

CHAPTER 3520
STATE BOARD OF EDUCATION
TRANSPORTATION OF STUDENTS IN PUBLIC
AND NONPUBLIC ELEMENTARY AND
SECONDARY SCHOOLS

STANDARDS FOR AID

3520.0200 APPLICATION AND CLAIM FOR TRANSPORTATION AID.

3520.0300 AID LIMITATION.

3520.0400 ELIGIBLE PUPILS, RESIDENT PUPILS.

3520.0500 FULL-TIME EQUIVALENT PUPIL UNITS.

3520.0600 CERTIFICATION OF ELIGIBLE PUPILS.

3520.0700 DETERMINATION OF TRANSPORTATION COSTS.

3520.0800 TRANSPORTATION AID OTHER THAN SCHOOL TO HOME.

3520.0900 TRANSPORTATION AIDS FOR HANDICAPPED CHILDREN.

3520.1000 TRANSPORTATION AND BOARD AND LODGING CONTRACTS.

3520.1100 BUS RENTAL CONTRACTS.

3520.1200 COMMISSIONER'S RULES, TRANSPORTATION CONTRACTS.

3520.1300 PLANNING DETAIL, RECORDS.

3520.1400 REGULATIONS RELATING TO EQUAL TRANSPORTATION.

3520.1500 FREE AND EQUAL TRANSPORTATION TO SCHOOL DISTRICT BOUNDARY.

3520.1600 FREE AND EQUAL TRANSPORTATION AID ONLY FOR CONTRACT COSTS WITHIN THE DISTRICT.

3520.1700 DEPRECIATED AID.

3520.1800 TRANSPORTATION OF NONRESIDENT PUPILS.

3520.1900 QUALIFICATIONS FOR SCHOOL BUS DRIVERS.

3520.2000 TESTS.

3520.2100 PHYSICAL EXAMINATION.

3520.2200 DRIVER BACKGROUND CHECK.

3520.2300 REQUIREMENTS, RENEWAL OF DRIVER LICENSE AND SCHOOL BUS ENDORSEMENT.

RULES, OPERATION OF SCHOOL BUSES AND PUPIL TRANSPORTATION SAFETY EDUCATION PROGRAM

3520.2400 OPERATION OF TYPE I SCHOOL BUSES CARRYING MORE THAN 16 PUPIL PASSENGERS.

3520.2500 DRIVER OF TYPE I BUSES.

3520.2600 FLAGGING AT RAILROAD GRADE CROSSINGS.

3520.2700 TIRE REQUIREMENTS FOR ALL TYPES OF VEHICLES.

3520.2800 PRETRIP INSPECTION OF BUSES.

3520.2900 ADOPTION OF ADDITIONAL OPERATING RULES.

3520.3000 OPERATION OF TYPE III SCHOOL BUSES CARRYING 16 OR LESS PUPIL PASSENGERS. (INCLUDES AUTOMOBILES, STATION WAGONS, AND OTHER VEHICLES DESIGNED FOR CARRYING NINE OR LESS.)

3520.3100 DRIVER OF TYPE III BUSES.

3520.3200 ADOPTION OF ADDITIONAL OPERATING RULES.

3520.3300 TRANSPORTATION OF HANDICAPPED STUDENTS.

3520.3400 DRIVER OF VEHICLE FOR HANDICAPPED STUDENTS.

3520.3500 ADOPTION OF ADDITIONAL OPERATING RULES.

3520.3600 PUPIL TRANSPORTATION SAFETY EDUCATION PROGRAM.

DESIGN OF SCHOOL TRANSPORTATION EQUIPMENT STANDARDS

3520.3700 DESIGN.

3520.3800 SCHOOL BUS CHASSIS.

3520.3900 AIR CLEANER.

3520.4000 AXLES.

3520.4100 BATTERY.

3520.4200 BRAKES.

3520.4210 AUXILIARY BRAKE.

3520.4220 BRAKES FOR CHASSIS CARRYING 36 OR GREATER BASIC PUPIL CAPACITY.

3520.4230 BRAKE SYSTEM VACUUM TANK.

3520.4240 BRAKE REQUIREMENTS ON SCHOOL BUS CHASSIS MANUFACTURED AFTER JANUARY 1, 1968.

3520.4250 EMERGENCY STOPPING SYSTEM.

3520.4260 PARKING BRAKES.

3520.4300 BUMPERS.

3520.4400 CERTIFICATION.

3520.4500 CLUTCH.

3520.4510 COLOR.

3520.4520 FAN-RADIATOR COOLING SYSTEM.

3520.4530 DRIVE SHAFT.

3520.4540 ELECTRICAL SYSTEM.

3520.4550 EXHAUST SYSTEM.

3520.4560 FENDERS, FRONT.

3520.4570 FRAME.

3520.4580 FRAME LENGTHS.

3520.4600 FUEL TANK.

3520.4610 GENERATOR OR ALTERNATOR.

3520.4620 GOVERNOR.

3520.4630 HEATING SYSTEM.

3520.4640 HORN.

3520.4650 INSTRUMENTS AND INSTRUMENT PANEL.

3520.4660 OIL FILTER.

3520.4670 OPENINGS.

3520.4680 PASSENGER LOAD FOR NEW BUSES MANUFACTURED AFTER JANUARY 1, 1975.

3520.4690 POWER AND GRADEABILITY OF NEW BUSES MANUFACTURED AFTER JANUARY 1, 1975.

3520.4700 SHOCK ABSORBERS.

3520.4710 SPRINGS.

3520.4720 STEERING GEAR.

3520.4730 TIRES AND RIMS.

3520.4740 TRANSMISSION.

3520.4750 UNDERCOATING AND/OR RUST PROOFING.

3520.4760 WEIGHT DISTRIBUTION.

3520.4770 WHEELS.

3520.4800 SCHOOL BUS BODY.

3520.4810 AISLE.

3520.4820 BATTERY.

3520.4830 BODY SIZES.

3520.4840 BOOK RACKS.

3520.4850 BUMPER.

3520.4860 CEILING.

3520.4870 CHAINS.

3520.4900 COLOR.

3520.4910 CONSTRUCTION.

3520.4920 CONSTRUCTION OF THE BUS BODY.

3520.4930 FLOOR CONSTRUCTION.

3520.4940 ROOF STRAINERS.

3520.4950 SIDE STRAINERS.

3520.4960 REAR CORNER REINFORCEMENT.

3520.4970 FLOOR SILLS.

3520.4980 OPENINGS.

MINNESOTA RULES 1983

2685

TRANSPORTATION OF STUDENTS 3520.0400

3520.4990	EXCEPTIONS.	3520.5380	SEAT BELT FOR DRIVER.
3520.5000	DEFROSTERS.	3520.5400	SEATS.
3520.5010	DOORS.	3520.5410	FIBERGLASS SEATS.
3520.5020	EXCEPTIONS FOR SMALL VEHICLES.	3520.5420	SEAT EXCEPTION FOR SMALL VEHICLES.
3520.5100	EMERGENCY WINDOW.	3520.5430	STANCHIONS AND GUARD RAILS.
3520.5110	FIRE EXTINGUISHERS.	3520.5440	STEERING WHEEL.
3520.5120	FIRST AID KIT.	3520.5450	STEPS.
3520.5130	FLOOR.	3520.5460	STIRRUP STEPS.
3520.5140	FLOOR COVERING.	3520.5470	STOP SIGNAL ARM.
3520.5150	HEATERS.	3520.5480	STORAGE COMPARTMENT.
3520.5160	IDENTIFICATION.	3520.5490	SUNSHIELD.
3520.5170	INSIDE HEIGHT.	3520.5500	TAILPIPE.
3520.5180	INSULATION.	3520.5510	UNDERCOATING AND RUSTPROOFING.
3520.5190	INTERIOR.	3520.5520	VENTILATION.
3520.5200	LAMPS AND SIGNALS FOR NEW BUSES ONLY.	3520.5530	WHEEL HOUSING.
3520.5210	LAMPS AND SIGNALS FOR BUSES NOW IN SERVICE.	3520.5540	WIDTH.
3520.5220	TURN SIGNAL LAMPS.	3520.5550	WINDSHIELD AND WINDOWS.
3520.5230	FLAGS AND FLARES.	3520.5560	WINDSHIELD WASHERS.
3520.5300	METAL TREATMENT.	3520.5570	WINDSHIELD WIPERS.
3520.5310	MIRRORS.	3520.5580	WIRING.
3520.5320	MOUNTING.	3520.5600	TYPE II SCHOOL BUSES.
3520.5330	OVERALL LENGTH.	3520.5610	EQUIPMENT.
3520.5340	OVERALL WIDTH.	3520.5700	TYPE III SCHOOL BUSES.
3520.5350	POSTS.	3520.5710	EQUIPMENT.
3520.5360	RUB RAILS.	3520.5800	INSPECTION OF SCHOOL TRANSPORTATION EQUIPMENT.
3520.5370	SANDERS.		

STANDARDS FOR AID

3520.0200 APPLICATION AND CLAIM FOR TRANSPORTATION AID.

Subpart 1. **Deadline.** A district making application for aid for transportation or board and lodging under Minnesota Statutes, sections 124.222 and 124.223 shall report to the State Department of Education and all claims submitted shall be postmarked not later than July 31 after the close of the school term for which aid is claimed in order to qualify for final payment at the regular time.

Subp. 2. **Frequency of reports.** For each fiscal year ending June 30, each district shall file a report pursuant to subpart 1. This report and the year-end reports required in subpart 1 shall provide the pupil counts on which the following September, December, and March payments of 30 percent will be paid.

Statutory Authority: *MS s 124.14*

3520.0300 AID LIMITATION.

Transportation aid will be paid for the transportation of each eligible resident pupil for one round trip per day to the classified school attended. Transportation aid for any eligible pupils will be granted on the authority of only one clause of Minnesota Statutes, section 124.223, clauses (1), (2), (4), and (5).

Statutory Authority: *MS s 124.14*

3520.0400 ELIGIBLE PUPILS, RESIDENT PUPILS.

Resident pupils:

A. Any elementary or secondary pupil for which a school district is entitled to transportation aid under the provisions of Minnesota Statutes, sections 124.223 and 124.32, subdivision 6. Each eligible pupil transported pursuant to Minnesota Statutes, section 124.223, clause (1), to be included for transportation aid, shall reside a walking distance of one mile or more from the school building attended or which could be attended, but in the case of a nonpublic school only to the extent permitted by Minnesota Statutes, sections 123.76 to 123.79 with respect to nonpublic school pupils.

B. Any secondary pupil or an area vocational-technical school pupil, who is a resident of a district not maintaining a secondary school or area vocational-technical school or vocational classes and is transported to a district having a classified secondary or area vocational-technical school or vocational classes at the expense of the resident district.

3520.0400 TRANSPORTATION OF STUDENTS

2686

C. Any pupil transported to and from an instructional community-based employment station which is part of an approved occupational experience secondary vocational program, subject to such budget limitations as are imposed by current legislation.

D. Any pupil enrolled on a shared time basis in an educational program approved by the commissioner, for which transportation is provided from one educational facility to another within the district, subject to such budget limitations as are imposed by current legislation.

Statutory Authority: *MS s 124.14*

3520.0500 FULL-TIME EQUIVALENT PUPIL UNITS.

Subpart 1. Computation of pupil units for purpose of establishing base cost per pupil. For purposes of establishing base costs per pupil and for paying transportation liabilities of the state pursuant to Minnesota Statutes, sections 124.222 and 124.223, equivalent pupil units shall be computed (to the nearest .01).

Subp. 2. Regular transportation of pupils. For regular transportation of children pursuant to Minnesota Statutes, section 124.223, clauses (1) and (2), no pupil transported less than 20 days in a school year shall be counted.

Subp. 3. Other transportation. For transportation of children to a secondary vocational or cooperative center pursuant to Minnesota Statutes, sections 124.223, clause (3), and 123.351, and the state plan for vocational technical education, each pupil transported 20 or more days shall be counted according to term of enrollment as follows:

- A. half-semester, one-fourth full-time equivalent pupil;
- B. quarter, one-third full-time equivalent pupil;
- C. semester, one-half full-time equivalent pupil; and
- D. regular school year, one full-time equivalent pupil.

Subp. 4. Transportation of handicapped children. For transportation of handicapped children pursuant to Minnesota Statutes, section 124.223, clauses (4) and (5), the number of full-time equivalent pupils shall be the sum of the number of days in attendance and transported for each child divided by 175 with no ratio to exceed on.

For board and lodging, pursuant to Minnesota Statutes, section 124.223, clauses (2), (4), and (5), the rule in this subpart applies.

For summer school transportation of handicapped children, pursuant to Minnesota Statutes, section 124.223, clause (8), the rule in this subpart will apply.

Subp. 5. Summer school transportation. For summer school transportation, pursuant to Minnesota Statutes, section 124.223, clause (8), a pupil other than a handicapped child shall be counted one-sixth of a full-time equivalent pupil.

Summer school pupils are counted with the pupils in the following school year.

Statutory Authority: *MS s 124.14*

3520.0600 CERTIFICATION OF ELIGIBLE PUPILS.

The administrative officer of the school district shall certify that every pupil for whom aid for transportation or board or lodging is claimed is eligible for aid.

Statutory Authority: *MS s 124.14*

3520.0700 DETERMINATION OF TRANSPORTATION COSTS.

Subpart 1. General. In determining transportation costs to be used by any district as the basis for state aids, the following shall apply.

Subp. 2. Definitions. "Actual cost" means the net operating cost per eligible pupil transported or given board and lodging. "Base cost" is such cost in a given category for the 1973-1974 year. "Current cost" is such cost in a

MINNESOTA RULES 1983

2687

TRANSPORTATION OF STUDENTS 3520.0800

given category for the year of payment. The categories of cost are the same as listed in part 3520.0500. The commissioner shall establish a base cost for any transportation category for which a district had no experience in 1973-1974.

Subp. 3. Amount of aid. For any current year, the amount of state aid to be paid to a district will be the actual cost per full-time equivalent pupil or the base cost per full-time equivalent pupil augmented as provided in law, whichever is smaller, reduced by the amount of one mill (.001) times adjusted assessed valuation of the district.

Subp. 4. Times of payment. Payments of 30 percent of transportation aid are made to a district in September, December, and March based on the full-time equivalent pupils transported the previous year. The amount to be paid is the base cost per full-time equivalent pupil augmented as provided in state law. If the cost of transporting children is increasing greatly due to increased enrollment or new or expanded programs, the commissioner may authorize the payment of aids on a larger number of full-time equivalent pupils.

Subp. 5. Final payment. In August following the current year, a final payment shall be made based on current year full-time equivalent pupils and costs as provided in subparts 1 to 5 less previous payments made.

Subp. 6. Two children from same family residence. When two or more children from the same family residence are transported by the parent or guardian to the same school in a family vehicle, cost for state aid purposes is to be calculated on the basis of one child only.

Subp. 7. Duplication of state funds. Claims for aid which involve duplication of state funds to be paid for any pupil transported will not be approved.

Statutory Authority: *MS s 124.14*

3520.0800 TRANSPORTATION AID OTHER THAN SCHOOL TO HOME.

Subpart 1. Between school buildings. Any district in which pupils receive transportation between school buildings within the district for instructional purposes will receive transportation aid if a plan for the program and required transportation is submitted to and approved by the commissioner of education. The amount of such aid shall be specified by the commissioner upon consideration of a proposed budget. All plans and applications must be submitted to the commissioner for approval prior to July 1 of the fiscal year in which the plan is to be placed in effect. It shall be necessary to renew the plan each year with budget and other modifications as warranted in order to continue the plan.

Subp. 2. From employment station. Any district in which pupils receive transportation to and from an instructional community-based employment station which is part of an approved occupational experience secondary vocational program will receive transportation aid if a transportation application is submitted and approved by the commissioner of education. All plans and applications must be submitted to the commissioner for approval prior to July 1 of the fiscal year in which the plan is to be placed in effect. It shall be necessary to renew the plan each year with budget and other modifications as warranted in order to continue the plan.

Subp. 3. For shared time program. Any district in which pupils are enrolled in an approved shared time program will receive transportation aid if an application for required transportation is submitted to and approved by the commissioner of education. All plans and applications must be submitted to the commissioner for approval prior to July 1 of the fiscal year in which the plan is to be placed in effect. It shall be necessary to renew the plan each year with budget and other modifications as warranted in order to continue the plan.

