



The State of Wisconsin
MOTOR VEHICLE DEPARTMENT
MADISON 2



August 9, 1962

IN REPLY REFER TO:

Mr. James Burke
Revisor of Statutes
321 N. E. Capitol
Madison, Wisconsin

Dear Mr. Burke:

Re: Approval of Incorporation by
Reference. Chapter MVD-5,
Wisconsin Administrative Code

We have received instructions from Mr. Dalton of the Attorney General's Office to include the names and addresses of the references after each reference in the body of the revised order.

Attached you will find a copy of the revised order, corrected to meet the requirements of the Attorney General's Office. It is my understanding from Mr. Dalton, that this document will be approved as far as these references are concerned.

I have also taken the necessary steps to order for your office and for the Secretary of State, the necessary copies of publications involved.

If anything further is needed with reference to this revision, please advise.

Yours very truly,


Commissioner

JLK:rc1
Attach



The State of Wisconsin
MOTOR VEHICLE DEPARTMENT
MADISON 2
July 23, 1962



Honorable John W. Reynolds
Attorney General's Office
State Capitol Building
Madison 2, Wisconsin

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Dear Sir:

Re: Reference Sources Listed in Revision of
Chapter MVD-5, Wisconsin Administrative Code.

Attached you will find a copy of the proposed revision of Chapter MVD-5 which regulates the transportation of school children and a list of the references mentioned in the chapter. These are being submitted to you in compliance with section 227.025, Statutes, for your scrutiny and approval.

The comparison of the attached proposed revision with the present Chapter MVD-5 will show a complete change in format. The proposed revision is propounded from the present minimum standards for school buses as set forth by the National Conference on School Transportation which is a division of the National Education Association.

The minimum national standards are the results of twenty-five years of study by the above mentioned conference and have been adopted by many states as their standards. I feel certain that the committee would not use questionable or unreliable sources of reference.

I hope you will clear these references for use in this revision. If I can be of any assistance to you, please advise.

Yours very truly,


Commissioner

JLK:rc1
Attach

cc: Mr. James Burke



The State of Wisconsin
MOTOR VEHICLE DEPARTMENT
MADISON 2

MVD 5



September 27, 1962

IN REPLY REFER TO:

Mr. James Burke
Revisor of Statutes
321 N. E. Capitol
Madison 2, Wisconsin

Dear Mr. Burke:

Re: Wisconsin Administrative Code
Chapter MVD-5

Herewith find a copy of the revision of the above Chapter MVD-5 marked with the references as discussed with you and Mr. Dalton several days ago. I believe you will find the references as you indicated they should be. I also wish to advise you that after each reference I am including the following: "This reference is available in the offices of the Secretary of State, Revisor of Statutes or the Motor Vehicle Department" such as is found in the Industrial Commission's Code on Chapter IND-8 covering flammable liquids. I did not include this in the attached copy because of the lack of space. I trust this now meets with your approval. If you have further questions, call me at any time.

This is not to be considered the final draft of this chapter. You will receive the final draft from Mr. Steensland, our department attorney, very shortly,

Yours very truly,

R. G. Cromeley
Captain R. G. Cromeley
Inspection Services
Wisconsin State Patrol

RGC:bd
Attach

Information on Reference Sources Listed in Chapter MVD 5.

Horn - Sound Level Measurements:

American Standards Association, Inc.
10 East 40th Street
New York, N. Y.

Tire and Rim - Sizes:

Tire and Rim Association
2001 First National Tower
Akron 8, Ohio

Color - School Bus Chrome Specifications:

Federal Standard No. 595 black enamel No. 17038
Federal Standard No. 595 chrome yellow enamel No. 13432,
obtainable from:

General Services Administration
Business Service Center, Region 3
Seventh and D Streets - S. W.
Washington 25, D. C. - Price 5 cents each.

Floors - Plywood Standards:

Commercial Standard CS45-55 for Douglas Fir Plywood
(amended 1959): A Recorded Voluntary Standard of the Trade
obtainable from:

U. S. Gov't Printing Office
Washington 25, D. C. - Price 15 cents.

First Aid Kits

Federal Specification GG-K-391a obtainable from:

General Services Administration
Business Service Center
Region 3, Seventh and D Streets
Washington 25, D. C. - Price 15 cents.

Heaters:

"Standard Code for Testing and Rating Automotive Bus Hot
Water Heating and Ventilating Equipment" - copies available
from:

School Bus Body Manufacturers Ass'n
401-402 Washington Board of Trade Building
1616 K Street N. W.
Washington 6, D. C.

National Assoc of Chain Manufacturers MVD 5.88
Society of Automotive Eng MVD 5 74 - 5,93
Fire Extinguishers MVD 5.66 National Inst of
Fire Insurance
U.S. Dept of Commerce Weather Bureau MVD 5.69

Heaters (continued)

Combustion type heaters

See requirements in Motor Carrier Safety Regulations
of Interstate Commerce Commission obtainable from:

U. S. Gov't Printing Office
Washington 25, D. C. - Price 30 cents

Identification:

Size of lettering - Standard Alphabets for Highway Signs.
A full scale layout (40 inches overall length) of words
"SCHOOL BUS" with suggestions for application is available
from:

National Commission on Safety Education
1201 Sixteenth Street N. W.
Washington 6, D. C. - Price 50 cents.

Lamps, Signals, Wiring:

Society of Automotive Engineers
485 Lexington Avenue
New York 17, N. Y.



The State of Wisconsin

MOTOR VEHICLE DEPARTMENT

MADISON



mvd 5

WISCONSIN ADMINISTRATIVE CODE

Chapter MVD 5 (Revised, 1962) -- TRANSPORTATION OF SCHOOL CHILDREN

MVD 5.01	Definition	Subchapter III - BUS BODY
		MVD 5.53 Aisle
		MVD 5.54 Body Sizes
		MVD 5.55 Book Racks
		MVD 5.56 Bumper, Rear
		MVD 5.561 Bumper, Front
		MVD 5.57 Ceiling
		MVD 5.58 Chains
		MVD 5.59 Color
		MVD 5.60 Construction
		MVD 5.61 Defrosters
		MVD 5.62 Doors
		MVD 5.63 Electrical System
		MVD 5.64 Emergency Equipment
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		MVD 5.66 First-aid Kit
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		MVD 5.751 Mounting
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		MVD 5.78 Rear Vision
		MVD 5.79 Rub Rails
		MVD 5.80 Seats
		MVD 5.81 Stanchions and Guard Rails
		MVD 5.82 Steering Wheel
		MVD 5.83 Steps
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		Subchapter IV - GENERAL REQUIREMENTS
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		MVD 5.95 Panel Trucks and Station Wagons
		MVD 5.96 Enforcement Policy
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MVD 5.01 DEFINITION: (1) (Statutory) "School bus" means a motor vehicle which transports children to or from a public or private school or which transports school groups engaged in extracurricular activities to or from points designated by such schools, but does not include:

(a) A motor vehicle owned or operated by a parent or guardian transporting only his own children, regardless of whether the school has made a contract with or paid compensation to such parent or guardian for such transportation; or

(b) A vehicle having a seating capacity of fewer than 10 persons, including the operator, and used in casual, occasional or reciprocal transportation of school children and not under contract.

(c) Buses operated by a common motor carrier of passengers used in urban transportation of school children, or when used in extracurricular activities to and from points designated by a school.

(This is a direct quote of sec. 340.01 (56) statutes as amended by 1959 Legislature)

(2) These minimum standards are intended to apply to all types of school buses:

92 (a) Large buses

1. Conventional type body-on chassis vehicles having a seating capacity of 24 or more pupils;

2. Transit and metropolitan types of vehicles having a seating capacity of 24 or more pupils;

3. Pupil capacity is determined from Body Sizes Chart in the appendix.

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(b) Small buses .

Vehicles having a seating capacity of less than 24 pupils, but not including automobiles. Pupil capacity is determined from Body Sizes Chart in the appendix.

(c) Automobiles

Vehicles having a seating capacity of less than 10 passengers based on seat measurements of 20 inches per person including the driver.

SUBCHAPTER I

DRIVER REQUIREMENTS

MVD 5.02 SCHOOL BUS OPERATOR'S LICENSE: No person shall drive a school bus without having first applied for and received a school bus driver's license or driver license examiner's receipt. (The law prohibits issuance of a school bus driver's license to any person who is less than 21 years of age.)

MVD 5.04 PHYSICAL QUALIFICATIONS: School bus driver must be in good physical condition, possessing at least 20/40 vision either normally or corrected, in each eye, and having a minimum horizontal form field of 70 degrees; having normal ability to hear the spoken voice; and possessing sufficient use of both his hands and the foot normally employed to operate the foot brake and foot accelerator which may be substantiated by competent medical proof submitted by the applicant.

