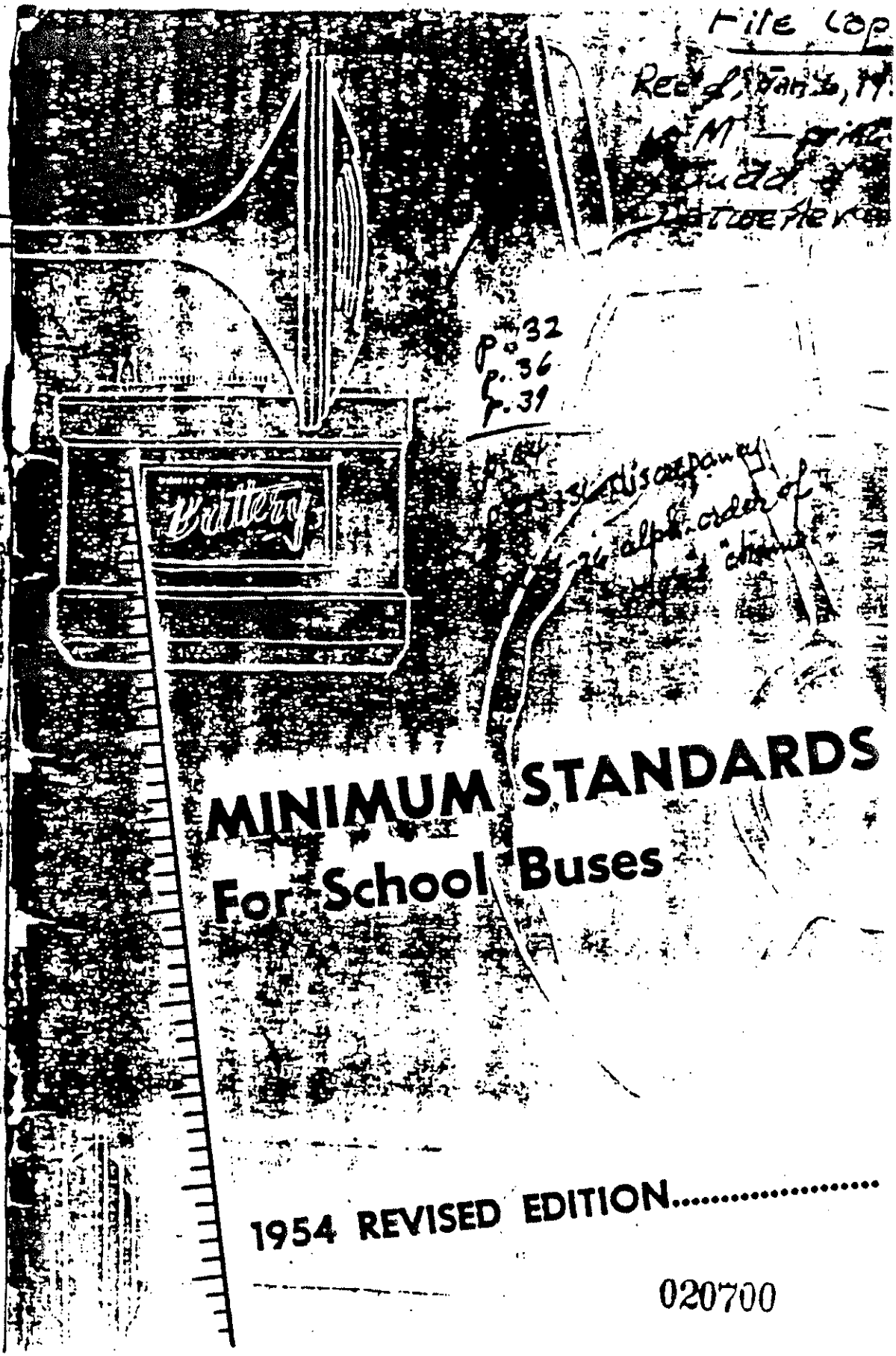

MINIMUM STANDARDS For School Buses

1954 REVISED EDITION.....

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MINIMUM STANDARDS FOR SCHOOL BUSES

1954 Revised Edition

omission - p. 67 footnote
also error in alphabetical arrangement of "color" "chains" "construction"
p. 64 "George"

Recommendations of
NATIONAL CONFERENCE ON SCHOOL TRANSPORTATION

Sponsored by

National Council of Chief State School Officers
American Association of School Administrators, NEA
Department of Rural Education, NEA
U. S. Office of Education

Administered by

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1954

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FOREWORD

Fifteen years of development and use are now behind the minimum uniform standards for school bus construction originally formulated by official representatives of the 48 states at the 1939 National Conference on School Bus Standards. In subsequent National Conferences (1945, 1948, 1951, and 1954), these standards have been revised and refined where experience or new developments demonstrated the need for modification. They have also been expanded to apply to the small vehicles used to transport school children in sparsely populated areas and to the transit and metropolitan types of vehicles new coming into wider use for school transportation.

This report presents the *minimum* standards for all types of school buses as modified by the 1954 National Conference on School Transportation. Each basic minimum standard herein is intended to apply to all types of school buses—conventional type body-on-chassis vehicles having a seating capacity of 24 or more pupils, small vehicles (including station wagons, suburbans, and converted panel trucks) having a seating capacity up to and including 23 pupils, and transit and metropolitan types of vehicles having a seating capacity of 24 or more pupils. In some instances where the minimum standard applies only to the conventional type body-on-chassis vehicles, necessary exceptions are stated as minimum standards applicable to "small vehicles" and/or to "transit and metropolitan vehicles."

The process by which these minimum standards for school buses have been developed and revised is a significant achievement representing cooperative nationwide action of the states on common problems. Preliminary consultation with state departments of education, preparation of pertinent data in advance of each Conference, revision and refinement of the standards by state representatives in Conference, together with cooperation and advice of engineers of the automotive industry and others thruout these Conferences, were elements vital to the development of sound standards and to their subsequent adoption and enforcement in the various states.

The minimum standards, cooperatively developed but administered

by the individual states, have already resulted in greater safety for transported children and substantial savings in the procurement of school buses. This is true even in states which have not yet adopted the standards. The minimum standards also demonstrate the strength of state departments of education when they unite to solve problems of nationwide concern and then return to put the Conference recommendations into practice in their respective states.

Adoption of these revised standards in each of the 48 states will result in safer vehicles, assist the public in protecting the lives of school children, and effect savings for both school districts and industry thru standardizing the manufacture of school buses.

M. R. TRABUE, *Chairman*,
National Conference on School Transportation

THOMAS D. BAILEY, *President*,
National Council of Chief State School Officers

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INTRODUCTION

Preceding the deliberations on school bus standards, participants in the National Conference on School Transportation were addressed by two leaders whose efforts in the past have been closely allied to safe pupil transportation: J. O. Mattson, President of the Automotive Safety Foundation; and Wayne O. Reed, Assistant Commissioner of the United States Office of Education.

Because of their guidance to the Conference in pointing out past achievements and avenues of present need and because of their inspirational nature, these messages contributed greatly to the success of the meetings. A record of the proceedings would be incomplete without reference to them. The following paragraphs, therefore, contain highlights of these addresses. Running thru both was the theme of cooperation. Each speaker emphasized that progress depended on a harmonious working relationship between education, industry, and government, particularly at the state and local levels. This theme sounded the keynote for the Conference to follow.

Mr. Mattson spoke of the pupil transportation system as something of a phenomenon. In the first place, it is an integral part of the school plant, a situation not found in other countries. Secondly, it is one of the finest examples of industry-education cooperation found anywhere. This cooperation has raised the standards of education in this country, has improved the social and economic lives of rural communities, and has given new understanding and cooperation to young men and women. Besides these, a program of school transportation needs a third partner—the highway. The state department of education and the state highway department are financed by and are servants of the same public. This interrelationship can be illustrated with research showing the need for more improved roads in order to facilitate school bus travel.

Pupil transportation is not new, having been conducted during the early years of this country by horse and wagon. The invention which made an organized system possible was, of course, the internal com-

bustion engine. Probably the greatest single advance since then has been the development of the pneumatic tire. This occurred almost simultaneously with early efforts toward school consolidation. Originally intended for rural use, pupil transportation has since spread to suburban areas where it has given increasing service, in line with the movement of the population to these outlying communities. Former minimum distance limits are frequently being ignored, emphasis now being placed on protecting pupils against pedestrian hazards along busy roadways.

The school transportation conferences have been giving attention to safety in two ways. First, methods of selecting and training drivers are being closely studied. That properly trained drivers are essential to safe school transportation is illustrated by one study; the accident rate of the untrained drivers was four times the rate of the trained drivers. For a training course designed to provide even safer driving, ways should be found to instill in drivers proper attitudes toward driving, those special skills that make the driver capable and considerate of the lives entrusted to him. Second, school bus standards are being continually improved. One should bear in mind, however, that all states have not yet adopted standards established previously. Efforts to obtain support from the public and from governmental agencies are needed to achieve full enforcement. On the other hand, minimum standards for school buses should not be so rigid and precise that they stand in the way of new technical advancements and new and forward thinking.