Subp. 4. **Special trips.** All extracurricular and other special trips, not involving transportation from home to school or special education facility and return or from school to a vocational center or special education facility and return and not eligible for state aids, shall be accounted for, as to the number of miles traveled, number of resident pupils involved, and total cost for such trip or trips, by the board of each school district from which such trips not authorized by Minnesota Statutes, section 124.223 are made during the year.

Statutory Authority: *MS s 124.14*

3520.0900 TRANSPORTATION AIDS FOR HANDICAPPED CHILDREN.

Notwithstanding any rule to the contrary, handicapped children may be transported beyond school district boundaries if the district school board deems that such transportation is educationally necessary.

Districts which are responsible for the education of handicapped children residing in state institutions shall provide the necessary transportation and collect the transportation aids for all such pupils regardless of the district of residence pursuant to Minnesota Statutes, section 124.32, subdivision 6.

In addition to all aids provided herein, aids shall be provided for handicapped children pursuant to Minnesota Statutes, section 124.222, subdivision 2a.

Statutory Authority: *MS s 124.14*

3520.1000 TRANSPORTATION AND BOARD AND LODGING CONTRACTS.

The school board shall enter into written contracts for the transportation and/or board and lodging of its resident pupils and such contracts shall be approved by the commissioner of education within ten days after the written contract is negotiated. (See part 3525.1200)

Statutory Authority: *MS s 123.39 subd 2*

3520.1100 BUS RENTAL CONTRACTS.

The board of any school district which rents any of its district buses or vehicles shall submit in duplicate its written contract covering the rental arrangements to the commissioner of education within ten days after the written contract is negotiated.

Statutory Authority: *MS s 123.39 subd 2*

3520.1200 COMMISSIONER'S RULES, TRANSPORTATION CONTRACTS.

The board of any school district contracting with another district, private contract hauler, or parent for the transportation of its resident pupils shall submit its written contract(s) in duplicate to the commissioner of education within ten days after the written contract is negotiated, but not later than the first day of the school period for which the contract is made.

Transportation contracts shall include at least the following specific items:

- A. the correct names of the contracting parties;
- B. date the contract begins and date the contract ends;
- C. kind of transportation equipment to be used;
- D. total amount to be paid during the school year or base per pupil rate;
- E. when and how payments are to be made;
- F. minimum number of pupils to be transported; and
- G. special terms to be mentioned:
 - (1) holidays, specific dates;
 - (2) vacations, beginning and ending dates;

MINNESOTA RULES 1983

2689

TRANSPORTATION OF STUDENTS 3520.1400

- (3) conditions governing bus route changes;
- (4) how new and additional pupils will be provided for;
- (5) how extracurricular and other special trips are to be provided and paid for;
- (6) how adjustments and refunds are to be handled;
- (7) kinds and amounts of insurance to be carried and special coverage;
- (8) a statement that the local board shall approve any and all school bus routes, drivers, and alternate drivers; and
- (9) how contracts may be terminated.

Statutory Authority: *MS s 123.39 subd 2*

3520.1300 PLANNING DETAIL, RECORDS.

The school board in making arrangements for pupil transportation to and from school shall determine and maintain supporting records of the following, when applicable:

- A. routes of the regular and special school buses;
- B. location of regular and special school bus loading areas;
- C. time schedule for all school bus routes;
- D. any changes to be made in school bus routes during the school year and the giving of adequate notice thereof;
- E. evidence that all bus drivers are legally qualified;
- F. local pupil transportation policies; and
- G. the distance each pupil transported resides from the school attended or if nonpublic the district line to which transported.

Statutory Authority: *MS s 123.39 subd 2*

3520.1400 REGULATIONS RELATING TO EQUAL TRANSPORTATION.

In accordance with Minnesota Statutes, sections 123.76 to 123.79, it is the policy of the State Board of Education that school districts provide free and equal transportation for all school children of the state.

Pursuant to the policy set out above, the State Board of Education:

A. Shall provide transportation aid in accordance with parts 3520.0200 to 3520.1700 for transportation provided by the school board for resident pupils to and from eligible schools located within the district.

B. Shall provide transportation aid in accordance with parts 3520.0200 to 3520.1700 for transportation provided by the school district for resident pupils attending eligible schools located in another district, provided that the aid shall be for only so much of the trip as is within the district of residence and, provided further that transportation aid may only be provided for such pupils within the limits specified in part 3520.1500. This limitation is not applicable to transportation of handicapped children.

C. Shall not provide transportation aid where a school district elects to provide transportation for nonresident pupils to a school or schools within its district.

D. Shall not provide transportation aid where a school district elects to provide transportation for nonresident pupils through its district enroute to a school located in another district.

Statutory Authority: *MS s 121.11 subd 12*

3520.1500 FREE AND EQUAL TRANSPORTATION TO SCHOOL DISTRICT BOUNDARY.

An eligible resident pupil shall receive free and equal transportation to the appropriate school district boundary if there is no nonpublic school within the district maintaining grades or departments that are maintained in another district, or if attendance can more safely, economically, or conveniently be provided by such means.

A nonpublic school located within the resident district shall be deemed unavailable if it does not maintain the appropriate grades or departments. The term "appropriate department" shall include a department of religion.

The public school administration shall annually and as necessary consult with the appropriate nonpublic school administration on attendance areas, safety, economics, conveniences, and availability of space for the pupils.

The final determination as to whether transportation shall be provided to the boundary of the resident district shall be made by the public school board pursuant to law.

Where transportation is provided within the district to the boundary of the district and the school district is eligible for transportation aid for such transportation, the "within the district" limitation shall not be applied in an arbitrary manner. Safety factors in loading or unloading buses at or near the school district boundary shall be given due consideration. Transporting pupils a reasonable distance into the adjoining district or stopping short of the district boundary to assure safety of the pupils shall be determined by the public school board.

Statutory Authority: *MS s 121.11 subd 12*

3520.1600 FREE AND EQUAL TRANSPORTATION AID ONLY FOR CONTRACT COSTS WITHIN THE DISTRICT.

The school board of the district of residence may make contractual arrangements with private bus operators, nonpublic schools, public transit operators, parents, and/or other school districts for the transportation of school pupils for any portion of the pupil's trip to or from school, provided that the board ascertains that it is only paying for and claiming state aid for that portion of the trip that is within the district of residence. The resident school board's responsibility relative to such contracts shall be limited to the pro rata cost per resident pupil based on mileage traveled within the resident district as the mileage relates to the total number of miles traveled. Equal transportation is not to be defined in terms of numbers of children transported or numbers of miles traveled or the average cost per pupil for the transportation of eligible pupils attending public schools. Each public school board shall require the other party to such contractual arrangements to substantiate and identify all transportation costs charged to the public school district. Each school board applying for transportation aid for nonpublic school pupils shall comply with regulations of the state board as specified in chapter 3520.

The resident district may transport eligible nonpublic pupils to a nonpublic school located in another district provided the nonpublic school shall pay the cost of that portion of the trip which is outside of the resident district boundary.

Statutory Authority: *MS s 121.11 subd 12*

3520.1700 DEPRECIATED AID.

In addition to the transportation costs, depreciation aid shall be paid to each eligible district. Effective with the 1975-1976 fiscal year depreciation shall be calculated at 12-1/2 percent per school year in each year of the eight following the year of purchase on each eligible school bus. Depreciation for equipment added to or installed in a school bus specifically to meet special needs of handicapped individuals shall be calculated as provided in law.

MINNESOTA RULES 1983

2691

TRANSPORTATION OF STUDENTS 3520.2000

Such depreciation aids shall be paid in a lump sum in the month of September. For purposes of transportation levies, the last available depreciation amount shall be used.

“Restructured” means a vehicle produced by a chassis manufacturer which is converted into a school bus by a second manufacturer and upon completion shall meet or exceed the static load test code for school bus body structure. See part 3520.4920.

Type I conventional, forward control and pusher type vehicles of more than 16-passenger capacity which conform to the established state minimum standards are eligible to earn depreciation aid in accordance with the rules established by the State Board of Education.

Type II or Type III restructured vehicles of 16 or less passenger capacity are eligible to earn depreciation aid only when, and as, approved by the commissioner of education.

Remounted school bus body and chassis units shall not be eligible for depreciation aid. Exceptions may be made by the commissioner of education when it is determined that the safety of the unit is not adversely affected.

Statutory Authority: *MS s 121.11 subd 12*

3520.1800 TRANSPORTATION OF NONRESIDENT PUPILS.

Each school district wishing to transport nonresident pupils on district-owned and -operated buses and on privately owned and operated buses contracted for by the school board of the district shall make written application to the State Board of Education for permission to do so. Permission to transport nonresident pupils may be granted to school districts by the State Board of Education provided:

A. that the equipment is not required for the transportation of resident pupils and that there is available seating space in the bus to accommodate nonresident pupils; and

B. that the routes are within the area of the secondary school to be served and are approved by the State Board of Education.

Statutory Authority: *MS s 121.11 subd 12*

3520.1900 QUALIFICATIONS FOR SCHOOL BUS DRIVERS.

Satisfactory completion of a school bus driver's examination shall be required of every person required by Minnesota Statutes, section 171.321 to have a school bus endorsement to operate a motor vehicle used in the transportation of children to or from public, private, or parochial schools and school-related activities, and owned by a government agency, a private or parochial school corporation or agency, or a private person, firm, association, or corporation.

Statutory Authority: *MS s 171.321*

3520.2000 TESTS.

Subpart 1. **Test required.** The test or examination required for an initial school bus driver's endorsement on a Minnesota driver's license shall include a written test and a road test.

Subp. 2. **Written test.** The written test shall be based on the provisions of the Highway Traffic Regulations Act and driver license laws and rules relating to school bus operation prescribed by the State Board of Education, and a general knowledge of the operation of school buses, including knowledge of the equipment, devices, and laws peculiar to school buses. The written test shall be satisfactorily completed if a score of 70 is obtained. In determining whether a score of 70 has been obtained, the commissioner of public safety shall weight each portion of the test with regard to the criticalness of the specific factor being tested in relation to overall driving safety.

Subp. 3. **Road test.** The road test shall be given in a school bus. There are two separate classes of endorsement: one for a school bus with a capacity of 16 passengers or fewer, the other for a school bus with a capacity of over 16 passengers. An endorsement issued to an applicant taking the test in the smaller bus will be restricted to a bus of that size. An endorsement issued to an applicant taking the test in the larger bus will be unrestricted.

The road test shall be satisfactorily completed if a score of 70 is obtained. In determining whether a score of 70 has been obtained, the commissioner of public safety shall weight each portion of the test with regard to the criticalness of the specific factor being tested in relation to overall driving safety.

Statutory Authority: *MS s 171.321*

3520.2100 PHYSICAL EXAMINATION.

Subpart 1. **Physician's certificate.** An applicant for a school bus driver's endorsement shall be in good physical and mental health, be able-bodied and free from communicable disease. As evidence of his physical fitness and mental alertness, the applicant shall submit to a physical examination by a reputable physician designated by the local school authorities; and the physician's certificate of physical fitness and mental alertness shall accompany the application for school bus driver's endorsement when presented to the Department of Public Safety.

Subp. 2. **Disqualification.** Any school bus driver applicant whose physical examination discloses communicable diseases or mental or physical conditions of intermittent or continuing nature that might reasonably affect his ability to operate a school bus shall be denied a school bus driver's endorsement. One or more of the following deficiencies will disqualify the applicant for a school bus driver's endorsement:

A. Visual acuity less than 20/40 (Snellen) in either eye without lenses or by correction with lenses; total form field of vision in the horizontal meridian less than 140 degrees in either eye (drivers requiring correction by lenses shall wear properly prescribed lenses at all times when driving).

B. Hearing less than 30 db (10/20) in the better ear, with or without a hearing aid.

C. Inebriates or users of narcotics or drugs which may impair driving ability.

D. Any indication of coronary or heart ailment likely to interfere with safe driving. Electrocardiogram is required when other findings indicate desirability.

E. Blood pressure over 160/90.

F. Failure to have a satisfactory Mantoux or chest x-ray as required by Minnesota Department of Health rules parts 4605.3400 and 4605.3500.

G. Any communicable disease as listed in Minnesota Department of Health rules, parts 4605.0200 to 4605.0600; 4605.1700 to 4605.3300; and 4605.3600 to 4605.5100.

H. Loss of foot, leg, hand or arm, or other structural defect or limitation of movement likely to interfere with safe driving.

I. Any mental, nervous, organic, or functional disease likely to interfere with safe driving.

J. Diabetes unless controlled by diet or oral medication only.

K. Epilepsy or other episodic (paroxysmal) periods of unconsciousness.

L. Use of any medication which the examining physician determines is likely to interfere with safe driving.

M. Applicant not of good general health.

Subp. 3. **Form of physician's certificate.** The certificate to be used by the physician for reporting the physical condition of the applicant shall be one prescribed by the Department of Public Safety and may be obtained from that office or any driver examining station.

Subp. 4. **Periodic reexamination.** Each school bus driver is required to take and pass a physical examination every two years prior to his birthday in order to retain his school bus driver endorsement. The Department of Public Safety will send physical examination certificates to school bus drivers. A school bus driver shall return the certificate, completed by the examining physician, along with a \$2 processing fee, on or before his birthday to the Department of Public Safety. Failure to pass and return the physical examination shall result in cancellation of the school bus driver endorsement from the Minnesota driver license.

Subp. 5. **Additional examinations.** A physical examination may be required oftener upon demand of any school district from or to which such school bus driver shall be transporting school children. Such extra examination shall be paid for by the district demanding it.

Statutory Authority: *MS s 171.321*

3520.2200 DRIVER BACKGROUND CHECK.

Before issuing a school bus driver's endorsement the Department of Public Safety shall determine whether the applicant has been convicted of a crime involving moral turpitude and shall also conduct a background check on the applicant's driving record.

Statutory Authority: *MS s 171.321*

3520.2300 REQUIREMENTS, RENEWAL OF DRIVER LICENSE AND SCHOOL BUS ENDORSEMENT.

Subpart 1. **Requirements.** Every four years a school bus driver applying for the renewal of his driver license and school bus endorsement shall pass a written examination containing only such material as the commissioner of public safety deems necessary to determine if the licensee is entitled to retain the endorsement previously issued.

Subp. 2. **Noncompliance.** Failure to comply with any of the requirements of this part shall result in the cancellation or denial of the school bus driver's endorsement.

Statutory Authority: *MS s 171.321*

RULES, OPERATION OF SCHOOL BUSES AND PUPIL TRANSPORTATION SAFETY EDUCATION PROGRAM

3520.2400 OPERATION OF TYPE I SCHOOL BUSES CARRYING MORE THAN 16 PUPIL PASSENGERS.

Subpart 1. **Application of rules.** The operating rules stated in parts 3520.2400 to 3520.2900 shall govern the operation of Type I school buses used for the transportation of school children when owned and operated by a school district or privately owned and operated under a contract with a school district.

Subp. 2. **Transportation of pupils.** Only pupils assigned to the school bus by the school board or designated administrative officer of the school district shall be transported at district expense.

Pupils are not to be evicted from the bus along the route for a breach of discipline. All breaches of discipline shall be reported by the bus driver to the administrative officer.

The entrance door shall be closed at all times when transporting pupils and the bus is in motion.

All buses shall load and unload in the right lane of the roadway, at pupil's stops on bus routes approved by the administrative officer. Loading or

unloading in a designated turn lane or in a lane immediately adjacent to a designated turn lane is prohibited.

There shall be no pupils in the bus while the gas tank is being filled. On leaving the vehicle when pupils are in the bus, the driver shall stop the motor, remove the ignition key, set the brakes, and otherwise render the bus immobile.

The administrative officer shall see that no materials, including guns, loaded or unloaded; gasoline cans, empty or full; animals; or any other object of dangerous or objectionable nature are transported in the school bus when children are being transported.

No school bus shall pull any trailer when children are being transported to or from school or on extracurricular trips.

Subp. 3. Driving on school grounds. Buses shall not be run backwards on the school grounds or at any other point if it can be avoided. If it is necessary to run a bus backwards, the driver shall have another responsible person act as a guard or flagman in back of the bus to keep other persons out of the path and to issue warnings to the drivers of approaching vehicles.