MVD 5.05 SMOKING AND USE OF ALCOHOL: The driver shall not smoke or permit smoking when children are transported.

MVD 5.06 MAINTAINING ORDER: Driver shall be responsible for the maintenance of order among children being transported, and shall promptly report any misconduct to the proper school authorities or parents.

MVD 5.08 CHECKING VEHICLE: Driver shall check daily the condition of the vehicle, giving particular attention to brakes, tires, lights, emergency equipment and interior cleanliness of the vehicle. Defects shall be corrected and the interior of the bus cleaned before the next school bus operation.

MVD 5.10 CONDUCT IN EVENT OF ACCIDENT: In case of an accident or a breakdown, the driver should remain with the vehicle and send two responsible children to the nearest place for help, when practicable.

MVD 5.11 LOADING AND UNLOADING PROCEDURE: Vehicle shall be brought to a full stop before loading or unloading children; loading stations or points must be selected with due regard for traffic and pedestrian safety, and shall be approved by school authorities. Flashing red signals shall be given continuously during at least 100 feet before stopping, and for duration of stop consistent with sec. 346.48 (2).

MVD 5.12 STARTING AND STOPPING: Doors must be closed securely before starting and must remain closed while vehicle is in motion, except as provided in MVD 5.19. Abrupt starts and stops or sudden maneuvers are prohibited, except in emergency.

MVD 5.13 UNATTENDED VEHICLE: Driver shall not leave vehicle unattended with engine running.

MVD 5.14 AUTHORIZED PASSENGERS: No person except a teacher or pupils or person specified under sec. 40.57 (3), Wisconsin Statutes, shall be permitted to ride in a vehicle subject to these regulations; provided that School Board members or an authorized official making an inspection, or conducting an examination of the driver's ability shall be given such privilege. Transportation of passengers in excess of the number posted as required in sec. 5.45 is prohibited.

MVD 5.141 TRANSPORTATION OF ARTICLES: No articles may be transported within bus body if there is or may be interference with pupils or driver or if aisle, well, or steps are obstructed. Articles other than those associated with school activity may not be transported.

MVD 5.16 CHILDREN CROSSING ROAD: When discharging passengers, driver shall make sure that there is no traffic danger before allowing children to cross; children obliged to cross the road shall be required to cross from a point at least ten feet in front of the standing vehicle after receiving a signal from the driver, and the driver shall not proceed until children are safely across the street or highway. This section applies only where flashing red signals are used.

MVD 5.17 COOPERATION WITH OFFICERS: Drivers, School Boards and vehicle owners shall cooperate at all times with authorized officers in carrying out inspection of equipment, or examination of drivers pursuant to law or to departmental regulations.

MVD 5.18 STANDING IN VEHICLE PROHIBITED: Driver shall not require or allow any passenger to stand while vehicle is in motion, except while passenger is going to door or seat just prior to stopping or immediately after loading.

MVD 5.19 STOPPING AT RAILROAD CROSSINGS: When carrying school children driver shall come to a full stop at a distance of not less than 15 feet nor more than 50 feet from the nearest rail of the main line tracks of such railroad. While the vehicle is so stopped, the driver shall open the service door and listen and look in both directions along such track for any approaching train and for signals indicating the approach of a train. After stopping and upon proceeding when it is safe to do so, the driver of such vehicle shall cross only in such gear of the vehicle as will make it unnecessary to manually shift gears while traversing the crossing and he shall not shift gears while traversing the crossing. The driver shall close the service door as soon as he can satisfactorily determine that he can cross in safety. As soon as tracks are crossed, doors shall be closed. This section does not apply at

crossings with interurban railroad tracks which are laid on or along streets within the corporate limits of a city or village, nor to vehicles having a seating capacity of fewer than 10 persons and which are not painted or otherwise identified as a school bus.

MVD 5.20 SPEED LIMITATIONS: No vehicle subject to the provisions of Chapter MVD 5 shall be driven at a speed in excess of 45 miles per hour while transporting school children, except that:

(1) When engaged in transporting children to and from extracurricular activities the speed of the vehicle shall not exceed 50 miles per hour;

(2) Vehicles having a seating capacity of less than 10 adults, counting the driver, may not be driven in excess of 55 miles per hour while transporting children to and from school and extracurricular activities.

SUBCHAPTER II

THE BUS CHASSIS

MVD 5.25 AIR CLEANER: Bus shall be equipped with adequate oil-bath or dry-element type air cleaner mounted outside passenger compartment.

MVD 5.26 AXLES: (1) Front axle or other type of suspension assembly shall be of sufficient capacity at ground to support such load as would be imposed by gross vehicle weight 10 per cent in excess of actual gross vehicle weight as defined under Grade Ability Formula. See Appendix.

(2) Rear axle shall be full-floating type. Rear axle or other type of suspension assembly shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by rear suspension assembly.

(3) Exception--small buses: Requirement in subsection (2) for full-floating rear axle does not apply to small vehicles not specifically manufactured as school buses.

(4) Exception--transit and metropolitan vehicles: (a) Front axle shall be wide-track, heavy-duty bus type and shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by front axle.

(b) Rear axle shall be full-floating, heavy-duty bus type and shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by rear axle.

MVD 5.27 BATTERY: (1) Storage battery, as established by manufacturer's rating, shall be of sufficient capacity to care for starting, lighting, signal devices, heating, and other electrical equipment.

(2) No bus shall be equipped with battery of less than 70 ampere hours at 12 volts or 120 ampere hours at 6 volts measured at 20-hour rate.

(3) (a) Battery shall be mounted outside passenger compartment in adequate carrier and be readily accessible for servicing and removal, preferably from outside passenger compartment.

(b) If battery is not mounted under hood, it shall be mounted on left side of chassis frame so that center line of battery shall be 52 inches back of cowl, and no part of battery shall extend above top of chassis frame.

(4) Exception--small buses: (a) No bus shall be equipped with battery of less than 50 ampere hours at 12 volts, measured at 20-hour rate.

(b) Subsection (3) (b) does not apply.

(5) Exception--transit and metropolitan vehicles: Subsection (3) (b) does not apply.

MVD 5.28 BRAKES: (1) Four-wheel, over-size brakes, with highest possible braking area, adequate at all times to control bus when fully loaded, shall be provided.

(2) Foot or service brakes shall, at all times, be capable of stopping complete unit from speed of 20 miles per hour in not more than 30 feet, such distance to be measured from point at which movement of service brake pedal or control begins. Tests for stopping distance shall be made on substantially level (not to exceed plus or minus 1 per cent grade), dry, smooth, hard surface that is free from loose material.

(3) Chassis shall be equipped with auxiliary brake capable of locking two wheels and capable of holding vehicle on any grade on which it is operated under any conditions of loading on a surface free from snow or ice. Operating controls of such auxiliary brake shall be independent of operating controls of service brakes.

(4) Chassis designed for any bus body of 48 or greater basic pupil capacity shall be equipped with full compressed-air brakes, vacuum-actuated power or assistor-type brakes, or compressed-air-over-hydraulic brakes. (See Body Sizes table, Appendix.)

(a) Such installation shall be made by authorized representative of chassis or brake manufacturer and shall conform to recommendation of that manufacturer.

(b) Hydraulic line pressure shall not exceed recommendation of chassis or brake manufacturer.

(c) Total reservoir capacity (see subsection (d) 1.) shall be at least 1,650 cubic inches for full compressed-air systems, and at least 1,000 cubic inches for vacuum-actuated systems and for compressed-air-over-hydraulic systems.

(d) Buses having full compressed-air systems shall be equipped with:

1) At least two reservoirs (or one vessel divided into two compartments) connected in series.

2) Safety valve mounted on first reservoir to protect air-brake system against excessive air pressure and check valve mounted in optional location.

3) Air gauge mounted on instrument panel to register air pressure in air-brake system (See MVD 5.41).

OK 4) Audible low-pressure indicator to warn driver if air pressure in air-brake system falls below 60 pounds per square inch.

(e) Buses having vacuum-actuated or compressed-air-over-hydraulic systems shall be equipped with check valve located between source of supply and reservoir, and must have air or vacuum gauge on instrument panel.

MVD 5.29 BUMPER, FRONT: (1) Front bumper shall be furnished by chassis manufacturer as part of chassis.

(2) Front bumper must extend to outer edges of fenders at bumper top line (to assure maximum fender protection) and be of sufficient strength to permit pushing vehicle of equal gross weight without permanent distortion to bumper, chassis, or body.

(3) Exception--transit and metropolitan vehicles: Same as above except that front bumper shall be furnished by body manufacturer.