Mr. Reed, in his address, traced the growth of pupil transportation, the problems it faces, and the agencies cooperating to develop a safe and efficient system. The number of pupils transported has increased from 1,100,000 in 1925-26 to 8 million today, about 30 percent of the present school population. They are being transported in 130,000 vehicles at an annual cost of over $250 million. Despite this growth, however, current physical needs are not being met. Over half of the buses now in operation are at least four years old. It is estimated that 36,000 new school buses are needed to provide adequate transportation, at a probable cost of $156 million.

Also needed before pupil transportation could develop was legislation legalizing public financing of this activity. Then, too, a growing public consciousness for safe school transportation called attention in the 1930's to the need for standards for buses and drivers. The National Conference on School Bus Standards was established to meet this need. Since that first meeting, subsequent conferences have continued to study minimum standards for school buses. The word "minimum" here should be emphasized. It does not refer to ultimate goals, but to the "lowest limit consistent with reasonable and practical degrees of safety and economy." Manufacturers are free to exceed these standards, and state and local school systems may wish to require more than

this minimum when purchasing school buses. Besides bus standards, the scope of topics has broadened with each succeeding meeting. Among these topics have been desirable standards and training programs for bus drivers, a system of uniform records and reports for pupil transportation, extended educational uses of school buses, school transportation insurance, and bus maintenance—always with emphasis on safety and economy.

The limit of Conference action, one must remember, is to recommend. The state alone has the legal responsibility for action. Prospects for the work of the Conference bearing fruit are encouraging, however, in the light of present enforcement standards, many of which are based on the recommendations of past conferences.

The success of the work depends on cooperation between all governmental levels and private agencies concerned with pupil transportation. State-local teamwork is necessary, for the objectives cannot be achieved by unilateral action on the part of either the state or the local community. Cooperation between interested agencies within the state government is also vital: for example, the state department of education and the state highway department. The Federal government can, as it has in the past, provide important consultative services. Another source for similar valuable information is the private organizations. Finally, no better opportunity for cooperation between education and industry exists than at conferences of this type. Representatives of several bus body, chassis, and equipment manufacturers have furnished the technical information and advice which has made possible many of the present standards.

Cooperative effort between all these organizations is necessary not only to meet present day needs but also to face the challenge of future prospects. Based on current facts and trends, by 1960 more than 12 million pupils will be transported. Factors accounting for this 67 percent increase are expanded service to areas not now served, expanding school enrolments, and larger administrative school units as a result of school district reorganization. Such prospects make one reflect upon the importance of pupil transportation in the public educational system. The work of the National Conference on School Transportation, therefore, means much "to the safety and welfare of the children and youth of this Nation and also to the taxpayers who will be called upon to furnish the additional amounts of money necessary to finance this important phase of public education."

OBJECTIVES AND GUIDING PRINCIPLES

Following are the objectives and guiding principles for making decisions on minimum standards which were developed by the 1939 Conference and revised by subsequent Conferences in 1945, 1948, 1951, and 1954. The continuous emphasis thruout these Conferences on the two major objectives of *safety* and *economy* was a vital factor in arriving at sound and common agreement.

Objectives

State regulations governing school bus construction should assure safe and economical vehicles in which children can be transported in safety and comfort.

SAFETY means the safe transportation of pupils to and from school and school activities under normal conditions, and in cases of emergency. It applies thruout the time the pupil is on the bus, including entering and leaving the bus. It refers to the prevention of both major and minor accidents. It also refers to the health of pupils as affected by bus construction.

ECONOMY means the construction, procurement, operation, and maintenance of school buses at the lowest possible cost of pupil transportation consistent with safety. Since schools serve and are responsible to the whole public, they cannot foster luxurious transportation; neither can they afford to apply an excessive portion of the educational budget to a service which in itself is not primarily educational but rather a means of making education available. Uniform state standards for school buses, therefore, should discourage unnecessary luxury.

Guiding Principles

1. Uniform state standards for school buses should
   a. provide minimum standards consistent with safety and economy
   b. eliminate the construction of unsafe buses

c. eliminate or reduce conflicting standards between states where such conflicts increase production costs
d. specify exact spatial dimensions where necessary to increase the efficiency of volume production.

2. Adaptations of the nationally recommended minimum standards should be made by states only to permit desirable adjustments to local needs, and only when such adaptations do not
   a. conflict with the nationally recommended minimum standards
   b. otherwise unduly increase the cost of production.

3. The primary function of uniform state standards for school buses is to specify the *results desired* in terms of safety and economy. The results desired must be defined when this is necessary to make enforceable regulations.

4. Uniform state standards for school buses should be subject to periodic review and revision, when necessary, thru cooperation of the states.

5. Uniform state standards for school buses should permit the widest possible opportunity for use of new inventions and improvements which will assure greater efficiency and still be consistent with the formulation of enforceable regulations.

6. Uniform state standards for school buses should usually provide limits within which sound construction is possible by permitting that degree of flexibility which is necessary to accommodate the various manufacturers. The actual designing of buses is a responsibility of the manufacturers.

7. Existing national minimum standards for school buses are considered in full force and effect as recommendations to the states, and are changed only when evidence indicates that change is needed.

USING THESE STANDARDS

In order that minimum standards for school buses may be put into effect, each of the state legislatures which has not already done so should confer upon the proper regulatory agency the general responsibility for setting up statewide rules and regulations regarding the construction of school bus chassis, bodies, and equipment. In no instance, however, should the detailed standards for school buses be written into the state law.

The minimum standards for school buses appearing in this report must be officially adopted by a state to become legally effective within it.

These minimum standards for school buses are intended to apply primarily to new vehicles purchased after adoption of the standards. Any state considering making the standards applicable to vehicles purchased previously must give careful consideration to the economic effects of such retroactive action.

These minimum standards are intended to apply to all types of school buses—conventional type body-on-chassis vehicles having a seating capacity of 24 or more pupils, small vehicles (including station wagons, suburbans, and converted panel trucks) having a seating capacity up to and including 23 pupils, and transit and metropolitan types of vehicles having a seating capacity of 24 or more pupils.

These minimum standards are not intended to apply to buses used primarily as public carriers which also transport pupils to school.

These revised minimum standards should be put into effect as soon as possible. However, the 1954 Conference recommended that the standards contained in this edition which represent a substantial change from the last previous standards (such as the standard on chassis frame lengths) not be enforced by states before January 1, 1956.

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MINIMUM STANDARDS FOR SCHOOL BUSES

The Bus Chassis

Air cleaner—

Bus shall be equipped with adequate oil-bath type air cleaner mounted outside passenger compartment. If air intake is located inside passenger compartment, air cleaner shall be equipped with adequate backfire deflector, and shall be one approved by Underwriters' Laboratories, Inc.*

Axles—

1. Front axle shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by front axle.
2. Rear axle shall be full-floating type, and shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by rear axle.
3. Chassis manufacturer's rating for each axle on each model used in school buses shall be furnished in duplicate (unless more are requested by state department of education) by chassis manufacturer to each 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.

Exception—small vehicles

Requirement in Item 2 for full-floating rear axle does not apply to small vehicles not specifically manufactured as school buses.

Exception—transit and metropolitan vehicles

1. Front axle shall be wide-track, heavy duty bus type, and shall have gross weight rating at ground equal to or exceeding that portion of total load which is supported by front axle.

* 207 East Ohio Street, Chicago 11, Illinois.

2. 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.
3. Same as Item 3 above.

Battery—

1. Storage battery, as established by manufacturer's rating, shall be of sufficient capacity to care for starting, lighting, signal devices, heating, and other electrical equipment.
2. No bus shall be equipped with battery of less than 120 ampere-hours if 6-volt, or of less than 60 ampere-hours if 12-volt, measured at 20-hour rate.
3. a. Battery shall be mounted outside passenger compartment in an adequate carrier and be readily accessible for servicing and removal, preferably from outside passenger compartment.
   b. If battery is not mounted under hood, it shall be mounted on left side of chassis frame so that center line of battery shall be 52 inches back of cowl, and no part of battery shall extend above top of chassis frame.

Exception—small vehicles

1. Same as Item 1 above.
2. No bus shall be equipped with battery of less than 90 ampere-hours if 6-volt, or of less than 45 ampere-hours if 12-volt, measured at 20-hour rate.
3. a. Same as Item 3a above.
   b. Item 3b does not apply.

Exception—transit and metropolitan vehicles

Item 3b does not apply.

Brakes—

1. Four-wheel brakes, adequate at all times to control bus when fully loaded, shall be provided.
2. Foot or service brake shall be capable of stopping complete unit (i.e., wet chassis weight,* plus body weight, plus driver's weight, without pupils), from initial brake application within 22 feet when driven at speed of 20 miles per hour over dry level road having approximately .6 coefficient of friction and whose surface is free from loose materials. Stopping ability shall be determined by test with approved decelerometer or other instrument which indicates brake effectiveness in units that are convertible into rate of deceleration.
3. Auxiliary brake shall be provided in addition to service brake,

* With oil, water, and full tank of fuel.

and shall be an entirely separate, mechanically-operated device. It shall be so mounted as to minimize danger of accidental release by pupils. It shall be capable of successfully passing engine stall test in low gear (not in compound low gear), and shall be adequate to hold bus stationary, when loaded, on any grade upon which vehicle will be operated.