Subp. 4. In case of accidents. In case of an accident or breakdown of the bus the driver shall not leave the bus but send two of the patrol or other responsible pupils to the nearest house to summon help.

Immediate reports of all accidents, however slight, involving the school bus shall be made by the driver to the administrative officer and to such other authorities as required by law, rule, or regulation. The driver shall prepare and keep all records and reports required by the administrative officer.

Statutory Authority: *MS s 169.45*

3520.2500 DRIVER OF TYPE I BUSES.

The driver:

A. Shall bring the bus to a full stop and disengage gears by shifting into neutral or park before loading and unloading pupils.

B. Shall use the prewarning amber flashing signals, flashing red signals, and stop signal arm in accordance with Minnesota Statutes, section 169.44.

C. Shall maintain at least a 50-foot interval when following another bus entering or leaving the school ground, and at least 500 feet when traveling on the highway (Minnesota Statutes, section 169.18, subdivision 8, clause (b)).

D. Shall load or unload pupils only where the view is unobstructed to the motorist for 500 feet in either direction.

E. Shall be responsible for safely delivering the pupils who must cross the highway to the left side of the road by one of the following methods: the pupil shall pass around in front of the vehicle and cross the road only upon receiving word from the driver; or the pupil shall pass around in front of the bus and be conducted across the road by the school bus patrol; or the driver shall personally conduct the pupils across the road.

F. Shall stop at all railroad crossings whether carrying passengers or not in accordance with Minnesota Statutes, section 169.28. Eight-lamp prewarning alternately flashing amber signals and flashing red stop signals shall not be used at railroad crossings.

A school bus shall not be flagged across railroad grade crossings except at such railroad grade crossings as the local school administrative officer may designate.

Statutory Authority: *MS s 169.45*

MINNESOTA RULES 1983

2695

TRANSPORTATION OF STUDENTS 3520.2800

3520.2600 FLAGGING AT RAILROAD GRADE CROSSINGS.

Flagging shall be done in the following manner.

The pupil shall take a position so as to have a clear view of the railroad tracks in both directions. If a train is approaching, the pupil shall not cross the track but shall face the bus and signal the bus not to proceed by holding up both hands above his head. When pupil has made certain that the track is clear and safe for crossing, he shall signal the driver to cross the tracks by a forward motion of upraised arm. The driver shall be sure that the pupil has checked for approaching trains and it is safe to cross before driving bus across the tracks. The pupil shall not reenter the bus until the bus has crossed the tracks a safe distance.

Statutory Authority: *MS s 169.45*

3520.2700 TIRE REQUIREMENTS FOR ALL TYPES OF VEHICLES.

Subpart 1. **Front wheels.** No recapped tires shall be used. Minnesota Statutes, section 169.44, subdivision 11. Tire tread depth shall not be less than 4/32 inch in any two adjacent major tread grooves at three equally spaced intervals around the circumference of the tire. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968. Issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Subp. 2. **Rear wheels.** Recapped tires permitted on rear wheels. Tire tread depth shall not be less than 2/32 inch in any two adjacent major tread grooves at three equally spaced intervals around the circumference of the tire. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968. Issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Subp. 3. **All wheels.** Not acceptable if:

A. Tire regrooved or recut below original groove depth when extra under-tread rubber was not provided for this purpose. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968, issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

B. Tire has unrepaired fabric break or was repaired by use of a boot or blowout patch. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968, issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. Tire has a bump, bulge, knot, or separation. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968, issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

D. Tire has exposed or damaged body cords. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968, issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

E. Tire has reinforcement repair to the cord body. USA Standard Inspection Procedures for Motor Vehicles, USAS D 7.1-1968, issued by United States of America Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Statutory Authority: *MS s 169.45*

3520.2800 PRETRIP INSPECTION OF BUSES.

A daily pretrip inspection shall be conducted on every school bus. Any defects or deficiencies that may affect the vehicle's safe operation or result in a mechanical breakdown shall be promptly reported in writing to the administrative officer.

Statutory Authority: *MS s 169.45*

3520.2900 ADOPTION OF ADDITIONAL OPERATING RULES.

The school board of the district may adopt such additional operating rules as deemed necessary to meet local conditions and needs, providing they do not conflict with state laws and rules.

Statutory Authority: *MS s 169.45*

3520.3000 OPERATION OF TYPE III SCHOOL BUSES CARRYING 16 OR LESS PUPIL PASSENGERS. (INCLUDES AUTOMOBILES, STATION WAGONS, AND OTHER VEHICLES DESIGNED FOR CARRYING NINE OR LESS.)

Subpart 1. **Application.** The operating rules stated in parts 3520.3000 to 3520.3200 shall govern the operation of Type III school buses used for the transportation of school children when owned and operated by a school district or privately owned and operated under a contract with a school district.

Subp. 2. **Transportation of pupils.** Only pupils assigned to the vehicle by the school board or designated administrative officer of the school district shall be transported at district expense.

Statutory Authority: *MS s 169.45*

3520.3100 DRIVER OF TYPE III BUSES.

The driver:

- A. Shall not operate vehicle as a Type I or Type II bus.
- B. Shall not stop traffic.
- C. Shall not load or unload in a vehicular traffic lane or on the shoulder. Shall be restricted to curb, nontraffic side (normal parking lane), off-street loading areas, driveways, yard service, and other areas to avoid any hazardous conditions.
- D. Shall not load or unload in the right-hand lane of the roadway, designated turn lane, or lane immediately adjacent to a designated turn lane.
- E. Shall not load or unload so that a child has to cross the road. Where not possible or impractical, the driver or aide shall personally escort the child across the road. If driver escorts, the motor must be stopped, ignition key removed, brakes set, and vehicle otherwise rendered immobile.
- F. Shall not load or unload before making a complete stop and disengaging gears by shifting into neutral or park.
- G. Shall not operate as a school bus, whether carrying pupil passengers or not, without displaying the "Vehicle Stops At RR Crossings" sign and stopping at all railroad crossings. See part 3520.5710, subpart 3. Sign may be covered or removed when vehicle is not operating as a school bus.

Statutory Authority: *MS s 169.45*

3520.3200 ADOPTION OF ADDITIONAL OPERATING RULES.

The school board of the district may adopt such additional operating rules as deemed necessary to meet local conditions and needs, providing they do not conflict with state laws and rules.

Statutory Authority: *MS s 169.45*

3520.3300 TRANSPORTATION OF HANDICAPPED STUDENTS.

Subpart 1. **Services provided.** Under the provisions of Minnesota Statutes, section 120.17, school districts are required to provide special education and services for handicapped school age residents. Accordingly, free transportation services shall be provided to any such handicapped child who requires special transportation services because of his or her handicapping conditions and/or special program needs.

These rules shall apply when the handicapping conditions of the child are such that the child cannot be safely transported on the regular school bus route

MINNESOTA RULES 1983

2697

TRANSPORTATION OF STUDENTS 3520.3400

and/or when the child is transported on a special route for the purpose of attending an approved special education program. These rules shall not be applicable to parents who transport their own child under contract with a school district.

Subp. 2. Appeal process. Any parent of a handicapped child who believes that the transportation services provided for that child are not in compliance with these rules may utilize the due process procedures provided for in Laws of Minnesota 1976, chapter 211.

Subp. 3. Transportation of students. The length of time a handicapped child is transported shall be appropriate to the physical, mental, and emotional well-being of the child. In general, a handicapped child should not spend more time in transit than a nonhandicapped child except as may be required because of the unique location of the child's educational program.

The school district shall determine the type of vehicle used to transport handicapped students on the basis of the handicapping conditions of those students. Such vehicles shall comply with the provisions of parts 3520.3700 to 3520.5800 of the rules of the State Board of Education.

All vehicles used to transport handicapped students shall be equipped with a two-way communications system and/or have a responsible aide to provide necessary assistance and supervision which cannot safely be provided by the driver. A school district may determine that neither a communication system nor an aide is required. The determination of whether a communication system and/or an aide are required shall reflect the needs of the students and be based on such factors as handicaps of students transported, distance traveled, density of population, terrain, and any other factors which may affect the safety of the pupil passengers. Exceptions to this paragraph may be made upon mutual agreement between the parents and the school district.

Specially adapted seats, support, and/or protective devices shall be provided for all students who require such devices to insure their safe transportation. Such devices shall be selected by the school district in consultation with the child's parents and on the basis of the specific needs of the individual handicapped child.

Any school bus used to transport students in wheelchairs shall be equipped with fastening devices which will hold such wheelchairs securely in a fixed position.

Statutory Authority: *MS s 169.45*

3520.3400 DRIVER OF VEHICLE FOR HANDICAPPED STUDENTS.

Each driver of a vehicle for handicapped students should be carefully selected to fulfill the unique requirements of the job. Drivers shall be assigned to each route on a regular basis whenever possible. Each aide assigned to a vehicle transporting handicapped students, or driver if no aide is assigned, or both, shall:

A. Have available to them in the vehicle a typewritten card indicating the student's name and address; the nature of the student's handicaps; emergency health care information; and the names and telephone numbers of the student's physician, parents, guardians and/or custodians, and of some person other than the student's parents or custodians who can be contacted in case of an emergency.

B. Be instructed in the proper emergency health care procedures for the students under their care. In addition, within one month after the effective date of assignment, participate in a program of in-service training on the proper methods for dealing with the specific needs and problems of those students.

C. Assist such children on and off the bus when necessary for their safe ingress and egress from the bus.

MINNESOTA RULES 1983

3520.3400 TRANSPORTATION OF STUDENTS

2698

D. Ensure that protective safety devices, as required in part 3520.3300, subpart 3, fourth paragraph, are in use and fastened properly.

Statutory Authority: *MS s 169.45*

3520.3500 ADOPTION OF ADDITIONAL OPERATING RULES.

The school district may adopt such additional operating rules governing transportation of handicapped students as deemed necessary to meet local conditions and needs, providing they do not conflict with state laws and rules.

Statutory Authority: *MS s 169.45*

3520.3600 PUPIL TRANSPORTATION SAFETY EDUCATION PROGRAM.

Each school district shall implement a program of safety education for all students who are transported in school buses. This program shall provide that:

A. at least twice during each school year, pupils shall be instructed in safe riding practices and shall participate in emergency evacuation drills; and

B. the instruction shall include, but need not be limited to, correct safety procedures for riding, loading, unloading, vehicle lane crossing, and emergency evacuation of school buses.

Statutory Authority: *MS s 123.80*

DESIGN OF SCHOOL TRANSPORTATION EQUIPMENT STANDARDS

3520.3700 DESIGN.

Subpart 1. **General.** The design and color of school buses, and all other vehicles used in the transportation of public school children, whether owned and operated by a school district or privately owned and operated under a contract with a school district, shall ensure safe and economical transportation of pupils at all times and shall reasonably conform to the minimum standards for design of school buses as established by the State Board of Education and as stated in the following rules.

Subp. 2. **New school buses.** The minimum standards shall apply to new school buses purchased for use in Minnesota after the effective date of these standards and buses complying with these standards when purchased new for use in Minnesota need not comply with any standards established by rules adopted subsequent thereto except as specifically provided.

Subp. 3. **Used school buses.** Any used school bus purchased for use in Minnesota shall conform to the Minnesota minimum standards that were in effect on the date that the vehicle was purchased new and, in addition thereto, any standards established by rules adopted subsequently which are applicable to school buses purchased new for use in Minnesota as set out in subpart 2.

Statutory Authority: *MS s 169.45*

3520.3800 SCHOOL BUS CHASSIS.

The design of each truck chassis used in the transportation of school children shall provide for:

- A. air cleaner;
- B. axles;
- C. battery;
- D. brakes;
- E. bumpers;
- F. certification;
- G. clutch;
- H. color;
- I. cooling system (fan-radiator);
- J. drive shaft;

- K. electrical system;
- L. exhaust system;
- M. fenders, front;
- N. frame;
- O. frame lengths;
- P. fuel tank;
- Q. generator or alternator;
- R. governor;
- S. heating system;
- T. horn;
- U. instruments and instrument panel;
- V. oil filter;
- W. openings;
- X. passenger load, new buses (manufactured after January 1, 1975);
- Y. power and gradeability, new buses (manufactured after January 1, 1975);
- Z. shock absorbers;
- AA. springs;
- BB. steering gear;
- CC. tires and rims;
- DD. transmission;
- EE. undercoating and/or rust proofing;
- FF. weight distribution; and
- GG. wheels.

Statutory Authority: *MS s 169.45*

3520.3900 AIR CLEANER.

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

Statutory Authority: *MS s 169.45*

3520.4000 AXLES.

Subpart 1. **Front axle.** Front axle or other type of suspension assembly shall be of sufficient capacity at ground to support such load on front axle as would be imposed by actual average gross vehicle weight.

Subp. 2. **Rear axle.** Rear axle shall be full-floating type. Rear axle or any 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.

Subp. 3. **Exception in axle requirement for transit and metropolitan vehicles.** Front axle shall be wide-track, heavy-duty bus type and shall have gross weight rating at the ground equal to or exceeding that portion of total load which is supported by the front axle.

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.

Statutory Authority: *MS s 169.45*

3520.4100 BATTERY.

Subpart 1. **General requirement.** 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 in Minnesota. No bus shall be equipped with a battery system of less than 150 ampere hours at 12 volts, measured at 20-hour rate. (Negative ground system only.)

MINNESOTA RULES 1983

3520.4100 TRANSPORTATION OF STUDENTS

2700

Subp. 2. **Option.** Battery system of at least 90 ampere hours may be installed in engine compartment and shall be used only in combination with generator or alternator of at least 120 amperes. (See chassis, part 3520.4610, subpart 2.)

Subp. 3. **Mounting of battery.** When battery is to be mounted outside of engine compartment, it may be temporarily mounted to chassis. Body company will permanently mount battery on sliding tray located so that center line of battery is 52 inches back of cowl. One-piece, one gauge battery cables shall be provided by chassis manufacturer, such cables to be at least 36 inches longer than normally required, to accommodate battery when located 52 inches to rear of cowl.

Subp. 4. **Exception for battery requirement in small vehicles.** Same as subpart 1.

No small vehicle shall be equipped with battery of less than 60-ampere hours at 12 volts, measured at 20-hour rate.

Subpart 3 does not apply.

Statutory Authority: *MS s 169.45*

3520.4200 BRAKES.

Components of all brakes shall be of standard make with replacement parts available through larger automotive parts suppliers.

Four wheel brakes, adequate at all times to control bus when fully loaded, shall be provided.

Foot or service brakes shall, at all times, be capable of stopping complete unit (i.e., wet chassis weight, plus body weight, plus driver's weight, without pupils) 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 one percent grade), dry, smooth, hard surface that is free from loose material.

Statutory Authority: *MS s 169.45*

3520.4210 AUXILIARY BRAKE.

Chassis shall be equipped with auxiliary brake capable of locking rear 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 and ice. Operating controls of such auxiliary brake shall be independent of operating controls of service brakes and shall be readily accessible to driver in normal driving position.

Under test conditions outlined in part 3520.4200, auxiliary brake shall be capable of stopping vehicle from speed of 20 miles per hour in measured distance of 50 feet.

Statutory Authority: *MS s 169.45*

3520.4220 BRAKES FOR CHASSIS CARRYING 36 OR GREATER BASIC PUPIL CAPACITY.

Chassis carrying body of 36 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 table under body, part 3520.4830. Such installation shall be made by authorized representative of chassis or brake manufacturer and shall conform to recommendation of that manufacturer. Hydraulic line pressure shall not exceed recommendation of chassis or brake manufacturer. Total reservoir capacity (see item A) 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.

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

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

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

C. Air gauge mounted on instrument panel to register air pressure in air-brake system. See chassis, part 3520.4650.

D. Audible or visible low-pressure indicator to warn driver if air pressure in air brake system falls below 60 pounds per square inch.

Buses having vacuum-actuated or compressed-air-over-hydraulic systems shall be equipped with check valve located between source of supply and reservoir.

Statutory Authority: *MS s 169.45*

3520.4230 BRAKE SYSTEM VACUUM TANK.

Brake system vacuum tank installed by chassis manufacturer shall be used exclusively for operation of brakes. System shall include suitable and convenient connection for installation of separate vacuum reservoir with capacity of not less than 1,000 cubic inches, furnished and installed by body manufacturer and protected by check valve, for actuation of other vacuum-powered accessories. Engine shall be protected by proper filters.