MVD 5.291 BUMPER, REAR: (See MVD 5.56)

MVD 5.30 CLUTCH: Clutch torque capacity shall be not less than 10 per cent in excess of maximum net torque output of engine. All chassis of 48 and 54 pupil capacity buses shall be equipped with clutch of 11-inch minimum diameter. Chassis of 60 and greater pupil capacity buses shall be equipped with clutch of 12-inch minimum diameter or

clutch of equivalent performance.

MVD 5.31 COLOR: (See MVD 5.59)

MVD 5.32 DRIVE SHAFT: (1) Drive shaft shall be protected by metal guard or guards to prevent it from whipping through floor or dropping to ground if broken.

(2) Exception--small buses: Standard does not apply to vehicles with torque-tube drive shaft.

MVD 5.33 ELECTRICAL SYSTEM

(1) Battery (See MVD 5.27)

(2) Generator or alternator (See MVD 5.38)

(3) Lamps and signals (See MVD 5.74)

(4) Wiring (See MVD 5.93)

MVD 5.34 EXHAUST SYSTEM: (1) Exhaust pipe, muffler, and tailpipe shall be outside bus body and attached to chassis.

(2) Tailpipe shall be constructed of seamless or electrically welded tubing of 16-gauge steel or equivalent. (See MVD 5.85)

(3) Size of tailpipe shall not be reduced after it leaves muffler. Tailpipe shall extend beyond the external rear of the bus body at the point of projection, but not beyond the bumper.

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

(5) Noise level shall not exceed 125 sones as measured by Beranek-Armour-ATA Tone Equivalent Method.

MVD 5.35 FENDERS, FRONT: (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 fender shall be properly braced and free from any body attachment.

(3) Chassis sheet metal shall not extend beyond rear face of cowl.

(4) Exception--transit and metropolitan vehicles: Standard does not apply.

MVD 5.36 FRAME: (1) Frame or equivalent shall be of such design as to correspond at least to standard practice for trucks of same general load characteristics which are used for severe service.

(2) When frame side members are used they shall be of one-piece construction. If frame side members are extended, such extension shall be designed and furnished by chassis manufacturer with his guarantee, and installation shall be made by either chassis or body manufacturer and guaranteed by company making installation. Extensions of frame lengths are permissible only when such alterations are behind rear hanger of rear spring and shall not be for purpose of extending wheel base.

(3) Holes in top or bottom flanges of frame side rails shall not be permitted except as provided in original chassis frame. There shall be no welding to frame side rails except by chassis or body manufacturer.

OK (4) Frame lengths. (See Body Sizes table, Appendix.)

MVD 5.37 FUEL TANK: (1) Fuel tank shall have minimum capacity of 30 gallons, be made of 16-gauge terneplate or equivalent, and be mounted directly on right side of chassis frame entirely outside body.

(2) Flexible gasoline- and oil-proof connection shall be provided at engine end of fuel feed line.

(3) Tank shall be equipped with adequate baffles.

(4) Engine supply line shall be taken from top of tank.

(5) Drain plug of at least $\frac{1}{4}$ -inch diameter shall be located in center of bottom of tank.

(6) Fill-pipe cap shall be of such design as to minimize spillage of fuel when bus turns corners in either direction. If venting of fuel tank is done other than through fill-pipe cap, cap shall be of nonvented type.

(7) Exception--small buses: (a) Minimum capacity does not apply.

(b) Fuel tank shall be mounted, filled, and vented outside body.

(8) Exception--transit and metropolitan vehicles: (a) Fuel tank shall have minimum capacity of 30 gallons, be made of 16-gauge terneplate or equivalent, and be mounted away from left side of bus entirely outside passenger compartment.

(b) Bottom of tank shall not be exposed below skirt of body side paneling.

(c) Engine supply line shall be taken from upper portion of tank and shall be adequately protected.

(d) Drain plug of at least $\frac{1}{4}$ -inch diameter shall be located in bottom of tank.

(e) Fill-pipe cap shall be entirely outside passenger compartment.

MVD 5.38 GENERATOR OR ALTERNATOR: (1) Generator or alternator with rectifier shall have maximum output of at least 35 amperes if 12 volt or 40 amperes if 6 volt with either low cut-in or charge-at-idle type, and shall be ventilated, voltage-controlled, and current-controlled. (Note: If electrical load is increased through addition of heater motors, electric windshield wipers, defrosters, etc., refer to Suggested Method for Estimating Generator Capacity, Appendix, for guidance in selecting generator of adequate capacity.)

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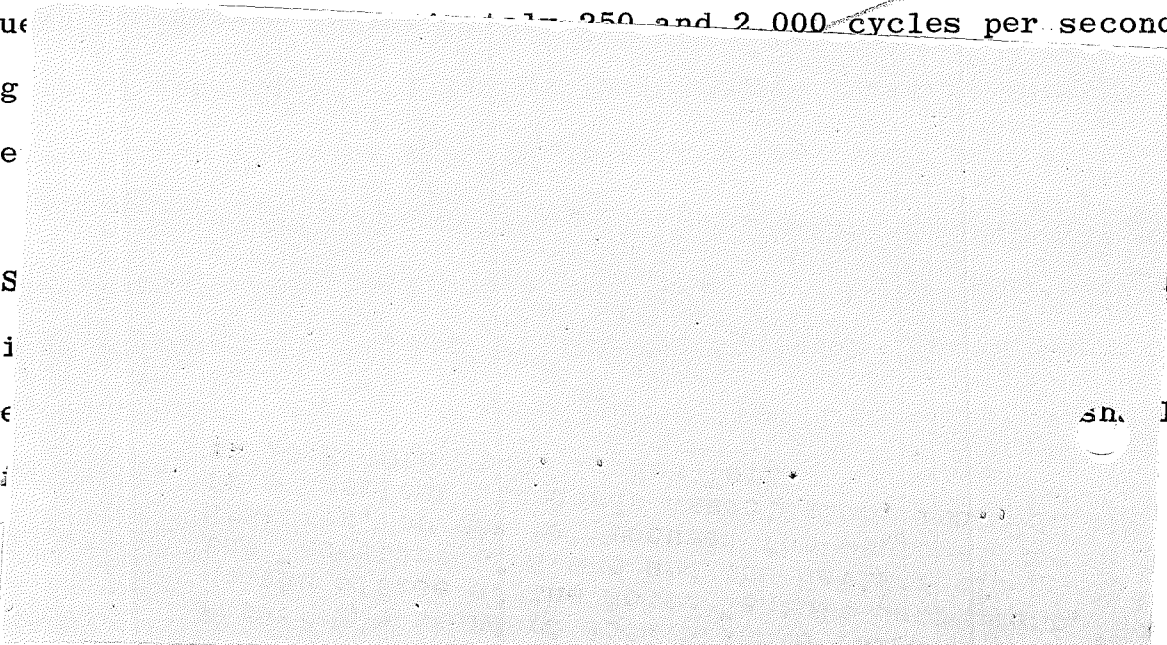
(2) Exception--small buses: Generator or alternator with rectifier shall have maximum output of at least 30 amperes with 12-volt system or 40 amperes if 6 volt system and shall be ventilated, voltage-controlled, and current-controlled.

MVD 5.39 GOVERNOR: (1) Governor is permissible and where used shall be approved by chassis manufacturer.

(2) Exception--transit and metropolitan vehicles: When engine is remotely located from driver, governor shall be installed to limit engine speed to maximum revolutions per minute recommended by engine manufacturer, or tachometer shall be installed so engine speed may be known to driver.

MVD 5.40 HORN: (1) Bus shall be equipped with horn or horns of standard make, each horn capable of producing complex sound in band of audiofrequency between 250 and 2,000 cycles per second and having limits where

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... shall be of the low cut-in or charge-at-idle type, and shall be ventilated, voltage-controlled, and current-controlled. (Note: Electrical load is increased through addition of heater motors, electric windshield wipers, defrosters, etc., refer to Suggested Method for Estimating Generator Capacity, Appendix, for guidance in selecting generator of adequate capacity.)

(2) Exception--small buses: Generator or alternator with rectifier shall have maximum output of at least 30 amperes with 12-volt system or 15 amperes if 6 volt system and shall be ventilated, voltage-controlled, and current-controlled.

MVD 5.39 GOVERNOR: (1) Governor is permissible and where used shall be approved by chassis manufacturer.

(2) Exception--transit and metropolitan vehicles: When engine is remotely located from driver, governor shall be installed to limit engine speed to maximum revolutions per minute recommended by engine manufacturer, and tachometer shall be installed so engine speed may be known to driver.