4. Chassis designed for any bus body of 48 or greater basic pupil load 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 sizes, page 23).

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

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

   c. Reservoir capacity shall be at least 1650 cubic inches for full compressed air systems, and at least 1000 cubic inches for vacuum actuated systems and for compressed-air-over-hydraulic systems.

   d. Buses having full compressed air systems shall be equipped with
      (1) at least two reservoirs connected in series
      (2) safety valve mounted on first reservoir to protect air brake system against excessive air pressure, and check valve mounted in optional location
      (3) air gauge mounted on instrument panel to register air pressure in air brake system
      (4) audible low pressure indicator to warn driver if air pressure in air brake system falls below 60 pounds per square inch.

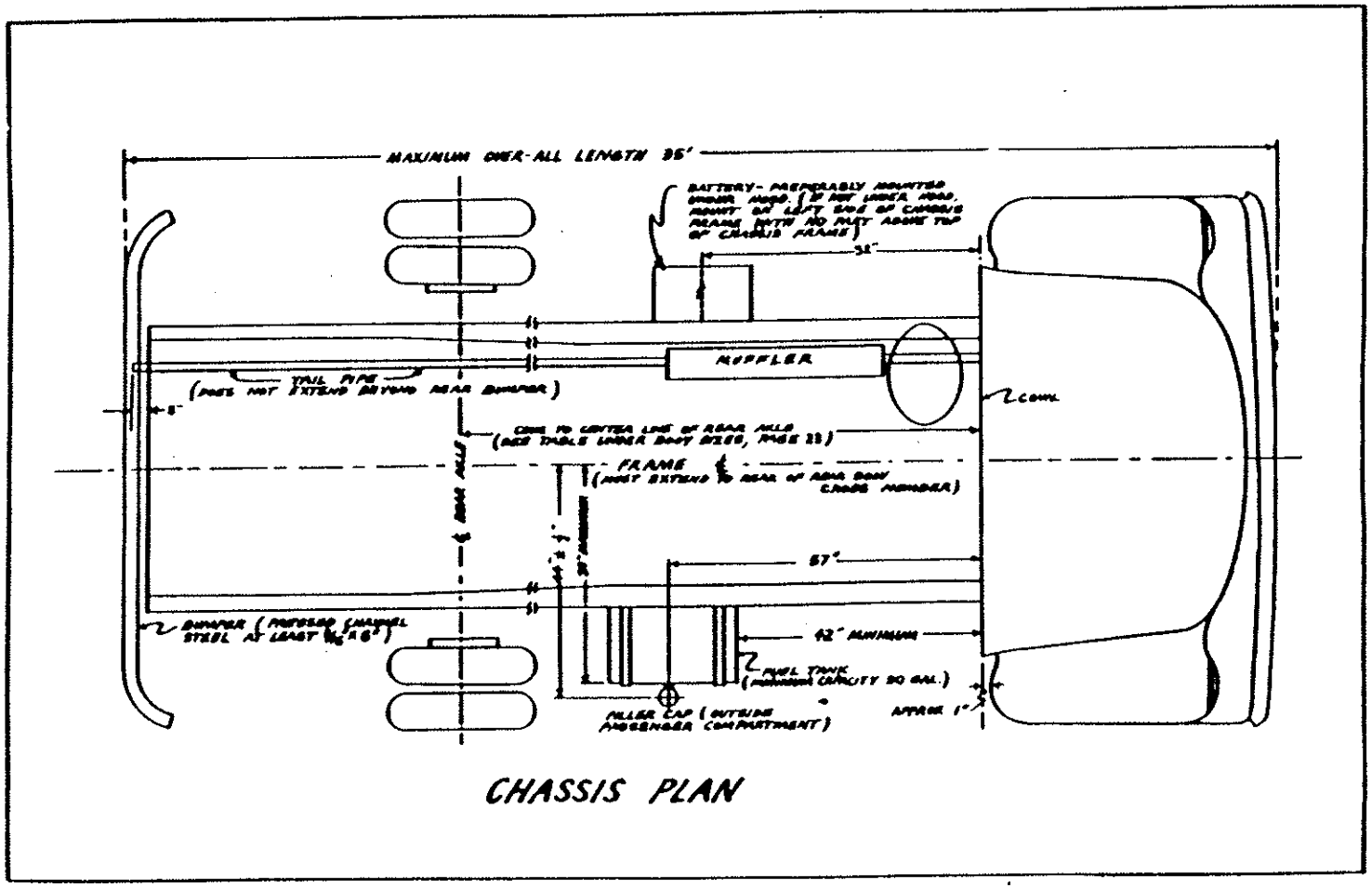
   e. Buses having vacuum actuated or compressed-air-over-hydraulic systems shall be equipped with check valve located between source of supply and reservoir.

Bumper, front—

1. Front bumper shall be furnished by chassis manufacturer as part of chassis.

2. Front bumper must be of sufficient strength to permit pushing vehicle of equal gross weight without permanent distortion to bumper, chassis, or body.

   Exception—transit and metropolitan vehicles
   Same as above, except front bumper shall be furnished by body manufacturer.



CHASSIS PLAN

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Color—

Chassis, including fenders and wheels, shall be black;* hood shall be in prime.

Drive shaft—

Drive shaft shall be protected by metal guard or guards to prevent it from whipping thru floor or dropping to ground if broken.

Exception—small vehicles

Standard does not apply to vehicles with torque tube drive shaft.

Electrical system—

1. Battery—see page 14.
2. Generator or alternator—see page 19.
3. Lamps and signals—see page 32.
4. Wiring—see page 40.

Exhaust system—

1. Exhaust pipe, muffler, and tail pipe shall be outside bus body and attached to chassis.
2. Tail pipe shall extend at least 5 inches beyond chassis frame. (See Tail pipe, page 37.)
3. Size of tail pipe shall not be reduced after it leaves muffler.
4. Exhaust system shall be properly insulated from fuel tank and tank connections by securely attached metal shield at any point where it is 12 inches or less from tank or tank connections.

Fenders, front—

1. Rear end of each front fender shall stop approximately 1 inch ahead of back face of cowl.
2. Front fenders shall be properly braced and free from any body attachment.

Exception—transit and metropolitan vehicles

Standard does not apply.

Frame—

1. Frames or equivalent shall be of such design as to correspond at least to standard practice for trucks of same general load characteristics used for severe service.
2. When frame side members are used they shall be of one-piece construction. If frame side members are extended, such extension shall be designed and furnished by chassis manufacturer with his guarantee, and installation shall be made by either chassis or body manufacturer and guaranteed by company making installation. Exten-

* Black enamel #1775. See *Federal Specification: Colors; (for) Ready-Mixed Paints* (TT-C-595, 1950), obtainable from U. S. Government Printing Office, Washington 25, D. C.; price $4.50.

sions of frame lengths are permissible only when such alterations are behind rear hanger of rear spring, and shall not be for purpose of extending wheel base.

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

Frame lengths—(See table under Body sizes, page 23.)

Fuel tank—

1. Fuel tank shall have minimum capacity of 30 gallons, be made of 16-gauge terneplate or equivalent, and be mounted directly on right side of chassis frame entirely outside body.
2. Flexible gasoline- and oil-proof connection shall be provided at engine end of fuel feed line.
3. Tank shall be equipped with adequate baffles.
4. Engine supply line shall be taken from top of tank.
5. Drain plug at least ¼ inch in diameter shall be located in center of bottom of tank.
6. Measurements contained in this paragraph 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 filler cap shall be 57 inches.
   f. Distance from center line of chassis to center of filler cap shall be 44 inches with plus or minus tolerance of ½ inch permitted.
   g. Center of filler cap shall be 1 inch below top of frame with tolerance of ¼ inch permitted.

   Exception—small vehicles

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

   Exception—transit and metropolitan vehicles

   1. 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.
   2. Bottom of tank shall not be exposed below skirt of body side paneling.

3. Engine supply line shall be taken from upper portion of tank and shall be adequately protected.
4. Drain plug at least ¼ inch pipe size shall be located in bottom of tank.
5. Filler cap shall be entirely outside passenger compartment.

Generator or alternator—

Generator or alternator with rectifier shall have maximum output of at least 40 amperes if 6-volt system, or 20 amperes if 12-volt system, and shall be ventilated, and voltage and current controlled.

Exception—small vehicles

Generator or alternator with rectifier shall have maximum output of at least 35 amperes if 6-volt system, or 20 amperes if 12-volt system, and shall be ventilated, and voltage and current controlled.

Governor—

Governor is permissible and where used it shall be approved by chassis manufacturer.

