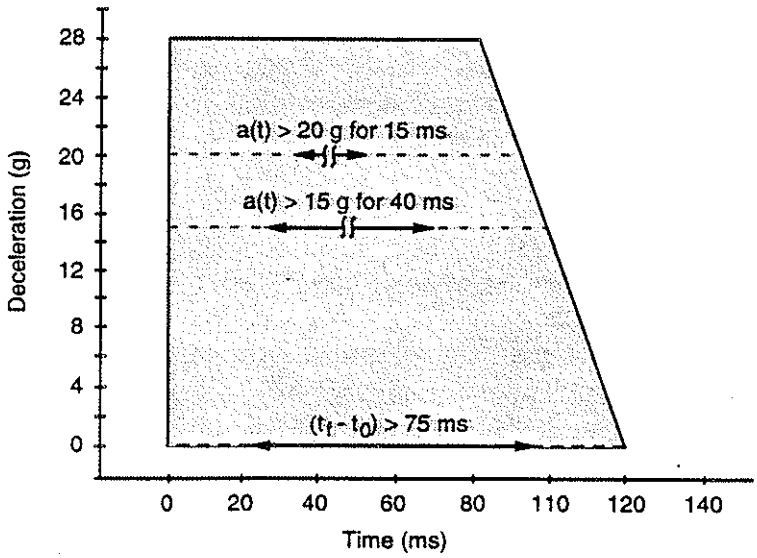


Figure A.2 - Deceleration pulse corridor for a 48 (+2/-0) km/hr delta V

A.5 Preparation and Calibration of Test Equipment

Prior to conducting the test:

A.5.1 Check to make sure that the sled accelerometer has been calibrated by the manufacturer or a designated representative within six months of the test date.

A.5.2 Calibrate the signal processing system for the sled accelerometer.

A.5.3 Inspect the ATD to insure that all primary components are intact and functioning.

A.5.4 Adjust the ATD to achieve a static resistance of 1 g at each joint indicated by just-noticeable movement from the weight of the distal body segment.

A.5.5 Place snug-fitting cotton clothing on the pelvis, thighs, and torso of the ATD.

A.5.6 If the surrogate wheelchair is used:

A.5.6.1 adjust the location of the simulated battery mass to accommodate WTORS components that are fastened to the wheelchair and/or to provide adequate clearance to vehicle-anchored WTORS components,

A.5.6.2 inflate the rear tires to 414 ± 69 kPa and inflate the front tires to 759 ± 69 kPa,

A.5.6.3 inspect the sidewalls of the tires for abrasion and/or cracking and replace tires if worn,

A.5.6.4 inspect the seat plate and plate-support structures and replace if deformed,

A.5.6.5 inspect all frame joints and components and repair if there are signs of fatigue or deformation.

A.5.7 If the test involves use of a production or prototype wheelchair:

A.5.7.1 inspect and adjust the wheelchair condition according to the manufacturer's instructions,

A.5.7.2 replace battery acid with water,

A.5.7.3 replace electronic components and motors with equivalent masses, if desired.

A.6 Setting Up and Conducting the Test

Perform the following in sequence:

A.6.1 Set up the high-speed camera or high-speed video system to record a lateral view of the test sled, test wheelchair, and ATD during the impact event.

A.6.2 Fasten any wheelchair add-on components to the test wheelchair.

A.6.3 Position the test wheelchair facing forward on the sled with wheelchair reference plane parallel to the direction of sled travel.

A.6.4 Install the wheelchair tiedown anchorages in accordance with the manufacturer's instructions* on the sled platform, selecting anchorage points for strap-type systems that:

a. are symmetrical about the longitudinal axis of the test wheelchair, that
b. achieve angles of the rear tiedown straps of 45 ± 3 degrees and angles of the front tiedown straps of 60 ± 3 degrees with respect to the horizontal, measured (or projected) in a plane parallel to the wheelchair reference plane, and that
c. achieve angles of the rear tiedown straps of 0 ± 3 degrees and angles of the front tiedown straps of 15 ± 3 degrees (angled outward) relative to the horizontal, measured (or projected) in a vertical plane perpendicular to the wheelchair reference plane.

A.6.5 Secure the test wheelchair in accordance with the WTORS manufacturer's instructions.

A.6.6 Install load cells on tiedown straps if applicable and desired.

A.6.7 Tension any tiedown straps to the manufacturers specifications, making sure that the test wheelchair reference plane remains aligned with the direction of sled travel.

A.6.8 Position the ATD in the test wheelchair sitting upright and symmetrically positioned about the wheelchair midline, with the pelvis and elbows as close to the seatback of the test wheelchair as possible.

A.6.9 Install the occupant restraint system in accordance with the manufacturer's instructions*,

a. selecting anchor points for the pelvic belt to achieve angles within the range specified in Figure 7 of this document, and
b. selecting anchor points for the upper torso belt within the preferred zone or zones shown in Figures 8, 9, or 10, as applicable.

A.6.10 Install belt-webbing load cells on occupant restraint belts if desired.

A.6.11 If an emergency-locking or automatic-locking retractor is provided, adjust the pelvic restraint for minimum slack. If no emergency-locking or automatic-locking retractor is provided, adjust the tension of the pelvic restraint to a snug fit over the ATD's pelvis.

A.6.12 If an emergency-locking or automatic-locking retractor is provided, adjust the shoulder belt for minimum slack or minimum preloading. If no emergency- locking or automatic-

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* If fasteners provided with the WTORS are incompatible with the sled platform, replacement fasteners shall be of the same thread size and specification. The anchor bolt may also be fastened directly into a tapped hole in the sled platform.

locking retractor is provided, adjust the shoulder belt to a snug fit with a 75 x 75 x 75 mm block placed between the belt and the ATD's sternum.

A.6.13 Mark the webbing at WTORS adjustment mechanisms to determine slippage during the test.

A.6.14 Position high-contrast targets on the sides of the ATD and test wheelchair in view of the high-speed recording equipment at:

a. the lateral aspect and center of the ATD's knee joint,

b. the point P of the surrogate wheelchair (see Figure 1 and Figures D.1 through D.3 in Appendix D), or a point on the side of the seatback of a production or prototype wheelchair that is as close to the wheelchair point P as possible.

A.6.15 Verify that the test wheelchair reference plane is aligned within ± 3 degrees of the direction of sled travel.

A.6.16 Record the locations of all WTORS anchor points relative to the test wheelchair and the angles of all tiedown straps and pelvic restraint belts relative to the horizontal longitudinal axis of the sled platform.

A.6.17 Conduct the impact test.

A.7 Measurement and Calculation of Test Results

After the test:

A.7.1 Examine the test wheelchair, ATD, and WTORS components to determine and/or measure:

A.7.1.1 whether the ATD remained in the test wheelchair,

A.7.1.2 whether the test wheelchair remained on the test platform,

A.7.1.3 any change in orientation of the test wheelchair reference plane relative to the direction of sled travel,

A.7.1.4 any slippage at each WTORS adjustment mechanism,

A.7.1.5 whether any load-carrying parts became separated, deformed, or fractured,

A.7.1.6 if the ATD and test wheelchair could be released from the WTORS without the use of tools.

A.7.2 Analyze the high-speed films or video recordings to determine the following with an accuracy of ± 5 mm:

A.7.2.1 $Exhead_{peak}$ = the horizontal distance relative to the sled platform between the most forward point on the ATD's head above the nose at time t_o, to the most forward point on the ATD's head at the time of peak head excursion,

A.7.2.2 $Exknee_{peak}$ = the horizontal distance relative to the sled platform between the ATD knee-joint target at time t_o, to the knee-joint target at the time of peak knee excursion, and

A.7.2.3 $ExWC_{peak}$ = the horizontal distance relative to the sled platform between the contrast target placed at or near point P on the test wheelchair at time t_o, to the point P target at the time of peak wheelchair excursion.

A.7.3 Calculate the ratio $(Exknee_{peak})/(ExWC_{peak})$.

A.8 Test Report

The test report shall include:

A.8.1 a description of the test facility including the type of impact simulated, instrumentation and signal processing techniques, the frame speed for each film and/or video produced, methods for measuring sled velocity change and deceleration, methods used to measure ATD and test wheelchair excursions, and the accuracy of excursion measurements,

A.8.2 a full identification of the WTORS, anchorage fasteners, test wheelchair, and ATD used,

A.8.3 pre-test measurements documenting the locations of all WTORS anchorages relative to the test wheelchair and angles of all tiedown straps and pelvic restraint belts relative to the horizontal and measured in vertical planes perpendicular to, or parallel to, the wheelchair reference plane, as appropriate,

A.8.4 the angles of all tiedown straps and pelvic restraint belts relative to the horizontal obtained by projecting the actual angles onto a vertical plane perpendicular to the wheelchair reference plane (side view) and a vertical plane perpendicular to the wheelchair reference plane (front or rear view),

A.8.5 a description of the test setup including a statement about any parts or fasteners used in the test that were not provided by the WTORS manufacturer,

A.8.6 whether the ATD remained in the test wheelchair,

A.8.7 whether the test wheelchair remained on the test platform,

A.8.8 the change in the orientation of the test wheelchair reference plane, if measurable, in comparison with the initial test orientation,

A.8.9 identification of any WTORS load-carrying parts that became separated, deformed, or fractured during the test,

A.8.10 the webbing slippage in millimeters at each WTORS adjustment mechanism,

A.8.11 the peak horizontal excursions specified in A.7.2, and whether any of the excursions exceeded the limits in Table 2 of this recommended practice,

A.8.12 a statement as to whether the ATD and test wheelchair could be released from the WTORS without the use of tools,

A.8.13 a statement as to whether the ATD was loaded by the test wheelchair based on the results of the calculation in 6.2.4,

A.8.14 a statement as to whether the WTORS complied with all of the performance requirements specified in 6.2 of this recommended practice,

A.8.15 a graph of the sled deceleration time history for the test in relation to the deceleration corridor of Figure A.2, and

A.8.16 the measured or calculated value of the test delta V.

6 Performance Requirements

6.1 WTORS Components

6.1.1 All webbing, metal parts, buckles, release mechanisms, and adjustment mechanisms of wheelchair tiedown and occupant restraint systems shall comply with applicable subsections of FMVSS 209 as indicated in Table 1.

6.1.2 All materials used in WTORS shall comply with the flammability requirements of FMVSS 302.

Table 1
Applicable Subsections of FMVSS 209

Section	Component	Subject	Tests referenced	Application*
S4.1 (a)	general design	occupancy	-	R
S4.1 (b)	pelvic restraint	design	-	R
S4.1 (c)	upper torso restraint	design	-	R
S4.1 (d)	hardware	burrs & sharp edges	-	R + TD
S4.1 (e)	release mechanism	design	-	R
S4.1 (g)	restraint assemblies	adjustment range	-	R
S4.1 (h)	webbing	unraveling	-	R + TD
S4.2 (a)	webbing	belt width	S5.1(a)	R
S4.2 (b)	webbing	breaking strength	S5.1(b)	R
S4.2 (c)	webbing	elongation	S5.1(c)	R
S4.2 (d)	webbing	abrasion resistance	S5.1(d), S5.3(c)	R
S4.2 (e)	webbing	light resistance	S5.1(e)	R + TD
S4.2 (f)	webbing	micro. resistance	S5.1(f)	R + TD
S4.2 (g)	webbing	colorfastness	S5.1(g)	R + TD
S4.2 (h)	webbing	stain resistance	S5.1(h)	R + TD
S4.3 (a)	hardware	corrosion resistance	S5.2(a)	R + TD
S4.3 (b)	hardware	temp. resistance	S5.2(b)	R + TD
S4.3 (c)	floor fasteners	breaking loads	S5.2(c)	R + TD
S4.3 (d)	buckle release	release force	S5.2(d)	R
S4.3 (e)	adjustment device	adjustment force	S5.2(e)	R + TD
S4.3 (f)	tilt-lock devices	locking angles	S5.2(f)	R
S4.3 (g)	buckle latch	separation force	S5.2(g)	R
S4.3 (h)	belt retractor	performance	S5.2(h)	R
S4.3 (i)	belt retractor	performance	S5.2(i)	R
S4.3 (j)	belt retractor	performance	S5.2(j)	R
S4.3 (k)	belt retractor	performance	S5.2(k), S4.4	R
S4.4 (a)	pelvic restraints	performance	S5.3(a)	R
S4.4 (b)	3-pt restraints	performance	S5.3(b)	R

* R = occupant restraint; TD = wheelchair tiedown

6.2 Frontal Sled Impact Test

When tested as specified in Appendix A, the WTORS shall:

6.2.1 retain the test dummy in the test wheelchair and on the test sled with the test wheelchair in an upright position,

6.2.2 not show any fragmentation or complete separation of any load carrying part,

6.2 Frontal Sled Impact Test

When tested as specified in Appendix A, the WTORS shall:

6.2.1 retain the test dummy in the test wheelchair and on the test sled with the test wheelchair in an upright position,

6.2.2 not show any fragmentation or complete separation of any load carrying part,

6.2.3 not allow the horizontal excursions of the test dummy and the test wheelchair to exceed the values given in Table 2,

Table 2
Horizontal Excursion Limits (mm)

Measurement Point	Excursion Variable	Pelvic & Shoulder Restraint
Test Wheelchair	$ExWC_{peak}$	200
Dummy Knee	$Exknee_{peak}$	375
Dummy Head	$Exhead_{peak}$	650

where,

$Exhead_{peak}$ = the horizontal distance relative to the sled platform between the most forward point on the dummy's head above the nose at time t_0, to the most forward point on the dummy's head at the time of peak head excursion,

$Exknee_{peak}$ = the horizontal distance relative to the sled platform between the dummy knee-joint target at time t_0, to the knee joint target at the time of peak knee excursion, and

$ExWC_{peak}$ = the horizontal distance relative to the sled platform between the contrast target placed at or near point P on the test wheelchair at time t_0, to the point P target at the time of peak wheelchair excursion.

6.2.4 prevent the wheelchair from imposing forward loads on the occupant as indicated by:

$$(Exknee_{peak})/(ExWC_{peak}) \geq 1.1$$

6.2.5 allow removal of the anthropomorphic test dummy and the test wheelchair subsequent to the test without the use of tools.

Appendix D (normative)
Specifications for Surrogate Wheelchair

D.1 Purpose

This appendix provides design, dimensional, material, and performance specifications for the surrogate wheelchair (SWC) referenced in the design requirements and tests of this recommended practice. These specifications are intended to provide a repeatable and reusable device that represents a typical adult-sized power wheelchair. Details for the design, fabrication, and maintenance of a suitable surrogate wheelchair are available in SAE J2252 - Surrogate Wheelchair Drawing Package and Maintenance Manual.