~~MVD 5.40 HORN: (1) Bus shall be equipped with horn or horns of standard make, each horn capable of producing complex sound in band of frequencies between approximately 250 and 2,000 cycles per second having total sound level of 110 decibels within these frequency range when measured at point on axis of horn 3 feet from exit of horn.~~

~~2) Sound-level measurements shall be made with meter that complies with American Standard Z24.3-1944, or current revision thereof, as designated by American Standards Association, Inc. Measurement shall be made with meter set to flat response (C weighting network).~~

Note: The standard is available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from American Standards Association, Inc., 10 E 40th St N. Y. New York.

(3) Sound-level measurements shall be made with horn or horns installed on bus. There shall be no reflecting walls or obstacles other than ground and vehicle closer than 100 feet from horn during sound-level measurements.

(4) If louder horn is desired, it shall be capable of producing sound level of 120 decibels under conditions specified above.

MVD 5.41 INSTRUMENTS AND INSTRUMENT PANEL: (1) Chassis shall be equipped with following instruments and gauges:

- (a) Speedometer which will show speed.
- (b) Odometer which will give accrued mileage including tenths of miles.
- (c) Ammeter with graduated charge and discharge.
- (d) Oil-pressure gauge.
- (e) Water-temperature gauge.
- (f) Fuel gauge.
- (g) Upper-beam headlamp indicator.
- (h) Air pressure or vacuum gauge, where air or vacuum brakes are used.

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

All instruments shall be maintained in good working order.

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(3) Above instruments and gauges shall be mounted on instrument panel in such manner that each is clearly visible to driver in normal seated position. Lights in lieu of gauges are not acceptable after the effective date of this chapter.

(4) Instrument panel shall have lamps of sufficient candlepower to illuminate all instruments and gauges.

MVD 5.42 OIL FILTER: Oil filter of replaceable element or cartridge type shall be provided and shall be connected by flexible oil lines if it is not of built-in or engine-mounted design. Oil filter shall have oil capacity of at least 1 quart.

MVD 5.43 OPENINGS: All openings in floorboard or firewall between chassis and passenger-carrying compartment, such as for gearshift lever and auxiliary brake lever, shall be sealed unless altered by body manufacturer. (See MVD 5.60 (4) (b).)

MVD 5.44 OVER-ALL LENGTH: Over-all length of bus shall not exceed 40 feet.

MVD 5.45 PASSENGER LOAD: (1) Gross vehicle weight (i.e., chassis weight with oil, water, and full tank of fuel, plus body weight, plus driver's weight of 150 pounds, plus weight of maximum seated pupil load based on not less than 100 pounds per pupil) shall not exceed maximum gross vehicle-weight rating as established by manufacturer.

(2) There shall be displayed on the inside of the bus body directly over the windshield on the right of the driver a sign indicating the maximum pupil seating capacity of the bus. The size of the letters and numerals shall be large enough to permit them to be read by passengers. Transportation of passengers in excess of the number designated on such sign is prohibited.

MVD 5.46 POWER OR GRADE ABILITY: Chassis must be so geared and powered as to be capable of surmounting 3.7 per cent grade at speed of at least 20 miles per hour with full load (see MVD 5.45) on continuous pull in direct drive. (See Grade Ability Formula, Appendix.)

MVD 5.47 SHOCK ABSORBERS: Bus shall be equipped with front and rear double-acting shock absorbers of adequate size.

MVD 5.48 SPRINGS: (1) Springs or suspension assemblies shall be of ample resiliency under all load conditions and of adequate strength to sustain loaded bus without evidence of overload.

(2) Springs or suspension assemblies shall be designed to carry their proportional share of gross vehicle weight in accordance with requirement for weight distribution as shown in MVD 5.52.

(3) If rear springs are used, they shall be of progressive type.

(4) If leaf-type front springs are used, stationary eyes shall be protected by full wrapper leaf in addition to main leaf.

(5) Exception--small buses: Springs that are regular equipment on vehicle to be purchased may be used.

MVD 5.49 STEERING GEAR: (1) Steering gear shall be approved by chassis manufacturer and designed to assure safe and accurate performance when vehicle is operated with maximum load and at maximum speed.

(2) Steering mechanism shall provide for easy adjustment for lost motion.

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

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

(5) Power steering is permissible if approved by chassis manufacturer.

MVD 5.50 TIRES AND RIMS: (1) Tire and rim sizes, based upon ~~current~~ standards contained in the 1962 yearbook 2001 First National Tower, Akron 8, standards of Tire and Rim Association/ shall be required. Ohio

(2) In order to allow for reasonable tolerance, total weight imposed on any tire shall not be greater than 10 per cent above ~~current~~ 1962 standard

of Tire and Rim Association.

(3) Dual rear tires shall be provided on all vehicles.

(4) All tires on given vehicle shall be of same size and ply rating.

(5) Spare tire, if required, shall be suitably mounted in accessible location outside passenger compartment. Spare tire is required unless adequate arrangements for service facilities have been made.

(6) Exception--small buses: Same as above, except that dual rear tires are not required.

MVD 5.51 TRANSMISSION: (1) Transmission shall be syncromesh or constant-mesh type. It shall be of sturdy construction, and input torque capacity shall be at least 10 per cent above maximum net torque developed by engine. Its design shall provide not less than four forward and one reverse speeds.

(2) Automatic transmissions are permissible.

(3) Exception--small buses: Three-speed transmissions are acceptable.

MVD 5.52 WEIGHT DISTRIBUTION: (1) Weight distribution of fully loaded bus on level surface shall be such that not more than 75 per cent of gross vehicle weight is on rear tires and not more than 35 per cent is on front tires.

(2) Exception--transit and metropolitan vehicles with engine inside front of body: If entrance door is ahead of front wheels, not more than 75 per cent of gross vehicle weight shall be on rear tires nor more than 50 per cent on front tires. If entrance door is behind front wheels, not more than 75 per cent of gross vehicle weight shall be on rear tires nor more than 40 per cent on front tires. With engine in rear: Not more than 75 per cent of gross vehicle weight shall be on rear tires nor more than 40 per cent on front tires.

Note: The standards are available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from the 1962 yearbook of the Tire and Rim Association, 2001 First National Tower, Akron 8 Ohio.

SUBCHAPTER III

THE BUS BODY

MVD 5.53 AISLE: (1) Minimum clearance of all aisles, including aisle (or passageway between seats) leading to emergency door, shall be 12 inches. (See MVD 5.62 (2) (f).)

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

(3) Exception--transit and metropolitan vehicles with engine inside front of body: Minimum distance between stanchion at rear of entrance stepwell and engine cover shall be 14 inches measured at floor level.

MVD 5.54 BODY SIZES: (1) Bodies for conventional body-on-chassis type vehicles shall be limited to lengths shown in Body Sizes table. (See Appendix.) Sizes are based on 27-inch center-to-center spacing between rows of forward-facing seats, over-all width of 96 inches, center aisle width of 12 inches, and average rump width of (a) 13 inches for 3-3 seating plan and (b) 15 inches for 3-2 seating plan. Body lengths are measured from back of cowl to rear of body at floor level.

(2) Exception--small buses: Small vehicle may vary in capacity up to 23 pupils, may be narrower than large vehicle, and body may have been converted from one originally manufactured for other purposes.

(3) Exception--transit and metropolitan vehicles: Measurements in Body Sizes table, Appendix, do not apply.

(4) In no case shall less than 13 inches rump space per pupil be permitted in computing passenger capacity.

MVD 5.55 BOOK RACKS: (1) Book racks, if installed, shall be provided above side windows within range from front cross-seat to rear transverse seat except across or above emergency door.

(2) Racks shall be free of projections likely to cause injury.

MVD 5.56 BUMPER, REAR: (1) Rear bumper shall be of pressed steel channel at least 3/16 inch by 7 inches.

(2) It shall be fully wrapped around to both sides and shall be so attached as to prevent hitching of rides.

(3) It shall be attached to chassis frame and braced with material of impact ratio comparable to that of bumper material.

(4) Exception--small buses: (a) Rear bumper shall be furnished by chassis manufacturer as part of the chassis.

(b) Rear bumper shall be of sufficient strength to permit vehicle being pushed without permanent distortion to bumper, chassis, or body.

(5) Exception--transit and metropolitan vehicles: Rear bumper shall be of sufficient strength to permit fully loaded vehicle being pushed without permanent distortion to bumper or body. It shall be so designed as to prevent hitching-to or riding-on and shall be long enough to protect full width of body.

MVD 5.561 BUMPER, FRONT: (See MVD 5.29)

MVD 5.57 CEILING: (See MVD 5.72 and MVD 5.73)

MVD 5.58 CHAINS: (See MVD 5.88 (4))

MVD 5.59 COLOR: With the exception of fenders and trim, the body, including hood, cowl and roof shall be painted a uniform color, national school bus chrome (yellow), according to national bureau of standards specifications. The fenders and body trim, if used, shall be black.