Exception—transit and metropolitan vehicles

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

Horn—

1. Bus shall be equipped with horn or horns of standard make capable of producing sound level of 110 decibels at point on axis of horn 3 feet from exit opening. Meter used to determine sound level must comply with specifications Z24.3–1944 of American Standards Association, Inc.,* and measurement shall be made with flat response.
2. If louder horn is desired it shall be capable of producing sound level of 120 decibels under conditions specified above.
3. Since obstructions in sound path reduce effectiveness of horn, there is advantage in mounting horn outside hood or body.

Instruments and instrument panel—

1. Bus shall be equipped with following instruments:
   a. speedometer showing speed
   b. odometer giving accrued mileage (or hubodometer may be used instead)
   c. ammeter (or suitable charge indicator on vehicles having engine remotely located from driver)
   d. oil pressure gauge (or suitable light indicator)
   e. water temperature indicator
   f. fuel gauge

* 70 East Forty-fifth Street, New York 17, New York.

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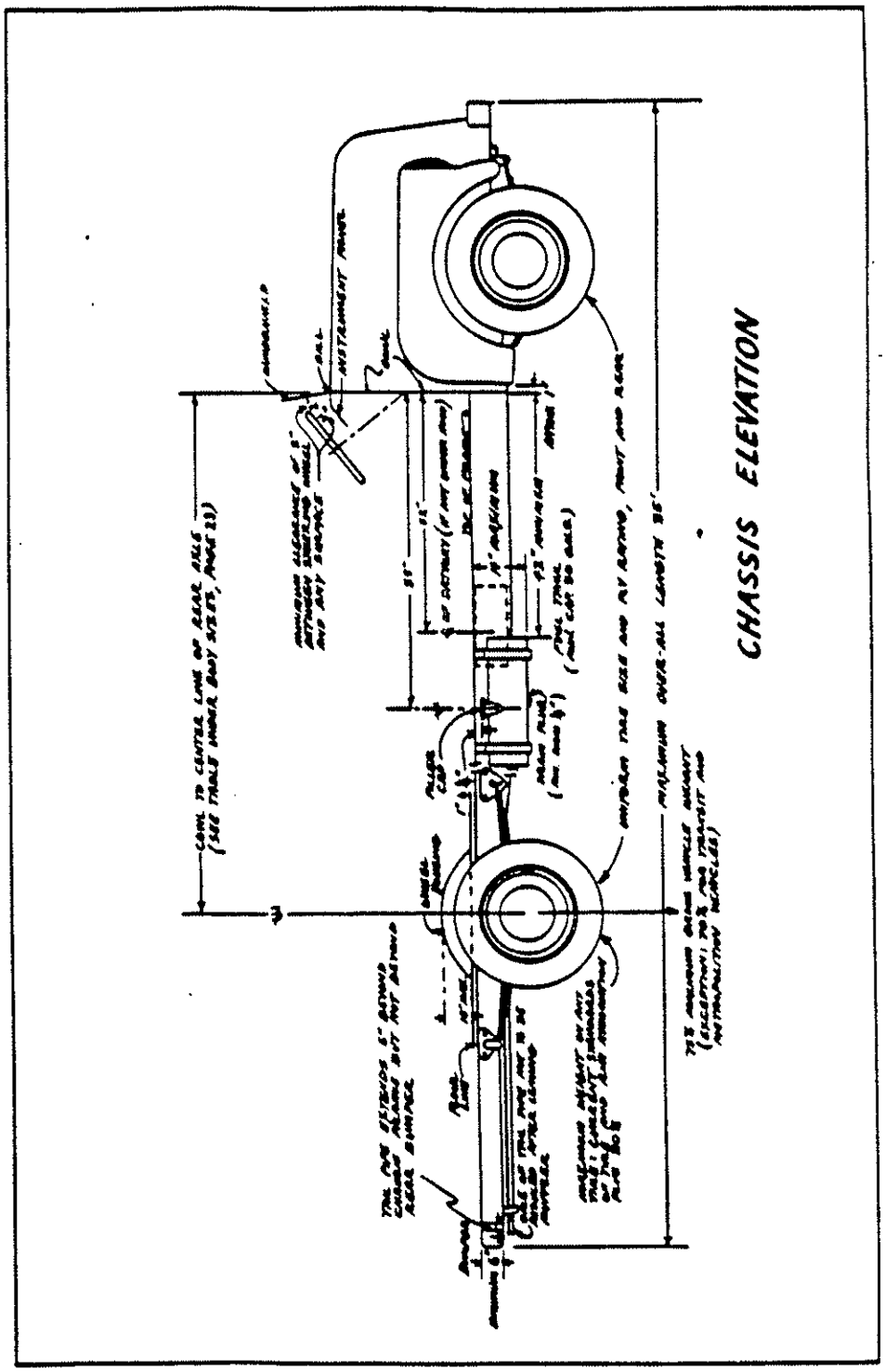

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CHASSIS ELEVATION

g. upper beam headlamp indicator
h. visible or audible signal actuated by emergency door (see Item 2g under Doors, page 29.)
i. air pressure or vacuum gauge, where air or vacuum brakes are used.

2. All instruments shall be easily accessible for maintenance and repair.
3. Above instruments shall be mounted on instrument panel in such manner that each is clearly visible to driver. If signal actuated by emergency door is audible, it may be mounted anywhere within immediate proximity of driver.
4. Instrument panel shall have lamps of sufficient candlepower to illuminate all instruments.

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 design.

Over-all length—

Over-all length of bus shall not exceed 35 feet.

Passenger load—

1. Gross vehicle weight (i.e., wet weight,* plus driver's weight of 150 pounds, plus weight of maximum seated pupil load based on not less than 100 pounds per pupil) shall not exceed maximum gross vehicle weight rating as established by manufacturer.
2. Manufacturer's gross vehicle weight rating shall be furnished in duplicate (unless more are requested by state department of education) by manufacturer to each 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.

Power or grade ability—

1. Bus must be so geared and powered as to be capable of surmounting 3 percent grade at a speed of at least 20 miles per hour with full load on continuous pull.
2. To meet above specifications, loaded gross weight of bus shall not exceed 200 pounds per certified net published horsepower of engine at manufacturer's recommended maximum governed revolutions per minute.
3. Manufacturer's certified net published horsepower of engine shall be furnished in duplicate (unless more are requested by state department of education) by manufacturer to each state depart-

* With oil, water, and full tank of fuel.

ment 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.

Shock absorbers—

1. Bus shall be equipped with front double-action shock absorbers of adequate size.
2. Rear shock absorbers are optional.

Exception—small vehicles

Standard does not apply to small vehicles not specifically manufactured as school buses.

Springs—

1. Springs shall be of ample resiliency under all load conditions and of adequate strength to sustain loaded bus without evidence of overload.
2. Rear springs shall be of progressive type.
3. Stationary eyes of front springs shall be protected by wrapper leaf in addition to main leaf.

Exception—small vehicles

Springs that are regular equipment on vehicle to be purchased may be used.

Steering gear—

1. Steering gear shall be approved by chassis manufacturer and designed to assure safe and accurate performance when vehicle is operated with maximum load and at maximum speed.
2. Steering mechanism shall provide for easy adjustment for lost motion.
3. No changes shall be made in steering apparatus which are not approved by chassis manufacturer.
4. There shall be a distance of at least 2 inches between steering wheel and cowl instrument panel, windshield, or any other surface.

Tires and rims—

1. Tire and rim sizes, based upon current standards of Tire and Rim Association,* shall be required.
2. In order to allow for reasonable tolerance, total weight imposed on any tire shall not be greater than 20 percent more than current standards of Tire and Rim Association.
3. Dual rear tires shall be provided on all vehicles.
4. All tires on given vehicle shall be of same size and ply rating.
5. Spare tire, if required, shall be suitably mounted in accessible location outside passenger compartment.

* Current standards may be obtained from Tire and Rim Association (2001 First National Tower, Akron 8, Ohio), or from tire manufacturers.

Exception—small vehicles
Same as above, except that dual rear tires are not required.

Weight distribution—
Weight distribution shall be such that not more than 75 percent of gross vehicle weight shall be on rear tires when bus is on level surface.
Exception—transit and metropolitan vehicles
Weight distribution shall be such that not more than 70 percent of gross vehicle weight shall be on rear tires when bus is on level surface.

The Bus Body

Aisle—
1. Minimum clearance of all aisles, including aisle (or passageway between seats) leading to emergency door, shall be 12 inches. (See Item 2f under Doors, page 29.)
2. Aisle supports of seat backs shall be slanted away from aisle sufficiently to give aisle clearance of 15 inches at tops of seat backs.

Battery—(See Item 3 under Battery, page 14.)

Body sizes—
Purchase of bus bodies shall be limited to lengths shown in table below. However, adoption of these lengths shall impose no restrictions as to type of seat arrangement. These sizes are based upon 25-inch center-to-center spacings between rows of forward-facing seats, over-all width of 96 inches, center aisle of 12 inches, and average rump width of 13 inches. Body lengths are measured from back of cowl to rear of body at floor level.