D.2 Specifications

The surrogate wheelchair shall be designed and fabricated with the features, dimensions, and specifications shown in Figures D.1 through D.3, and shall:

a. be of rigid construction,
b. have a total mass of 85 $\pm$ 1 kg,
c. have a lower frame design that is compatible with WTORS components of docking-type and clamp-type wheelchair tiedowns with little or no modification to those components,
d. allow for adjustment in the SWC-to-floor clearance distance to accommodate wheelchair anchorage components of docking-type tiedown systems,
e. have a center of gravity located 200 $\pm$ 25 mm forward of the rear axle and 325 $\pm$ 25 mm above the ground plane for the range of frame-to-floor clearance adjustments allowed,
f. provide two front securement points and two rear securement points for strap-type tiedowns at the locations indicated in Figure D.1 and with the geometry specified in Figure F.1 of Appendix F,
g. provide accessible and structurally sound locations 250 $\pm$ 10 mm above the ground plane for the addition of two rear securement points that simulate the horizontal axles a standard welded-frame wheelchair and that are perpendicular to the surrogate wheelchair sideframe,
h. provide pelvic restraint anchor points on both sides that are located so that the angle of a pelvic restraint bolted to these points and placed over the pelvis of a 50th-percentile-male ATD seated in the surrogate wheelchair forms an angle between 45 and 60 degrees to the horizontal,
i. have a rigid, flat seat surface with dimensions shown in Figures D.2 that is oriented at an angle of 4 $\pm$ 1.5 degrees to the horizontal (front end up) when the SWC tires are resting on a flat horizontal surface,

j. have a rigid seatback with height and width dimensions indicated in Figure D.3 that is oriented at 8 $\pm$ 1.5 degrees to the vertical when the inflated tires of the SWC are resting on a flat horizontal surface,

k. have a 20-mm minimum thickness, perforated rubber pad with height and width dimensions indicated in Figures D.1 and D.3 fixed to the front surface of the rigid seatback,

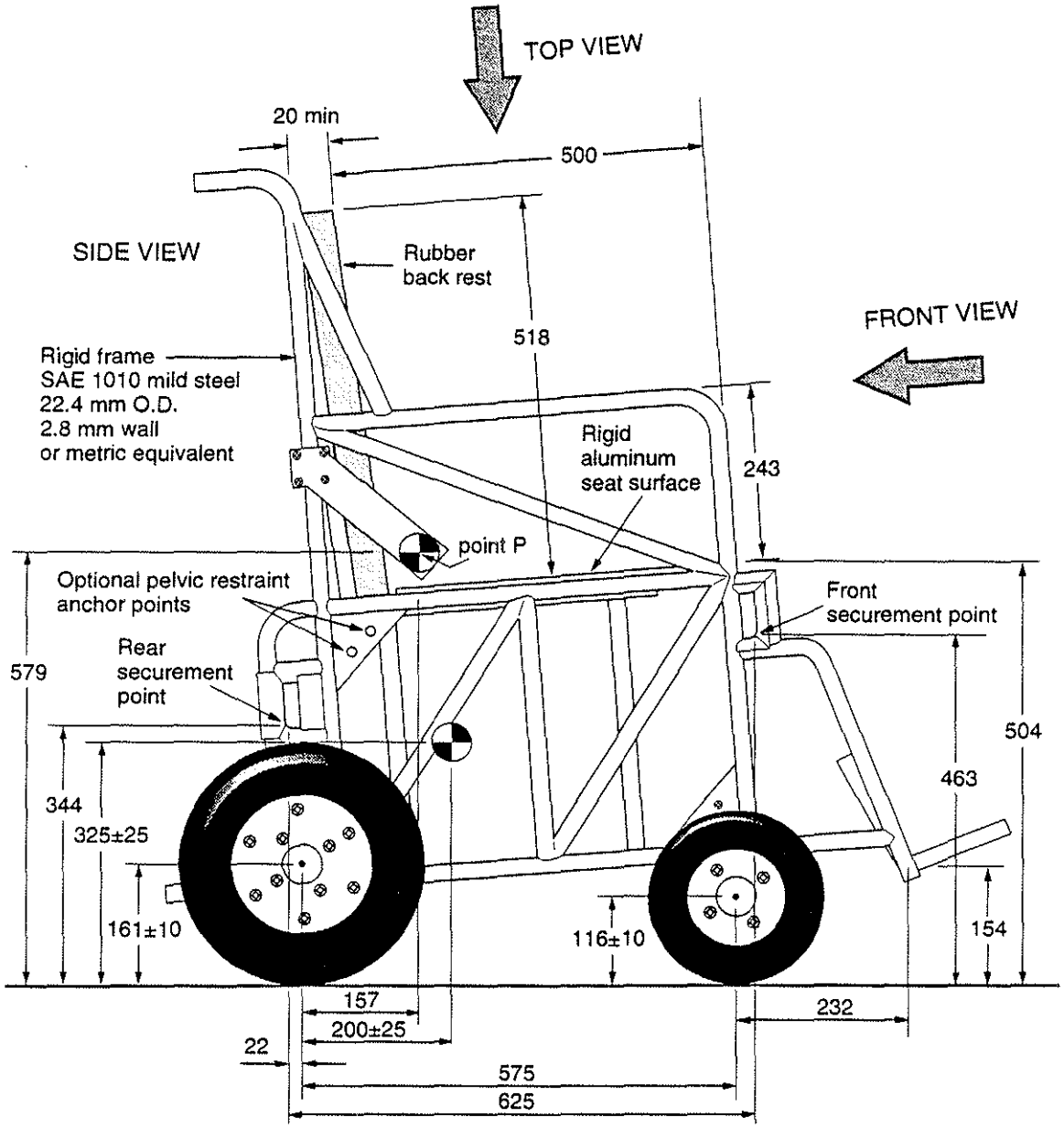
l. be of durable construction such that there is no permanent deformation of the frame, seat surface, or seatback in a 48-km/h, 20-g frontal impact test with a 50th-percentile, 73.5 kg ATD positioned and restrained in the SWC,

m. have a detachable but rigid mounting plate for placement of a side-view contrast target at the location of reference point P outboard of tiedown and restraint system components on either side of the SWC,

n. have pneumatic front tires that, when inflated to 759 kPa, have a diameter of 230 $\pm$ 10 mm, a width of 75 $\pm$ 5 mm, and a sidewall height of 54 $\pm$ 5 mm,

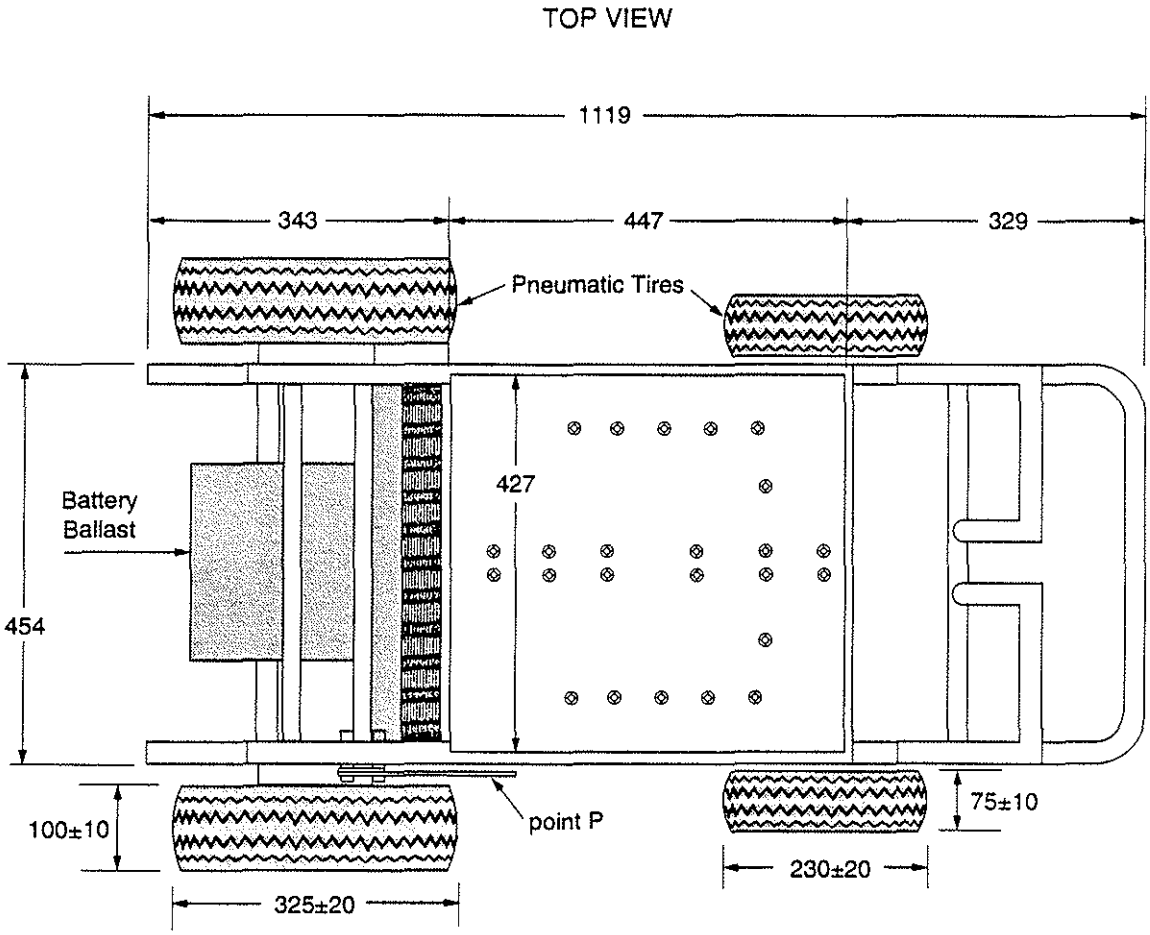
o. have pneumatic rear tires that, when inflated to 414 kPa, have a diameter of 325 $\pm$ 10 mm, a width of 100 $\pm$ 10 mm, and a sidewall height of 70 $\pm$ 5 mm

p. include hard rubber stops located inboard of each rear wheel to limit rear tire compression during the frontal impact test of Appendix A to 45 $\pm$ 5 mm.



all dimensions are in mm with tolerances of ± 2 mm unless specified

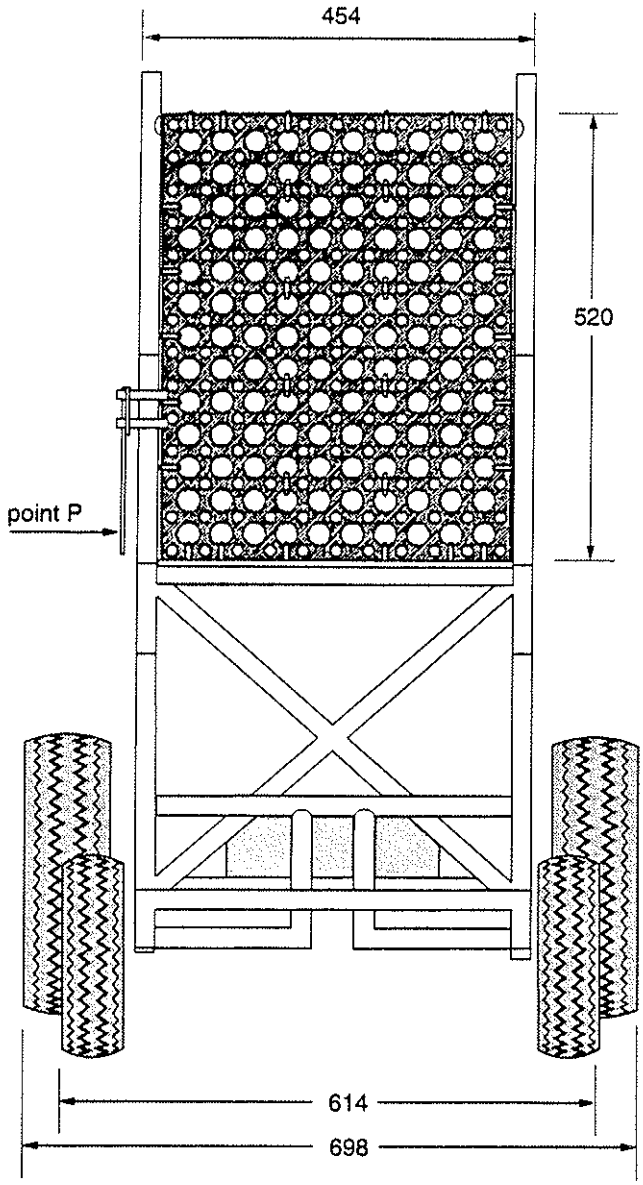
Figure D.1 - Side-view drawing of surrogate wheelchair.



all dimensions are in mm with tolerances of $\pm$ 2 mm unless specified

Figure D.2 - Top-view drawing of surrogate wheelchair.

FRONT VIEW



all dimensions are in mm with tolerances of $\pm$ 2 mm unless specified

Figure D.3 - Front-view drawing of surrogate wheelchair.

VEHICLE RAMP 36 CFR 1192.23

(1) **Vehicle ramp.** -(1) Design Load. Ramps 30 inches or longer shall support a load of 600 pounds, placed at the centroid of the ramp distributed over an area of 26 inches by 26 inches, with a safety factor of at least 3 based on the ultimate strength of the material. Ramps shorter than 230 inches shall support a load of 300 pounds.

(2) **Ramp surface.** The ramp surface shall be continuous and slip resistant; shall not have protrusions from the surface greater than 1/4 inch high; shall have a clear width of 30 inches; and shall accommodate both four-wheel and three-wheel mobility aids.

(3) **Ramp threshold.** The transition from roadway or sidewalk and the transition from vehicle floor to the ramp may be vertical without edge treatment up to 1/4. Changes in level between 1/4 inch and ½ inch shall be beveled with a slope no greater than 1:2.

(4) **Ramp barriers.** Each side of the ramp shall have barriers at least 2 inches high to prevent mobility aid wheels from slipping off.

(5) **Slope.** Ramps shall have the least slope practicable and shall not exceed 1:4 when deployed to ground level. If the height of the vehicle floor from which the ramp is deployed is 3 inches or less above a 6-inch curb, a maximum slope of 1:4 is permitted; if the height of the vehicle floor from which the ramp is deployed is 6 inches or less, but greater than 3 inches, above a 6-inch curb, a maximum slope of 1:6 is permitted; if the height of the vehicle floor from which the ramp is deployed is 9 inches or less, but greater than 6 inches, a maximum slope of 1:8 is permitted; if the height of the vehicle floor from which the ramp is deployed is greater than 9 inches above a 6-inch curb, a slope of 1:12 shall be achieved. Folding or telescoping ramps are permitted provided they meet all structural requirements of this section.