Buses placed in operation after the effective date of this order shall have wheels painted black.

Note! Federal Standards #595 black enamel #17038 and chrome yellow #13432 obtainable from General Services Administration, Business Service Center, Region 3, Seventh and D Streets, S. W. Washington 25, D. C.

MVD 5.60 CONSTRUCTION: (1) Construction shall be all-steel or other metal with strength at least equivalent to all-steel as certified by bus body manufacturer.

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MVD 5.59
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V

Note: The standards are available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from General Services Administration, Business Service Center, Region 3, Seventh and D Streets, S W Washington 25 D. C.

(2) Construction shall provide reasonably dustproof and watertight unit.

(3) Bus body (including roof bows, body posts, and floor) shall be of sufficient strength to support entire weight of fully loaded vehicle on its top or side if overturned. It shall have sufficient frame members (strainers, stringers, etc.) in roof structure and corners to provide adequate safety and to resist damage on impact.

(4) (a) Floor shall be of metal at least equal in strength to 14-gauge steel or of 5-ply plywood at least 5/8-inch thick and found by standard test to be at least equal in strength to 14-gauge steel, provided it equals or exceeds properties of exterior-type Douglas fir plywood,

107e
B-B Grade, ~~as specified in standard issued by U. S. Department of Commerce.~~
Commercial Standard CS 45-60 for Douglas Fir Plywood (amended 1959):
A Recorded Voluntary Standard of the Trade. Obtainable from U. S. Gov't.
Printing Office, Washington 25, D. C.

(b) All openings between chassis and passenger-carrying compartment made due to alterations by body manufacturer must be sealed. (See MVD 5.43)

(5) Fuel tank: (See MVD 5.37 (8) (b))

(6) Exception--small buses: Subsection (3) does not apply to small vehicles not manufactured specifically as school buses. Subsection (4) (a): Floor on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

MVD 5.61 DEFROSTERS: Defrosters are required, and shall be of sufficient capacity to keep windshield and driver's window clear of fog, ice and snow. This may be done by using fans or by taking heat directly from approved heater.

MVD 5.62 DOORS:

(1) Service Door:

(a) Service door shall be power or manually operated, under control of driver, and so designed as to afford easy release and prevent accidental opening.

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

(c) Service door shall have minimum horizontal opening of 24 inches and minimum vertical opening of 65 inches.

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

(e) Lower as well as upper panels shall be of approved safety glass. (See MVD 5.90 (1).). Bottom of lower glass panel shall not be more than 35 inches from ground when bus is unloaded. Top of upper glass panel shall not be more than 6 inches from top of door.

(f) Vertical closing edges shall be equipped with flexible material to protect children's fingers.

(g) There shall be no door to left of driver. (This shall not be interpreted to conflict with subsection (2) (a).).

(h) Operation shall be such as to prevent injury to operator or passengers.

(2) Emergency door and emergency window:

(a) Emergency door shall be located in center of rear end of bus or in rear half of left side of bus.

(b) Emergency door shall have minimum horizontal opening of 24 inches and minimum vertical opening of 48 inches measured from floor level.

(c) Emergency door shall be hinged on right side if in rear end of bus and on front side if on left side of bus. It shall open outward.

(d) Upper portion of emergency door shall be equipped with approved safety glass, exposed area of which shall not be less than 12 inches in height and 20 inches in width. (See MVD 5.90 (1).)

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

(f) No seat or other object shall be so placed in bus as to restrict any part of passageway leading to either rear or left-side emergency door to opening smaller than rectangle of 12 inches in width and 48 inches in height, measured from floor level.

(g) When not fully latched, emergency door shall actuate signal audible to driver by means of mechanism actuated by latch.

(h) If emergency door is located on left side of rear-engine bus:

1) Window at rear shall be designed as emergency exit and shall be no smaller than 16 inches in height and 54 inches in width on buses 80 inches or more in width; it shall be no smaller than 16 inches in height and 48 inches in width on buses less than 80 inches in width. Window shall be hinged from top and devised and operated to insure against accidental closing in emergency.

2) Paneling is required to cover space between top of rear divan seat and inside surface of emergency window at rear.

(i) Both emergency door and emergency window shall be designed to open from inside and outside bus and shall be equipped with fastening device which may be quickly released but is designed to offer protection against accidental release. Control from driver's seat shall not be permitted. Provision for opening from outside shall consist of nondetachable device so designed as to prevent hitching-to, but to permit opening when necessary.

(3) Exception--small buses: Substitute the following standards for those above:

(a) Service door shall be located to right of driver and shall be manually controlled from driver's seat by over-center control for bus-type conveyance.

(b) Emergency door:

1) Emergency door shall be located in center of rear end of bus and shall be equipped with fastening device for opening from inside and outside body, which may be quickly released but is designed to offer protection against accidental release. Metal guard shall be placed over door control on inside. Control from driver's seat shall not be permitted. Provision for opening from outside shall consist of device designed to prevent hitching-to, but to permit opening when necessary.

2) Door shall open either vertically or horizontally. When vertical-type door is used, there shall be unobstructed aisle at least 12 inches wide.

3) There shall be no steps leading to emergency door.

4) No seat or other object shall be placed in bus which restricts passageway to emergency door to less than 12 inches.

MVD 5.63 ELECTRICAL SYSTEM:

(1) Battery (See MVD 5.27)

(2) Generator or alternator (See MVD 5.38)

(3) Lamps and signals (See MVD 5.74)

(4) Wiring (See MVD 5.93)

MVD 5.64 EMERGENCY EQUIPMENT: (1) Each school bus shall be provided with the following emergency equipment: 1 axe or steel wrecking bar, a suitable jack, spare tire and necessary tools for tire or wheel changing, and tools for minor repairs, unless they have adequate arrangements for service facilities. During the winter season all vehicles shall carry a suitable shovel. All emergency equipment shall be kept in a readily accessible place in vehicle in suitable fasteners or containers.

(2) (a) Each school bus shall carry at all times at least 3 red flags not less than 12 inches square and means for mounting.

(b) Each school bus shall carry at all times at least 3 red electric lanterns, or 3 oil burning pot-type flares and 3 red burning fusees.

(3) Flags, fusees and axe or wrecking bar shall be kept in the driver's compartment. Flares shall be kept filled and in metal containers to right or left of emergency door. All other emergency equipment shall be kept in a readily accessible place in proper containers or fasteners.

MVD 5.65 FIRE EXTINGUISHER: Each bus shall be equipped with a fire extinguisher of a type approved by the laboratories of the National Board of Fire Underwriters, 207 East Ohio Street, Chicago 11, Illinois, having not less than the following classification: 4BC dry powder type, or 6BC CO2 type. Extinguisher shall be mounted in an accessible place in full view, and kept filled and in satisfactory operating condition at all times.

MVD 5.66 FIRST-AID KIT: Bus shall carry Grade A metal first-aid kit and Type II contents conforming to specifications as set forth in March 3, 1959 ~~current~~ Federal Specifications GG-K-391a, mounted in full view and in accessible place in driver's compartment, and containing at least 16 units as listed in following table:

Federal specifications GG-K-391a obtainable from General Services Administration Business Research Center, Region 3, Seventh and D Streets, Washington 25, D. C.

- Bandage compress, (sterile gauze pads) 4-inch..... 2
- Bandage compress, (sterile gauze pads) 2-inch..... 1
- Adhesive absorbent bandage (adhesive tape) 1-inch..... 2
- Triangular bandage, 40-inch..... 1
- Gauze bandage, 4-inch..... 1

Absorbent-gauze compress.....	1
Burn compound, 1/8 ounce.....	2
Antiseptic applicators (swab type) (iodine or nitromersol tincture N.F. or thimersol N.F.).....	2
Ammonia inhalants.....	1
Wire splints.....	1
Tourniquet and forceps.....	2

MVD 5.67 FLOOR: (See MVD 5.60 (4).)

MVD 5.68 FLOOR COVERING: (1) Floor in underseat area, including tops of wheel housings, driver's compartment, and toeboard, shall be covered with fire-resistant floor-covering material of type commonly used in passenger transportation equipment. Floor covering shall be of rubber or linoleum and shall have minimum over-all thickness of 0.125 inch. (Linoleum floor covering shall be made with oxidized linseed-oil binder having cork filler and placed on burlap or felt backing.)

(2) Floor covering in aisle shall be of aisle-type rubber or linoleum, non-skid, and wear-resistant. If of linoleum, or rubber without ribs, it shall have minimum over-all thickness of 0.125 inch. If of ribbed material, minimum over-all thickness shall be 0.140 inch measured from tops of ribs. (Linoleum floor covering in aisle shall be as described in subsection (1).)