(1)	(2)	(3)
Basic pupil load	Range of body length (in feet, with tolerance of ±8 inches)	Approximate measurement, cowl to center line of rear axle (in inches)
24	13	102
30	15	123
36	17	126
42	19	142
48	21	160
54	23½	192
60	26	211
66	28	229

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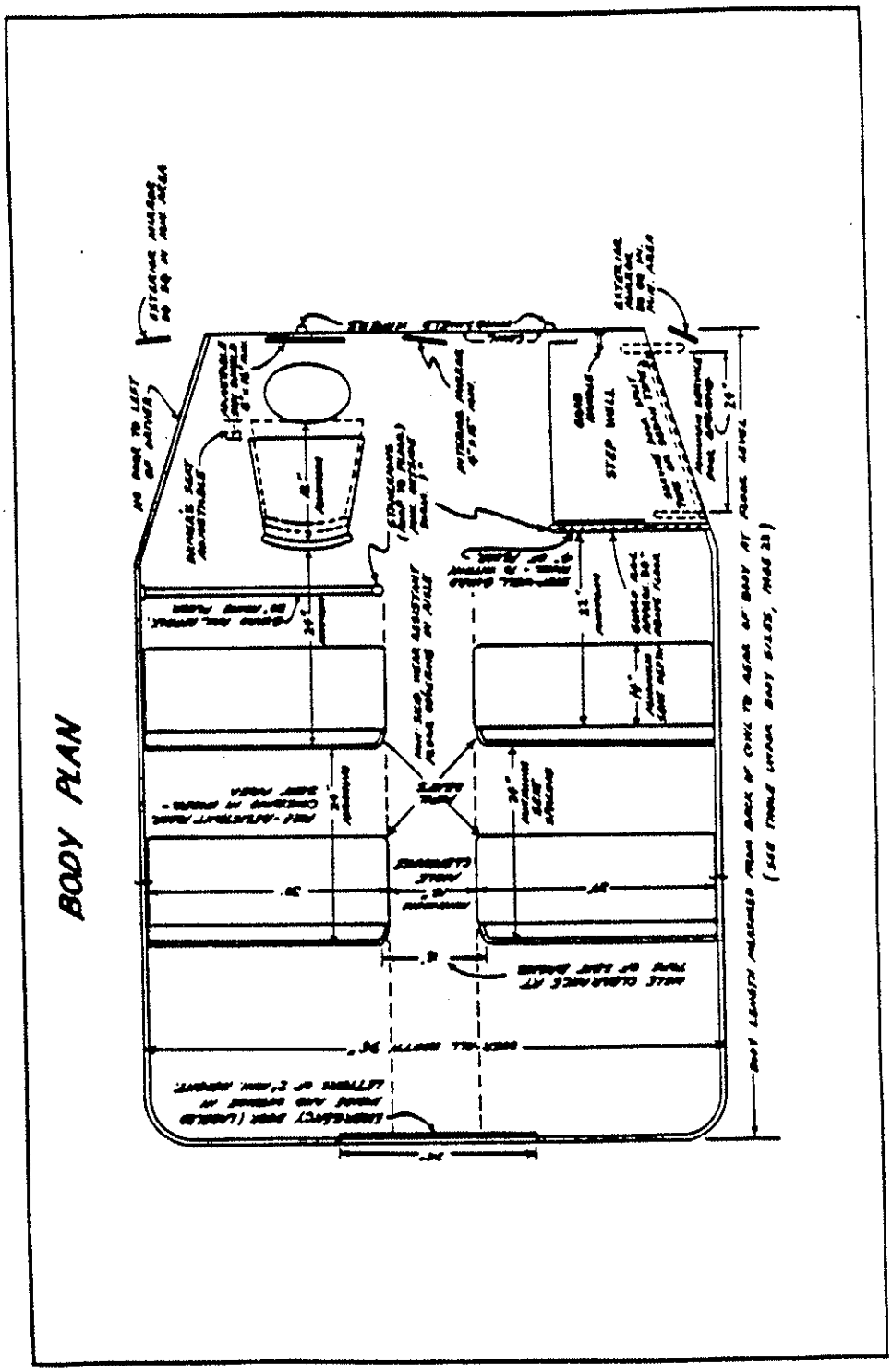

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Exception—small vehicles

Small vehicle may vary in capacity up to 23 pupils, is narrower than large vehicle, and body may have been converted from one originally manufactured for other purposes.

Exception—transit and metropolitan vehicles

Measurements in columns (2) and (3) of preceding table do not apply.

Book racks—

1. Book racks, if installed, shall be provided above side windows within range from front cross-seat to rear transverse seat except across or above emergency door.
2. Racks shall be free of projections likely to cause injury.

Bumper, front—(See *Exception* under Bumper, front, page 15.)

Bumper, rear—

1. Rear bumper shall be of pressed steel channel at least $^{3}/_{16}$ inch by 6 inches.
2. It shall be full wrap around to both sides, and shall be so attached as to prevent hitching of rides.
3. It shall be bolted to chassis frame, and braced with material of impact ratio comparable to that of bumper material.

Exception—small vehicles

1. Rear bumper shall be furnished by chassis manufacturer as part of chassis.
2. Rear bumper shall be of sufficient strength to permit vehicle being pushed without permanent distortion to bumper, chassis, or body.

Exception—transit and metropolitan vehicles

Rear bumper shall be of sufficient strength to permit fully-loaded vehicle being pushed without permanent distortion to bumper or body. It shall be so designed as to prevent hitching-to or riding-on, and shall be long enough to protect full width of body.

Ceiling—(See Insulation, and Interior, page 32.)

(SUP. 26) Chains—

Color—

1. School bus body including hood, cowl, and roof shall be painted uniform color, National School Bus Chrome,* according to National Bureau of Standards specifications.
2. Fenders and lettering (and body trim if used) shall be black.†

* National School Bus Chrome #1305. See *Federal Specification* referenced on page 17. Colorimetric specifications for National School Bus Chrome are on file at National Bureau of Standards, Washington 25, D. C.

† See footnote, page 17.

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Chains—

Each state where chains are needed shall formulate its own rules, regulations, and/or standards governing their use. (See Item 4 under Wheel housings, page 39.)

Construction—

1. Construction shall be all steel or other metal with strength at least equivalent to all-steel as certified by bus body manufacturer.
2. Construction shall provide reasonably dustproof and watertight unit.
3. Bus body (including roof bows, body posts, and floor) shall be of sufficient strength to support entire weight of fully loaded vehicle on its top or side if overturned. It shall have sufficient strainers in roof structure and corners to provide adequate safety and to resist damage on impact. As evidence that bus body meets this standard, manufacturer shall furnish, for each current body model, certification in duplicate (unless more are requested by state department of education) that bus body meets School Bus Body Manufacturers' Association *Static Load Test Code for School Bus Body Structure.** Consideration of impact resistance shall be a prime factor in body design in compliance with *Code* requirements. Copies of *Code* shall be furnished in duplicate (unless more are requested by state department of education) by School Bus Body Manufacturers' Association to each state department of education. State department of education shall, in turn, transmit *Code*, and certification for each current body model, to each other state agency responsible for development or enforcement of state standards for school buses.
4. Floor:
   a. Floor shall be of metal at least equal in strength to 14-gauge steel.
   b. All closures between passenger compartment and engine shall be fitted with gaskets which will effectively prevent gases from entering passenger compartment.

   Exception—small vehicles

   Item 3 does not apply to small vehicles not manufactured specifically as school buses.

   Item 4: Floor on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

   Exception—transit and metropolitan vehicles

   Item 4: Floor shall be constructed of metal at least equal in strength to 14-gauge steel; or of 5-ply plywood at least ⅝ inch thick and found by standard test to be at least equal

* Copies available from School Bus Body Manufacturers' Association, 74 Trinity Place, New York 6, New York.

in strength to 14-gauge steel, provided it equals or exceeds properties of exterior type Douglas fir plywood, "B-B Grade," as specified in standard issued by U. S. Department of Commerce.*