(6) **Attachment.** When in use for boarding or alighting, the vehicle so that if is not subject to displacement when loading or unloading a heavy power mobility aid and that no gap between vehicle and ramp exceeds 5/8 inch.

(7) **Stowage.** A compartment, securement system, or other appropriate method shall be provided to ensure that stowed ramps, including portable ramps stowed in the passenger area, do not impinge on a passenger's wheelchair or mobility aid or pose any hazard to passengers in the event of a sudden stop or maneuver.

(8) **Handrails.** If provided, handrails shall allow persons with disabilities to grasp them from outside the vehicle while starting to board, and to continue to use them throughout the boarding process, and shall have the top between 30 inches and 38 inches above the ramp surface. The handrails shall be capable of withstanding a force of 100 pounds concentrated

at any point on the handrail without permanent deformation of the rail or its supporting structure. The handrail shall have a cross-sectional diameter between 1-1/4 inches and 1-1/2 inches or shall provide an equivalent grasping surface, and have eased edges with corner radii of not less than 1/8 inch. Handrails shall not interfere with wheelchair or mobility aid maneuverability when entering or leaving the vehicle.

APPENDIX, VEHICLE

*SOCIETY OF AUTOMOTIVE ENGINEERS, INC.
400 COMMONWEALTH DRIVE
WARRENDALE, PA 15096
(412)776-4841

*SCHOOL BUS MANUFACTURERS INSTITUTE
DIVISION OF TRUCK BODY AND EQUIPMENT ASSOCIATION
4907 CORDELL AVE.
BETHESDA, MD 20814
(301)652-8004

*UNDERWRITERS LABORATORIES, INC.
333 PFINGSTEN RD.
NORTHBROOK, ILLINOIS 60062

*PRODUCT STANDARD PSI-66
U.S. DEPARTMENT OF COMMERCE
14th AND E STREETS
WASHINGTON, D.C. 20230

*AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 RACE STREET
PHILADELPHIA, PA 19103

*FEDERAL SPECIFICATION TT-C-520b
GENERAL SERVICES ADMINISTRATION
SPECIFICATIONS AND CONSUMER INFORMATION
DISTRIBUTION CENTER
WASHINGTON NAVY YARD
BUILDING 197
WASHINGTON, D.C. 20407

APPENDIX E

SCHOOL BUS OPERATIONS

- ✔ Guideline for Standard #17
- ✔ School Bus Driver Application
- ✔ Bus Route Actions
- ✔ En Route Emergency Bus Evacuation Procedures
- ✔ Planning School Sites
- ✔ Policies/Procedures for Pupil Management
- ✔ Evaluation Checklist for School Bus Driveways
- ✔ Pupil Rules
- ✔ How to cross the road safely (When leaving the bus)
- ✔ How to cross the road safely (when boarding the bus)
- ✔ Bus Conduct Report
- ✔ Procedures for Drivers at Railroad Grade Crossings
- ✔ Trip Request Form
- ✔ Conducting Emergency Exit Drills
- ✔ Evacuation Procedures

June 2, 1992

HIGHWAY SAFETY PROGRAM guideline #17

PUPIL TRANSPORTATION SAFETY
(Effective May 28, 1991)

I. Scope. This guideline establishes minimum recommendations for a State Highway Safety Program for pupil transportation safety including the identification, operation, and maintenance of buses used for carrying students; training of passengers, pedestrians, and bicycle riders; and administration.

II. Purpose. The purpose of this guideline is to minimize, to the greatest extent possible, the danger of death or injury to school children while they are traveling to and from school and school-related events.

III. Definitions.

"Bus"is a motor vehicle designed for carrying more than 10 persons (including the driver).

"Federal Motor Carrier Safety Regulations (FMCSR)" are the regulations of the Federal Highway Administration (FHWA) for commercial motor vehicles in interstate commerce, including buses with a gross vehicle weight rating (GVWR) greater than 10,000 pounds or designed to carry 16 or more persons (including the driver), other than buses used to transport school children form home to school and from school to home. (The FMCSR are set forth in 49 CFR Parts 383-399).

"School-chartered bus" is a "bus" that is operated under a short-term contract with State or school authorities who have acquired the exclusive use of the vehicle at a fixed charge to provide transportation for a group of students to a special school-related event.

"School bus" is a "bus" that is used for purposed that include carrying students to and from school or related events on a regular basis, but does not include a transit bus or a school-chartered bus.

IV. Pupil Transportation Safety Program Administration and Operations.

Recommendation. Each State, in cooperation with its school districts and other political subdivisions, should have a comprehensive pupil transportation safety program to ensure that school buses and school-chartered buses are operated and maintained so as to achieve the highest possible level of safety.

A. Administration.

1. There should be a single State agency having primary administrative responsibility for pupil transportation, and employing at least one full-time professional to carry out these responsibilities.

2. The responsible State agency should develop an operating system for collecting and reporting information needed to improve the safety of operating school buses and school-chartered buses. This includes the collection and evaluation of uniform crash data consistent with the criteria set forth in Highway Safety Program Guidelines No. 10, "Traffic Records" and No. 19, "Accident Investigation and Reporting".

B. Identification and equipment of school buses. Each State should establish procedures to meet the following recommendations for identification and equipment of school buses.

1. All school buses should:
   a. Be identified with the words "School Bus" printed in letters not less than eight inches high, located between the warning signal lamps as high as possible without impairing visibility of the lettering from both front and rear, and have no other lettering on the front or rear of the vehicle, except as required by Federal Motor Vehicle Safety Standards (FMVSS), 49 CFR Part 571.

   b. Be painted National School Bus Glossy Yellow, in accordance with the colorimetric specification of National Institute of Standards and Technology (NIST) Federal Standard No. 595a, color 13432, except that the hood should be either that color or lusterless black, matching NIST Federal Standard No. 595a, Color 37038.

   c. Have bumpers of glossy black, matching NIST Federal Standard No. 595a, Color 17038, unless, for increased visibility, they are covered with a reflective material.

   d. Be equipped with safety equipment for use in an emergency, including a charged fire extinguisher, that is properly mounted near the driver's seat, with signs indicating the location of such equipment.

   e. Be equipped with device(s) demonstrated to enhance the safe operation of school vehicles, such as a stop signal arm.

f. Be equipped with a system of signal lamps that conforms to the school bus requirements of FMVSS No. 108, 49 CFR 571.108.

g. Have a system of mirrors that conforms to the school bus requirements of FMVSS No. 111, 49 CFR 571.111, and provides the seated driver a view to the rear along both sides of the bus and a view of the front bumper and the area in front of the bus. Mirrors should be positioned and adjusted such that when a rod, 30 inches long, is placed upright on the ground at any point along a traverse line 1 foot forward of the forward-most point of a school bus, at least 7 ½ inches of the length of the rod should be visible to the driver, either by direct view or by the system of mirrors.

h. Comply with all FMVSS applicable to school buses at the time of their manufacture.

2. Any school bus meeting the identification recommendations of sections 1. a-h above that is permanently converted for use wholly for purposes other than transporting children to and from school or school-related events should be painted a color other than National School Bus Glossy Yellow, and should have the stop arms and school bus signal lamps described by sections 1. e & f removed.

3. School buses, while being operated on a public highway and transporting primarily passengers other than school children, should have the words "School Bus" covered, removed, or otherwise concealed, and the stop arm and signal lamps described by sections 1. e & f should not be operated.

4. School-chartered buses should comply with all applicable FMCSR and FMVSS.

C. **Operations.** Each State should establish procedures to meet the following recommendations for operating school buses and school-chartered buses:

1. Personnel.
   a. Every person who drives a school bus or school-chartered bus occupied by school children should, as a minimum:

      (1) Have a valid State driver's license to operate such a vehicle. All drivers who operate a vehicle designed to carry 16 or more persons (including the driver) are required by FHWA's Commercial Driver's License Standards by April

1, 1992 (49 CFR Part 383) to have a valid commercial driver's license.

(2) Meet all physical, mental, moral and other requirements established by the State agency having primary responsibility for pupil transportation, including requirements for drug and/or alcohol misuse or abuse; and

(3) Be qualified as a driver under the Federal Motor Carrier Safety regulations of the FHWA, 49 CFR Part 391, if the driver or the driver's's employer is subject to those regulations.

2. Vehicles.

a. Each state should enact legislation that provides for uniform procedures regarding school buses stopping on public highways for loading and discharge of children. Public information campaigns should be conducted on a regular basis to ensure that the driving public fully understands the implications of school bus warning signals and requirements to stop for school buses that are loading or discharging school children.

b. Each State should develop plans for minimizing highway use hazards to school bus and school-chartered bus occupants, other highway users, pedestrians, bicycle riders and property. They should include, but not be limited to:

(1) careful planning and annual review of routes for safety hazards;

(2) Planning routes to ensure maximum use of school buses and school-chartered buses, and to ensure that passengers are not standing while these vehicles are in operation;

(3) Providing loading and unloading zones off the main traveled part of highways, whenever it is practical to do so;

(4) Establishing restricted loading and unloading areas for school buses and school-chartered buses at or near schools;

(5) Ensuring that school bus operators, when stopping on a highway to take on or discharge children, adhere to State

regulations for loading and discharging including the use of signal lamps as specified in section B. 1. f. of this guideline;

(6) Prohibiting, by legislation or regulation, operation of any school bus unless it meets the equipment and identification recommendations of this guideline; and

(7) Replacing, consistent with the economic realities which typically face school districts, those school buses which are not manufactured to meet the April 1, 1977 FMVSS for school buses, with those manufactured to meet the stricter school bus standards, and not chartering any pre-1977 school buses

(8) Informing potential buyers of pre-1977 school buses that these buses may not meet current standards for newly manufactured buses and of the need for continued maintenance of these buses and adequate safety instruction.

c. Use of amber signal lamps to indicate that a school bus is preparing to stop to load or unload children is at the option of the State. Use of red warning signal lamps as specified in section B 1. f. Of this guideline for any purpose or at any time other than when the school bus is stopped to load or discharge passengers should be prohibited.

d. When school buses are equipped with stop arms, such devices should be operated only in conjunction with red warning signal lamps, when vehicles are stopped.

e. Seating

(1) Standing while school buses and school-chartered buses are in motion should not be permitted. Routing and seating plans should be coordinated so as to eliminate passengers standing when a school bus or school-chartered bus is in motion.

(2) Seating should be provided that will permit each occupant to sit in a seat intended by the vehicles' manufacturer to provide accommodation for a person at least as large as a 5th percentile adult female, as defined in 49 CFR 571.208. Due to the variation in sizes of children of different ages, states and school districts should exercise judgment in

deciding how many students are actually transported in a school bus or school-chartered bus.

(3) There should be no auxiliary seating accommodations such as temporary or folding jump seats in school buses.

(4) Drivers of school buses and school-chartered buses should be required to wear occupant restraints whenever the vehicle is in motion.

(5) Passengers in school buses and school chartered buses with a gross vehicle weight rating (GVWR) of 10, 000 pounds or less should be required to wear occupant restraints (where provided) whenever the vehicle is in motion. Occupant restraints should comply with the requirement of FMVSS Nos. 208, 209 and 210, as they apply to multipurpose vehicles.

f. Emergency exit access. Baggage and other items transported in the passenger compartment should be stored and secured so that the aisles are kept clear and the door(s) and emergency exit(s) remain unobstructed at all times. When school buses are equipped with interior luggage racks, the racks should be capable of retaining their contents in a crash or sudden driving maneuver.

D. Vehicle Maintenance. Each State should establish procedures to meet the following recommendations for maintaining buses used to carry school children:

1. School buses should be maintained in safe operating condition through a systematic preventive maintenance program.

2. All school buses should be inspected at least semi-annually. In addition, school buses and school-chartered buses subject to the Federal Motor Carrier Safety Regulations of FHWA should be inspected and maintained in accordance with those regulations (49 CFR Parts 393 and 396).

3. School bus drivers should be required to perform daily pre-trip inspections of their vehicles, and the safety equipment thereon (especially fire extinguishers), and to report promptly and in writing any problems discovered that may affect the safety of the vehicles's operation or result in its mechanical breakdown. Pre-trip inspection and condition reports for school buses and school-chartered buses subject to the Federal Motor

Carrier Safety Regulations of FHWA should be performed in accordance with those regulations (49 CFR 392.7, 392.8, and 396).

E. Other Aspects of Pupil Transportation Safety.

1. At least once during each school semester, each pupil transported from home to school in a school bus should be instructed in safe riding practices, proper loading and unloading techniques, proper street crossing to and from school bus stops and should participate in supervised emergency evacuation drills, which are timed. Prior to each departure, each pupil transported on an activity or field trip in a school bus or school-chartered bus should be instructed in safe riding practices and on the location and operation of emergency exits.

2. Parents and school officials should work together to select and designate the safety pedestrian and bicycle routes for the use of school children.

3. All school children should. be instructed in safe transportation practices for walking to and from school. For those children who routinely walk to school, training should include preselected routes and the importance of adhering to those routes.

4. Children riding bicycles to and from school should receive bicycle safety education, wear bicycle safety helmets, and not deviate from preselected routes.

5. Local school officials and law enforcement personnel should work together to establish crossing guard programs.

6. Local school officials should investigate programs which incorporate the practice of escorting students across streets and highways when they leave school buses. These programs may include the use of school safety patrols or adult monitors.

7. Local school officials should establish passenger vehicle loading and unloading points at schools that are separate from the school bus loading zones.

V. Program evaluation. The pupil transportation safety program should be evaluated at least annually by the state agency having primary administrative responsibility for pupil transportation.

APPENDIX E

SCHOOL BUS DRIVER APPLICATION

(Example of a form that may be used)

Applicant Name _____
Present Address _____
Date of Birth _____ Social Security # _____

Addresses at which applicant has resided during the past three (3) years: _____
_____

Current Driver's License Number _____
State of Issue _____ Expiration Date _____
Class of License _____ Endorsements _____
Restrictions _____
Do you have any physical impairments that could interfere with the duties of a school bus driver? (See physical form). _____
_____

Have you had any type of vehicle accident in the last three (3) years?
☐ yes ☐ no
If yes, give dates and explain: _____
_____
_____

Have you ever been terminated or suspended from previous employment because of a positive drug or alcohol test? ☐ yes ☐ no

Have you been convicted of a moving traffic violation in the last three (3) years?
☐ yes ☐ no
If yes, give dates and explain: _____
_____

Has your driver's license been suspended or revoked during the last three (3) years?
☐ yes ☐ no
If yes, give dates and explain: _____
_____

Has your license ever been revoked, suspended or denied since the time you obtained your original license? ☐ yes ☐ no
If yes, give dates and explain: _____
_____

Have you held a license in another state during the last three (3) years?
☐ yes ☐ no

Which state(s) _____

List the names and addresses of your current and previous employers during the ten (10) years preceding the date of this application:

Employer _____
Address _____
Dates _____
Reason for leaving _____
_____
Job Title & Duties _____
_____

Employer _____
Address _____
Dates _____
Reason for leaving _____
_____
Job Title & Duties _____
_____

Additional employers may be listed on a separate sheet.