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

(4) Exception--small buses: Floor covering on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

MVD 5.69 HEATERS: (1) Heaters are required, and shall be of hot-water or combustion type.

Note: The standards are available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from the General Services Administration Business Research Center, Region 3, Seventh and D Streets, Washington 25 D. C.

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

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

Overhaul
(4) Where hot-water heaters are used, they shall bear name plate rating of School Bus Body Manufacturers' Association Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating

Equipment, plate to be affixed by heater manufacturer.

School Bus Body Manufacturers' Association
401 - 402 Washington Board of Trade Building
1616 K Street, N. W. Washington 6, D. C.

(5) All combustion-type heaters shall be approved by Underwriters' Laboratories, Inc, 207 E. Ohio St., Chicago 11, Illinois.

11
(6) If combustion-type heaters are used, they shall be installed on new buses by body manufacturers and on buses now in operation by

authorized dealers or by authorized garages. *all*
Note: Requirements for combustion type heaters listed in Interstate Commerce Commission Motor Carrier Safety Regulations, Revision of 1952 as amended as of July 1, 1961, obtainable from U. S. Government Printing Office, Washington

(7) Heaters shall be capable of maintaining inside temperatures²⁵ of 50 degrees Fahrenheit at average minimum January temperatures as established by U. S. Department of Commerce, Weather Bureau, for area in which heater is required. *D.C.*

AAA
MVD 5.70 IDENTIFICATION: (1) Body shall bear words "SCHOOL BUS" in black letters at least 8 inches high and one inch stroke on both front and rear of body or on signs attached thereto. Lettering shall be placed as high as possible without impairment of its visibility. ~~Lettering~~

~~shall conform to "Series B" of Standard Alphabets for Highway Signs.~~
Note: Full scale layout (40" overall length) of words "SCHOOL BUS" with suggestions for application available from: National Commission on Safety Education, 1201 Sixteenth Street, N. W. Washington 6, D. C.

(2) The painting of school nicknames, slogans, or insignia on bus is prohibited.

(3) Only signs and lettering approved by state law or regulation shall appear on bus.

The standard is on file -

and traceable.

5.69(4)

(a) Carrier may show fleet number, and if so, number shall be displayed under right taillight and in belt line immediately to the rear of service door, in letters 3 inches high with $\frac{1}{2}$ -inch stroke.

(b) Name and address (and telephone number if desired) of owner or operator shall be displayed in lower yellow panel of the rear of, and as close as possible to, the service door.

(c) A placard, decal or other device, not to exceed 90 square inches in size, to identify bus to small children, may be attached to bus body, below belt line and just to the rear of service entrance, in contrasting colors of yellow and black.

(d) Name of school or school bus firm may appear on sides of bus, on belt line above the seat line rub rail, in yellow or black letters not more than 8 inches high.

(e) Words "Emergency Door" shall be painted on the inside of the bus above the emergency door, and across the outside of the emergency door below the glass, in letters not less than 2 inches high by $\frac{1}{4}$ -inch stroke.

(f) Words "Emergency Exit" in letters at least 2 inches high by $\frac{1}{4}$ -inch stroke shall be painted directly above the emergency window referred to in sec. 5.62 (2) (h) on the inside of the bus, and directly below it on the outside.

(g) See sec. 5.45 regarding sign indicating passenger capacity.

(h) When bus is being used for other than school transportation purposes, flashing red signals shall not be used and all markings indicating it is a school bus shall be removed or concealed.

MVD 5.71 INSIDE HEIGHT: (1) Minimum inside body height shall be 70 inches measured at any point on longitudinal center line from front vertical bow to rear vertical bow.

(2) Exception--small buses: Standard does not apply.

MVD 5.72 INSULATION: Ceilings and walls shall be insulated with proper materials to deaden sounds and to reduce vibrations and heat transfer. Thermal insulation shall be fire-resistant material of type approved by Underwriters' Laboratories, Inc., 207 E. Ohio Street, Chicago 11, Illinois.

MVD 5.73 INTERIOR: (1) Interior of bus shall be free of all unnecessary projections likely to cause injury. This standard requires inner lining on ceilings and walls.

(2) Ceilings over aisles shall be free of all projections.

MVD 5.731 LADDERS: No school bus shall have a ladder attached to its exterior while in motion.

MVD 5.74 LAMPS AND SIGNALS: (1) All lamps and their installation shall conform to ~~current~~ standards and recommendations as set forth in handbook supplement 34 of 1963 of Society of Automotive Engineers, 485 Lexington Ave., N. Y. 17, N. Y.

(2) Head lamps: Bus shall be equipped with head lamps and fuses or circuit breakers.

(3) Clearance lamps and reflectors: Vehicles having a width at any part in excess of 80 inches shall be equipped with 2 amber clearance lights mounted on the front and 2 red clearance lights mounted on the rear, mounted in such a manner as to indicate the extreme width of the vehicle and as near the top thereof as practicable, and visible from a distance of 500 feet. Vehicles having a width in excess of 80 inches shall also be equipped with 2 amber reflectors mounted on the front and 2 red reflectors mounted on the rear, in such a manner as to indicate as nearly as possible the extreme width of the vehicle. Reflectors shall be mounted not less than 16 nor more than 60 inches from the ground. A lawful red reflector may be incorporated as part of a tail lamp.

(4) Tail and stop (brake) lamps: (a) Bus shall be equipped with two tail lamps and two stop (brake) lamps not in combination, emitting red light plainly visible for distance of 500 feet to rear. Stop (brake) lamps shall have light intensity at least equal to Class A, Type I turn-signal set forth in handbook supplement 34 of 1963 of units as established by Society of Automotive Engineers., 485 Lexington Ave., N. Y. 17, N. Y. X

(b) Tail lamps shall be mounted not less than 40 inches from surface on which vehicle stands. Stop (brake) lamps shall be as high as practicable but below window line, and spaced as far apart laterally as practicable but not less than 3 feet. Measurements shall be taken from lamp centers.

(5) License-plate lamp: Bus shall be equipped with rear license-plate illuminator. This lamp may be combined with one of tail lamps.

(6) Interior lamps: Interior lamps shall be provided which adequately illuminate aisle and step-well.

(7) School bus alternately flashing red signal lamps: (Definition) School bus alternately flashing red signal lamps are lamps mounted at same horizontal level, intended to identify vehicle as school bus and to inform other users of highway that such vehicle is stopped or about to stop on highway to take on or discharge school children.

(a) Bus shall be equipped with two red lamps at rear of vehicle and two red lamps at front of vehicle, which shall be controlled by manually actuated switch and shall flash alternately at rate of 60 to 120 cycles per minute. No brake or door operated switch shall be permitted.

(b) Lamps shall be sealed beam type not less than 5 inches in diameter designed specifically for school bus use and visible from a distance of at least 500 feet along the axis of the vehicle in bright sunlight.

(c) There shall be visible or audible means of giving clear and unmistakable indication to driver when signaling system is turned on.

Note: The standards are available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from the Handbook supplement 34 of 1963 of the Automotive Engineers, 485 Lexington Ave. N. Y 17 N Y.

(d) Installation:

1) Each signal lamp shall be mounted with its axis substantially parallel to longitudinal axis of vehicle.

2) Front and rear signal lamps shall be spaced as far apart laterally as practicable, but in no case shall spacing between lamp centers be less than 3 feet.

3) Location of front signal lamps shall be such that they can be clearly distinguished when headlamps are lighted on lower beam.

4) Signal lamps shall be mounted at front above windshield and at rear so that lower edge of lens is not lower than top line of side window openings.

5) Vision of front signal lamps to front and of rear signal lamps to rear shall be unobstructed by any part of vehicle from 10 degrees above to 10 degrees below horizontal and from 20 degrees to right to 20 degrees to left of center line of vehicle.

6) Area around lens of each alternately flashing red signal lamp and extending outward approximately 3 inches shall be painted black. In installations where there is no flat vertical portion of body immediately surrounding entire lens of lamp, circular or square band of black approximately 3 inches wide, immediately below and to both sides of lens, shall be painted on body or roof area against which signal lamp is seen.

7) Red signal lamps shall be equipped with 6-inch hoods to shield from rays of sun, for improved visibility.

(8) Turn-signal units: Bus shall be equipped with Class A, Type I turn-signal units that meet specifications/ of Society of Automotive Engineers, as set forth in handbook supplement 34 of 1963. These signals must be independent units.
485 Lexington Avenue, N. Y. 17, N. Y.