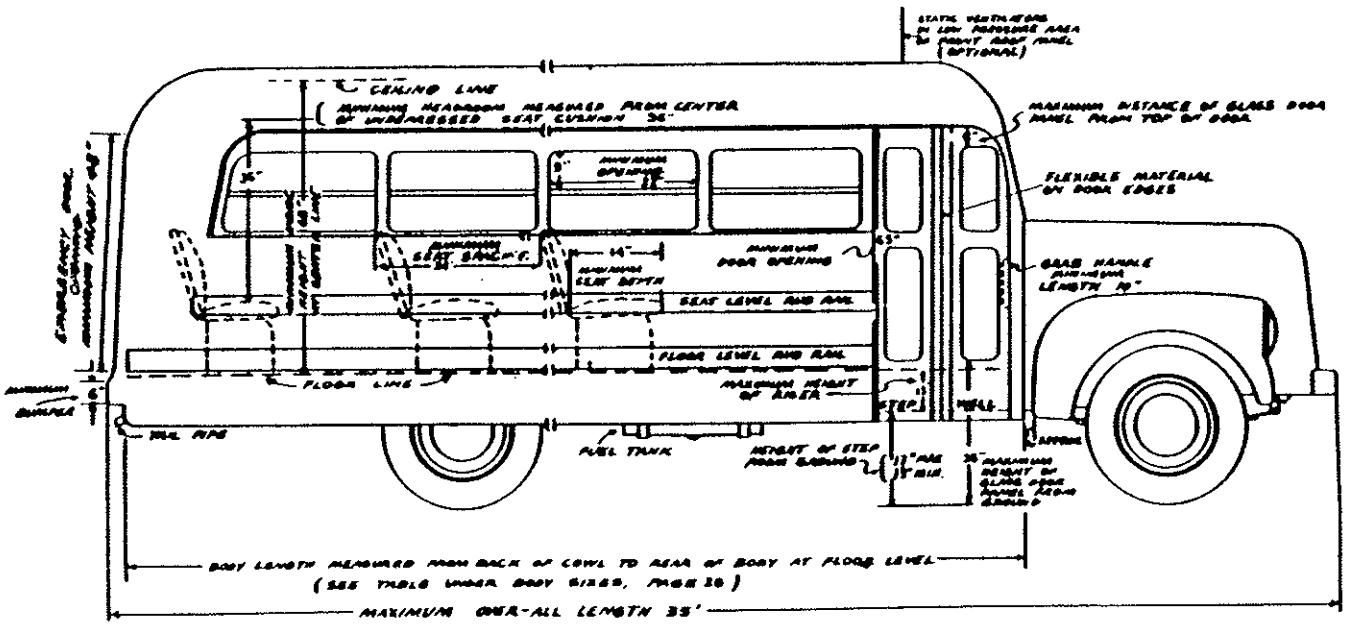
Defrosters—

Defrosters, if required, shall be of sufficient capacity to keep windshield clear of fog, ice, and snow. This may be done by using fans or by taking heat directly from approved heater.

Doors—

1. Service door:
   a. Service door shall be power or manually operated, under control of driver, and so designed as to afford easy release and prevent accidental opening. When hand lever is used, no parts shall come together so as to shear or crush fingers.
   b. Service door shall be located on right side of bus opposite driver and within his direct view.
   c. Service door shall have minimum horizontal opening of 24 inches and minimum vertical opening of 65 inches.
   d. Service door shall be of split type or sedan type. (Split-type door includes any sectioned door which divides and opens inward or outward.) If one section of split-type door opens inward and other opens outward, front section shall open outward.
   e. Lower as well as upper panels shall be of safety glass. (See Item 1 under Windshield and windows, page 39.) Bottom of lower glass panel shall not be more than 35 inches from ground when bus is unloaded. Top of upper glass panel shall not be more than 6 inches from top of door.
   f. Vertical closing edges shall be equipped with flexible material to protect children's fingers.
   g. There shall be no door to left of driver. (This shall not be interpreted to conflict with Item 2a below.)
2. Emergency door and emergency window:
   a. Emergency door shall be located in center of rear end of bus, or in rear half of left side of bus if engine is so located as to make it impossible to place door in center of rear end.
   b. Emergency door shall have minimum horizontal opening of 24 inches, and minimum vertical opening of 48 inches measured from floor level.

* *Commercial Standard CS45-48 for Douglas Fir Plywood: A Recorded Voluntary Standard of the Trade* (eighth edition), issued by U. S. Department of Commerce, and obtainable from U. S. Government Printing Office, Washington 25, D. C.; price 10 cents.



BODY ELEVATION

c. Emergency door shall be hinged on right side if in rear end of bus, and on front side if on left side of bus. It shall open outward, and shall be labeled inside to indicate how it operates.
d. Upper portion of emergency door shall be equipped with approved safety glass, exposed area of which shall not be less than 12 inches in height and 20 inches in width. (See Item 1 under Windshield and windows, page 39.)
e. There shall be no steps leading to emergency door.
f. No seat or other object shall be so placed in bus as to restrict any part of passageway leading to either rear or left side emergency door to opening smaller than rectangle of 12 inches horizontal width and 48 inches vertical height (measured from floor level), when bus is standing on level ground.
g. When either open or not fully latched, emergency door shall actuate signal visible or audible to driver. (See Item 1h under Instruments and instrument panel, page 21.)
h. Emergency door shall bear words "EMERGENCY DOOR" both inside and outside in letters at least 2 inches high. Words shall be placed directly above emergency door.
i. If emergency door is located on left side of bus it is required that window at rear shall be designed as emergency exit and that it be no smaller than 16 by 54 inches on buses 80 inches or more in width, and no smaller than 16 by 48 inches on buses less than 80 inches in width. Window shall be hinged from top and devised and operated to insure against accidental closing in emergency.
j. Emergency window shall bear words "EMERGENCY EXIT" both inside and outside in letters at least 2 inches high. Words shall be placed directly above emergency window on inside, and below on outside.
k. Both emergency door and emergency window shall be designed to open from inside and outside bus and shall be equipped with fastening device which may be quickly released, but so designed as to offer protection against accidental release. Control from driver's seat shall not be permitted. Provision for opening from outside shall consist of non-detachable device so designed as to prevent hitching-to, but to permit opening when necessary.

Exception—small vehicles

Substitute following standards for those above:

1. Service door shall be located at right of driver and shall be manually controlled from driver's seat by over-center control.

2. Emergency door:

   a. Emergency door shall be located in center of rear end

of bus and shall be equipped with fastening device for opening from inside and outside body, which may be quickly released but is designed to provide 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 of such design as to prevent hitching but to permit opening when necessary.

b. Door shall open either vertically or horizontally. When vertical type door is used, there shall be unobstructed aisle at least 12 inches wide.
c. Emergency door shall be marked "EMERGENCY DOOR" on inside.
d. There shall be no steps leading to emergency door.
e. No seat or other object shall be so placed in bus as to restrict passageway to emergency door to less than 12 inches.

Electrical system—

1. Battery—see page 14.
2. Generator or alternator—see page 19.
3. Lamps and signals—see page 32.
4. Wiring—see page 40.

Fire extinguisher—

1. Bus shall be equipped with at least one 1-quart vaporizing liquid type, or 4-pound dry chemical type, fire extinguisher, mounted in accessible place in full view.
2. Fire extinguisher shall be of type approved by Underwriters' Laboratories, Inc.*

First-aid kit—

Bus shall carry dustproof first-aid kit approved by proper state authority, mounted in accessible place in full view.

Floor—(See Construction, page 26.)

Floor covering—

1. Floor in underseat area shall be covered with fire-resistant floor covering material of type commonly used in passenger transportation equipment.
2. Floor covering in aisle shall be of aisle type, non-skid, and wear-resistant.

* Specifications for fire extinguishers are available from Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago 11, Illinois.

3. Floor covering must be permanently bonded to floor, and must not crack when subjected to sudden changes in temperature.
Exception—small vehicles
Floor covering on small vehicles not manufactured specifically as school buses shall be manufacturer's standard.

Heaters—

1. Where heaters are required, they shall be of hot water or combustion type.
2. If only one heater is used it shall be of fresh air, or combination fresh air and recirculating type.
3. If more than one heater is used, additional heaters may be of circulating type.
4. Where hot water heaters are used, they shall bear name plate rating of School Bus Body Manufacturers' Association *Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating Equipment*,* plate to be affixed by heater manufacturer. Copies of *Code* shall be furnished in duplicate (unless more are requested by state department of education) by School Bus Body Manufacturers' Association to each state department of education. State department of education shall, in turn, transmit such *Code* to each other state agency responsible for development or enforcement of state standards for school buses.
5. All combustion type heaters shall be approved by Underwriters' Laboratories, Inc.†
6. If combustion type heaters are used they shall be installed on new buses by body manufacturers, and on buses now in operation by authorized dealers or by authorized garages.‡
7. 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.

Identification—

1. Body shall bear words "SCHOOL BUS" in black letters at least 8 inches high on both front and rear of body or on signs attached thereto. Lettering shall be placed as high as possible without im-

* Copies available from School Bus Body Manufacturers' Association, 74 Trinity Place, New York 6, New York.

† 207 East Ohio Street, Chicago 11, Illinois.

‡ Specifications on installation of combustion type heaters are available from Interstate Commerce Commission, Washington 25, D. C.

§ Washington 25, D. C.

pairment of its visibility. Lettering shall conform to "Series B" of Standard Alphabets for Highway Signs.*

2. Words "STOP ON SIGNAL" may be painted on rear of bus. Word "STOP" by itself shall not be used.
3. Only signs and lettering approved by state law or regulation (recommended that they be limited to name of owning school district and any number necessary for identification of vehicle) shall appear on sides of bus.

Inside height—

Minimum inside body height shall be 68 inches measured at longitudinal center line from back of first row of seats to back of next to last row of seats.

Exception—small vehicles

Minimum inside body height shall be 50 inches.

Insulation—

Ceiling and walls shall be insulated with proper materials to deaden sounds and to reduce vibrations and heat transfer.