Statutory Authority: *MS s 169.45*

3520.4240 BRAKE REQUIREMENTS ON SCHOOL BUS CHASSIS MANUFACTURED AFTER JANUARY 1, 1968.

Subpart 1. **Provisions.** The following provisions for brakes shall supersede those shown in parts 3520.4200 to 3520.4230 on all school bus chassis manufactured after January 1, 1968.

Subp. 2. **Service brakes.** Four-wheel brakes, adequate at all times to control bus when fully loaded, shall be provided in accordance with Federal Motor Vehicle Safety Standards.

Subp. 3. **Stopping ability of service brake system.** Service brake system shall be designed and constructed so that by application of single control unit vehicle can be stopped within distances specified in the following paragraph. Stopping distance requirement tests shall be conducted in accordance with SAE J658 and with vehicle loaded (MGVW -- manufacturer's gross vehicle weight).

Brakes shall be designed to have capability of developing deceleration of 14 fpsps (feet per second per second) from speed of 20 mph at pedal effort of not more than 75 pounds. Stopping distance test with brakes cold shall be conducted after proper conditioning according to SAE J880 and vehicle shall stop, from speed of 20 mph, within following distances at pedal effort of not more than 200 pounds:

- A. 10,000 pounds GVW and under 25 feet;
- B. over 10,000 pounds GVW 35 feet.

Brake balance shall be such that, when tested at speed of 20 mph under any normal condition of loading with MGVW (manufacturer's gross vehicle weight), deceleration of 12 fpsps (feet per second per second) can be achieved without locking wheels on any axle.

Subp. 4. **Energy absorption; horsepower rating.** Energy absorption capability of brakes, when tested in accordance with procedure established by SAE J880 or equivalent, shall be not less than

$$12 + 1.4 \text{ GVW}$$

Subp. 5. **Travel reserve of air brake actuator or hydraulic brake pedal.** Brake actuator travel, when measured statically at actuating force required for compliance with subpart 3, shall be not more than 60 percent of available travel.

Subp. 6. **Reservoirs required.** Every brake system which employs air or vacuum shall include following reservoir capacity. Air brake system shall have reservoir capacity which is equal to or greater than 12 times total volume of all brake actuators at full travel. Vacuum brake system shall have reservoir used exclusively for brakes, with capacity of not less than 1,000 cubic inches, and shall be adequate to ensure loss in pressure at full stroke application of not more than 30 percent. Brake system shall include suitable and convenient connection for installation of separate vacuum reservoir with capacity of not less than 1,000 cubic inches, furnished and installed by body manufacturer and protected by check valve, for actuation of other vacuum-powered accessories. Engine shall be protected by proper filters.

Subp. 7. **Protection of brake system.** Lines supplying power to air or vacuum system reservoirs shall be safeguarded through proper design and bracing to protect from excessive heat and vibration. Brake system reservoir shall be "so safeguarded by a check valve or equivalent device that in the event of failure or leakage in its connection to the source of compressed air or vacuum, the stored air or vacuum shall not be depleted by the leak or failure." Means shall be provided to establish air check valve to be in working order.

Subp. 8. **Gauges.** A vehicle using air or vacuum in operation of brake system shall be equipped with illuminated gauge, accurate to within ten percent of actual reservoir pressure, which will indicate to driver, in case of air brakes: pressure in psi (pounds per square inch) which is available for operation of brakes; or vacuum brakes: vacuum in inches of mercury which is available for operation of brakes.

Subp. 9. **Warning devices.** In addition to gauges required in subpart 8, vehicle shall be equipped with warning signal, readily audible or visible to driver, which will give continuous warning to driver when, in case of air brakes: air pressure in system available for braking is 60 psi (pounds per square inch) and less; or vacuum brakes: vacuum in system available for braking in eight inches of mercury and less.

Statutory Authority: *MS s 169.45*

3520.4250 EMERGENCY STOPPING SYSTEM.

Subpart 1. **Function.** Brake system(s) shall perform emergency stopping function and be so designed and constructed that single failure anywhere in brake system which performs service brake function, excepting mechanical parts of wheel brake assemblies and brake pedal and brake pedal attachment to brake valve(s) or master cylinder(s), will not leave vehicle without operative brakes capable of stopping vehicle when loaded up to and including manufacturer's rated GVW (gross vehicle weight) at any legal speed and in accordance with requirements of subparts 2 and 3.

Subp. 2. **Emergency stopping performance requirements.** Following performance shall be obtained under road and test conditions outline in part 3520.4240, subpart 3. Vehicle, when loaded to manufacturer's GVW (gross vehicle weight) capacity, shall be brought to stop from speed of 20 mph in measured distance of 85 feet or as may be modified by the Federal Motor Vehicle Safety Standards.

Deceleration of not less than six fpsps (feet per second per second) shall be maintained throughout stop from 20 mph.

Subp. 3. **Control requirements of emergency stopping system.** Control of emergency stopping system shall be designed and constructed to permit

MINNESOTA RULES 1983

2703

TRANSPORTATION OF STUDENTS 3520.4510

modulated control by driver of brake application and release and to permit release of brakes by driver unless energy is available for reapplication.

Statutory Authority: *MS s 169.45*

3520.4260 PARKING BRAKES.

Parking brake system shall be designed and constructed to meet the following requirements:

A. Parking brake shall hold vehicle stationary, or to limit of traction of braked wheels, on 20 percent grade under any condition of legal loading and on surface free from snow, ice, and loose material.

B. When applied, parking brake shall remain in applied position with capability set forth in item A, despite exhaustion of source of energy used for application or despite leakage of any kind.

C. Parking brake shall be readily accessible to driver in normal driving position and shall be equipped with warning light readily visible to driver in normal driving position and be marked "BRAKE."

Statutory Authority: *MS s 169.45*

3520.4300 BUMPERS.

Subpart 1. **Front bumper.** Front bumper shall be furnished by chassis manufacturer as part of the chassis. Front bumper shall be not less than eight inches in width (high) and 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 without permanent distortion to bumper, bumper braces, chassis, or body.

Subp. 2. **State law.** The center point of such bumpers shall be not more than 20, or less than 14 inches from the ground when vehicle is unloaded. (Minnesota Statutes, section 169.73)

Subp. 3. **Exception.** None. See Minnesota Statutes, section 169.73.

Subp. 4. **Rear bumper.** See body, part 3520.4850, subpart 3.

Statutory Authority: *MS s 169.45*

3520.4400 CERTIFICATION.

Chassis manufacturer shall certify to State Department of Education that their product meets minimum standard on the following items: axles; brakes; exhaust system noise level; horn; power and gradeability; springs; complete electrical system.

Statutory Authority: *MS s 169.45*

3520.4500 CLUTCH.

All chassis of 48 to 60 pupil capacity having mechanical type transmission shall be equipped with clutch of 12-inch minimum diameter. Chassis of 66 and greater pupil capacity having mechanical type transmission shall be equipped with clutch of 13-inch minimum diameter or clutch of equivalent performance.

Statutory Authority: *MS s 169.45*

3520.4510 COLOR.

Subpart 1. **Buses now in service.** (Manufactured prior to June 2, 1973. See Minnesota Statutes, section 169.44, subdivision 7.) Chassis, including wheels, front fenders, and front bumper, shall be black; hood and cowl shall be in Minnesota School Bus Golden Orange, Dupont #1051 or its approved equal.

Subp. 2. **Options on buses in service.** Options:

A. Front fenders may be painted golden orange or glossy black.

3520.4510 TRANSPORTATION OF STUDENTS

2704

B. The following may be other than orange or black: wheel rims; chassis grills; mirror backs, rims, and mounting brackets; reflector housings; window frames; accessories and other minor trim items. See body, part 3520.4900.

C. The use of silver, black, or yellow retroreflective material may be used on front bumper for increased night visibility.

Subp. 3. **New buses.** (Manufactured after June 1, 1973. See Minnesota Statutes, section 169.44, subdivision 7.) Chassis including front bumper and wheels shall be painted glossy black, color 17038; hood and cowl shall be painted National School Bus Glossy Yellow, color 13432, except that the hood shall be either that color or lusterless black, color 37038.

Subp. 4. **Option on new buses.** Options:

A. Front fenders may be painted glossy yellow or glossy black.

B. The following may be other than yellow or black: wheel rims; chassis grills; mirror backs, rims, and mounting brackets; reflector housings; window frames; accessories and other minor trim items. See body, part 3520.4900.

C. The use of silver, black, or yellow retroreflective material may be used on front bumper for increased night visibility.

Statutory Authority: *MS s 169.45*

3520.4520 FAN-RADIATOR COOLING SYSTEM.

The cooling system fan blade assembly shall be the heavy-duty reinforced center type. Thin pressed blades are not acceptable. Fan, alternator, and water pump when driven by common belts shall be equipped with matching pulleys. The cooling system radiator shall be of sufficient capacity to cool the water at all speeds in all gears. Optional: radiator shall be equipped with shutters furnished by chassis manufacturer.

Statutory Authority: *MS s 169.45*

3520.4530 DRIVE SHAFT.

Subpart 1. **General requirement.** Drive shaft shall be protected by adequate metal guard or guards to prevent it from whipping through floor or dropping to ground if broken.

Subp. 2. **Exception for small vehicles.** Standard does not apply to vehicles with torque-tube drive shaft.

Statutory Authority: *MS s 169.45*

3520.4540 ELECTRICAL SYSTEM.

Subpart 1. **Battery.** Battery: see chassis, part 3520.4100; and body, part 3520.4820.

Subp. 2. **Generator.** Generator or alternator: see chassis, part 3520.4610.

Subp. 3. **Lamp and signals.** Lamp and signals: see body, parts 3520.5200 to 3520.5230.

Subp. 4. **Wiring.** Wiring: see body, part 3520.5580.

Subp. 5. **Electrical terminal.** Chassis manufacturer shall install readily accessible electrical terminal so that body and chassis electrical load can be recorded through chassis ammeter without dismantling or disassembling chassis component. Chassis wiring system to terminal shall have minimum 100-ampere capacity. Chassis ammeter and wiring shall be compatible with generating capacity, and ammeter shall be capable of recording continuous draw of 100 amperes.

Subp. 6. **Wiring diagram.** A complete and readable wiring diagram shall be furnished with each bus.

Statutory Authority: *MS s 169.45*

MINNESOTA RULES 1983

2705

TRANSPORTATION OF STUDENTS 3520.4600

3520.4550 EXHAUST SYSTEM.

Exhaust pipe muffler and tailpipe shall be outside bus body and attached to chassis with adequate hangers of sufficient strength to maintain the position of the exhaust system under all normal operating conditions. Tailpipe shall be constructed of seamless or electrically welded tubing of 16-gauge steel or equivalent and shall extend at least five inches beyond chassis frame (should not go beyond rear bumper). See body, part 3520.5500. Size of tailpipe shall not be reduced after it leaves muffler. 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. Noise level shall not exceed 125 sones as measured by Beranek-Armour-ATA Equivalent Tone Method. Muffler shall be constructed of corrosion-resistant material.

Statutory Authority: *MS s 169.45*

3520.4560 FENDERS, FRONT.

Subpart 1. General requirements. 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. Front fenders shall be properly braced and free from any body attachment.

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

Subp. 2. Exception for transit and metropolitan vehicles. Standard does not apply.

Statutory Authority: *MS s 169.45*

3520.4570 FRAME.

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. 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 or body 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 wheelbase. Holes in top or bottom flanges of frame side rail 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.

Statutory Authority: *MS s 169.45*

3520.4580 FRAME LENGTHS.

Frame lengths: see table under body sizes, body, part 3520.4830.

Statutory Authority: *MS s 169.45*

3520.4600 FUEL TANK.

Subpart 1. Capacity of 30 gallons. 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.

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

Tank shall be equipped with adequate baffles.

Engine supply line shall be taken from top of tank.

Drain plug of at least one-fourth inch diameter shall be located in center of bottom of tank.

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 nonvented type.

Fuel filter with replaceable element shall be installed between fuel tank and carburetor.

Fuel tank, fittings, or lines shall not extend above top of chassis frame rail.

Subp. 2. **Size larger than 30 gallons.** If tank sizes other than 30 gallons are specified, location of front of tank and filler spouts must remain as specified in items A to G and subparts 3, 4, and 5.

Note: Measurements shown in items A to G and subparts 3, 4, and 5 are for guidance of chassis manufacturers and serve only to prevent need for replacement of original tank. Inspectors concerned with state or local approval of vehicle need not consider them unless tank does not fit.

A. Tank shall not extend in height above side member of chassis.

B. Distance from center line of chassis to outside of tank shall not be more than 39 inches.

C. Bottom of tank shall not be more than 14 inches below top of frame.

D. Distance from cowl to front of tank shall be 42 inches minimum.

E. Distance from cowl to center of fill-pipe shall be 57 inches.

F. Distance from center line of chassis to center of fill-pipe cap shall be 44 inches with plus or minus tolerance of one-half inch permitted.

G. Center of fill-pipe cap shall be one-inch below top of frame with plus or minus tolerance of one-fourth inch permitted.

Subp. 3. **Exception for small vehicles.** Fuel tank shall be mounted, filled, and vented outside the body.

Subp. 4. **Exception for transit and metropolitan type vehicles.** 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.

Bottom of tank shall not be exposed below skirt of body side paneling. See part 3520.4950 under body.

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

Drain plug of at least one-fourth inch diameter shall be located in bottom of tank.

Fill-pipe cap shall be entirely outside passenger compartment and safety chain shall be attached to fuel tank cap.

Subp. 5. **Exception for vehicles of less than 54 passenger capacity constructed for transporting handicapped children.** Fuel tank may be located behind rear wheels, inside or outside chassis frame, with fill-pipe located on right side of body.

Statutory Authority: *MS s 169.45*

3520.4610 GENERATOR OR ALTERNATOR.

Subpart 1. **Output requirement.** Generator or alternator (negative ground only) with rectifier shall have output of at least 100 amperes (in accordance with Society of Automotive Engineers rating) with a minimum charging of 30 amperes at manufacturer's recommended engine idle speed (12-volt system) and shall be ventilated and voltage-controlled and, if necessary, current-controlled. Matched dual belt drive shall be used with generator or alternator. Heavy-duty full transistorized regulator with adjustable voltage shall be supplied.

Subp. 2. **Option.** When battery of less than 150-ampere hours is installed in engine compartment, generator or alternator shall have an output of at least 120 amperes. (See chassis, part 3520.4100, subpart 2.)

MINNESOTA RULES 1983

2707

TRANSPORTATION OF STUDENTS 3520.4620

Subp. 3. **Electrical load increased.** If electrical load is increased through addition of heater motors, electric windshield wipers, defroster, etc., see the following chart for guidance in selecting generator or alternator of adequate capacity.

Suggested Method for Estimating Generator or Alternator Capacity		
Constant load		
Equipment	Number of Units	Current Draw (Amperes)
Ignition		2.50 (average)
Head lamps (Type 2 dual lower beams)	2	8.40
Tail lights	2	1.18
Clearance lights	4	2.36
Cluster lights	6	3.54
Body instrument panel		0.80
Primary front heater motors	2	24.00
Primary defroster motor	1	12.00
Supplementary front heater motor	1	12.00
Supplementary defroster motor	1	12.00
Underseat heater motors	2	10.50
Underseat heater motor	1	8.50
Defroster fan motor	1	3.50
Windshield wipers		14.00
Fuel pump		3.00
Emergency door buzzer		1.00
Intermittent load		
Flasher motor		2.90
Alternately flashing signal lamps	2	11.60
Step-well and 6 interior dome lights		5.64
Individual additional dome lights		0.94
Stop (brake) lights	4	6.60
Turn signals	2	2.36

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

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

Subp. 4. **Exception for small vehicles.** Generator or alternator with rectifier shall have output of at least 60 amperes with 12-volt system, and shall be ventilated and voltage-controlled and, if necessary, current-controlled.

Statutory Authority: *MS s 169.45*

3520.4620 GOVERNOR.

Subpart 1. **Permissible.** Engine governor is permissible and where used shall be set at manufacturer's recommended maximum engine speed. When it is desired to limit road speed, road speed governor should be installed.

Subp. 2. **Exception for 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.