MVD 5.75 LETTERING: (See Identification - MVD 5.70)

MVD 5.751 MOUNTING: Chassis frame shall extend to rear of rear body cross member.

MVD 5.76 OVER-ALL WIDTH: Over-all width of bus shall not exceed 96 inches.

MVD 5.77 POSTS: (See MVD 5.60 and MVD 5.90 (2).)

MVD 5.78 REAR VISION: (1) Interior clear-view mirror shall be 6 by 30 inches over-all, to afford good view of pupils and roadway to rear. If not metal-backed and framed, mirror shall be of laminated plate safety glass. It shall have rounded corners and protected edges. (Exception--small buses: Manufacturer's standards acceptable.)

(2) Two exterior clear-view, rearview mirrors shall be provided, one to left and one to right of driver. Area of each mirror shall be not less than 50 square inches over-all. Each mirror shall be firmly supported and adjustable to give driver clear views past left rear and right rear of bus. (Exception--small buses: Left outside mirror only required. Manufacturer's standards acceptable.)

(3) A cross view mirror shall be provided to allow driver to see area in front of conventional type bus. (Exception--small buses: Standard does not apply.)

MVD 5.79 RUB RAILS: (1) Two rub rails of ample strength to resist impact and to prevent body crushing shall be provided on each side of body. They shall be applied to full outside length of body: on left side from windshield post to rear corner radius and on right side from service door to rear corner radius. One rail shall be located approximately at seat line and one approximately at floor line. Pressed-in or snap-on rub rails do not satisfy this requirement.

(2) Exception--small buses: Standard does not apply to small vehicles not manufactured specifically as school buses.

MVD 5.80 SEATS: (1) All seats shall have minimum depth of 14 inches.

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

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

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

(See Body Sizes table, Appendix)

(3) All seats shall be forward-facing and shall be securely fastened to that part or parts of bus which support them. (See MVD 5.53 (2).)

(4) No bus shall be equipped with jump seats or portable seats.

(5) Forward-most pupil seat on right side of bus shall be located so as not to interfere with driver's vision, not farther forward than guard rail behind driver or rear of driver's seat when adjusted to its rear-most position.

(6) Minimum center-to-center seat spacing shall be 26 inches. Distance between driver's seat when adjusted to its rear-most position and front face of seat-back of forward-most pupil seat on left side of bus shall not be less than 24 inches measured at cushion height.

(7) Padding and covering on all seats shall be of such materials as will not flash or explode upon contact with spark or open flame. Springs or other dangerous material shall not protrude through padding and covering.

(8) Minimum distance between steering wheel and back rest of driver's seat shall be 12 inches. Driver's seat shall have fore-and-aft adjustment of not less than 3 inches and shall be strongly attached. Buses put into operation after January 1, 1959 shall have hand or power operated adjustment.

(9) Minimum of 36-inch headroom for sitting position above top of undepressed cushion line of all seats shall be provided. Measurement shall be made vertically not more than 7 inches from side wall at cushion height and at fore-and-aft center of cushion.

(10) Backs of all seats of similar size shall be of same width at top and of same height from floor and shall slant at same angle with floor.

(11) Where grab handles on seats are used, they shall be enclosed.

(12) Exception--small buses: (a) subsections (1), (2), (3), (4), (5), (6), (7), (8), (10) and (11) apply.

(b) Seat beside driver, if regular equipment or installed by vehicle manufacturer, may be used for pupil seating. It shall be securely fastened to body and shall be so constructed as not to interfere with pupils entering or leaving vehicle.

(c) Allowable rump width in determining seating capacity of small buses and automobiles, which by reason of construction cannot be determined from the Body Sizes table, shall be 13 inches.

MVD 5.81 STANCHIONS AND GUARD RAILS: (1) Vertical stanchion shall be installed at right rear corner of driver's seat in such position as neither to interfere with adjustment of driver's seat nor to obstruct 12-inch aisle. Guard rail, approximately 30 inches above floor, and so placed as not to interfere with fore-and-aft adjustment of driver's seat, shall extend from vertical stanchion to left-hand wall behind driver's seat.

(2) Stanchion shall be installed at rear of entrance step-well from roof to floor. Placement shall not restrict entrance passageway at any level to less than 24 inches nor aisle to less than 12 inches.

(3) Guard rail and step-well guard panel shall be installed from step-well stanchion to right-hand wall to prevent children in front seat from being thrown into step-well in case of sudden stop. Guard rail shall be approximately 30 inches above floor and its guard panel shall not restrict entrance passageway to less than 24 inches at any level. Panel shall extend from guard rail to within 2 inches of floor. If panel extends over or into step-well opening, it must be flanged at floor line so as to close any opening between panel and floor.

(4) Clearance between step-well guard panel and first pupil seat shall be at least 24 inches measured from panel to front face of seat back at cushion height.

(5) All stanchions and guard rails shall be minimum of 1-inch outside diameter and of 18-gauge metal tubing or equal.

MVD 5.82 STEERING WHEEL: (See MVD 5.49 (4).)

MVD 5.83 STEPS: (1) First step at service door shall be not less than 12 inches and not more than 16 inches from ground, based on standard chassis specifications.

(2) Riser of upper step at service door shall be not more than 15 inches. When more than two steps are used, risers must be within $\frac{1}{2}$ inch of equal height except that, where plywood floor is used on steel, differential may be increased by thickness of plywood used.

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

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

(5) Grab handle not less than 10 inches in length shall be provided in unobstructed location inside doorway.

(6) Surface of steps shall be of non-skid material.

(7) Exception--small buses: Steps (if any) on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

MVD 5.84 SUN SHIELD: Interior adjustable sun visor not less than 6 by 16 inches in size shall be installed above windshield.

MVD 5.86 UNDERCOATING: Entire underside of body, including floor members and side panels below floor level, shall be coated with fire-resistant, asphalt-base or rubber-base undercoating material, applied by spray method, at least 1/8-inch thick, in order to seal, to deaden sound, to insulate, and to prevent oxidation. This shall not apply to buses placed in service prior to January 1, 1955.

MVD 5.87 VENTILATION: (1) Body shall be equipped with suitable, controlled ventilating system of sufficient capacity to maintain proper quantity of air under operation conditions without opening of windows except in extremely warm weather.

(2) If static-type exhaust roof ventilators are desired, they shall be installed forward of the center of roof.

(3) Exception--small buses: Standard does not apply to small vehicles not manufactured specifically as school buses.

MVD 5.88 WHEEL HOUSINGS:

(1) Wheel housings must be of full open type.

(2) Wheel housings shall be attached to floor sheets in such a manner as to prevent any water or dust from entering body.

(3) Inside height of wheel housings above floor line shall not exceed 10 inches.

(4) Wheel housings shall provide clearance for ^{loaded bus and the use} ~~dual wheels as estab-~~
of anti-skid chains.
~~lished by National Association of Chain Manufacturers.~~

(5) Exception--small buses: Standard does not apply to small vehicles not manufactured specifically as school buses.

MVD 5.89 WIDTH: (See MVD 5.76)

MVD 5.90 WINDSHIELD AND WINDOWS: (1) All glass in windshield, windows, and doors shall be of approved safety glass, so mounted that permanent mark is visible, and of sufficient quality to prevent distortion of view in any direction.

(2) Windshield shall be large enough to permit driver to see roadway clearly, shall be slanted to reduce glare, and shall be installed between front corner posts that are so designed and placed as to afford minimum obstruction to driver's view of roadway.

(3) All regular side windows shall provide an opening from the top of not more than 10 inches.

(4) All exposed edges of glass shall be banded.

MVD 5.91 WINDSHIELD WASHERS: Windshield washers shall be optional but, where installed, they shall conform to body manufacturer's recommendations as to type and size for bus on which they are to be used.

MVD 5.92 WINDSHIELD WIPERS: Bus shall be equipped with two positive-action windshield wipers of vacuum, air, or electric type.

MVD 5.93 WIRING: (1) All wiring shall conform to ~~current~~ standards set forth in handbook supplement 33 of 1963 of Society of Automotive Engineers., 485 Lexington Avenue, N. Y. 17, N. Y.

(2) Circuits:

(a) Wiring shall be arranged in at least nine regular circuits, as follows:

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

2) Clearance lamps.

Note. The standards are available for inspection at the office of the Motor Vehicle Department, the Secretary of State and the Revisor of Statutes, or may be procured for personal use from the Handbook Supplement # 33 of 1963 of the Society of Automotive Engineers, 485 Lexington Avenue, New York 17 New York.

- 3) Dome and step-well lamps.
- 4) Starter motor.
- 5) Ignition and emergency door signal.
- 6) Turn-signal units.
- 7) Alternately flashing red signal lamps.
- 8) Horn.
- 9) Heaters and defrosters.