Interior—

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

Lamps and signals—

1. Headlamps: Bus shall be equipped with headlamps, and fuses or circuit breakers, as required by state law. Lamps shall be of proper intensity and adjustment to meet standards of Society of Automotive Engineers.†
2. Clearance lamps: Body shall be equipped with two red clearance lamps at rear and two amber clearance lamps at front, mounted at highest and widest portions of body.
3. Tail and stop lamps: Bus shall be equipped with two tail and two stop lamps, which may be in combination, emitting red light plainly visible from distance of 500 feet to rear, and mounted on rear end not less than 6 nor more than 20 inches from plane of side of body, and not less than 40 nor more than 55 inches from surface on which vehicle stands.

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* Designed by U. S. Bureau of Public Roads for Joint Committee on Uniform Traffic Control Devices. A full-scale layout (40 inches over-all length) of words "SCHOOL BUS" as here specified, with suggestions for application, is available from National Commission on Safety Education, 1201 Sixteenth Street, N. W., Washington 6, D. C.; price 50 cents. One copy of this layout may be used repeatedly as guide for placing specified lettering on buses.

† 29 West Thirty-ninth Street, New York 18, New York.

4. Interior lamps: Interior lamps shall be provided which adequately illuminate interior aisles and step-well.

5. School bus warning signal lamps:

Definition: School bus warning signal lamps are alternately-flashing lamps 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, to take on or discharge school children.

a. Bus shall be equipped with two alternately-flashing red lights at rear of vehicle and two alternately-flashing red lights at front of vehicle.

b. Lamps shall be controlled by manually-operated switch and such other switches as may be designated by state law, except that no brake-operated switches shall be permitted.

c. Lamps shall flash at rate of from 60 to 120 cycles per minute.

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

e. Alternately-flashing warning signals shall meet current specifications of Society of Automotive Engineers.*

f. Installation recommendations:

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

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

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

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

(5) Vision of front signals to front and of rear signals to rear shall be unobstructed by any part of vehicle from 10° above to 10° below horizontal, and from 20° to right to 20° to left of center line of vehicle.

6. Turn signal units: Bus shall be equipped with "Class A, Type I" turn-signal units that meet specifications of, and are installed according to recommendations of, Society of Automotive Engineers.* These signals must be independent units mounted to conform to state law.

* 29 West Thirty-ninth Street, New York 18, New York.

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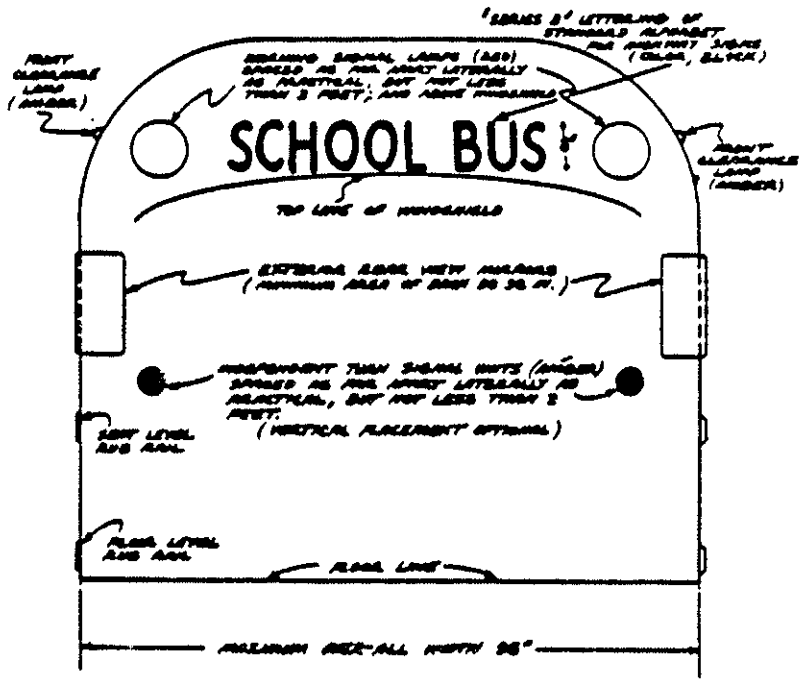

FRONT ELEVATION

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7. Flags and flares:
   a. School bus shall carry at all times at least two red cloth flags not less than 12 inches square and means for mounting for use in warning traffic in event of prolonged stops on highway.
   b. Bus shall carry at least three liquid-burning flares or red electric lanterns or at least three red emergency reflectors, to be displayed according to state law in event of prolonged stops on highway. Liquid-burning flares must be carried in leakproof metal box or carried outside body compartment.
   c. All flags and flares shall be approved by state.

Mounting—

Chassis frame shall extend to rear of rear body cross member.

Over-all width—

Over-all width of bus shall not exceed 96 inches.

Posts— (See Construction, page 26, and Item 2 under Windshield and windows, page 39.)

Rear vision—

1. Interior rear-view mirror designed to minimize glare, and large enough (at least 4 by 15 inches) to afford good view of pupils and roadway to rear shall be installed. If not metal-backed, such mirror shall be of laminated plate safety glass.* It shall have rounded corners and protected edges.
2. Two exterior rear-view mirrors designed to minimize glare shall be provided, one to left and one to right of driver. Area of each mirror shall be not less than 50 square inches. Mirrors shall be firmly supported and set to give driver clear view past left rear and right rear of bus.

Rub rails—

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

Exception—small vehicles

Standard does not apply to small vehicles not manufactured specifically as school buses.

Seats—

1. All seats shall have minimum depth of 14 inches.

* See footnote (†) on page 39.

2. Thirteen inches shall be allowable average rump width in determining seating capacity of bus.
3. All seats shall be forward-facing and shall be securely fastened to that part of parts of bus which support them. (See Item 2 under Aisle, page 23.)
4. No bus shall be equipped with jump seats or portable seats.
5. Forward-most pupil seat on right side of bus shall be located so as not to interfere with driver's vision, not farther forward than guard rail behind driver or rear of driver's seat when adjusted to its rearmost position.
6. Minimum center-to-center seat spacing shall be 24 inches. This 24-inch spacing shall also apply to distance between rearmost position of driver's seat and first pupil seat on left side of bus.
7. Padding and covering on all seats shall be of such materials as will not flash or explode upon contact with spark or open flame.
8. Minimum distance between steering wheel and back rest of driver's seat shall be 12 inches. Driver's seat shall have fore-and-aft adjustment of not less than 3 inches and shall be strongly attached.
9. Minimum of 36-inch headroom for sitting position above top of undepressed cushion line of all seats shall be provided. Measurement shall be made vertically not more than 7 inches from side wall at cushion height and at fore-and-aft center of cushion.

Exception—small vehicles

Substitute following standards for those above:

1. All seats shall be securely fastened to body of vehicle.
2. Seats shall be covered with fire-resistant padding material and comfortably upholstered with adequate padding.
3. Jump seats or portable seats shall not be used.
4. 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.
5. Thirteen inches shall be allowable average rump width in determining seating capacity of bus.
6. All seats shall be at least 14 inches in over-all depth.
7. 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 24 inches.
8. If longitudinal seats are used, only two shall be installed.
9. Back rest for each longitudinal seat shall measure at least 8 inches vertically and shall be so mounted that its top edge is at least 12 inches above seat.

Stanchions and guard rails—

1. Vertical stanchion shall be installed at right rear corner of driver's

seat in such position as neither to interfere with adjustment of driver's seat nor to obstruct 12-inch aisle. Guard rail, approximately 30 inches above floor, and so placed as not to interfere with fore-and-aft adjustment of driver's seat, shall extend from vertical stanchion to left-hand wall behind driver's seat.

2. Stanchion shall be installed at rear of entrance step-well from roof to floor. Placement shall not restrict entrance passageway to less than 24 inches or aisle to less than 12 inches.
3. Guard rail and step-well guard panel shall be installed from step-well stanchion to right-hand wall to prevent children in front seat from being thrown into step-well in case of sudden stop. Guard rail shall be approximately 30 inches above floor, and guard panel shall extend from guard rail to within 4 inches of floor.
4. Clearance between step-well guard panel and first pupil seat shall be at least 22 inches measured from panel to front face of seat back at cushion height.
5. All stanchions and guard rails shall be minimum of 1-inch outside diameter and of 18-gauge metal tubing or equal.

Steering wheel—(See Item 4 under Steering gear, page 22.)

Steps—

1. First step at service door shall be not less than 13 inches and not more than 17 inches from ground.
2. Riser of upper step at service door shall be not more than 15 inches. When more than two steps are used, risers must be of equal height.
3. Steps shall be enclosed to prevent accumulation of ice and snow.
4. Steps shall not protrude beyond side body line.
5. Grab-handle not less than 10 inches long shall be provided in unobstructed location inside doorway.
6. Surface of steps shall be of non-skid material.

Exception—small vehicles

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

Sun shield—

Interior adjustable sun visor not less than 6 by 16 inches in size shall be installed above windshield.

Tail pipe—

Tail pipe shall not extend beyond rear bumper. (See Item 2 under Exhaust system, page 17.)

Tool compartment and tools—

Bus shall have tool compartment and carry such tools as may be necessary to make minor emergency repairs while bus is enroute.