Education and training (circle the highest obtained)

8 9 10 11 12 GED 13 14 15 16 17 18 19+

Degrees earned: _____
_____

Specific experience of formal training related to transportation of pupils: _____
_____

I understand that the information provided by me, may be checked and previous employers may be contacted for the purpose of investigating my background. This certifies that this application was completed by me, and that all entries on it and information on it are true and complete to the best of my knowledge.

_____ _____
(Date) (Signature)

I authorize the employer to conduct a criminal history check, and to investigate all written information contained on this application.

_____ _____
(Date) (Signature)

APPENDIX E

ACTIONS TO BE TAKEN DURING AND FOLLOWING THE OBSERVATIONS OF SCHOOL BUS ROUTES

Supervisory actions that should be taken during and after the transportation director completes a review of bus routes are:

1. Check the route and schedule for accuracy.

2. Determine that loading and unloading occurs only at authorized stops.

3. Check to see that vehicles are operated in compliance with prescribed regulations.

4. Observe the driver-pupil relationship.

5. Check loading and unloading conditions at school centers.

6. Check for evidence of supervision in loading zones.

7. Note hazardous road conditions.

8. Note the nature, frequency and locations of bus stop law violations.

9. Observe conditions of bus, e.g., cleanliness, tires, windows, emergency exit(s), first aid kits, fire extinguisher, seats, etc.

10. Observe vehicle inspection guide for evidence of pre-trip inspection.

11. Note driver attitude toward other motorists and pedestrians.

12. Follow the observation with a written report and discussion with the driver (and others, as appropriate).

13. File the written report in the driver's permanent record.

APPENDIX E

GUIDELINES FOR EN ROUTE EMERGENCY BUS EVACUATION PROCEDURES

The intent of this procedure is to provide guidelines for evacuating a bus only when absolutely necessary for the safety of students and staff in an emergency situation.

PREPARING AN EMERGENCY EVACUATION PLAN:

Bus staff should have an emergency evacuation plan in the bus which considers the individual capabilities and needs of each student, the type of behavior which might be exhibited during an emergency evacuation, and the type of wheelchair or support equipment being used for students. A floor plan with pupil location and special needs should be on the bus. Some issues to consider in establishing an evacuation plan are:

1. Which students could help, and to what extent.

2. How to deal with individual emergencies during the evacuation process, such as seizures.

3. Whether students should be evacuated in their wheelchairs, or removed from their wheelchairs before evacuation.

4. How to disconnect or cut wheelchair securement and occupant protection equipment, including belts, trays, and other support equipment.

5. Identify which students might run after evacuation so they could be evacuated last.

6. Know the length of time a student requiring life support equipment or medical care procedures can survive if such service is interrupted or delayed during the evacuation process.

   Every driver and/or attendant should be able to physically carry-out their emergency evacuation plan upon request without hesitation. Many emergencies only allow 3 to 5 minutes to complete an evacuation before possible serious injury to students might occur.

ASSESSING THE NEED TO EVACUATE:

Student safety and control is best maintained by keeping students on the bus during an emergency and/or impending crisis situation if doing so does not expose them to unnecessary risk or injury. A decision to evacuate should include consideration of the following conditions:

1. Is there a fire involved?

2. Is there a smell of raw or leaking fuel?

3. Does the possibility exist that the bus will roll/tip causing further threat to safety?

4. Is the bus likely to be hit by other vehicles?

5. Is the bus in direct path of a sighted tornado or other natural disasters such as rising water?

6. Would evacuating students expose them to speeding traffic, severe weather, or a dangerous environment?

7. Considering the medical, physical, and emotional condition of the students, does staying on the bus or evacuating pose the greater danger to the students' safety?

GENERAL PROCEDURES TO FOLLOW FOR EMERGENCY EVACUATION:

1. Keep the situation as orderly and low-key as possible.

2. If time and conditions permit, bus driver should use their communication system to advise their office:

   A. Their exact location, including nearest intersecting road or familiar landmark.

   B. The condition creating their emergency.

   C. The type of assistance needed (police-fire-ambulance)

   D. Notification that the bus is being evacuated.

3. Analyze conditions to determine safest exit from bus.

4. During evacuation, monitor conditions and adjust procedures to meet unexpected circumstances.

5. Move evacuated students to the nearest safe location at least 100 feet from the bus.

6. Be prepared to give information to emergency medical personnel regarding individual students' medical or physical requirements.

EQUIPMENT CONSIDERATIONS:

1. Bus staff should, as part of their pre-trip inspection, familiarize themselves with the location and method of opening all emergency exits.

2. If time permits, a lift platform can be lowered half the distance to the ground, providing a step for evacuating wheelchairs. If there is a smell of spilled fuel, the lift should be operated manually.

3. When re-entry to the bus is not probable, communication equipment and first aid kits can frequently be passed through a window, making them accessible outside the bus. Consideration should also be made for student medication, if carried and needed.

4. If a large bus is being used, and evacuation is made through the rear exit door, consideration should be given to the method to be used for re-entry to the bus, if necessary, considering the height of the floor from the ground. Some states allow a stirrup-type step on the rear bumper.

5. If a battering ram is needed, a fire extinguisher can often serve that purpose.

6. A belt cutter should be stored in the bus, in a location readily accessible to the driver. The cutter should have a protected mouth to restrict the entry of fingers, etc.

LOCAL DISTRICT POLICY:

Bus staff should be familiar with local district policy regarding:

1. Evacuation procedure to follow when enroute and a tornado or flash flood, etc. is sighted, with no shelter near.

2. The type of medical information to be available on long distance trips in case of student injury.

NOTE: THE SAFETY OF THE BUS AND EQUIPMENT IS SECONDARY TO THE SAFETY OF THE STUDENTS. NO ATTEMPT SHOULD BE MADE TO SAVE EQUIPMENT OR PERSONAL ITEMS UNTIL ALL STUDENTS ARE REMOVED FROM THE BUS, SAFELY OUT OF DANGER, AND SUPERVISED.

APPENDIX E

PLANNING SCHOOL SITES FOR SCHOOL BUS SAFETY

1. In the selection of school sites, major consideration should be given to the safety of pupils riding school buses. School buses will be forced to utilize the roads in and around the school site plus public highways leading into the school area. High-density traffic flow near school exits and entrances due to the proximity of freeways, periodic commercial traffic or massive commuter traffic from industrial plants should be avoided. It must be recognized in many cases that the area designated for the school site has been selected prior to hiring an architect. It is suggested, therefore, that this information be issued to boards of education and municipal planning authorities alerting them to the dangers inherent in the process of site selection. It is also suggested that boards of education discuss the selection with the superintendent of schools, traffic engineers and the state office of school plant planning and solicit their help in evaluating possible school sites.

2. The location of the school plant on a site should be determined to provide a safe means of entrance and egress for all pupils. When boards of education are considering school sites, the state, county and local roads servicing the area should have a minimum 30-feet paved width where loading and unloading is contemplated off the main thoroughfare. If it is necessary to load or unload pupils on the main thoroughfare in front of the school, at least a 40-feet wide paved road should be provided.

3. All school bus traffic should be considered as one-way traffic flow, preferably with the service door side of the bus always next to the loading and unloading zone.

4. Whenever possible, separate pickup and delivery points some distance from the teacher, student parking areas should be designated for parents, service, teacher and administrative traffic. Accident inducing conditions are created by haphazard pickup and delivery of pupils in the bus loading zones, particularly during inclement weather.

5. Whenever possible, roads should not be constructed that completely encircle a school. Areas that pupils must cross to engage in outside activities should be free of all vehicular traffic.

6. All school bus roads entering into or exiting from main arteries should have a 50- to 100-feet-radius turn on inner edge of pavement. Within the school site, roads should have at least a 60-feet radius on inner edge of pavement on all curves. At

least a 50-feet tangent section should be provided between reverse curves. In order to minimize driveway entrance and exit widths, island construction may be required. Driveway openings must conform to local requirements. Driveway openings on state highways should be approved by the state highway department.

7. Curbing, with suitable drainage, should be constructed on all roads utilized by school buses within the school site. Consideration should be given to state highway department performance specifications. A minimum of 30-feet should be maintained for one-way traffic and 36-feet for two-way traffic. Roads should be wider on all curves.

8. It is desirable to separate all parking areas, it might be advantageous if only the visitor parking area were located in close proximity to the school. Care should be exercised in the placement of these areas to preclude the visitor from crossing the school bus traffic pattern.

9. In the construction of parking areas, it might be advantageous if only the visitor parking area were located in close proximity to the school. Care should be exercised in the placement of these areas to preclude the visitor from crossing the school bus traffic pattern.

10. Prior to designing and laying out roads and parking lots, architects should consult with the school administration on the following items:

    a. Total number of pupils and school personnel.

    b. Number of present and projected pupils to be transported.

    c. Number of buses.

    d. Type of schedule.

        (1) Staggered opening and closing times.

        (2) Single opening and closing times.

    e. Extra-curricular activities that would necessitate use of school buses.

11. It is desirable to locate parked buses on school grounds to prevent glare from reflective surfaces of windows, doors and windshields from being transmitted to the pupils in the classroom.

12. Attention should be given in planning school bus parking, loading and unloading

areas. Parking should exclude the necessity for backing the bus.

13. Sidewalk plans for pupils walking to school should eliminate crosswalks in front of the buses.

14. Architects' plan for school buildings often include bus canopies. Such units are not considered feasible for schools with large enrollments. Canopies are advantageous in schools attended by handicapped pupils. Height of the canopy should accommodate the highest school buses. Each canopy support post adjacent to the driveway curb should have a three-(3) foot minimum setback from the curb to minimize the possibility of crushing a pupil between the support post and arriving school buses.

15. For areas that will be constantly utilized by heavy school buses, the type of pavement and base should conform to state highway department specifications.

16. All roads within the school site should be graded to avoid configurations that could impair a motorist's vision. It is suggested that a maximum 5% grade be allowed on all roads and, at entrance and exit points, a maximum 2% grade be allowed. Blind corners and intersections should be eliminated. Trees and shrubbery planted on the school site should not obstruct a motorist's vision.

17. Plans for the location of access and service roads should exclude conditions that would require school buses to be backed on the school premises.

18. All pupil loading and unloading should be provided for on the school site.

19. Plans for loading facilities should include separate areas specially designed for handicapped pupils. Attention should be given to entrance ramps and handrails.

20. Plans for roads and loading areas should accommodate emergency vehicles which must have access to the school at all times.

21. Where necessary, traffic control devices should be provided to assist school traffic to enter regular flow.

APPENDIX E

POLICIES AND PROCEDURES FOR PUPIL MANAGEMENT

1. The bus driver's authority over, and responsibility for, pupils while in transit.

2. The pupil's right to due process when disciplinary action is taken.

3. A step-by-step procedure for resolving problems when the driver needs assistance.

4. The conditions under which a pupil might be temporarily or permanently suspended from the bus riding privilege.

5. Procedures for handling emergencies.

6. Use of bus monitor or bus attendants.

7. Requirements and responsibility for school bus passenger and pedestrian safety instruction.

8. Parent's or guardian's responsibility for damage caused by their children to the bus or its equipment.

APPENDIX E

EVALUATION CHECKLIST FOR SCHOOL BUS DRIVEWAYS IN THE VICINITY OF THE SCHOOL

NAME OF THE SCHOOL:_____ DATE: _____

LOCATION OF THE SCHOOL: _____

	YES	NO	DOES NOT APPLY
1. School bus loading areas are provided on the school site.	☐	☐	☐
2. When loading and unloading of school pupils take place on main thoroughfare in front of the school, the roadway has a minimum width of 40 feet of hard surface.	☐	☐	☐
3. The driveway leading to and from the loading and unloading area for school buses has a minimum width of 30 feet of paved surface.	☐	☐	☐
4. If diagonal parking is provided for buses in the loading and unloading area, a minimum width of 60 feet of paved surface is available.	☐	☐	☐
5. Parking for loading and unloading of pupils at school is bumper-to-bumper() or diagonal(); in either case, the necessity for backing does not exist.	☐	☐	☐

6. The school bus is not required to back anywhere on school property.	☐	☐	☐
7. All school bus movement on the school grounds is one-way in a counter-clockwise direction.	☐	☐	☐
8. School bus traffic does not completely encircle the school building.	☐	☐	☐
9. The driver has proper sight distance at all points along the driveway.	☐	☐	☐
10. Crosswalks for pupils do not exist at the entrance to the school bus driveway.	☐	☐	☐
11. Separation is maintained between school bus traffic and all other traffic.	☐	☐	☐
12. Vehicular pickup points for non-bus pupils are on separate driveway from that used by school buses.	☐	☐	☐
13. Curbing and suitable drainage are provided along driveways.	☐	☐	☐
14. Curbing and driveway construction comply with state highway specifications.	☐	☐	☐
15. At ingress and egress areas to and from the school, there is a minimum radius on inner edge of driveway pavement from 50 to 100 feet.	☐	☐	☐
16. On the school site, there is a			

minimum radius of inner edge of driveway pavement of 60 feet.	☐	☐	☐
17. Between reverse curves, at least a 50-foot tangent section is provided.	☐	☐	☐
18. At ingress and egress points a maximum grade of 2% is adhered to.	☐	☐	☐
19. A maximum grade of 5% is adhered to on the school bus driveway within the school site.	☐	☐	☐

NOTE: A "yes" answer for each of the items indicates a well-planned traffic pattern for school buses.

SIGNATURES:

Person making the report: _____

Director of School Transportation: _____

NOTE: Most of the items included in this Evaluation Checklist are based on a 1966 Report of the Special Committee on School Plant Evaluation "School Planning: Safe Transporting." Bureau of Pupil Transportation, Department of Education, Trenton, New Jersey 08652.

APPENDIX E

PUPIL RULES
Supervision and Disciplinary Guidelines

1. Pupil shall follow directions of the driver the first time given.

2. Pupil shall arrive at the bus stop before the bus arrives.

3. Pupil shall wait in a safe place, clear of traffic and away from where the bus stops.

4. Pupil shall wait in an orderly line and avoid horseplay.

5. Pupil shall cross the road or street in front of the bus only after the bus has come to a complete stop and upon direction of the driver.