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

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

(3) A separate fuse or circuit breaker shall be provided for each circuit except starter motor and ignition circuits.

(4) All wires shall be insulated and protected by covering of fibrous loom (or equivalent) which will protect them from external damage and minimize dangers from short circuits.

(5) All light circuits shall be such as to provide, as nearly as possible, bulb design voltage at light-bulb terminals.

(6) Inside and outside wires shall be fastened securely at intervals of not more than 24 inches. All joints shall be soldered or joined by equally effective connectors.

(7) Exception--small buses: Wiring shall be manufacturer's standard.

SUBCHAPTER IV

GENERAL REQUIREMENTS

MVD 5.94 ORTHOPEDIC BUSES: Buses used for the transportation of orthopedic children shall comply with all general school bus regulations which by their nature are applicable to this type of operation.

(1) General driver requirements are applicable, with the exception that special loading and unloading procedures may be followed.

(2) General construction requirements apply, except that special seating devices are permissible. Where wheel chairs are used, they must be firmly and securely anchored before bus is put in motion.

(3) Special loading arrangements and devices are permissible in lieu of normal school bus step and school bus door requirements.

(4) The usual emergency equipment is required.

(5) Because of the special nature and function of these vehicles, they will be inspected and approved by the State Patrol on an individual basis.

MVD 5.95 PANEL TRUCKS AND STATION WAGONS: No panel body truck or delivery car shall be converted or put in service as a school bus. No station wagon having a body of wood construction shall be put into service as a school bus.

MVD 5.96 ENFORCEMENT POLICY: The enforcement policy of the Motor Vehicle Department shall take into consideration the age, condition and equipment of vehicles before granting approval for their continued use. The Motor Vehicle Department shall prohibit the use of any vehicle for school transportation purposes which is deemed to be unsafe or unfit for such service.

(2) In construing and enforcing the provision of this chapter, the act, omission or failure of any officer, agent, servant or other person acting for or employed by the registered owner or the lessee of the bus, whoever has control, done within the scope of his employment is deemed to be the act, omission or failure of such registered owner or lessee. This shall not apply to violations of Chapter 346, statutes.

MVD 5.97 INSPECTION: Upon notification by the Commissioner of the Motor Vehicle Department or his representative, or the Department of Public Instruction, or any public school official, the owner or operator shall present all school buses for inspection at the designated time and place of inspection.

MVD 5.98 PENALTIES: Violations of any provision of Chapter MVD 5 shall be prosecuted under the governing statute. Where no penalty is provided, the violation shall be prosecuted as set forth in Section 110.06 (3), Wisconsin Statutes.

MVD 5.99 APPLICABILITY: (1) The provisions of Chapter MVD 5 (revised, 1962) shall take effect January 1, 1963.

(2) Exception: The following provisions apply only to new buses and bus replacements first placed in operation on or after the effective date of Chapter MVD 5 (revised, 1962):

5.26	5.56
5.27 (2), (3)(b), (4)	5.60 (3), (4)
5.28 (1), (2), (4)(c)	5.61
(4)(d), (4)(e)	5.62 (1)(c), (d)
5.30	(2)(d), (g), (h)(1), (2), (i)
5.36 (1), (2)	(3)
5.37	5.66
5.38	5.68
5.39	5.69
5.40	5.70 (3)(a), (b), (f)
5.41	5.74 (4), (5), (7)
5.42	5.75
5.47	5.78
5.48	5.80 (1), (2), (6), (9), (10)
5.49	5.81
5.50	5.83 (1), (2)
5.52	5.88
5.53 (2), (3)	5.93 (1), (2)(a), (5)
5.54	

(3) Buses placed in service before the effective date of this revision shall be governed by the comparable section which existed in Chapter MVD 5, Revised 1958.

~~SUBCHAPTER V~~

AUTOMOBILES

(3)
1. The following subsections apply to automobiles:

(a) 5.19 ; 5.20 ; 5.25 ;

(b) 5.20

(c) 5.25

5.27 (1), (3) (a)

5.28 (2), (3)

5.29 (1), (2)

5.34 Statutory

5.40 Statutory

5.41 (1) (a), (b), (f), (g),
(2), (3), (4)

Indicator lights may be used in place of ammeter, voltmeter, oil pressure indicator, temperature indicator.

5.43

5.46

5.48 (1)

5.50 (5) Mounting may be according to manufacturer's specifications.

5.54 (4) In no case shall more than 2 children occupy the front seat of automobiles.

5.56 (4)

5.59 Optional. If painted, must comply with sec. 347.44 (3), statutes

5.60 (1) All steel. Manufacturer's specifications.
(2), (4) (b)

5.61

5.62 Manufacturer specification. All inside door handles on camper type vehicles shall be protected against accidental release.

5.69 (1) Manufacturer's standards.
(2), (3), (5), (7).

5.70 (1) If automobile is painted in accordance with section 5.59, it must comply with sec. 347.44 (3), statutes. Words "SCHOOL BUS" shall be in black letters at least 6 inches high and three-fourths inch stroke.

(2)

(3)(b) Name and address (telephone number if desired)

shall be displayed on right hand door of driver's
compartment.

5.74 Manufacturer's standards shall apply for headlamps, tail lamps,
stop lamps, direction lamps and license plate lamps.

(7)(a) Flashing red signal required if automobile is painted
according to sec. 5.59.

5.78 Manufacturer's standard. In addition, one outside mirror
mounted on left side shall be required.

5.80 (3), (4), (12)(c).

5.84 Manufacturer's standard.

5.90 (1)

5.92

5.93 Manufacturer's standards.

APPENDIX

Grade Ability Formula:

$$G = \frac{33750 \times H. P.}{G.V.W. \times M.P.H.}$$

— 1.5 (for buses having seating capacity up to and including 67 pupils)

or

— 1.2 (for buses having seating capacity of 68 or more pupils)

Where G = Grade in per cent

H.P. = Certified net horsepower delivered at road speed (M.P.H.)

G.V.W. = Gross vehicle weight (see table below)

M.P.H. = Miles per hour vehicle is driven

Rolling Resistance = 1.5 or 1.2 (depending on seating capacity on bus)

<u>Pupil Capacity</u>	<u>Gross Vehicle Weight (G.V.W.)</u>
36	Chassis (wet) plus 7,500 lbs.
42	Chassis (wet) plus 8,600 lbs.
48	Chassis (wet) plus 9,800 lbs.
54	Chassis (wet) plus 10,800 lbs.
60	Chassis (wet) plus 11,900 lbs.
66	Chassis (wet) plus 13,200 lbs.

Body Sizes:

Number of rows of seats	Pupil Capacity		Maximum body length (in inches)	Minimum measurement, cowl to center line of rear axle (in inches)	Minimum measurement, cowl to end of frame (in inches)
	3-3 plan rump width 13 inches	3-2 plan rump width 15 inches			
4	24	20	174	102	174
5	30	25	187	123	187
6	36	30	215	126	215
7	42	35	243	142	243
8	48	40	272	160	272
9	54	45	301	192	301
10	60	50	330	211	330
11	66	55	355	229	355

Suggested Method for Estimating Generator Capacity:

Constant Load		Intermittent Load	
Equipment	Approximate average current draw (amperes)	Equipment	Approximate average current draw (amperes)
Ignition.....	2.50	Four alternately flashing signal lamps - sealed beam.....	
Head lamps (dual low beam).....	6.85	type - (2 lighted at once).....	13.00
Tail lamps.....	0.82	Turn-signal units.....	3.00
Clearance lamps.....	2.52	Step-well and four interior lamps.....	4.20
Flasher motor.....	3.00	Two stop (brake) lamps.....	3.00
Instrument panel.....	0.80	Electric windshield wiper motor.....	7.00
Left-hand driver's heater (two motors)...	18.00	Electric fuel pump.....	3.00
Left-hand driver's heater (one motor)....	9.00	Emergency door buzzer.....	1.00
Right-hand driver's heater (one motor)....	9.00	Interior lamps in excess of four, added draw per lamp.....	0.90
Defroster fan.....	3.00		
Left-hand defroster....	8.00		
Right-hand defroster...	8.00		
Four alternately flashing signal lamps -- bulb type (2 lighted at once)....	6.00		

(Note: Horn is not included because of its limited use.)

The above values show (in amperes) the approximate average draw of current for typical constant-load and intermittent-load equipment items. The draw for any specific item will vary depending on make and model of the equipment. For more accurate values, the manufacturer's specifications should be consulted.

To determine the electrical load (in amperes) for a typical school bus, the following formula is recommended:

$$\text{Constant load} + 35\% \text{ of intermittent load} = \text{total load.}$$