Statutory Authority: *MS s 169.45*

3520.4630 HEATING SYSTEM.

Chassis engine shall provide inlet and outlet holes in accessible locations for attachment of bus heating system water lines. Also see body, part 3520.5150.

Statutory Authority: *MS s 169.45*

3520.4640 HORN.

Bus shall be equipped with dual horns of standard make, each horn capable of producing complex sound in band of audio frequencies between approximately 250 and 2,000 cycles per second and each having a total sound level of 110 decibels within these frequency limits when measured at point on axis of horn three feet from exit of horn.

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

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 measurement.

Statutory Authority: *MS s 169.45*

3520.4650 INSTRUMENTS AND INSTRUMENT PANEL.

Chassis shall be equipped with following instruments and gauges (lights in lieu of gauges are not acceptable):

- A. Speedometer.
- B. Odometer which will give accrued mileage including tenths of miles.
- C. Ammeter shall be vane or shunt type with graduated charge and discharge, both ammeter and its wiring to be compatible with generating capacities and capable of handling continuous current draw of 100 amperes.
- D. Voltmeter with graduated scale (optional item).
- E. Oil-pressure gauge.
- F. Water-temperature gauge.
- G. Fuel gauge.
- H. Upper-beam headlamp indicator.
- I. Air pressure or vacuum gauge, where air or vacuum brakes are used, and audible or visible low-pressure indicator to warn driver if air pressure in air-brake system falls below 600 pounds per square inch. See chassis, parts 3520.4200 to 3520.4230; 3520.4240 to 3520.4260.
- J. Tachometer (optional).

All instruments shall be easily accessible for maintenance and repair.

All instruments and gauges shall be mounted on instrument panel in such manner that each is clearly visible to driver in normal driving position. Instrument panel shall have lamps of sufficient candlepower to illuminate all instruments and gauges.

Statutory Authority: *MS s 169.45*

3520.4660 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 one quart.

Statutory Authority: *MS s 169.45*

MINNESOTA RULES 1983

2709

TRANSPORTATION OF STUDENTS 3520.4690

3520.4670 OPENINGS.

All openings in floorboard or firewall between chassis and passenger-carrying compartments, such as for gearshift lever and auxiliary brake lever, shall be sealed unless altered by body manufacturer. See parts 3520.4980 and 3520.4990.

Statutory Authority: *MS s 169.45*

3520.4680 PASSENGER LOAD FOR NEW BUSES MANUFACTURED AFTER JANUARY 1, 1975.

Average actual GVW (gross vehicle weight) is sum of average chassis weight, plus average body weight, plus 150 pounds for driver's weight, plus total seated pupil weight (based on 120 pounds per pupil).

Recommended chassis manufacturer's rated GVW (gross vehicle weight) is weight assigned to complete vehicle. (Weights assigned for each pupil capacity classification are shown in table for next topic. Power and gradeability.)

Manufacturer's gross vehicle weight rating shall be furnished in duplicate (unless more copies are requested by State Department of Education) by manufacturer to the State Department of Education. State Department of Education shall, in turn, transmit such rating to each other state agency responsible for development or enforcement of state standards for school buses.

Statutory Authority: *MS s 169.45*

3520.4690 POWER AND GRADEABILITY OF NEW BUSES MANUFACTURED AFTER JANUARY 1, 1975.

Subpart 1. Basis for specifications. Chassis must be so geared and powered as to be capable of surmounting 3.7 percent grade at speed of 20 miles per hour with full load (see passenger load, part 3520.4680) on continuous pull in direct drive. Following figures are based on achieving 3.7 percent grade at 20 mph in direct drive using 1.5 rolling resistance (1.2 for buses having seating capacity of 68 or more pupils), 150-pound driver, 120-pound pupil and 7.17:1 to 7.2:1 rear axle ratio. For 36-pupil capacity, rear axle ratio is 6.16:1 or higher.

Note: See subpart 2, Power and gradeability specifications.

Subp. 2. Power and gradeability specifications.

Chassis size/capacity	36	42	48	54	60	66	73
1. Recommended manufacturer's rated GVW	15,000	17,000	17,000	19,000	21,000	22,000	27,000**
a) Calculated avg. GVW (120 lbs. per pupil)	13,800	15,800	16,700	18,000	20,100	21,600	26,500**
b) Min. net HP required @ 20 mph at eng. RPM	1,368	1,368	1,325	1,325	1,267	1,267	1,206
2. a) Est. part of GVW front axle*	3,898	5,056	4,625	4,860	5,680	5,724	8,650
b) % Est. wt., front axle	26.8	32	27.7	27	26.3	26.5	32.6
c) Est. part of GVW rear axle*	10,102	10,744	12,074	13,140	14,420	15,836	17,850

MINNESOTA RULES 1983

3520.4690 TRANSPORTATION OF STUDENTS

2710

Chassis size/capacity	36	42	48	54	60	66	73
d) % Est. wt., rear axle.....	73.2	68	72.3	73	73.7	73.7	67.4
3. Recommended tire size							
(w/tube)	7.50-20	7.50-20	8.25-20	8.25-20	9.00-20	9.00-20	10.00-20**
ply rating	8 or 10	8 or 10	10	10	10	10	12
a) Rim size (w/tube)							
Preferred	6.0	6.0	6.5	6.5	7.0	7.0	7.5
Alternate			6.0	6.0	6.5	6.5	7.0
4. Motor speed (RPM) necessary to attain road speed of 55 mph with gear ratio shown							
	7.2-1 3738	7.2-1 3738	7.2-1 3564	7.2-1 3564	7.2-1 3412	7.2-1 3412	7.2-1 3294
	6.8-1 3522	6.8-1 3522	6.8-1 3516	6.8-1 3516	6.8-1 3223	6.8-1 3223	6.8-1 3110

School bus operators should follow current recommended tire inflation tables of Tire & Rim Association.

*Approximate weights on axles are calculated by formula which does not provide for reserve capacity.

**The calculations in this column are for the 73-pupil capacity pusher school bus, but are not intended to limit the use of a forward control transit school bus.

Statutory Authority: *MS s 169.45*

3520.4700 SHOCK ABSORBERS.

Subpart 1. General requirement. Bus shall be equipped with front and rear double acting shock absorbers compatible with manufacturer's rated axle capacity.

Subp. 2. Exception for small vehicles. Standard does not apply to small vehicles not specifically manufactured as school buses.

Statutory Authority: *MS s 169.45*

3520.4710 SPRINGS.

Subpart 1. General requirement. 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. Springs or suspension assemblies shall be designed to carry their proportional share of gross vehicle weight in accordance with requirements for weight distribution as shown in part 3520.4760.

If rear springs are used, they shall be of the progressive type.

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

Subp. 2. Exception for small vehicles. Springs that are regular equipment on vehicle to be purchased may be used.

Statutory Authority: *MS s 169.45*

3520.4720 STEERING GEAR.

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. Steering mechanism shall provide for easy adjustment for lost motion. No changes shall be made in steering apparatus which are not approved by chassis manufacturer. There shall be clearance of at least three inches between steering wheel and cowl, instrument panel, windshield, or any other surface. Power steering is permissible if approved by chassis manufacturer.

Statutory Authority: *MS s 169.45*

3520.4730 TIRES AND RIMS.

Subpart 1. **General requirement.** Tire sizes shall be shown in table for power and gradeability, part 3520.4690. Rim sizes shall be based upon current standards of Tire and Rim Association. Total weight imposed on any tire shall not be greater than the current standard of Tire and Rim Association. Dual rear tires or wide single equivalents shall be provided on all vehicles. Spare tire, if required, shall be suitably mounted in accessible location outside passenger compartment.

Subp. 2. **Option.** All tires on given vehicle shall be of same size and ply rating except where wide single equivalents are used.

Subp. 3. **Exception for small vehicles.** Same as subpart 1, except that dual rear tires are not required.

Statutory Authority: *MS s 169.45*

3520.4740 TRANSMISSION.

Subpart 1. **General requirement.** Mechanical type transmission shall be synchromesh except first and reverse gears. Its design shall provide not less than four forward and one reverse speed. Automatic transmissions are permissible.

Subp. 2. **Exception for small vehicles.** Three speed transmissions are acceptable.

Statutory Authority: *MS s 169.45*

3520.4750 UNDERCOATING AND/OR RUST PROOFING.

Chassis manufacturer shall coat undersides of front fenders with fire-resistant asphalt base, rubber base, and/or rust proofing, or other undercoating material, applied by spray method, in order to seal, to deaden sound, to insulate, and to prevent oxidation. See also, body, part 3520.5510.

Statutory Authority: *MS s 169.45*

3520.4760 WEIGHT DISTRIBUTION.

Subpart 1. **General requirement.** Weight distribution of fully loaded bus on level surface shall be such that not more than 75 percent of gross vehicle weight is on rear tires and not more than 35 percent on front tires.

Subp. 2. **Exception for transit and metropolitan vehicles.** With engine inside front of body: If entrance door is ahead of front wheels, not more than 75 percent of gross vehicle weight shall be on rear tires not more than 50 percent on front tires. If entrance door is behind front wheels, not more than 75 percent of gross vehicle weight shall be on rear tires not more than 40 percent on front tires. With engine in rear: Not more than 75 percent of gross vehicle weight shall be on rear tires nor more than 40 percent on front tires.

Statutory Authority: *MS s 169.45*

3520.4770 TRANSPORTATION OF STUDENTS

2712

3520.4770 WHEELS.

Chassis shall have single wheels in front and dual wheels in rear. Exception would be if single equivalent tires are used. Wheels may be disc or cast-spoke type whichever is standard for the model.

Statutory Authority: *MS s 169.45*

3520.4800 SCHOOL BUS BODY.

The design and color of each school bus body used in the transportation of school children shall provide for:

- A. aisle;
- B. battery;
- C. body sizes;
- D. book racks;
- E. bumper;
- F. ceiling;
- G. chains;
- H. color;
- I. construction;
- J. defrosters;
- K. doors;
- L. emergency window;
- M. fire extinguishers;
- N. first aid kit;
- O. floor;
- P. floor covering;
- Q. heaters;
- R. identification;
- S. inside height;
- T. insulation;
- U. interior;
- V. lamps and signals;
- W. metal treatment;
- X. mirrors;
- Y. mounting;
- Z. overall length;
- AA. overall width;
- BB. posts;
- CC. rub rails;
- DD. sanders;
- EE. seat belt for driver;
- FF. seats;
- GG. stanchions and guard rails;
- HH. steering wheel;
- II. steps;
- JJ. stirrup steps;
- KK. stop signal arm;
- LL. storage compartment;
- MM. sunshield;
- NN. tailpipe;
- OO. undercoating and rustproofing;
- PP. ventilation;

MINNESOTA RULES 1983

2713

TRANSPORTATION OF STUDENTS 3520.4830

- QQ. wheel housing;
- RR. width;
- SS. windshield and windows;
- TT. windshield washers;
- UU. windshield wipers; and
- VV. wiring.

Statutory Authority: *MS s 169.45*

3520.4810 AISLE.

Subpart 1. **General requirement.** Minimum clearance of all aisles, including aisle (or passageway between seats) leading to emergency door, shall be 12 inches. See part 3520.5010, subpart 2. Aisle supports of seat backs shall be slanted away from aisle sufficiently to give aisle clearance of 15 inches at the top of seat backs.

Subp. 2. **Exception for transit and metropolitan vehicles.** With engine inside front of body: Minimum distance between stanchion at rear of entrance step-well and engine cover shall be 14 inches measured from floor level.

Statutory Authority: *MS s 169.45*

3520.4820 BATTERY.

Battery is to be furnished by chassis manufacturer. (See part 3520.4100.)

Statutory Authority: *MS s 169.45*

3520.4830 BODY SIZES.

Subpart 1. **General requirement.** Bodies for conventional body-on-chassis type vehicles shall be limited to length shown in table following. Sizes are based on 27-inch center-to-center spacing between the rows of forward facing seats, except when fiberglass seats are used, overall width of 96 inches, center aisle width of 12 inches, and average rump width of 13 inches for 3-3 seating plan, and 15 inches for 3-2 seating plan. Body lengths are measured from back of cowl to rear of body at floor level.

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 of 13 inches	3-2 plan: rump width of 15 inches			
4	24	20	178	102	173
5	30	25	196	123	187
6	36	30	222	125	210
7	42	35	250	142	241
8	48	40	277	160	268
9	54	45	304	192	295
10	60	50	332	211	323
11	66	55	355	229	349
12	72	60	388	250	380

Subp. 2. **Exception for small vehicles.** Small vehicles 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.

Subp. 3. **Exception for transit and metropolitan vehicles.** Measurements in preceding table do not apply.

Statutory Authority: *MS s 169.45*

3520.4840 TRANSPORTATION OF STUDENTS

2714

3520.4840 BOOK RACKS.

Book racks or shelves of any type are prohibited on interior of bus body.

Statutory Authority: *MS s 169.45*

3520.4850 BUMPER.

Subpart 1. **Chassis.** See part 3520.4300, subpart 1.

Subp. 2. **Front.** Front.

Subp. 3. **Rear.** Rear bumper shall be of pressed steel channel at least 3/16 inch thick and eight inches wide (high) and be of sufficient strength to permit being pushed by another vehicle without permanent distortion to bumper, bumper braces, chassis, or body. The center point of such bumper shall be not more than 20, nor less than 14 inches from ground when the vehicle is unloaded (Minnesota Statutes, section 169.73). It shall be wrapped around back corners of the bus. It shall extend forward at least 12 inches, measured from rearmost point of body at the floor line. Bumper shall be attached to chassis frame in such manner that it may be easily removed, shall be so braced as to develop full strength of bumper section from rear or side impact, and shall be so attached as to prevent hitching of rides. Rear bumper shall extend beyond rearmost part of body surface at least one inch, measured at floor line.

Subp. 4. **Exception for small vehicles.** No exception. See Minnesota Statutes, section 169.73.

Statutory Authority: *MS s 169.45*

3520.4860 CEILING.

See parts 3520.5180 and 3520.5190.

Statutory Authority: *MS s 169.45*

3520.4870 CHAINS.

See part 3520.5530.

Statutory Authority: *MS s 169.45*

3520.4900 COLOR.

Subpart 1. **Buses now in service manufactured prior to June 2, 1973.** See Minnesota Statutes, section 169.44, subdivision 7. School bus body including hood and cowl shall be painted uniform color, Minnesota School Bus Golden Orange, Dupont 1051 or its approved equal, according to specifications available from General Services Administration.

A. Rub rails: a minimum of three shall be black.

B. Rear bumper, rear fenders (if used), and lettering shall be black.

See part 3520.5160 and Minnesota Statutes, section 169.44, subdivision 3.

Subp. 2. **Option.** Belt line may be orange with black lettering or may be black with orange lettering. See part 3520.5160 and Minnesota Statutes, section 169.44, subdivision 3.

Subp. 3. **Option.** Front fenders may be painted orange or glossy black.

Subp. 4. **Option.** The following may be other than orange or black: wheel rims; chassis grills; mirror backs, rims, and mounting brackets; reflector housings; window frames; accessories and other minor items. See part 3520.4510.

Subp. 5. **Option.** The use of silver, black, yellow, or red retroreflective material may be used on rear bumper for increased night visibility.

Subp. 6. **New buses manufactured after June 1, 1973.** See Minnesota Statutes, section 169.44, subdivision 7.

Body including hood and cowl shall be painted National School Bus Glossy Yellow, color 13432, except that the hood shall be either that color or lusterless black, color 37038.

MINNESOTA RULES 1983

2715

TRANSPORTATION OF STUDENTS 3520.4930

A. Rub rails: a minimum of three shall be black.

B. Rear bumper, rear fenders (if used), and lettering shall be black.

See part 3520.5160 and Minnesota Statutes, section 169.44, subdivision 3.

Subp. 7. **Option.** Belt line may be yellow with black lettering or may be black with yellow lettering. See part 3520.5160 and Minnesota Statutes, section 169.44, subdivision 3.

Subp. 8. **Option.** Front fenders may be painted glossy yellow or glossy black.

Subp. 9. **Option.** The following may be other than yellow or black: wheel rims; chassis grills; mirror backs, rims, and mounting brackets; reflector housings; window frames; accessories and other minor trim items. See part 3520.4510.

Subp. 10. **Option.** The use of silver, black, yellow, or red retroreflective material may be used on rear bumper for increased night visibility.