6. Pupil shall go directly to an available or assigned seat when entering the bus.

7. Pupil shall remain seated and keep aisles and exits clear.

8. Pupil shall exhibit classroom conduct at all times.

9. Pupil shall refrain from throwing or passing objects on, from or into buses.

10. Pupil is permitted to carry only objects that can be held on his/her lap.

11. Pupil shall refrain from the use of profane language, obscene gestures, tobacco, alcohol, drugs or any other controlled substance on the bus.

12. Pupil shall refrain from eating and drinking on the bus.

13. Pupil shall not carry hazardous materials, nuisance items and animals onto the bus.

14. Pupil shall respect the rights and safety of others.

15. Pupil shall refrain from leaving or boarding the bus at locations other than the assigned stops at home or school.

16. Pupil shall refrain from extending head, arms or objects out of the bus windows.

17. Pupil shall refrain from hitching rides via the rear bumper or other parts of the bus.

WHEN LEAVING YOUR BUS:

Here's How to Cross the Road SAFELY

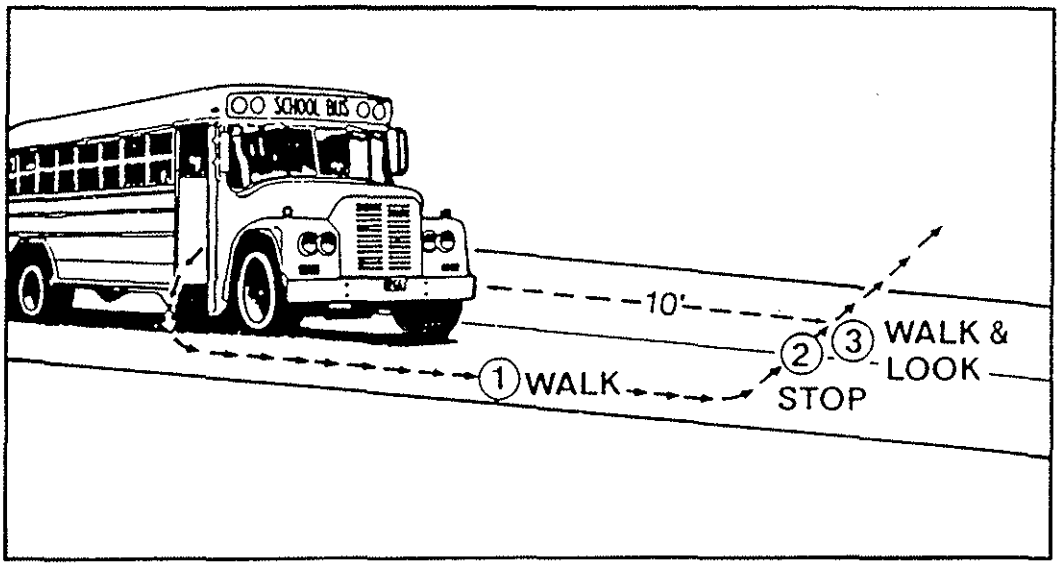
WALK—along the side of the road until you can see your driver

STOP—wait for the signal to cross

WALK & LOOK—for traffic both ways

—if you see a vehicle that has not stopped, go back to the bus immediately

—if all vehicles have stopped, cross the road quickly



Crossing the Highway is DANGEROUS

REMEMBER

- WALK
- STOP
- WALK & LOOK

Drivers SHOULD stop...But THEY MAY NOT!

WHEN BOARDING YOUR BUS:

Here's How to Cross the Road SAFELY

FOLLOW THE 10 FOOT RULE:

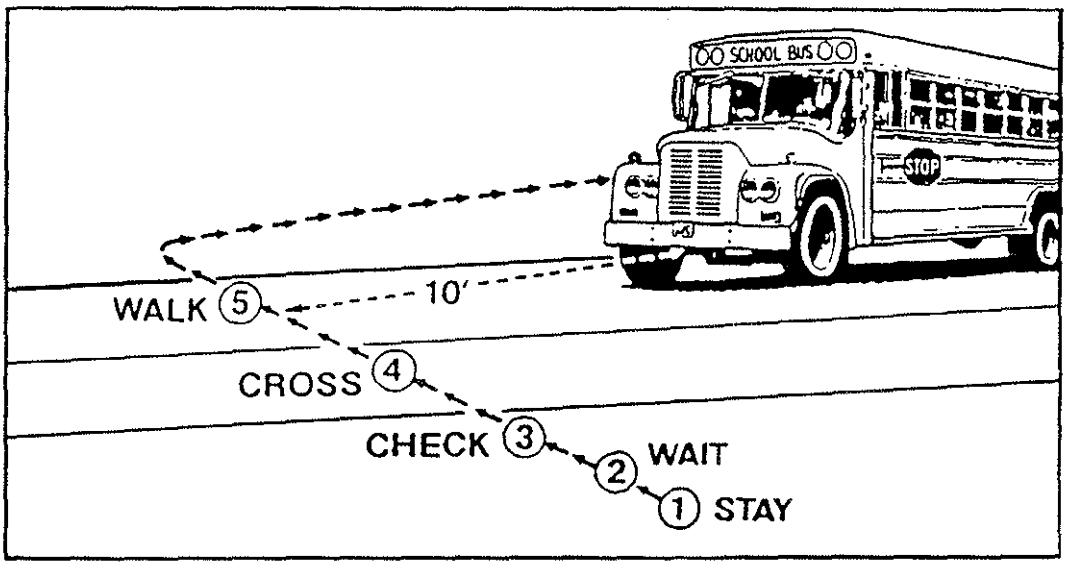
STAY—on your side of the road—far away from the traffic

WAIT—for the bus to stop and for your driver's signal to cross

CHECK—traffic both ways—then check again

CROSS—walk directly across, checking traffic both ways

WALK—approximately 10 feet ahead of the bumper and board bus quickly



REMEMBER

- Stay on your side of the road until your driver signals you to cross
- Check and recheck for traffic
- Follow the 10 foot rule
- Board bus quickly—go directly to your seat

Drivers SHOULD stop...But THEY MAY NOT!

APPENDIX E

BUS CONDUCT REPORT

Bus No. _____ School _____
Date _____

Pupils in the School District who ride buses are subject to rules and regulations designed to provide safe transportation to and from school. Any behavior which distracts the driver is a serious hazard to the safe operation of the vehicle, and as such, jeopardizes the safety of all passengers. Consequence of continued inappropriate behavior could result in your child being denied the bus riding privilege.

_____ has been cited for an infraction of the rules checked below:
(name)

☐ Failure to remain seated
☐ Scuffling or fighting
☐ Profanity or obscene language
☐ Smoking on the bus
☐ Throwing objects on bus
☐ Extending arm or head out window
☐ Lighting matches
☐ Throwing objects from window
☐ Refusing to obey driver
☐ Bothering others
☐ Other (See Comment)

☐Possession of harmful or illegal items.

COMMENT: _____
_____

Driver's Signature: _____

DATE OF OFFENSE: _____ FIRST OFFENSE _____

SECOND OFFENSE _____ THIRD OFFENSE _____

SCHOOL ADMINISTRATOR'S ACTION: _____
_____
_____

School Administrator's Signature _____

PARENT/GUARDIAN'S COMMENT _____
_____

PLEASE SIGN AND RETURN TO SCHOOL ADMINISTRATOR

Parent/Guardian's Signature _____

White-School Administrator's Copy
Pink-Parent/Guardian's Copy
Canary-Bus Driver's Copy
Gold-Pupil's Copy

First offenses require at least a notification to the pupil and parent or guardian either by phone or in person by appropriate school personnel. Second and subsequent offenses may require a conference with the pupil, parent or guardian, driver and school administrator(s) which may result in a period of suspension of pupil's riding privileges.

A form such as the one above should be used for reporting purposes.

APPENDIX E

RECOMMENDED PROCEDURES FOR SCHOOL BUS DRIVERS AT RAILROAD GRADE CROSSINGS

General

1. The driver of any school bus, whether carrying passengers or not, must before crossing any track or tracks of a railroad, bring the bus to a full and complete stop within not less than fifteen feet or more than fifty feet from the rails nearest the front of the bus.

2. When drivers are making stops for railroad crossings, they shall carefully observe traffic and reduce speed far enough in advance to avoid trapping other motorists in panic stops or rear-end collisions with the bus. On multiple lane roadways, no such stops shall be made in the center or left-hand lanes.

3. No special signs, signals or flashers designated for use on school buses shall be activated while the bus is stopped or stopping for this purpose. Note: The option to activate hazard lights or four-way flashers is at the discretion of the transportation agency or regulated by state statute.

4. The driver, when stopped, shall fully open the service door and driver's window, and must, after the stop and while so stopped, listen and look in both directions along the track or tracks for approaching engines, trains or cars. Upon resumption of motion, the service door may be closed.

5. If the view of the track or tracks, for a distance of one thousand feet in either direction is not clear or is obstructed in any way, no portion of the bus may be propelled onto the tracks until, by personal inspection, the driver has made certain that no train is approaching. In no instance may a signal indicating safety be considered as conclusive or serve to abrogate this precaution.

6. Drivers shall, in every instance, cross in a gear that will not necessitate changing gears while traversing such crossing and shall not, under any circumstances, shift gears while actually crossing tracks or railroad crossings.

7. In the event that a train has passed over the crossing, no bus driver shall drive the bus onto the track or tracks until such train has sufficiently cleared the crossing so that the driver is certain that no train, hidden by the first train, is approaching on an adjacent track.

8. For improved hearing, all noisy equipment (fans, etc.) should be off until the bus has cleared the crossing.

At Crossings Controlled by Signals Only

1. In addition to the above, the driver of a school bus which has stopped at any railroad track or tracks where there are flashing red lights and/or bells in operation, shall not proceed across such track or tracks unless by authorization from a law enforcement officer or train personnel, though this does not relieve the driver of personal responsibility for safe crossing.

2. In the event that switching operations or stopped trains delay the use of the crossing unnecessarily for frequent or extended periods of time, complaint should be made through proper channels to railroad management and traffic authorities.

At Crossings Controlled by Crossing Gates or Barriers

1. No bus driver shall drive the bus through, around or under any crossing gate or barrier at a railroad crossing while such gate or barrier is closed or being opened or closed.

2. The bus driver must never accept a lack of movement as indicating that the device is either in or out of order or not properly operating, but must always take a railroad grade crossing as a conclusive warning of danger and must not cross the tracks until the bus driver has conclusively ascertained that no train is approaching.

Weather Conditions

During wet, stormy or foggy weather, before placing part of the bus on the tracks, the driver must know conclusively that the crossing can be made safely. Any use of flares, etc., in addition to warning signals or devices maintained at such railroad crossings, must be taken as an additional warning of danger.

Management of Passengers

When any school bus must stop to cross any railroad track, all passengers must be silent until the crossing is completed. A signal for silence shall be given by the driver in whatever manner is deemed suitable.

Adapted from Fact Sheet, "Recommended Procedures for School Bus Drivers at Railroad Grade Crossings," revised, School Transportation Section, 1984, National Safety Council, 1121 Spring Lake Dr., Itasca, IL 60143-3201.

APPENDIX E

TRIP REQUEST FORM

Trip Date _____ School _____

Trip Destination _____

Depart from: _____ No. Passengers: _____

Extra Equipment_____

Departure Time: _____ Arrival Time: _____

Meal Stop Required ☐ yes ☐ no If yes, where _____

_____

Purpose of Trip_____

_____

Transportation Requested by: _____ Date: _____

Approved by: _____ Date: _____

Reimbursement Category:

TRANSPORTATION USE

Vehicle Assigned: _____ Driver: _____

Spot Time: _____ Spot Location: _____

Routing Information: _____

_____

Dispatcher Signature: _____ Date: _____

Time Out: _____ Time In: _____ Total Time: _____

Mileage Out: _____ Mileage In: _____ Total Miles: _____

Actual No. Passengers: _____

Remarks: _____

_____

_____

_____

Driver's Signature: _____ Date: _____

APPENDIX E

INSTRUCTIONS FOR CONDUCTING EMERGENCY EXIT DRILLS

There is an urgent need, due to the increased number of pupils being transported and the ever-increasing number of accidents on the highways, to instruct pupils on how to properly vacate a school bus in case of an emergency. It is possible for pupils to block the emergency door if all are trying to get out at the same time. There is also a possibility of danger when pupils jump from the rear emergency door exit. To avoid these situations, schools should organize and conduct emergency exit drills for all pupils who ride the school bus, even occasionally.

Reasons for actual emergency evacuations:

1. Fire or danger of fire. Being near an existing fire and unable to move the bus, or being near the presence of gasoline or other combustible material is considered dangerous and pupils should be evacuated. The bus should be stopped and evacuated immediately if the engine or any portion of the bus is on fire. Pupils should be moved to a safe place 100 feet or more from the bus and instructed to remain there until the driver has determined that the danger has passed.

2. Unsafe position. When the bus is stopped because of an accident, mechanical failure, road conditions, or human failure, the driver must determine immediately whether it is safer for pupils to remain on or evacuate the bus.

3. Mandatory evacuations. The driver must evacuate the bus when:

    a. Fire or threat of fire is apparent.

    b. The final stopping point is in the path of a train or adjacent to railroad tracks.

    c. The stopped position of the bus may change and increase the danger (e.g., a bus comes to rest near a body of water or at a precipice where it could still move and go into the water or over a cliff). The driver should be certain that the evacuation is carried out in a manner which affords maximum safety for the pupils.

    d. The stopped position of the bus is such that there is danger of collision.

4. Sight distance. In normal traffic conditions, the bus should be visible for a distance of 300 feet or more. A position over a hill or around a curve where such visibility does not exist should be considered reason for evacuation.

5. Important factors pertaining to school bus evacuation drills:

   a. Safety of pupils is of the utmost importance and must be first considered.

   b. All drills should be supervised by the principal or by persons assigned to act in a supervisory capacity.

   c. The bus driver is responsible for the safety of the pupils. When the driver is incapacitated and unable to direct the evacuation, school patrol members, appointed pupils or adult monitors should be authorized to direct these drills. It is important to have regular substitutes available.

6. Pupils appointed to direct evacuation drills should possess the following qualifications:

   a. Maturity.

   b. Good citizenship.

   c. Live near end of bus route.

7. Appointed pupils should know how to:

   a. Turn off ignition switch/shut down engine.

   b. Set emergency brake.

   c. Summon help when and where needed.

   d. Use kick out windows or emergency escape exits.

   e. Set warning devices.

   f. Open and close doors, and account for all pupils passing the station.

   g. Help small pupils off bus.

   h. Perform other assignments.

   i. Use of electronic voice equipment to summon help.

      (1) School Bus Driver and attendants should be active participant.

(2) Drills should be scheduled in a manner similar to fire drills held regularly in schools. They should be held more often during fall and spring months and conducted when the bus arrives at the school building with the pupils.