Statutory Authority: *MS s 169.45*

3520.4910 CONSTRUCTION.

Construction shall be of prime commercial quality steel or other metal or other material with strength at least equivalent to all-steel as certified by bus body manufacturer. All such construction materials shall be fire-resistant. Construction shall provide reasonably dustproof and watertight unit.

Statutory Authority: *MS s 169.45*

3520.4920 CONSTRUCTION OF THE BUS BODY.

Bus body, including roof bows, body posts, strainers, stringers, floor, inner and outer linings, rub rails, and other reinforcements, shall be of sufficient strength to support entire weight of fully loaded vehicle on its top or side if overturned. Bus body, as unit, shall be designed and built to provide impact and penetration resistance.

As evidence that bus body meets this standard, all body manufacturers shall furnish, for each current body model, certification in duplicate (unless more copies are requested by State Department of Education) that bus body meets current Static Load Test Code for School Bus Body Structure. Copies of code will be furnished by School Bus Manufacturers Institute to State Department of Education. State Department of Education will in turn transmit copies of code and individual model certificates to individual state agencies responsible for development and/or enforcement of state standards for school buses. Details involved in testing bus body structure will remain as shown in code; to qualify under code, however, deflections of body structure must not exceed following measurements:

A. deflection at center of roof bow 3.00 inches;

B. deflection at each side pillar at window sill level 1.00 inch; and

C. deflection at center of floor 0.40 inch.

Statutory Authority: *MS s 169.45*

3520.4930 FLOOR CONSTRUCTION.

Floor shall be of prime commercial quality steel of at least 14-gauge or other metal and such metal floor shall be covered with plywood. Plywood shall be five-ply, at least five-eighths inch thick and it shall equal or exceed properties of exterior-type Douglas fir plywood, grade C-C, as specified in standard issued by U.S. Department of Commerce. Floor shall be level from front to back and from side to side except in wheel housing, toeboard, and driver's seat platform areas.

Statutory Authority: *MS s 169.45*

3520.4940 ROOF STRAINERS.

Two or more roof strainers or longitudinal members shall be provided to connect roof bows, to reinforce flattest portion of roof skin, and to space roof bows. These strainers may be installed between roof bows or applied externally. They shall extend from windshield header, and when combined with rear emergency door post, are to function as longitudinal members extending from windshield header to rear floor body cross member. At all points of contact between strainers or longitudinal members and other structural material, attachment shall be made by means of welding, riveting, or bolting.

After load as called for in current Static Load Test Code has been removed, none of the following defects shall be evident:

- A. failure or separation at joints where strainers are fastened to roof bows; or
- B. appreciable difference in deflection between adjacent strainers and roof bows; or
- C. twisting, buckling, or deformation of strainer cross section.

Statutory Authority: *MS s 169.45*

3520.4950 SIDE STRAINERS.

There shall be one or more side strainers or longitudinal members to connect vertical structural members and to provide impact and penetration resistance in event of contact with other vehicles or objects. Such strainer(s) shall be formed (not in flat strip) from metal of at least 16-gauge and three inches wide.

Side strainers shall be installed in area between bottom of window and bottom of seat frame and shall extend completely around bus body except for door openings and body cowl panel. Side strainer(s) shall be fastened to each vertical structural member in any one or any combination of following methods as long as stress continuity of member(s) is maintained:

- A. installed between vertical members;
- B. installed behind panels but attached to vertical members; and
- C. installed outside external panels.

Fastening method employed shall be such that strength of strainer(s) is fully utilized. Side strainer(s) or longitudinal member(s) may be combined with one of required rub rails, or be in form of additional rub rail, as long as separate conditions and physical requirements for rub rails are met. No portion of side strainer or longitudinal member is to occupy same vertical position as either rub rail.

Statutory Authority: *MS s 169.45*

3520.4960 REAR CORNER REINFORCEMENT.

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

Statutory Authority: *MS s 169.45*

3520.4970 FLOOR SILLS.

Subpart 1. **Main body sill dimensions.** There shall be one main body sill at each side post and two intermediate body sills on approximately ten-inch centers. All sills shall be of equal height, not to exceed three inches. All sills shall extend width of body floor except where structural members or features restrict area.

MINNESOTA RULES 1983

2717

TRANSPORTATION OF STUDENTS 3520.5010

Subp. 2. **Gauge.** Main body sill shall be equivalent to or heavier than ten-gauge and each intermediate body sill shall be equivalent to or heavier than 16-gauge, or each of all body sills shall be equivalent to or greater than 14-gauge. All sills shall be permanently attached to the floor.

Subp. 3. **Connections to side and floor.** Connections between sides and floor system shall be capable of distributing loads from vertical posts to all floor sills. As evidence that this requirement is fulfilled, none of the following conditions shall occur during or after application of load, as called for in current Static Load Test Code:

- A. appreciable difference in deflection between adjacent sills;
- B. failure or separation in joints where floor, floor sills, and sides connect; or
- C. twisting, buckling, or deformation of floor sill cross sections.

Statutory Authority: *MS s 169.45*

3520.4980 OPENINGS.

All openings between chassis and passenger-carrying compartment made due to alterations by body manufacturer must be sealed. See part 3520.4670.

Statutory Authority: *MS s 169.45*

3520.4990 EXCEPTIONS.

Subpart 1. **Exception for small vehicles.** Parts 3520.4910 to 3520.4980 do not apply to small vehicles not manufactured specifically as school buses.

Subp. 2. **Exception for transit type vehicles.** Part 3520.4970, subpart 1 does not apply.

Statutory Authority: *MS s 169.45*

3520.5000 DEFROSTERS.

Defrosters and two all metal defroster fans with adequate guards shall be of sufficient capacity to keep windshield, window to left of driver, and glass in entrance door clear of fog, frost, and snow. This may be done by taking heat directly from approved heater or auxiliary heaters.

Statutory Authority: *MS s 169.45*

3520.5010 DOORS.

Subpart 1. **Service door.** Service door shall be power or manually operated, under control of driver, and so designed as to afford easy release and prevent accidental opening. When hand lever is used, no parts shall come together so as to shear or crush fingers.

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

Service door shall have minimum horizontal opening of 24 inches and minimum vertical opening of 68 inches.

Service door shall be of split type, sedan type, or jackknife type. If split type door is used front section shall open outward.

Lower as well as upper glass panels shall be of approved safety glass. See part 3520.5550. Bottom of lower glass panel shall not be more than 12 inches from bottom of the door. Top of upper glass panel shall not be more than six inches from top of door.

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

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

MINNESOTA RULES 1983

3520.5010 TRANSPORTATION OF STUDENTS

2718

Subp. 2. **Emergency door and emergency window.** Emergency door shall be located in center of rear end of bus or in rear half of left side of bus.

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

Emergency door shall be hinged on right side if in rear end of bus and on front side if on left side of bus. Door shall open outward and shall be labeled inside to indicate how it operates.

Upper portion of emergency door shall be equipped with approved safety glass, exposed area of which shall be not less than 400 square inches. See part 3520.5550.

There shall be no steps leading to emergency door.

No seat or other object shall be so placed in bus 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.

Words "EMERGENCY DOOR" both inside and outside in letters at least two inches high, shall be placed directly above upper window on emergency door. New buses purchased after September 1, 1973, words "EMERGENCY EXIT" may be substituted.

If emergency door is located on left side of bus: 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 49 inches in width on buses less than 80 inches in width. Window shall be hinged from top and devised and operated to ensure against accidental closing in emergency.

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

Words "EMERGENCY EXIT" in letters at least two inches high shall be placed directly above emergency window on inside and directly below it on outside.

Emergency door and emergency window shall be designed to be opened from inside and outside of the 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.

Emergency door shall be equipped with slide-bar cam-operated lock. Slide bar shall have minimum stroke of one inch. Emergency door lock shall be equipped with suitable electric plunger type switch connected with buzzer located in driver's compartment. Switch shall be enclosed in metal case, and wires leading from switch shall be concealed in bus body. Switch shall be so installed that plunger contacts farthest edge of slide bar in such manner that any movement of slide bar will immediately close circuit on switch and activate buzzer.

Door lock shall be equipped with interior handle that extends approximately to center of emergency door. It shall lift up to release lock.

Emergency window in rear shall be equipped with latch or latches on inside connected with electrical buzzer located in driver's area that will actuate when latch is being released.

It shall also be equipped on outside with nondetachable fastening device so designed as to prevent hitching-to, but permit opening from the outside.

Statutory Authority: *MS s 169.45*

MINNESOTA RULES 1983

2719

TRANSPORTATION OF STUDENTS 3520.5120

3520.5020 EXCEPTIONS FOR SMALL VEHICLES.

Subpart 1. **Standards.** Substitute following standards for those in part 3520.5010.

Subp. 2. **Service door.** 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.

Subp. 3. **Emergency door.** Emergency door shall be located in center of rear end of the 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. Door shall open either vertically or horizontally. When vertical-type door is used, there shall be unobstructed aisle at least 12 inches wide. Emergency door shall be marked "EMERGENCY DOOR" on inside in letters at least two inches high. New buses purchased after September 1, 1973, words "EMERGENCY EXIT" may be substituted.

There shall be no steps leading to emergency door.

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

Statutory Authority: *MS s 169.45*

3520.5100 EMERGENCY WINDOW.

See part 3520.5010, subpart 3.

Statutory Authority: *MS s 169.45*

3520.5110 FIRE EXTINGUISHERS.

Subpart 1. **General requirements.** Bus shall be equipped with at least one dry-chemical type fire extinguisher of at least five pound capacity, mounted in extinguisher manufacturer's bracket of automotive type, and located in driver's compartment in full view of and readily accessible to the driver.

Fire extinguisher shall bear label of Underwriters Laboratories, Inc., showing rating of not less than 8-B:C.

Subp. 2. **Option.** One 2-1/2 pound of not less than 10-B:C rating may be used. 10-B:C denotes amount of chemical needed to extinguish ten-square-foot type B fire (flammable liquid) or type C fire (electrical).

Statutory Authority: *MS s 169.45*

3520.5120 FIRST AID KIT.

Bus shall carry a removable Grade A metal dust-proof first aid kit, mounted in full view or in a labeled accessible place in driver's compartment.

Required units and required packages per unit first aid kit is to have:

- A. ten units for Type II and Type III vehicles of 16 or less capacity;
- B. 24 units for Type I buses with passenger capacity in excess of 16 and up to and including 42 passengers; or
- C. 36 units for Type I buses of passenger capacity in excess of 42.

Unit Size	Item	Required Packages		
		10 Unit	24 Unit	36 Unit
1	Compress Bandage, 4 inch	2	6	8
1	Compress Bandage, 2 inch	1	3	7
1	Adhesive Compress, 1 inch	2	2	4

MINNESOTA RULES 1983

3520.5120 TRANSPORTATION OF STUDENTS

2720

1	Triangular Bandage, 40 inch with 2 safety pins	1	2	4
1	Gauze Bandage, 4 inch	-	2	4
1	Absorbant Gauze Compress	-	2	2
1	Gauze Compress, 24 by 72 inches	1	2	2
1	Padded Tongue Blades	1	1	1
2	Adhesive Tape, 1 inch by 2-1/2 yards	1	1	1
1	Wire Splint	-	2	2

Statutory Authority: *MS s 169.45*

3520.5130 FLOOR.

See parts 3520.4910 to 3520.4990.

Statutory Authority: *MS s 169.45*

3520.5140 FLOOR COVERING.

Subpart 1. **General requirements.** Floor in underseat area, including tops of wheel housings, driver's compartment, and toeboard, shall be covered with fire-resistant rubber floor covering or approved equal having minimum overall thickness of .125.

Floor covering in aisle shall be of aisle-type, fire-resistant rubber or approved equal, nonskid, wear-resistant, and ribbed. Minimum overall thickness shall be .1875 inch measured from top of ribs. Rubber floor covering shall meet Federal Specification ZZ-M-71b.

Floor covering must be permanently bonded to floor and must not crack when subjected to sudden change 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.

Subp. 2. **Exception for small vehicles.** Floor covering on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

Statutory Authority: *MS s 169.45*

3520.5150 HEATERS.

Subpart 1. **General requirements.** Heaters shall be of hot water or combustion type. If hot water type, heater system shall be equipped with a shutoff valve readily accessible to driver. If only one heater is used, it shall be of fresh air or combination fresh air and recirculating type. If more than one heater is used, additional heaters may be of recirculating type. Each heater motor shall be two speed.

Subp. 2. **Hot water heaters.** Hot water heaters shall bear name plate rating in accordance with current Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilation Equipment, plate to be affixed by heater manufacturer. Copies of code shall be furnished to the State Department of Education in duplicate, unless more are requested, by the School Bus Manufacturer's Institute. The State Department of Education, shall, in turn, transmit such code to each other agency responsible for development or enforcement of state standards for school buses.

All combustion-type heaters shall be approved by Underwriter's Laboratories, Inc.

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.

Heaters shall be capable of maintaining inside temperature 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.

MINNESOTA RULES 1983

2721

TRANSPORTATION OF STUDENTS 3520.5200

All heater lines running to rear heaters shall be covered with metal shield.

Subp. 3. **Exception for small vehicles.** Subpart 2 does not apply to vehicles not specifically manufactured as school buses. Also see part 3520.4630.

Statutory Authority: *MS s 169.45*

3520.5160 IDENTIFICATION.

Body shall bear words "SCHOOL BUS" in black letters at least eight inches high on both front and rear of body or on signs attached thereto. Lettering shall be placed as high as possible without impairment of its visibility. Lettering shall conform to "Series B" of Standard Alphabets for Highway Signs.

Only signs and lettering approved by state law or rule, limited to name of owner or operator and any number necessary for identification shall appear on sides of bus. See Minnesota Statutes, section 169.44, subdivision 3.

Statutory Authority: *MS s 169.45*

3520.5170 INSIDE HEIGHT.

Subpart 1. **General requirements.** Inside body height shall be nominal 72 inches or more, measured metal to metal, at any point on longitudinal center line from front vertical bow to rear vertical bow.

Subp. 2. **Exception for small vehicles.** Standard does not apply.

Statutory Authority: *MS s 169.45*

3520.5180 INSULATION.

Ceiling and walls shall be insulated with proper material to deaden sound and to reduce vibrations to a minimum, and shall be insulated to a minimum of one-inch fiberglass and installed in such a manner that the insulation does not compact or sag. Thermal insulation shall be of fire-resistant material of type approved by Underwriter's Laboratories, Inc.

Statutory Authority: *MS s 169.45*

3520.5190 INTERIOR.

Interior of bus shall be free of all unnecessary projections likely to cause injury. This standard requires inner lining on ceilings and walls. Ceilings over aisle shall be free of all projections.

Statutory Authority: *MS s 169.45*

3520.5200 LAMPS AND SIGNALS FOR NEW BUSES ONLY.

Subpart 1. **Factory installation.** Factory installation of eight-lamp alternately flashing warning signal system manufactured after the effective date of these rules shall comply with the following.

Subp. 2. **Installation.** All lamps on exterior of vehicle shall conform with and be installed as required by Federal Motor Vehicle Safety Standard 108; Minnesota Statutes, sections 169.49 to 169.70; and current Minnesota approved motor vehicle equipment (Department of Public Safety).

Subp. 3. **Interior lamps.** Interior lamps shall be provided which adequately illuminate aisle and step well.

Subp. 4. **Red and amber signal lamps.** School bus alternately flashing signal lamps mounted at same horizontal level, intended to identify vehicle as school bus and to inform other users of highway that such vehicle is about to stop or is stopped on roadway to take on or discharge school children.

Each school bus shall be equipped with a system consisting of four red signal lamps designed to conform to SAE Standard J887. "School Bus Red Signal Lamps," and four amber signal lamps designed to that standard, except for color, and except that their candlepower shall be at least 2-1/2 times that specified for red signal lamps. Both red and amber signal lamps shall be installed in accordance with SAE Standard, J887, except that each amber signal

MINNESOTA RULES 1983

3520.5200 TRANSPORTATION OF STUDENTS

2722

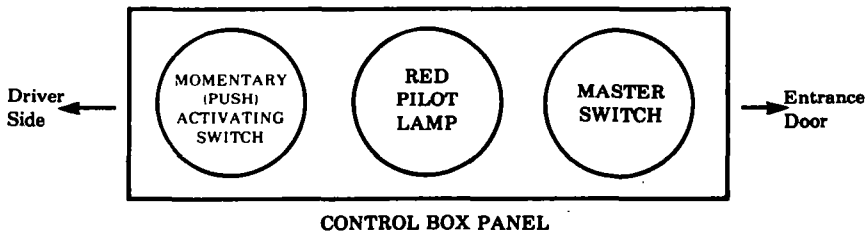
lamp shall be located near each red signal lamp, at the same level, but closer to the vertical centerline of the bus.