(3) Drills should be restricted to school property and conducted under the supervision of school officials.

(4) Types of drills should be varied.

8. Driver should stay in bus during evacuation drill. He/she must set the parking brake, turn the engine off and place the manual transmission in gear.

9. Pupils should not be permitted to take lunch boxes, books, etc., with them when they leave the bus. The objectives are to get pupils off safely in the shortest time possible; and in an orderly fashion.

10. Pupils should travel a distance of at least 100 feet from the bus in an emergency drill and remain there until given further directions.

11. All pupils should participate in the drill, including those who ride only on special trips.

12. Each pupil should be instructed in proper safety precautions.

13. Pupils should be instructed in how and where to obtain assistance in emergencies. Written instructions and telephone numbers should be posted in the bus.

14. There are several different drills:

a. Everyone exits through the front entrance doors and emergency door configurations.

b. Everyone exits through the rear-most emergency door(s).

c. Front half exits through the front door and rear half exits through the rear-most door.

d. All rear engine buses are equipped with a left side emergency door in lieu of a rear emergency door (see diagram). (insert) This exit should also be utilized for evacuation drills.

e. Some states also require side emergency doors in addition to rear emergency doors.

f. Students should be familiar with the operation of emergency windows, both side and rear, and roof hatches. All exits should be opened by students during evacuation drills to ensure their ability to operate such devices.

g. Every school bus driver shall ensure the students assigned to their bus are familiar with the emergency exit configuration of their assigned bus.

h. Identification of seat rows and positions similar to airline seating is recommended, i.e., left front seat 1, a, b, c, right front seat 1, d, e, f, etc. (See Diagram)

APPENDIX E
EVACUATION PROCEDURES
for
ACTIVITY TRIPS AND FIELD TRIPS

In order to ensure the safety of school bus passengers in an actual emergency, every school bus driver assigned to transport students on activity trips or field trips, shall assign an evacuation team prior to each trip. The team may consist of teachers, coaches, students or any other passenger. A roster should be provided to the driver accounting for all passengers.

Passengers assigned to evacuation teams must be seated where they can effectively carry out their responsibilities in an emergency.

Each Evacuation Team will consist of at least the following:

1. A passenger assigned to set the parking brake, turn off the engine, turn on warning flashers and to call in on the radio or other means, and report the incident to the Transportation Department, in case the driver is unable to do so.

2. A passenger assigned to lead passengers to a safe location at least 100 feet from the bus and for taking the first aid kit off the bus.

3. Two passengers assigned to stand outside the bus, next to the front door, to help students exit the bus and for taking the fire extinguisher.

4. Two passengers assigned to stand outside the bus next to the rear door, to help students exit the bus.

In addition to assigning an evacuation team, the following information shall be discussed and/or demonstrated prior to each activity trip or field trip:

1. Location and use of the fire extinguisher.

2. Location of the first aid kit.

3. Location of the warning reflectors.

4. Location and use of all emergency exits.

5. How to shut off the engine and set the parking brake.

6. How to open the service door, to include, safety releases on manual, air or vacuum doors, if so equipped.

7. Instruct passengers to keep aisles clear at all times and not to block emergency exists.

THE DRIVER OF THIS TRIP DID ASSIGN AN EVACUATION TEAM AND EXPLAINED THE EMERGENCY PROCEDURES TO OUR GROUP.

_____

Sponsor

APPENDIX F

SPECIAL NEEDS STUDENT TRANSPORTATION

- ✔ Characteristics of Disabilities as Defined in IDEA
- ✔ Special Education Department Forms
- ✔ Procedures for Lifting Passengers
- ✔ Continum

APPENDIX F

SPECIAL EDUCATION DEPARTMENT FORMS

Form 1

A. CONSENT FOR DISCLOSURE OF MEDICAL INFORMATION AND RECORDS

TO: _____

_____

_____

(Physician's Name and Address)

I, _____, the (parent/guardian) of _____(Student)consent and authorize you to disclose and provide to the _____, its nursing and other necessary staff, upon (School District) their request, any information or records which you have or have obtained concerning the diagnosis, evaluations, tests, medical problems or conditions, medications, or treatments of my child or ward named above.

It is the expressed intent of this document to waive any and all privileges which I or my child or ward might have with respect to disclosure of the above information and records to the school district, including the doctor-patient privilege, psychologist-client privilege, and social worker-client privilege.

_____

Signature of Parent or Guardian

Dated: _____

PLEASE RETURN TO: _____

_____

Form 2

B. REQUEST FOR MEDICAL VERIFICATION OF HEALTH STATUS AND NEEDS

_____ SCHOOL DISTRICT

_____

_____

_____

(Address)

NAME: _____ BIRTH DATE: _____

ADDRESS: _____ PHONE: _____

PARENT/GUARDIAN NAME: _____

PHONE: _____

ADDRESS (IF DIFFERENT): _____

PHYSICIAN: _____ PHONE: _____

Note to Physician: Should you have any questions regarding

this request, please contact _____

Phone _____

I. VERIFICATION OF MEDICAL, HEALTH AND BEHAVIOR STATUS.

A. Briefly describe the current medical, health and behavioral status.

B. Identify any medical conditions not addressed in A above.

C. Identify any health concerns that are not addressed in A above.

D. Identify any behavioral concerns that are not addressed above.

II. PARTICIPATION IN THE SCHOOL DAY PROGRAM

A. Briefly describe the staff supervision and interventions necessary for the student to safely participate in the normal school day program given the student's health and medical status.

B. Identify the training required for all staff including bus attendants and drivers to provide the supervision and interventions addressed in A above.

C. Identify any additional restrictions or modifications in school activities or medical care that would be necessary for student to safely participate in the school day program.

D. Identify any additional special equipment, aids, restraints, or mobility assistance needed for student to safely participate in the school day program.

Form 3

C. MEDICAL PROCEDURE AUTHORIZATION

I delegate and authorize the staff* of the _____School District to perform for _____ (student) the acts, tasks, and functions indicated on the Request for medical Verification of Health Status and Needs, dated _____ which I previously provided to the district. This authorization is subject to the condition that district staff assigned to perform these activities have been provided the required training as specified in the above Request.

I have reviewed the attached procedures for _____(procedure) which will be utilized and approve them, subject to any specific modifications necessary for this student which I have noted on the procedures.

I agree to supervise the performance of these activities and procedures by being continuously available through direct communications with district staff performing them and by regularly reviewing the student's health/medical status and needs, as well as the procedures being utilized by the staff.

_____

Signature of Physician Date

Form 4

D. STUDENT TRANSPORTATION CARD – SPECIAL NEEDS STUDENTS

Students Name: _____ Date: _____Address: _____
_____Home Phone: _____ Father's Work Phone: _____
Mother's Work Phone: _____ Emergency Phone: _____Please check appropriate type of transportation for your child:

☐ Walks to bus unassisted
☐ Walks to bus, but needs assist.
☐ Requires a car seat
☐ Wheelchair
☐ Needs to be carried
☐ Requires Special Restraint
☐ Booster seat
☐ Positioning Devices
☐ Special Equipment
☐ Requires Attendant

Needs to be met at school? _____Other (Specify) _____
_____On return/home, needs to be met at Bus Stop? _____
Names & Addresses of persons nearby student's residence who have consented to care for the student if the parents are not available:

Name:_____Address:_____Phone:_____

Name:_____Address:_____Phone:_____

Name:_____Address:_____ Phone:_____

Please check if any of the following applies to your child:

☐ Asthma ☐ Heart Disease ☐ Diabetes ☐ Blind ☐ Deaf

☐ Chronic Respiratory Problems ☐ Non-Verbal ☐ Bee Sting ☐ Hemophiliac

☐ Allergies--to what?

_____

Seizures: How long does seizure last? _____How often do they occur? _____

Action needed, if any _____Is your child on medication? ☐ Yes ☐ No If yes, what medication, what dosage, and when given?

_____Family Doctor: _____Address: _____

_____Doctor's Phone Number: _____

Family Designated Hospital: _____**Parental Contact:** If possible and practical, in the event of major emergency, parent contact will be made.

Parental Approval: If in the opinion of the driver a major emergency exists, the parent(s) have agreed in writing and will assume the cost of:

1. Contacting the family doctor ☐ Yes ☐ No
2. Contacting any doctor available ☐ Yes ☐ No
3. Contacting rescue squad ☐ Yes ☐ No
4. Transporting to designated hospital ☐ Yes ☐ No

Other Helpful Information: _____

_____As

parent or guardian, I agree to one or more of the above procedures as indicated and agree that this information may be shared with my child's transporter. CONFIDENTIALITY WILL BE MAINTAINED

Date: _____

Parent or Guardian's Signature _____

DO NOT WRITE BELOW THIS LINE

_____

Bus Company _____

Bus No. _____ Telephone _____

Special Instructions for Driver _____

_____

_____SCHOOL DISTRICT

_____

_____

(Address)

TRANSPORTATION SERVICE REQUIREMENTS FOR PASSENGERS WITH HEALTH CONCERNS

DATE:_____ ASSIGNED SCHOOL:_____
GRADE LEVEL:_____ SPECIFIC PROGRAM:_____
HOME SCHOOL:_____
NAME OF STUDENT:_____
BIRTH DATE:_____ STUDENT I.D. #_____
HOME ADDRESS:_____ ZIP:_____
HOME PHONE:_____
A.M. PICK-UP LOCATION:_____PHONE:_____
P.M. DROP-OFF LOCATION:_____PHONE:_____
PARENT(S) NAME:_____
FATHER'S WORK PHONE:_____MOTHER'S WORK PHONE:_____

EMERGENCY / ALTERNATE CONTACT:
Name:_____Phone:_____
Address:_____
Name:_____Phone:_____
Address:_____

EMERGENCY MEDICAL INFORMATION:
Student's Doctor:_____Phone:_____
Hospital Preference:_____
Address:_____

ALLERGIES:_____
MEDICATION STUDENT IS UNDER:_____
DOSAGE:_____
SPECIAL INSTRUCTIONS FOR ATTENDING PHYSICIAN (S):_____
_____
_____
_____
SPECIFIC INSTRUCTIONS IF PARENT (S) ARE NOT AT HOME:_____
_____
_____
LEVEL OF SUPERVISION REQUIRED (attach Medical Procedure Authorization and procedure): _____

REQUIRED TRAINING FOR SUPERVISION:_____

INTERVENTIONS REQUIRED (attach Medical Procedure Authorization and procedures):_____

REQUIRED TRAINING FOR INTERVENTIONS:_____

OTHER ADDITIONAL RESTRICTIONS OR MODIFICATIONS NECESSARY TO TRANSPORT STUDENT:_____

DISABILITY CONDITIONS AFFECTING TRANSPORTATION:_____

SPECIAL EQUIPMENT, AIDS, OR MOBILITY ASSISTANCE REQUIRED:_____

ADDITIONAL COMMENTS / INSTRUCTIONS:_____

PROCEDURE IF CHANGE IN SERVICES NECESSARY: If there are any changes in the student's health, medical or behavior status which the parent(s), physician, transportation, or other school staff believe may merit changes in staffing, precautions to be taken, interventions, restraints, or any other procedure noted above, the concerned party shall immediately contact _____ (Phone:_____) who will in turn initiate the process to evaluate and recommend necessary changes with the involvement of parents(s), physician, school, and transportation staff

APPROVAL OF TRANSPORTATION SERVICE REQUIREMENTS: Each of the following persons has participated in the development of these transportation service requirements and by signing below approves them for implementation.

Dated:_____ _____
Signature of Parent / Guardian

Dated:_____ _____
Signature of School District Representative

Dated:_____ _____
Signature of Transportation Staff Representative

Dated:_____ _____
*Signature of Private Contracted Transporter

Dated:_____ _____
*Signature of School Nurse

Dated:_____ _____
*Signature of Physician

*If an appropriate signature under the circumstances.

cc: All transportation Service Providers

APPENDIX F
PROCEDURE FOR LIFTING PASSENGERS

PURPOSE: The purpose of proper lifting techniques is to move the passenger without injury to yourself or the passenger.

BASIC RULES

1. Tell the passenger what you are going to do.

2. Estimate the weight of the passenger. (NEVER ATTEMPT TO CARRY A STUDENT ALONE WHO WEIGHS MORE THAN HALF YOUR OWN WEIGHT) unless the safety of the student is in immediate danger, and no assistance is available.

3. Always attempt to get help if you have any doubts about your ability to lift the student. If there is only a driver on a bus, and the necessity for an emergency evacuation develops, some districts suggest that the driver activate the alternating red lights, as the evacuation procedure is truly an UNLOADING PROCEDURE. Such action can draw attention from motorists that you need assistance. District policy should determine if this procedure is appropriate.

4. Be sure your path is CLEAR.

5. Stand with both feet firmly planted, about shoulder width apart for good balance.

6. Always bend from knees, not from back, so that you use your thigh muscles and buttock muscles rather than you back muscles to do the lifting.

7. When lifting and carrying, keep the student as close to your own body as possible.

8. Shift the position of your feet to move. DO NOT TWIST YOUR BODY. Take small steps to turn.

SINGLE PERSON LIFT

1. Follow the basic rules 1-8. Most strains, fatigue, and back injuries caused by lifting are due to using the WRONG muscles. Use your STRONG LEG AND BUTTOCK MUSCLES (by bending at the knees and hips) NOT YOUR BACK MUSCLES. Maintain the normal curves of the spine when lifting and avoid rounding of the upper back. (Keep your back straight)!

2. Keep equal weight on both feet and lower yourself to the level of the student by bending your knees and hips before lifting.

3. Once in position, put one arm around the upper back and the other under both knees.

TWO PERSON LIFT

1. Follow basic Rules 1-8.

2. TO LIFT FROM A WHEELCHAIR:

   A. Position the wheel chair as close to your destination as possible. In an emergency situation, to save time and congestion, leave the chair where it is strapped and blanket pull or carry the student to the appropriate exit location.

   B. One person stands in front to the side, the other in back.

   C. The person in front removes the arm rest (if detachable) and folds up the footrest.

   D. The person in back removes the seat belt and any other positioning device.

   E. The person in fron, bending from knees and hips, lowers himself or herself to place one arm under the student's knees and the other under the occupants thighs.

   F. Person in back, places his or her arms under student's armpits, reaching forward to grasp both student's wrists firmly. (Your right hand to student's right wrist; left hand to left wrist).

   G. Lift together on the count of 3. (REMEMBER TO USE YOUR LEGS AND BUTTOCK MUSCLES TO LIFT).

   H. Walk to area where student is to be placed and lowere on the county of 3, bending from the knees and hips.

3. TO LIFT FROM A BUS SEAT:

   A. Use the same procedure as above, but first, SLIDE THE STUDENT TO THE EDGE OF THE BUS SEAT NEAR THE AISLE.

BLANKET LIFT

1. Fold a blanket in half, place on the floor as close to the child as possible.

2. Follow lifting rules 1-8 and lower the student to the blanket.

3. ONE PERSON LIFT: Place the student's head toward the direction of exit, lift the blanket from head and slide to safety.

TO ASSIST A PERSON UP STAIRS

1. Follow basic rules 1-8.

2. Curl the student up as much as possible. Keep the student's arms and legs from flopping loosely. This flopping could throw you off balance, and cause a fall.

3. Support the student's head and neck as you would an infants.

4. Do not lift students up by an arm or leg except in extreme emergency.

5. Slow rocking or a firm holding will help to relax a very "tense" student.

BASIC BODY MECHANICS

1. Size up load and don't hesitate to ASK for help.

2. Be sure that the passenger knows you are going to lift him/her.

3. Plan ahead: How you will lift and where you are going.

4. Bend your knees and hips instead of your back. Keep your back straight. Maintain the normal curves of the spine as lifting.

5. Keep your feet apart while lifting to give a broad base of support.

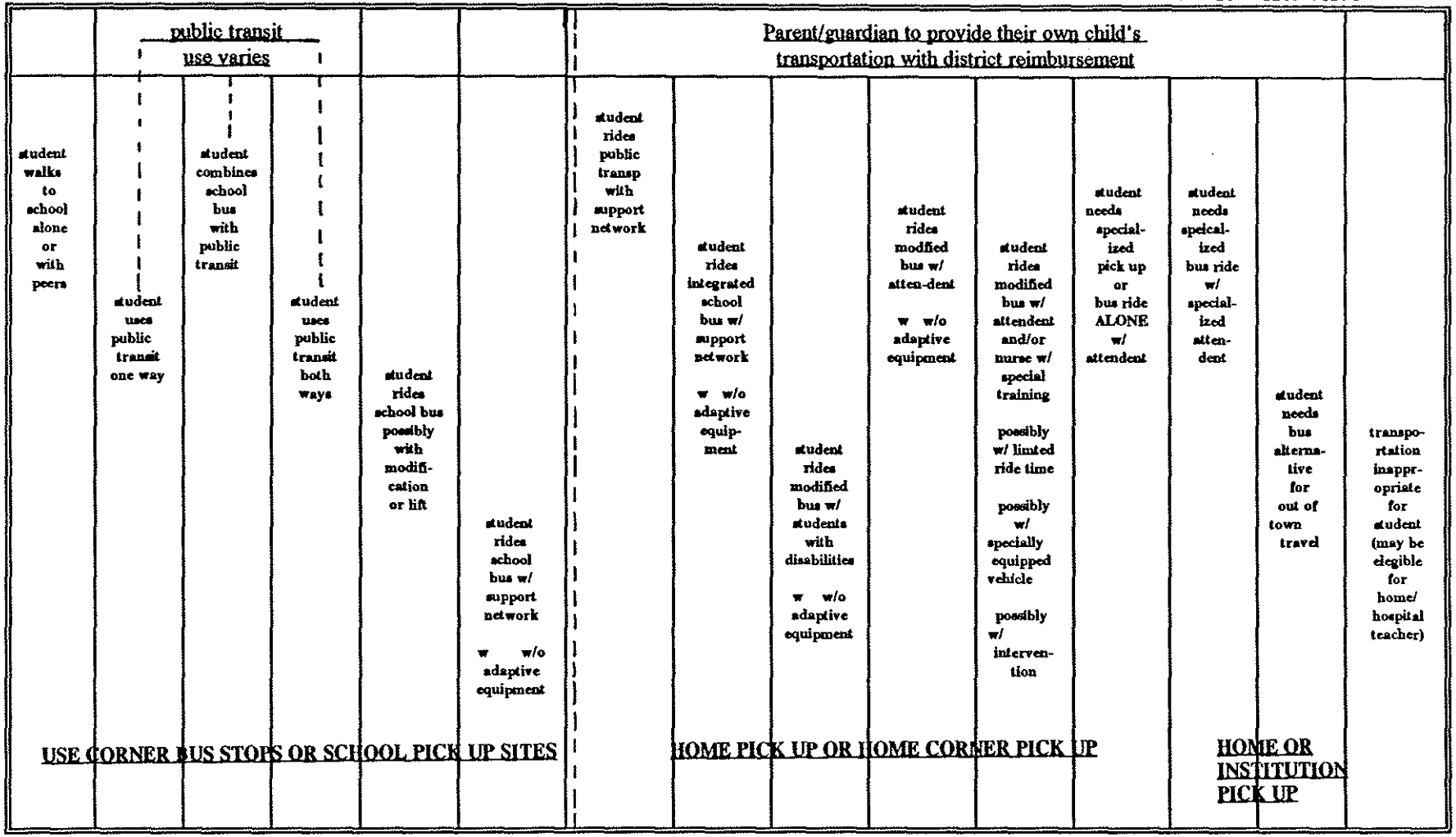
6. Keep the person CLOSE to you.

7. If lifting with someone else, lift smoothly and together. Count 1,2,3.

8. Take small steps. Never twist your body while lifting or carrying.

SAMPLE CONTINUIM
OF TRANSPORTATION SERVICES FOR STUDENTS WITH DISABILITIES
(CHOICE OF OPTION THAT MAY BE AVAILABLE AS APPROPRIATE)

Least Restrictive — **Most Restrictive**



APPENDIX G

INFANTS AND TODDLERS

✔ Laws

APPENDIX G

INFANTS AND TODDLERS

1. Definitions: Infants, Toddlers and Preschool Children

For the purpose of clarification, the following terms are defined:

Newborn is a child from birth to one month.

Infant is a child from one month to one year.

Toddler is a child from one year to three years.

Preschooler is a child from three years to five years.

Note: Individual programs may have variations in how these four terms are used. State laws, policies and guidelines may contain variations in the age range used to define the terms infants, toddlers and preschooler. If not specified newborn will be included in the infant category.

2. Laws Impacting the Transportation of Infants, Toddlers, and Preschool Children

There are a number of laws that impact decision-making and the transportation of infants, toddlers, and preschool children. They include:

Public Law 93-112
The Rehabilitation Act of 1973 (§504)

Public Law 94-142
The Education for all Handicapped Children Act of 1975

Public Law 97-35
The Head Start Act (§635)

Public Law 99-372
The Handicapped Children's Protection Act of 1986

Public Law 99-457, Part H
The Handicapped Children Amendments of 1986

Public Law 101-336

The Americans with Disabilities Act of 1990

Public Law 101-476, Part B
Individuals with Disabilities Education Act of 1990

Public Law 102-119
The Individuals with Disabilities Education Act Amendments of 1991

a. Public Law 93-112
The Rehabilitation Act of 1973 (§504)

This law constituted the first national declaration of the rights of individuals with handicaps. Section 504 prohibits the discrimination against individuals with handicaps by any recipient of federal funding. It includes young children with a handicap who would otherwise be qualified to participate in and benefit from programs or other activities receiving federal financial assistance.

b. Public Law 94-142
The Education for all Handicapped Children Act of 1975

This law guaranteed that a "free appropriate public education," including special education and related services, be provided to all handicapped children. It detailed steps that must be taken in identifying and evaluating children with handicaps, provided that handicapped students must be educated with other non-handicapped students to the maximum extent appropriate in the LRE, and established an elaborate system of procedural safeguards to ensure parental participation in the development and approval of the IEP. Transportation is one of the related services defined in the regulations. It is an important related service because it provides access to all other special education and related services.

c. Public Law 97-35
The Head Start Act (§635)

The Head Start program was initiated in 1965 as a comprehensive child development program to serve primarily low-income children. Predominately, the ages served are from three to compulsory school attendance. However, this program has been expanded to provide services that include infants, toddlers and children with disabilities. The regulations require that a minimum of 10 percent enrollment be available to children with disabilities. While Head Start is intended to serve children that are from low-income families, the regulations permit up to 10 percent of the children served be from families that are not low-

income. To assist young children reach their full potential, Head Start provides a comprehensive program that includes health, nutritional, educational, social and other services. One of the requirements of Head Start is the direct participation of parents of children enrolled.

d. Public Law 99-372
The Handicapped Children's Protection Act of 1986

This law amended the Education for all Handicapped Children Act of 1975 to authorize the award of "reasonable attorneys' fees" to parents who prevail in due process hearings and judicial proceedings under Part B of the Education for all Handicapped Children Act of 1975. This is extremely important because disputes that arise about the related service transportation under Part B can result in costly recovery of attorney fees awarded by the courts to parents.

e. Public Law 99-457, Part H
The Education of the Handicapped Act Amendments of 1986

Within a decade of the passage of the EHA, Part H was passed to assist states in establishing statewide, comprehensive early intervention services for children with handicaps from birth through two years old with handicaps and their families. Based on the recognition that early intervention enhances the development of handicapped children, this law provides states with financial incentives. Borrowing from IDEA, this law requires that children receive early intervention services as specified in an IFSP. As used in this part "developmental delay" is defined by the states. Each state must designate the criteria used to determine eligibility for services. Therefore, the types of children served under Part H programs nationwide are in part influenced by a state's definition of this population. Transportation is considered an early intervention service and is defined in the Part H regulations.

f. Public Law 101-336
The Americans with Disabilities Act of 1990

The Americans with Disabilities Act (ADA) is a comprehensive civil rights law that enforces the non-discrimination of persons with disabilities. It does not change or diminish existing provisions of federal law protecting individuals with disabilities under Section 504 or IDEA. The ADA creates a higher standard of non-discrimination than does Section 504 in that it applies regardless of whether federal funding is received. This law applies to all ages including young children with disabilities. As stated in the statute, the purpose of the ADA are:

(1) to provide a clear and comprehensive national mandate for the

elimination of discrimination against individuals with disabilities;

(2) To provide clear, strong, consistent, enforceable standard addressing discrimination against individuals with disabilities;

(3) to ensure that the federal government plays a central role in enforcing

the standards established in this Act on behalf of individuals with disabilities;

(4) to invoke the sweep of congressional authority, including the power to enforce the Fourteenth Amendment and to regulate commerce, in order to address the major areas of discrimination faced day-to-day by people with disabilities.

The ADA regulation specifically exempts school buses from some of its requirements, but does not exempt access to transportation services for infants, toddlers, and preschool children.

g. Public Law 101-476, Part B
Individuals with Disabilities Education Act of 1990

This act renamed the Education for all Handicapped Act of 1975 the Individuals with Disabilities Education Act (IDEA). All previous references to "handicapped children" were changed to "children with disabilities." Transportation is defined in the regulations as a related service under the Act. In addition, two new categories of disabilities were added: "autism" and "traumatic brain injury." The law also broadened the definition of the terms "assistive technology device" and "assistive technology service." The addition of assistive technology service is raising questions regarding responsibility for purchase, lease, selection, adaptation, maintenance, repair, or replacement of equipment under the definition of "assistive technology device." These terms are applicable to the provision of the related service transportation.

h. Public Law 102-119
The Individuals with Disabilities Education Act Amendments of 1991

These amendments reauthorized P.L. 99-457, the Education of the Handicapped Act Amendments of 1986 as the Individuals with Disabilities Education Act Amendments of 1991. This reauthorization requires participating states to coordinate services and funding sources for the provision of early intervention services to infants and toddlers from birth through two years old. The early intervention service transportation is defined in the regulations.

3. Transportation Definitions Affecting Services for Infants, Toddlers, and Preschool Children under the Individuals with Disabilities Education Act

The definition of transportation under the Individual with Disabilities Education Act is found in both P.L. 101-476 (Part B) and P.L. 102-119 (Part H). These definitions differ significantly in their provisions because of the ages covered under each of the statutes.

a. Public Law 101-476, Part B Individuals with Disabilities Education Act of 1990

The definition of transportation under the provisions of P.L. 101-476 (formerly P.L. 94-142) identifies transportation as a related service (Part B) under the IDEA regulations 300.16 and defines "transportation" as including:

(1) travel to and from school and between schools;
(2) travel in and around school buildings; and
(3) specialized equipment (such as special or adapted buses, lifts, and ramps), if required to provide special transportation for a child with a disability.

b. Public Law 102-119 The Individuals with Disabilities Education Act Amendments of 1991

The definition of transportation under the provisions of P.L. 102-119 (formerly P.L. 99-457) identifies transportation and related costs as an early intervention service (Part H) under the IDEA regulations 303-12 (d)(15) are defined as follows:

Transportation and related costs include the costs of travel (e.g., mileage, or travel by taxi, common carrier, or other means) and other costs (e.g., tolls and parking expenses) that are necessary to enable a child eligible under this part and child's family to receive early intervention services.

4. Head Start Program Performance Standards on Services for Children with Disabilities (45-CFR 1308)

These standards set forth the requirements for providing special services for 3- through 5-year old children with disabilities enrolled in Head Start programs. Transportation is addressed in Subpart B-Disabilities Service Plan (h)(6) and (o)(5). The related service transportation is defined as follows:

"Transportation for children with disabilities to and from the program and to special

clinics or other service providers when the services cannot be provided on-site. Transportation includes adapted buses equipped to accommodate wheelchairs or other such devices if required." § 1308.4 (h)(6)

"Transportation is a related service to be provided to children with disabilities. When transportation to the program site and to special services can be accessed from other agencies, it should be used. When it is not available, program funds are to be used to provide it. Special buses or use of taxis are allowable expenses if there are no alternatives available and they are necessary to enable a child to be served." § 1308.4 (o)(5)

5. Characteristics of Infants, Toddlers, and Preschool Children as Passengers on School Buses

Transporters must recognize that infants, toddlers, and preschool children, as passengers on school buses, greatly vary in their individual needs and development. These children range in age from one month to age five, and represent a diverse group. Their individual development and functional level may vary greatly with respect to cognitive development, physical development, including hearing and vision, communication development, social, or emotional and adaptive development. These children may be identified as children with or without developmental delays, disabilities, or special needs. One characteristic of this group is its need for supervision based upon their chronological age, physical and mental development and independent functional level. The degree of supervision required by these children while they are on a school bus should be determined by each child's level of functioning.

Infants and toddlers with disabilities under Part H of IDEA includes children birth through age two who require early intervention services because they are experiencing developmental delays in one or more of the following areas: (1) cognitive development, (2) physical development, including vision and hearing, (3) communication development, Social or emotional development, or adaptive development. This population includes children who have a diagnosed physical or mental condition that has a high probability of resulting in developmental delays. Individual states, at their discretion may include children from birth through age two who are at risk of having substantial developmental delays under their state definition.