The system shall be wired so that the amber signal lamps are activated only by hand operation, and if activated, are automatically deactivated and red signal lamps are automatically activated when the bus entrance door is opened. Right and left signal lamps shall flash alternately. Each signal lamp shall flash not less than 60 nor more than 120 flashes per minute. The "on" period shall be long enough to permit bulb filament to come up to full brightness. No brake-operated switch shall be permitted.

There shall be a red pilot lamp which shall go on when the respective amber or red systems are actuated. The pilot shall either go out or flash at an altered rate in the event the system is not functioning normally.

Subp. 5. **Option.** Mobilflash Mark IV, as modified and approved for use in Minnesota, or its approved equal. Control box panel contains switches and red OFF/ON pilot lamp located in conformance with diagram below in addition to eight indicator lights.

Subp. 6. **Control box for signal lamps.** Signal lamp system shall include a separate closed control box. The box shall be constructed as small as practical, easily demounted or partially disassembled to provide simple access for maintenance purposes. Switches and red pilot lamp shall be located in conformance with the following diagram.



The control box shall be securely mounted to the right of the steering wheel, in the near proximity of the entrance door control, within easy unobstructed reach of the driver. Switches and pilot lamp shall be readily visible to the driver. The activating switch may be self-illuminated (glow type). Buses equipped with an eight-lamp system prior to the effective date of these rules shall be exempt from subparts 4, last paragraph; 5; and 6.

Subp. 7. **System and stop arm.** Signal lamp system and stop arm shall operate as follows:

Stop signal arm shall be of an automatic type. It shall automatically extend and retract in conjunction with the alternately flashing red lights and shall be activated and deactivated by the entrance door switch.

With master switch on, entrance door closed, depress hand switch. Red pilot lamp and amber signals shall go on.

Open entrance door. Pilot lamp and amber signal lamps shall go off, and pilot lamp and red signal lamps shall go on. Stop arm shall automatically extend.

Close entrance door. Red pilot and signal lamps shall go off and stop arm shall automatically retract.

Open entrance door without depressing hand switch. Red pilot lamp and red signal lamps shall go on. Stop arm shall automatically extend.

With master switch off, depressing hand switch shall not actuate the amber signal system, nor will opening entrance door actuate the red signal system and stop arm.

MINNESOTA RULES 1983

2723

TRANSPORTATION OF STUDENTS 3520.5210

Subp. 8. **Installation requirements.** Each alternately flashing signal lamp shall be mounted with its axis substantially parallel to longitudinal axis of vehicle.

Front and rear alternately flashing signal lamps shall be spaced as far apart laterally as practicable.

Alternately flashing signal lamps shall be mounted at the front on same horizontal center line and above windshield, and at the rear on the same horizontal center line so that the lower edge of lens is not lower than top line of side window.

Vertical and lateral vision of the front and rear alternately flashing warning lamps shall not be obstructed by any part of the body or lamp-house insofar as standard bus body construction will permit.

Area around lens of each alternately flashing signal lamp and extending outward approximately three 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 three inches wide, immediately below and to both sides of lens, shall be painted on body or roof area against which signal lamp is seen (from distance of 500 feet along axis of vehicle).

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

All wiring from alternately flashing signal lamps to the door switch shall be at least ten-gauge. All other wire shall be a minimum of 14-gauge.

Statutory Authority: *MS s 169.45*

3520.5210 LAMPS AND SIGNALS FOR BUSES NOW IN SERVICE.

Conversion installation of eight-lamp alternately flashing warning signal system. "Effective Date: August 1, 1974."

Subpart 1. **Type I buses.** Type I school buses (carrying more than 16 pupil passengers) which were manufactured and in service prior to the effective date of these rules and not equipped with an eight-lamp system shall comply with subpart 2.

Subp. 2. **Red and amber signal lamps.** School bus alternately flashing signal lamps are lamps mounted at the same horizontal level, intended to identify vehicle as school bus and to inform other users of highway that such vehicle is about to stop or is stopped on roadway to take on or discharge school children. Each school bus shall be equipped with a system consisting of four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps," July 1964, and four amber signal lamps designed to that standard, except for color, and except that their candlepower shall be at least 2-1/2 times that specified for red signal lamps. Both red and amber signal lamps shall be installed in accordance with SAE Standard J887, except that each amber signal lamp shall be located near each red signal lamp, at or near as practicable to the same level, but closer to the vertical centerline of the bus.

The system shall be wired so that the amber signal lamps are activated only by hand operation and, if activated, are automatically deactivated and red signal lamps are automatically activated when the bus entrance door is opened. The flashing mechanism shall be capable of carrying the full current load of the signal system. Right and left signal lamps shall flash alternately. Each signal lamp shall flash not less than 60 nor more than 120 flashes per minute. The "on" period shall be long enough to permit bulb filament to come up to full brightness. No brake operated switch shall be permitted.

There shall be a red pilot lamp which shall go on when the respective amber or red systems are actuated. The pilot shall either go out or flash at an altered rate in the event the system is not functioning normally.

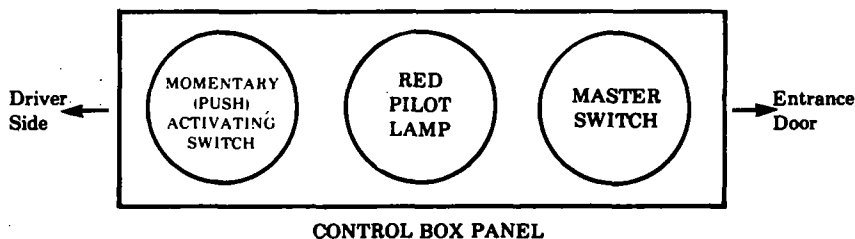
MINNESOTA RULES 1983

3520.5210 TRANSPORTATION OF STUDENTS

2724

Subp. 3. **Option.** Mobilflash Mark IV, as modified and approved for use in Minnesota, or its approved equal. Control box panel contains switches and red OFF/ON pilot lamp located in conformance with diagram below in addition to eight-indicator lights.

Subp. 4. **Control box for signal lamps.** Signal lamp system shall include a separate closed control box. The box shall be constructed as small as practical, easily demounted or partially disassembled to provide simple access for maintenance purposes. Switches and red pilot lamps shall be located in conformance with the following diagram.



The control box shall be securely mounted to the right of the steering wheel, in the near proximity of the entrance door control, within easy unobstructed reach of the driver. Switches and pilot lamp shall be readily visible to the driver. The activating switch may be self-illuminated (glow type).

Buses equipped with an eight-lamp system prior to the effective date of these rules shall be exempt from part 3520.5200, subparts 4, last paragraph, 5, and 6.

Subp. 5. **Signal lamp system and stop arm.** Signal lamp system and stop arm shall operate as follows:

Stop arms presently air or vacuum operated shall be converted to operate automatically in conjunction with the red signal lamps. Manual stop arms not required to be converted.

With master switch on, entrance door closed, depress hand switch. Red pilot lamp and amber signals shall go on.

Open entrance door. Pilot lamp and amber signal lamps shall go off and pilot lamp and red signal lamps shall go on. Stop arm, if air or vacuum, shall automatically extend.

Close entrance door. Red pilot and signal lamps shall go off and stop arm, if air or vacuum, shall retract automatically.

Open entrance door without depressing hand switch. Red pilot lamp and red signal lamps shall go on. Stop arm, if air or vacuum, shall automatically extend.

With master switch off, depressing hand switch shall not actuate the amber signal system, nor will opening entrance door actuate the red signal system and stop arm.

Subp. 6. **Installation requirements.** Each flashing signal lamp shall be mounted with its axis substantially parallel to longitudinal axis of vehicle.

Front and rear alternately flashing signal lamps shall be spaced as far apart laterally as practicable.

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

Vertical and lateral vision of the front and rear alternately flashing warning lamps shall not be obstructed by any part of the body or the body or lamphouse insofar as standard bus body construction will permit.

Area around each lamp, extending approximately three inches outward shall be painted black.

MINNESOTA RULES 1983

2725

TRANSPORTATION OF STUDENTS 3520.5230

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

All wiring from alternately flashing signal lamps to the door switch shall be at least ten-gauge. All other wire shall be a minimum of 14-gauge.

The red and amber signal lamps shall draw an equal current load. See part 3520.5200, subpart 4, last paragraph.

Air or vacuum operated stop arms shall automatically extend and retract in conjunction with the alternately flashing red signals and shall be activated and deactivated by entrance door switch. (Manual stop arms not required to be converted.)

Subp. 7. Wiring. No wiring shall be on the exterior of the vehicle. All wiring shall be located within the body structure or within the body interior or combination thereof.

A. Installation within the body structure: (Removing access panels above or below side windows.)

Wiring shall be cleated at intervals for proper support.

Wire shall be additionally insulated for protection at all possible wear points.

Whenever wires pass through body members or panels, additional protection shall be provided by the use of appropriate type of insulating inserts or grommets.

B. Installation within the body interior. (Use of sheet metal covering metal conduit or metal surface channel type applications.)

Installation shall not be made below side windows or along floor.

Wire shall be additionally insulated for protection at possible wear points.

Whenever wires pass through body members or panels, additional protection shall be provided by the use of appropriate type of insulating inserts or grommets.

C. Manufacturers shall provide detailed installation instructions, including correct method of mounting, assembly, and wiring with each alternately flashing warning conversion system.

Statutory Authority: *MS s 169.45*

3520.5220 TURN SIGNAL LAMPS.

Bus shall be equipped with Class A turn signal lamps that meet current specifications of Society of Automotive Engineers. These signals must be independent units and shall be equipped with four-way hazard warning switch to cause simultaneous flashing of turn signal lamps when needed as vehicular traffic hazard warning.

Statutory Authority: *MS s 169.45*

3520.5230 FLAGS AND FLARES.

School bus shall carry at all times at least three red, yellow, or orange flags not less than 12 inches square and means for mounting for use in warning traffic in event of breakdown on the highway.

Bus shall carry at least three red electric lanterns or at least three emergency reflectors, to be displayed according to state law in event of breakdown on the highway.

Fuses may also be used (not required). Liquid burning "pot type" flares not allowed.

Mounted reflectors: see Minnesota Statutes, sections 169.50 and 169.75.

Statutory Authority: *MS s 169.45*

3520.5300 METAL TREATMENT.

Subpart 1. **General requirements.** All ferrous metal less than 12-gauge used in the construction of bus body shall be zinc or aluminum coated, mill applied. Included are such items as structural members, inside and outside panels, floor panels and floor sills; excluded are door handles, grab handles, stanchions, interior decorative parts, and other interior plated parts.

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

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

Subp. 2. **Exception for small vehicles.** Standard does not apply to small vehicles not specifically manufactured as school buses.

Statutory Authority: *MS s 169.45*

3520.5310 MIRRORS.

Interior clear view mirror shall be at least 6 by 30 inches overall 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.

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 overall. Each mirror shall be firmly supported and adjustable to give driver clear view past left rear and right rear of bus.

Option: Small convex mirrors may be used in conjunction with above.

Exterior convex mirror at least 7-1/2 inches in diameter shall be located either on left or on right side of bus in such a manner that seated driver may observe, through its use, areas to front or side of bus where direct observation, as prescribed in Federal Standard 17, is not possible.

Statutory Authority: *MS s 169.45*

3520.5320 MOUNTING.

Subpart 1. **General requirement.** Chassis frame shall extend to rear edge of rear body cross member. Bus body shall be attached to chassis frame in such manner as to prevent shifting or separation of body from chassis under severe operating conditions.

Body front shall be attached and sealed to chassis cowl in such manner as to prevent entry of water, dust, and fumes through joint between chassis cowl and body.

Insulating material shall be placed at all contact points between body and chassis frame. Insulating material shall be one-fourth inch minimum thickness, shall have quality of sidewall of automobile tire, and shall be so attached to chassis frame or body member that it will not move under severe operating conditions.

Subp. 2. **Exception for small vehicles.** Standard does not apply to vehicles not specifically manufactured as school buses.

Statutory Authority: *MS s 169.45*

3520.5330 OVERALL LENGTH.

Overall length of bus shall not exceed 40 feet.

Statutory Authority: *MS s 169.45*

3520.5340 OVERALL WIDTH.

Overall width of bus shall not exceed 96 inches.

Statutory Authority: *MS s 169.45*

3520.5350 POSTS.

See parts 3520.4910 to 3520.4990 and 3520.5550.

Statutory Authority: *MS s 169.45*

3520.5360 RUB RAILS.

Subpart 1. **General requirements.** 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 for emergency door) to point of curvature near outside cowl on left side.

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

There shall be rub rail at base of skirt of bus.

All rub rails shall be attached at each body post and all other upright structural members.

All rub rails shall be four inches or more in width, shall be of 16-gauge steel, and shall be constructed in corrugated or ribbed fashion.

All rub rails shall be applied outside body or outside body posts.

Pressed-in or snap-on rails do not satisfy this requirement.

Subp. 2. **Exception for small vehicles.** Standard does not apply to small vehicles not manufactured specifically as school buses.

Statutory Authority: *MS s 169.45*

3520.5370 SANDERS.

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, nonfreezing rubber nozzles;
- G. be operated by electric switch with telltale light mounted on instrument panel;
- H. be exclusively driver controlled; and
- I. have gauge to indicate hoppers need refilling when they are down to one-quarter full.

Statutory Authority: *MS s 169.45*

3520.5380 SEAT BELT FOR DRIVER.

Seat belt for driver shall be provided, belt to comply with current specifications and recommended practices of Society of Automotive Engineers except that belt shall be fastened to bus floor immediately behind driver's seat when adjusted to rearmost position. Retractable seat belt to stop at seat level.

Statutory Authority: *MS s 169.45*

3520.5400 SEATS.

All seats shall have a minimum depth of 15 inches.

In determining seating capacity of bus, allowable rump width shall be 13 inches where 3-3 seating plan is used and 15 inches where 3-2 seating plan is used.

See table under part 3520.4830.

All seats shall be forward facing and anchorage shall comply with Federal Motor Vehicle Safety Standard 207. See part 3520.4810.

No bus shall be equipped with jump seats or portable seats.

Forwardmost pupil seat on right side of bus shall be located so as not to interfere with driver's vision when driver's seat is adjusted to its rearmost position.

Minimum center-to-center seat spacing shall be 27 inches. Distance between driver's seat when adjusted to its rearmost position and front face of seatback of forwardmost pupil seat on left side of bus shall not be less than 24 inches measured at cushion height.

Seat and back cushions of all seats shall be designed to safely support designated number of passengers under normal road conditions encountered in school bus service. Coverings of seat cushions shall be of material having 42-ounce finished weight, 54-inch width, and finished vinyl coating of 1.06 broken twill.

Minimum distance between steering wheel and back rest of driver's seat shall be 11 inches. Driver's seat shall be strongly attached (bolted through the floor with a minimum of four steel bolts each having a tensile strength of at least 5,500 pounds per square inch, with lock washer and nut), shall have vertical adjustment, and shall have fore-and-aft adjustment of not less than four inches.

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 seven inches from side wall at cushion height and at fore-and-aft center of cushion.

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.

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

Passenger seat cushion retention system shall be employed to prevent passenger seat cushions from disengaging from seat frames in event of accident. Each seat cushion retention system shall be capable of withstanding vertical static load equal to minimum of five times weight of cushion. System shall also be capable of withstanding forward or rearward static load equal to 20 times weight of cushion.

Statutory Authority: *MS s 169.45*

3520.5410 FIBERGLASS SEATS.

Fiberglass seats may be used provided they meet the following standards. Fiberglass seats must meet all foregoing provisions for seats except those concerning construction of seat cushions and backs, and shall provide at least 24-3/4 inch knee room.

MINNESOTA RULES 1983

2729

TRANSPORTATION OF STUDENTS 3520.5430

Fiberglass seats shall combine rigid construction of welded tubular steel with contoured matched die-formed or hand-sprayed molded plastic shell. Exposed steel shall be stainless steel or shall be finished with baked enamel.