Services for preschool children with disabilities are included under Part B of IDEA. The Preschool Grant Program is referred to as Section 619 of Part B and includes those children having mental retardation, hearing impairments including deafness, speech or language impairments, visual impairments including blindness, serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, specific learning disabilities, deaf-blindness, or multiple disabilities, and

who because of those impairments need special education and related services. The term "children with disabilities" for children three through five may, at a state's discretion, include children who experience developmental delays as defined by the state.

APPENDIX H

RESOLUTIONS

RESOLUTION TO THE SPONSORING ORGANIZATIONS (NASDPTS, NAPT, NSTA, NSC, SBMI, AND CMSU)

Whereas, the delegation of the Twelfth National Conference on School Transportation recognizes the importance of the document produced May 21-26, 1995, and;

Whereas, the sponsoring organizations; NASDPTS, NAPT, NSTA, NSC, School Transportation Manufacturing Technical Committee (formerly SBMI) and CMSU strongly urge that the Standards established by the Twelfth National Conference be adopted to provide the greatest passenger safety for our children:

Therefore, be it resolved that these organizations:

1. Review the progress being made toward the implementation of the Standards established by the Twelfth National Conference on School Transportation and prepare for future conferences.

2. Provide copies of the proceedings of the Twelfth National Conference to the National Highway Traffic Safety Administration and any other agency or organization and/or individuals deemed appropriate.

RESOLUTION BY THE DELEGATION OF THE TWELFTH NATIONAL CONFERENCE ON SCHOOL TRANSPORTATION

Whereas, it is important to provide continuity for the Conference; and,

Whereas, there is a need to provide ongoing information of the proceedings and actions of the Conference,

Therefore, be it resolved that:

1. Interim and Steering Committees for the Thirteenth National Conference on School Transportation meet at least once a year, and provide a status report to national trade publications and professional pupil transportation journals, on the status of the Twelfth National Conference proceedings and planning for the Thirteenth National Conference.

RESOLUTION
ON
WHEELCHAIR CRASHWORTHINESS

Whereas, the Rehabilitation Engineers Society of North America (RESNA) serves as the American National Standards Institute's (ANSI) designated US standards developer and the designated US representative to the International Standards Organization (ISO) in the area of rehabilitation and assistive technology: and

Whereas, in March of 1994 an ANSI/RESNA Subcommittee on Wheelchairs and Transportation was approved to begin a three-year project to develop an ANSI/RESNA standard which would provide general design guidelines and specify test conditions and performance requirements for wheelchairs that can be considered to offer safe and effective seating to occupants of motor vehicles; and

Whereas, a performance standard on wheelchairs will in all probability be adopted as an ANSI/RESNA standard before the Thirteenth National Conference on School Buses and Operations is convened in the year 2000;

Therefore, be it resolved:

1. that the Interim Steering Committee for the Thirteenth National Conference on School Buses and Operations be directed to establish a special adhoc committee, made up of representatives selected from sponsoring associations of the Thirteenth National conference, to review the ANSI/RESNA standard on wheelchairs.

2. that the special adhoc committee submit to the Interim Steering Committee its recommendations to adopt or reject the ANSI/RESNA wheelchair standard as an interim national standard.

3. that if the ANSI/RESNA wheelchair standard is recommended for adoption by the adhoc committee and subsequently adopted by the Interim Steering Committee, the standards shall, upon affirmative majority vote of a poll of the chairs of each delegation represented at the Twelfth National Conference, have equal status and application as those adopted by the delegates of the Twelfth National Conference on School Buses and Operations.

RESOLUTION
ON
LOADING AND UNLOADING SURVEY

Whereas, the Kansas School Bus Safety Agency has been providing a valuable national survey of loading/unloading fatalities since 1970; and

Whereas, the 1993-94 school year loading/unloading survey showed 32 fatalities which represents a 56% increase in fatalities since 1990; and

Whereas, 954 fatalities have occurred within the loading/unloading zone since 1970 of which 58.8% of the 24-year totals was a result of the pupil's own school bus; and

Whereas, the nation's greatest resource is its children, their safety and protection are our highest priorities and their education is our investment in the future; and

Whereas, extensive research using the 50 states' and Washington, D.C.'s accident reporting systems can be used to establish a national data base for tracking these results;

Therefore, be it resolved:

1. That the Kansas annual loading/unloading survey be expanded to include the following information:

   A. Non-fatal incidents in the loading/unloading areas of the school bus that result in disabling injuries.

   B. Length of disability resulting from non-fatal injuries in the loading/ unloading areas of the school bus.

   C. Financial considerations for all incidents, both short-term and long-term, resulting from the injury or fatality in the loading/unloading areas of the school bus.

   D. Equipment, i.e., mirrors, warning devices, crossing arms, etc., installed on the bus involved in any of the foregoing incidents.

2. That this study be conducted for the next four years, with results to be reported at the Thirteenth National Conference.

3. That the Kansas State Board of Education, School Bus Safety Education Unit, be directed to seek federal funds to establish this national data base and conduct this study.

RESOLUTION
on
HAZARD WARNING SYSTEMS OR SENSORS

Whereas, most student transportation fatalities occur outside and are a result of the student being struck by his/her own bus; and

Whereas, several manufacturers now offer for sale hazard warning sensor systems; and

Whereas, the National Standards conference is the appropriate body to initiate the establishment of standards for hazard warning sensor systems;

Therefore, be it resolved

1. That the Interim Committee of the Thirteenth (13th) National Conference on School Buses and Operations initiate a study of the design, installation and reliability of hazard warning sensor systems.

2. That this study be completed during the next three and one-half years with the results to be reported to the appropriate writing committee of the Thirteenth National Conference.

3. That if the results of the study meet the expectations of the delegates to the Thirteenth National Conference, standards be established for hazard warning sensor systems.

RESOLUTION
ON
PUBLIC TRANSIT VS. SCHOOL BUS--HOME-TO-SCHOOL INJURIES / FATALITIES

Whereas, the nation's greatest resource is its children; their safety and protection are our highest priority and their education is our investment in the future; and

Whereas, Public Transit is assuming a role in home-to-school transportation of school pupils nation-wide;

Whereas, Public Transit operators do not routinely separate student home-to-school/school-to-home injuries/fatalities from other passenger injuries/fatalities;

Therefore, be it resolved:

1. That the interim committee of the Thirteenth National Standards Conference appoint an ad hoc committee to initiate a research study of the injury/fatality rate of public transit buses versus school buses.

2. That this research study be completed during an appropriate period of time to reflect statistically significant findings.

3. That the results of this research study be reported to the appropriate writing committee of the Thirteenth National Conference.

RESOLUTIONS OF APPRECIATION

Whereas, the delegation of the Twelfth National Conference on School Transportation recognizes the dedication and hours of service by many individuals;

Therefore, be if resolved that the delegation:

1. Expresses appreciation to the National Association of State Directors of Pupil Transportation Services, National Association for Pupil Transportation, National School Transportation Association, National Safety Council-School Transportation Section, School Transportation Manufacturers Technical Committee (formerly SBMI), and Central Missouri State University for sponsoring this National Conference.

2. Expresses appreciation to Dr. Leanna Depue, associates and staff of the Missouri Safety Center; Central Missouri State University; Don Carnahan, General Conference Chairman; Dwight Carlson, On-Location Conference Chairman; and Dr. Malloy C. Gould, Parliamentarian for the excellent manner in which the Conference was organized and conducted.

3. Recognizes and expresses appreciation to members of the Interim Committee, Steering Committee and Writing Committees of the Twelfth National Conference for the extensive work in preparation for the Conference.

RESOLUTIONS COMMITTEE

Whereas, in spite of the excellent safety record of school buses relative to other modes of transportation, approximately two-thirds of the children killed in the loading zone are run over by their own buses; and

Whereas, many of the injuries and fatalities may be reduced with an improved school bus skirt design; and

Whereas, adequate ground clearance is also a concern in the design criteria of school buses, particularly in mountainous areas,

Therefore, be it resolved that the Twelfth National Standards Conference charges the school bus industry with developing designs that allow ground clearance which does not compromise angle of approach, breakover, or departure, but discourages children from going underneath the bus. Such designs may include lower, flexible skirting or other means that may be developed.

RESOLUTION
ON
INFANTS AND TODDLERS

Whereas, the Preschool Writing Committee had several unresolved recommendations regarding standards and practices, and;

Whereas, these issues need to be standard prior to the Thirteenth National Standards Conference, and;

Whereas, the delegation of the Twelfth National Standards Conference has recognized the following recommendations:

1. Dynamic crash testing needs to take place to evaluate the performance of restraint devices on school buses.

2. National data needs to be collected on the number of infants, toddlers, and preschool children transported daily.

3. Policies need to be developed for teen parents transported with their babies that address such issues as training, teen parent responsibility, length of ride, pick up and drop off, bottle feeding, breast feeding, responsibility for providing a car seat and required behavior on the school bus vehicle.

4. Spacing between seats with respect to the car seat needs to be studied.

5. Vehicle size versus child age needs to be studied.

6. Driver training needs should be studied.

7. Bus assistant training needs should be studied.

8. Lap belts for preschoolers should be tested.

9. Belt cutters should be standard equipment for all buses in which children are secured with straps or belts.

10. Decisions regarding length of the ride should be determined by the IFSP or IEP Committee on a case-by-case basis.

11. Substitute drivers should be trained specifically about infants, toddlers and preschool children prior to working with this population on a school bus vehicle.

12. Parents' responsibility for escorting young children to the bus and on the bus should be discussed.

13. Vehicle structure needs to be discussed with respect to window heights/feet to floor/seat backs.

Therefore, be it resolved, that the Interim Committee on the 13th National Standards Conference appoint an Ad Hoc Committee to study the unresolved issues and determine how these issues should be addressed by the 13th National Conference.

RESOLUTION ON PUBLIC TRANSIT

Whereas, the Safety of School Bus Transportation is recognized for its outstanding record, and;

Whereas, throughout the United States school students are transported to and from school on two distinctly different types of buses . . . the yellow school bus and a public transit bus, and;

Whereas, federal and state legislative bodies by their mandates have set higher safety standards for school buses and school bus operations, for the protection of school students, and;

Whereas, by these mandates, a double standard for the protection and transportation of school students has been created between school bus and public transit bus carriers, and;

Whereas, school students are being forced to seek non-school bus transportation as a result of school districts eliminating school bus service, and;

Whereas, we the delegates of the Twelfth National Standards Conference on School Transportation believe this action does not serve the best interest of America's school students;

Therefore, be it resolved

1. That the delegates of the Twelfth National Standard's Conference on School Transportation strongly urge Congress to pass legislation to provide all school students with the safest bus transportation environment;

2. That service provided by public transit that transport school children "to and from school" should meet or exceed the National Standards for equipment and operations adopted by the Twelfth National Conference;

3. That a copy of resolutions be forwarded to appropriate state and federal officials and agencies.

RESOLUTION
on
ADVERTISING

Whereas, the unobstructed color pattern of a school bus is a nationally recognized symbol of caution to the motoring public, and

Whereas, advertising on school buses will expose school students to unnecessary risk during the loading or unloading process by distracting motorists driving in the immediate vicinity of a school bus;

Therefore, be it resolved that the 12th National Conference on School Transportation vigorously urges each state and U.S. Territory to prohibit advertising on school buses.

RESOLUTION ON HANDRAILS

Whereas, six children since 1991, have been killed and others severely injured when their clothing or other personal items have become entangled while getting off the bus, and;

Whereas, clothing design, vehicle design and driver training may have contributed to these incidents, and;

Whereas, parents, students and clothing manufacturers can assist by eliminating loose clothing and personal items that become entangled

Therefore, be it resolved that

1. Clothing manufacturers be urged to improve clothing apparel to eliminate drawstrings and other loose appendages.

2. Local school districts and contractors be urged to implement a driver training program as related to handrail and other areas of the bus body that could be vulnerable to dragging students.

3. Local school districts be urged to inform parents, students and other related school personnel of the dangers associated with loading/unloading zones and in particular to the danger of loose clothing and personal items that may become entangled with the service entrance area.

4. School bus manufacturers, local school district and contractors be urged to retrofit existing school buses to eliminate entanglement dangers.

5. The Interim Committee of the Thirteenth National Standards Conference appoint the current Ad Hoc Committee to meet on a regular basis with the school bus manufacturers to check on progress toward the resolution of this problem.

RESOLUTION
STEERING COMMITTEE

Whereas, it is important to provide continuity and improvement of the conference;

Therefore be it resolved that the Interim and Steering Committees of the Thirteenth National Standards Conference consider the following:

1. Where feasible, request that the Writing Committees provide the delegates with a fiscal impact of proposed standards.

2. That the timelines of the Conference provide, as early as possible, copies of Writing Committee drafts to state delegations prior to the convening of the Conference to allow adequate time for state delegations to review and comment.

3. To urge the delegates the Thirteenth National Standards Conference to be continually aware of the impact that the written standards have on states in which they are mandatory.

SPECIAL RESOLUTION BY THE DELEGATES OF THE TWELFTH NATIONAL CONFERENCE ON SCHOOL TRANSPORTATION

Whereas, the nation's greatest resource is its children, and

Whereas, their safety is one of its major public priorities, and

Whereas, the nation's largest most cost efficient mass transportation system is comprised of 370,000 school buses and transports more than 22 million passengers daily in excess of 4 billion miles annually; and

Whereas, completed behavioral research studies substantiate the belief that the passive restraint systems offer greater protection for children transported without adult supervision, and

Whereas, improvements in collision protection and the development of the passive restraint system incorporated in the manufacture of school buses since April 1, 1977, are directly attributable to the extensive research conducted by the governments of the United States and Canada, and

Whereas, extensive research conducted by these governments, and other public and private agencies within their domains, have yielded negative conclusions relative to the mandated installation of seat belts on school buses;

Therefore, be it resolved

1. That local, state and federal governments and the general public recognize and affirm the outstanding safety record of school buses; and

2. That local, state and federal governments and the general public recognize the passive restraint system in school buses manufactured after April 1, 1977, as being a more effective passenger protection system in school buses than the protection provided by seat belts; and

3. That local, state and federal governments discourage the mandatory installation and use of seat belts in school buses until scientific research proves them to be more effective in injury prevention than the existing passive restraint systems; and

4. That local, state and federal governments and interested organizations conduct sound, comprehensive testing on current occupant protection systems in school buses to determine

if the current passive restraint system in school buses can be improved to provide greater safety for students; and

5. That all states be encouraged to accelerate the replacement of school buses manufactured prior to April 1, 1977; and

6. That a copy of this resolution be transmitted to the President of the United States and to the leadership of the United States Congress and the Governors of each state.

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12th National Conference on School Transportation

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ROSTER

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WCC-Writing Committee Chairman
CP-Conference Parliamentarian
WC-Writing Committee
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CT-Conference Timekeeper
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