Plastic shells shall consist of good commercial grade, fire-resistant, color pigmented resin reinforced with glass fibers in such manner as to avoid resin-rich sections. Shells shall be shaped to provide maximum comfort.

Both metal frames and plastic shells shall have rounded corners and be free of sharp edges.

Statutory Authority: *MS s 169.45*

3520.5420 SEAT EXCEPTION FOR SMALL VEHICLES.

Substitute following standards for those in parts 3520.5400 and 3520.5410.

All seats shall be securely fastened to body of vehicle.

Seats shall be covered with fire-resistant padding material and comfortably upholstered with adequate padding. (Not applicable to fiberglass seats.)

Jump seats or portable seats shall not be used.

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.

Allowable average rump width in determining seating capacity of bus shall be 13 inches.

All seats shall be at least 14 inches in overall depth.

If forward facing seats are used, they shall be so placed that distance from center to center measured at top center of backs shall be not less than 27 inches.

If longitudinal seats are used, only two shall be installed and distance between front edges of seat cushions shall be at least 20 inches.

Back rest for each longitudinal seat shall measure at least eight inches vertically and shall be so mounted that its top edge is at least 12 inches above seat.

Statutory Authority: *MS s 169.45*

3520.5430 STANCHIONS AND GUARD RAILS.

Subpart 1. **General requirements.** 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 the driver's seat.

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

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 two inches of floor. If panel extends over or into step-well opening, it must be flanged at the floor line so as to close any opening between panel and floor.

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.

All stanchions and guard rails shall be a minimum of one-inch outside diameter steel or equivalent strength tubing. They shall be stainless steel clad except when padded.

MINNESOTA RULES 1983

3520.5430 TRANSPORTATION OF STUDENTS

2730

Subp. 2. **Exception for small vehicles.** Standard does not apply to small vehicles not specifically manufactured as school buses.

Statutory Authority: *MS s 169.45*

3520.5440 STEERING WHEEL.

See parts 3520.5350 and 3520.5360.

Statutory Authority: *MS s 169.45*

3520.5450 STEPS.

Subpart 1. **General requirements.** First step at service door shall be not less than 12 inches and not more than 17 inches from ground, based on standard chassis specifications.

Service door entrance may be equipped with two-step or three-step step-well. Risers in each case shall be approximately equal. When plywood floor is used on steel, differential may be increased by thickness of plywood used.

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

Steps shall not protrude beyond side body line.

Grab handle not less than ten inches in length shall be provided in unobstructed location inside doorway.

Surface of steps shall be of nonskid material.

Subp. 2. **Exception for small vehicles.** Steps, if any, on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

Statutory Authority: *MS s 169.45*

3520.5460 STIRRUP STEPS.

Subpart 1. **General requirement.** There shall be one stirrup step and suitably located handle on each side of front of body for easy accessibility for cleaning windshield and lamps.

Subp. 2. **Exception for small vehicles.** Standard does not apply to vehicles not specifically manufactured as school buses.

Statutory Authority: *MS s 169.45*

3520.5470 STOP SIGNAL ARM.

Stop signal arm shall be installed on the left side of the bus, and shall be octagonal in shape, exclusive of brackets for mounting on arm.

New buses (effective March 7, 1974) stop signal arm shall be of an automatic type. See part 3520.5200.

Buses now in service (effective August 1, 1974) air or vacuum operated stop signal arms shall be converted to automatic type. See part 3520.5210, subpart 5.

It shall display a stop signal on both sides, have a red background, and carry the word "STOP" in white or silver-white letters at least one-third the height of the signal.

The stop signal shall be of the shape, size, legend, and colors specified by the "Manual on Uniform Traffic Control Devices for Streets and Highways" published by the Federal Highway Administration, or as specified by the state of Minnesota, as adopted by the commissioner of highways.

	Silver-White		
Div. ang.	.2°	.5°	1.5°
Inc. ang.			
4°	250.0	95.0	4.0
40°	120.0	54.0	2.0

New buses (effective January 1, 1975). The stop signal is to be 18 inches in height (24 inches optional), is to be reflective and fabricated of smooth surface, retroreflective sheeting mounted on the properly prepared surface. The reflective sheeting shall have the following minimum brightness values at .2

degrees, .5 degrees, and 1.5 degrees divergence expressed as average candlepower per footcandle per square foot of material. Measurements shall be conducted in accordance with the standard photometric testing procedures for reflexreflectors, paragraph 4.4.7 of Federal Specification LS-300A, "Sheeting and Tape, Reflective; Nonexposed Lens Adhesive Backing".

Statutory Authority: *MS s 169.45*

3520.5480 STORAGE COMPARTMENT.

Subpart 1. **General requirement.** Metal container of adequate strength and capacity for storage of tire chains and/or tow chains and such tools as may be necessary for minor emergency repairs while bus is enroute shall be provided. Such storage container may be located either inside or outside passenger compartment, but, if inside, it shall have cover (seat cushion may serve this purpose) and be fastened to floor in right rear portion of bus.

Subp. 2. **Option.** Snow shovel bracket to securely hold snow shovel may be provided.

Statutory Authority: *MS s 169.45*

3520.5490 SUNSHIELD.

Interior, adjustable sunshield not less than 6 by 16 inches in size shall be installed above windshield, driver's side, with mounting of double bracketed type.

Statutory Authority: *MS s 169.45*

3520.5500 TAILPIPE.

Tailpipe shall not extend beyond rear bumper. See part 3520.4550.

Statutory Authority: *MS s 169.45*

3520.5510 UNDERCOATING AND RUSTPROOFING.

Entire underside of body, including floor members and side panels below floor level shall be coated with fire-resistant, asphalt base, rubber base, or other undercoating material, applied by spray method, in order to seal, to deaden sound, to insulate, and to prevent oxidation. Undercoating shall be applied after assembly of the body has been completed.

Statutory Authority: *MS s 169.45*

3520.5520 VENTILATION.

Subpart 1. **General requirement.** Body shall be equipped with suitable, controlled ventilating system of sufficient capacity to maintain proper quantity of air under operating conditions without opening of windows except in extremely warm weather.

If static-type exhaust roof ventilators are desired, they shall be installed in low-pressure area of roof panel.

Subp. 2. **Exception for small vehicles.** Standard does not apply to small vehicles not manufactured specifically as school buses.

Statutory Authority: *MS s 169.45*

3520.5530 WHEEL HOUSING.

Subpart 1. **General requirement.** Wheel house openings shall allow for easy tire removal and service.

Wheel housings shall be designed to support seat and passenger loads and shall be attached to floor sheets in such manner as to prevent dust or water from entering the body.

Inside height of wheel housings above floor line shall not exceed ten inches.

Wheel housings shall provide clearance for dual wheels as established by National Association of Chain Manufacturers.

3520.5530 TRANSPORTATION OF STUDENTS

2732

Subp. 2. **Exception for small vehicles.** Standard does not apply to small vehicles not manufactured specifically as school buses.

Statutory Authority: *MS s 169.45*

3520.5540 WIDTH.

See part 3520.5340.

Statutory Authority: *MS s 169.45*

3520.5550 WINDSHIELD AND WINDOWS.

All glass in windows, windshield, 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.

Glass in windshield shall be heat-absorbent, laminated plate. 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.

Optional: Windshield may be of uniform tint throughout.

Optional: Windshield may have horizontal gradient band starting slightly above line of driver's vision and gradually decreasing in light transmission to 20 percent or less at top of windshield.

Glass in all side and rear windows shall be of AS-2 grade laminated safety glass as specified in American Standards Association code Z26.1. The driver's window shall be adjustable for ventilation purposes.

Each full side window shall provide unobstructed emergency opening at least nine inches high and 22 inches wide, obtained by lowering of window.

Knockout-type, split-sash windows shall be used.

All exposed edges of glass shall be banded.

Statutory Authority: *MS s 169.45*

3520.5560 WINDSHIELD WASHERS.

Windshield washers shall be optional but, where required, they shall conform to body manufacturer's recommendations as to type and size for bus on which they are to be used.

Statutory Authority: *MS s 169.45*

3520.5570 WINDSHIELD WIPERS.

Bus shall be equipped with two positive-action variable-speed, heavy duty bus type, windshield wipers of air or electric type. Wiper blades shall be at least 14 inches long and shall be of the replaceable blade type.

Statutory Authority: *MS s 169.45*

3520.5580 WIRING.

Subpart 1. **Standard.** All wiring shall conform to current standards of Society of Automotive Engineers.

Subp. 2. **Circuits.** Wiring shall be arranged in at least eight regular circuits, as follows: head, tail, stop (brake), and instrument panel lamps; clearance lamps; dome and step-well lamps; starter motor; ignition and emergency door signal; turn signal lamps; alternately flashing red signal lamps; and horn.

Any of the subpart 2 combination circuits may be subdivided into additional independent circuits.

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

MINNESOTA RULES 1983

2733

TRANSPORTATION OF STUDENTS 3520.5610

When installed, all other electrical functions shall be provided with independent and properly protected circuits.

Each body circuit shall be individually color coded and a diagram of the circuits shall be attached to the body in a readily accessible location, preferably on cover of fuse panel.

A separate fuse or circuit breaker shall be provided for each circuit except starter motor and ignition circuits. The fuse panel shall be located next to the circuit switch panel and color coded.

All wires within body shall be insulated and protected by covering of fibrous loom or approved equal which will protect them from external damage and minimize dangers from short circuits. Whenever wires pass through body members, additional protection in the form of appropriate type of insert shall be provided.

Wires not enclosed within body shall be fastened securely at intervals of not more than 24 inches. All joints shall be soldered or joined by equally effective connectors.

Subp. 3. **Exception for small vehicles.** Wiring shall be manufacturer's standard.

Statutory Authority: *MS s 169.45*

3520.5600 TYPE II SCHOOL BUSES.

Type II buses carrying 16 or less pupil passengers shall be painted National School Bus Glossy Yellow, identified as a school bus, equipped with eight-lamp warning system and stop signal arm, and shall operate as a Type I bus. See Type I, Operating Rules, parts 3520.2400 to 3520.2900.

Type II vehicles are restricted in size and shall not exceed 16 passengers (rated manufacturer's capacity).

Automobiles, station wagons, and other vehicles designed for carrying nine or less pupil passengers are Type III buses, and their use is prohibited as a Type I or Type II bus.

Statutory Authority: *MS s 169.45*

3520.5610 EQUIPMENT.

Subpart 1. **Age of bus.** No Type II vehicle used to transport school children shall be more than ten years old and every such vehicle shall provide for the following.

Subp. 2. **Color.** Shall be painted National School Bus Glossy Yellow (Color 13432). Use of chrome and/or black trim permitted. Type I buses. See parts 3520.3800 to 3520.4770, also 3520.4900.

Subp. 3. **Construction.** All steel construction and shall provide reasonably dustproof and watertight unit.

Subp. 4. **Defrosters.** Defrosters of sufficient capacity to keep at least 80 percent of the total windshield area clear of condensation, ice, and snow.

Subp. 5. **Doors.** Doors opening from both inside and outside with no restrictive secondary locking devices of the automatic type.

Subp. 6. **Fire extinguisher.** 2-1/2 pound, dry-chemical type.

Subp. 7. **First aid kit.** Vehicle shall carry first-aid kit (ten unit), removable and readily identifiable, mounted in full view and in an accessible place in driver's compartment. See Type I buses, part 3520.5120.

Subp. 8. **Heaters.** Heaters shall be of hot water or combustion-type.

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

If more than one heater is used, additional heaters may be of recirculating type. Each heater motor shall be at least two speed.

All combustion-type shall be approved by Underwriter's Laboratories, Inc.

Heaters shall be capable of maintaining inside temperature 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.

Heater lines inside the passenger compartment shall be guarded to prevent accidental contact by driver or passengers.

Subp. 9. **Identification.** Body shall bear words "SCHOOL BUS" in black letters at least eight inches high on both front and rear of body or on signs attached thereto. Lettering shall be placed as high as possible without impairment of its visibility. Lettering shall conform to "Series B" of Standard Alphabets for Highway Signs.

Only signs and lettering approved by state law or regulations, limited to name of owner or operator and any number necessary for identification shall appear on sides of bus. See Minnesota Statutes, section 169.44, subdivision 3.

Subp. 10. **Lamps and signals.** Eight-lamp alternately flashing warning signal system shall be installed and operate in conformance with Type I buses. See parts 3520.5200 to 3520.5230.

All lamps on exterior of vehicle shall conform with and be installed as required by Federal Motor Vehicle Safety Standard 108.

Subp. 11. **Flags and flares.** School bus shall carry at all times at least three red, yellow, or orange flags not less than 12 inches square and means for mounting for use in warning traffic in event of breakdown on the highway.

Bus shall carry at least three red electric lanterns or at least three red emergency reflectors, to be displayed according to state law in event of breakdown on the highway.

Fuses may also be used (not required). Liquid burning "pot type" flares not allowed.

Subp. 12. **Mirrors.** Interior mirror, manufacturer's standard.

Two exterior clear view mirrors, one to left and one to right of driver. Each mirror shall be firmly supported and adjustable to give driver clear view past left rear and right rear of bus.

Exterior convex mirror at least 7-1/2 inches in diameter shall be located either on left or on right side of bus in such a manner that seated driver may observe, through its use, areas to front or side of bus where direct observation, as prescribed in Federal Standard 17, is not possible.

Subp. 13. **Seat belt for driver.** Seat belt for driver shall be provided, belt to comply with current specifications and recommended practices of Society of Automotive Engineers except that belt shall be fastened to bus floor immediately behind driver's seat when adjusted to rearmost position.

Subp. 14. **Seats.** Vehicle manufacturer's standard seating.

If school bus type are used, they shall be installed and spaced in conformance with Type I buses (except for required headroom). See parts 3520.5400 to 3520.5420.

Subp. 15. **Stop signal arm.** Stop signal arm shall be installed and operate in conformance with Type I buses. See parts 3520.5470, 3520.5200, subpart 7, and 3520.5210, subpart 5.

Statutory Authority: *MS s 169.45*

3520.5700 TYPE III SCHOOL BUSES.

Type III buses carrying 16 or less pupil passengers (including automobiles, station wagons, and other vehicles designed for carrying nine or less), shall not be painted school bus color, bear the words "SCHOOL BUS," have the eight-lamp warning system or stop signal arm, and shall not operate as a Type I or Type II bus. See Type III buses, parts 3520.3000 to 3520.3200.

MINNESOTA RULES 1983

2735

TRANSPORTATION OF STUDENTS 3520.5800

Type III vehicles are restricted in size and shall not exceed 16 passengers (rated manufacturer's capacity).

Statutory Authority: *MS s 169.45*

3520.5710 EQUIPMENT.

Subpart 1. Age of the bus. No Type III vehicle used to transport school children shall be more than ten years old. Every Type III vehicle shall comply with the requirements for Type II buses, parts 3520.5600 and 3520.5610, except for the following.

Subp. 2. Color. Shall be painted a color other than National School Bus Glossy Yellow or Minnesota Golden Orange.

Exception: Vehicles purchased prior to the effective date of this rule.

Subp. 3. Identification. Shall not have the words, "School Bus" in any location on the exterior of the vehicle, or in any interior location visible to a motorist.

Shall display to the rear of the vehicle a sign "VEHICLE STOPS AT RR CROSSINGS."

Lettering (except for "AT," which may be one inch smaller) shall be a minimum two-inch "Series D" as specified in Standard Alphabets for Highway Signs as specified by the Federal Highway Administration.

Sign shall have provisions for being covered, or be of a removable or fold down type.

Subp. 4. Lamps and signals. Installation and use of the eight-lamp warning system is prohibited.

All lamps on exterior of vehicle shall conform with and be installed as required by Federal Motor Vehicle Safety Standard 108.

Subp. 5. Stop signal arm. Installation and use of stop signal arm is prohibited.

Statutory Authority: *MS s 169.45*

3520.5800 INSPECTION OF SCHOOL TRANSPORTATION EQUIPMENT.

The owner of any vehicle used in the transportation of school children, either a school district or private operator under contract with a school district, shall submit such vehicle to inspection at any time during the school year, as may be required by the commissioner of education.

Statutory Authority: *MS s 169.45*