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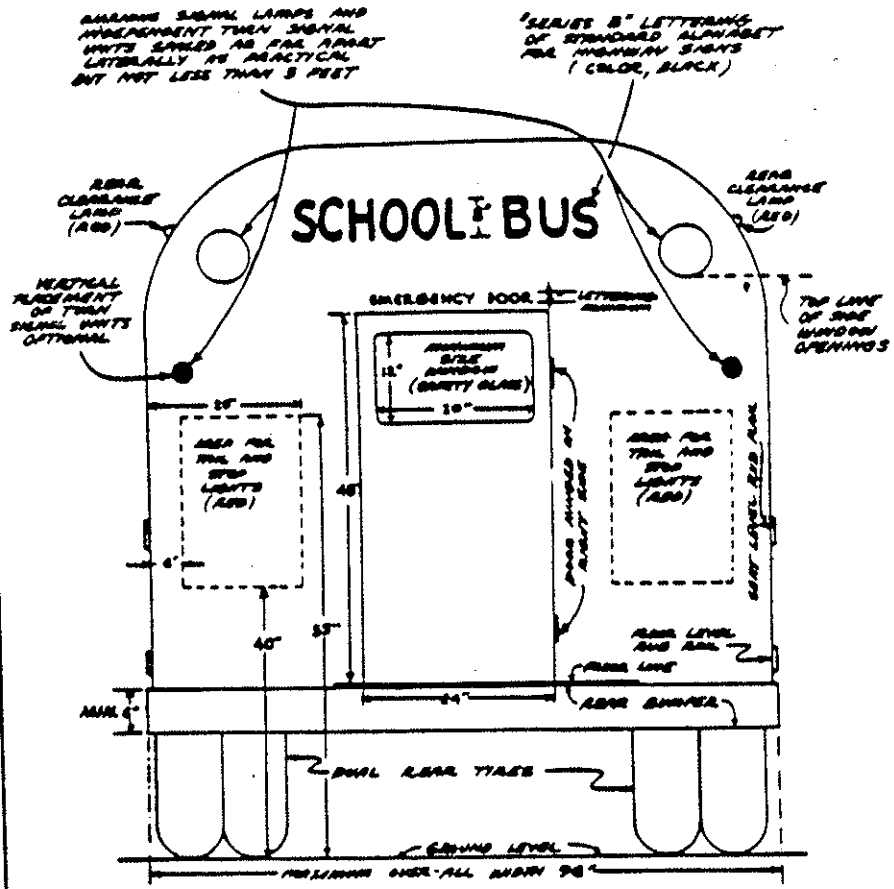

REAR ELEVATION

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Undercoating—

Entire underside of body, including floor members and side panels below floor level, shall be coated with asphalt-base or rubber-base undercoating material, applied by spray method, in order to seal, to deaden sound, to insulate, and to prevent oxidation.

Ventilation—

1. Body shall be equipped with suitable controlled ventilating system of sufficient capacity to maintain proper quantity of air under operating conditiitons without opening of windows except in extremely warm weather.
2. If static-type exhaust roof ventilators are desired, they shall be installed in low-pressure area of front roof panel.

Exception—small vehicles

Standards does not apply to small vehicles not manufactured specifically as school buses.

Wheel housings—

1. Wheel housings shall be of full open type.
2. Wheel housings shall be attached to floor sheets in such manner as to prevent any water or dust from entering body.
3. Inside height of wheel housings above floor line shall not exceed 10 inches.
4. Where chains are required, wheel housings shall provide clearance for dual wheels as established by Chain Institute, Inc.*

Exception—small vehicles

Standard does not apply to small vehicles not manufactured specifically as school buses.

Width—(See Over-all width, page 35)

Windshield and windows—

1. All glass in windshield, windows, and doors shall be of safety glass, approved by state law,† so mounted that permanent mark is visible, and of sufficient quality to prevent distortion of view in any direction.
2. Windshield shall be large enough to permit driver to see roadway clearly, shall be slanted to reduce glare, and shall be installed between front corner posts that are so designed and placed as to afford minimum obstruction to driver's view of roadway.
3. Each full side window shall provide unobstruced emergency open-

* 111 West Washington Street, Room 1171, Chicago 2, Illinois.

† It is general practice among states to approve glass which conforms to tests shown in *Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways* (Z26.1-1950), obtainable from American Standards Association, Inc., 70 East Forty-fifth Street, New York 17, New York.

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ing at least 9 inches high and 22 inches wide, obtained either by lowering window or by use of knock-out type split sash window.

4. All exposed edges of glass shall be banded.

Windshield wipers—

Bus shall be equipped with two positive-action windshield wipers of vacuum, air, or electric type.

Wiring—

1. All wiring shall conform to standards of Society of Automotive Engineers.*
2. Wiring shall be arranged in at least eight regular circuits, as follows:
   a. head, tail, and stop lamps
   b. dash and clearance lamps
   c. dome and step-well lamps
   d. starting
   e. ignition
   f. turn-signal units
   g. warning signal lamps
   h. horn
3. Wherever heaters and defrosters are used, at least one additional circuit shall be installed.
4. Wherever possible all other electrical functions shall be provided for by independent and properly-protected circuits.
5. Each circuit except starting and ignition shall have separate fuse or circuit breaker.
6. All wires within body shall be insulated and protected by covering of fibrous loom (or equivalent) which will protect them from external damage and minimize dangers from short circuits.
7. All light circuits shall be such as to provide bulb design voltage at light bulb terminals.
8. Wires shall be fastened securely at intervals of not more than 24 inches. All joints shall be soldered or joined by equally effective connectors.

Exception—small vehicles

Wiring shall be manufacturer's standard.

* 29 West Thirty-ninth Street, New York 18, New York.

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PUPIL TRANSPORTATION PRACTICES AND PROCEDURES

In additional to revising the minmum standards for school buses, the 1954 National Conference held work sessions and panel discussions on several other important aspects of pupil transportation. No attempt was made to reach consensus or to develop specific recommendations for universal adoption. The purpose, rather, was to give participants an opportunity to exchange viewpoints and experiences about pupil transportation, and thru this process to get help in solving problems they face in their back-home situations. Below are brief summaries of these discussions.

Extended Educational Uses of School Buses

In recent years the use of school buses for extended educational purposes has been increasing, and this increase has intensified the many inherent problems. The discussion revealed that a great variety of laws, regulations, and interpretations has given rise to an equally great variety of practices among the states.

It was generally agreed that the extended use of school buses should be for purely educational purposes. However, the practices reported indicated that the meaning of "educational purpose" in this connection ranges from bus trips carefully integrated with and designed to enhance a particular phase of credit-carrying instruction, to the use of buses by school board members in pursuit of school business, and even to the transportation of participants in adult education programs.

Among the problems discussed, those concerning school liability and the financing of educational trips were given considerable attention. The ways in which liability problems are met vary according to basic differences in state laws. Educational trips by school bus are financed with public funds in some places, and in others each pupil participant pays his own way, even on a publicly-owned bus. The implications of the latter plan were questioned by some conference participants. The importance of employing a fully qualified and ex-

perienced driver, and of carefully inspecting the bus for safe condition in advance of each trip, as well as a carefully organized system for safe conduct on the part of those transported, were emphasized as ways of reducing inherent risks to a minimum.

The discussion brought out great variations in the distances authorized or permitted for educational trips by school bus. While distance is restricted by law in some states, schools in other states are free to arrange trips of any length. In this connection, it was recognized that public carriers often feel that extended school bus trips unfairly deprive them of revenue business, altho it was pointed out that many such trips would be impossible except by school bus. Also discussed were some of the ways in which it was thought that the rules and regulations of the Interstate Commerce Commission affect extended educational uses of school buses. The dispersion of viewpoints clearly showed the need for clarification of this question.

In summary, the discussion seemed to indicate generally wide acceptance of the idea of using school buses for extended educational purposes. It was recognized, however, that such use of school buses should be (a) justified on the basis of its educational value, (b) undertaken only to an extent that would be acceptable to the community, and (c) carefully planned and administered in line with state laws and regulations, with every precaution being taken to minimize risk. A paramount consideration, clearly apparent in the discussion, was that the extended educational use of school buses should in no way adversely affect the availability or quality of the transportation service for its primary function of transporting pupils to and from school.

Laws and Regulations on Which National Uniformity May be Desired

Most of the discussion on this topic was devoted to the important and often perplexing problems of the so-called "school bus stop law." During the Conference a brief questionnaire survey was made and the replies from 37 states were tabulated to provide helpful background for the discussion. Many facets of the problem were revealed in the survey questions and replies. Since the Conference, the same survey has been used to show the situation in 46 states. The extent to which states are approaching the national recommendations is shown in the following summary.

1. Does your state permit a school bus to stop in the right-hand traveled lane of the highway while loading and unloading pupils?

   Ans. Yes: 43 states. No: 3 states. (In four states the bus must stop off the highway if possible.)

2. If the answer to item 1 is "yes," is the bus required to stop as

far to the right as practicable, still leaving sufficient roadway for a pupil to enter or leave the service door?

Ans. Yes: 31 states. No: 12 states.

3. To what extent is traffic controlled while the bus is stopped on the highway to load or unload pupils?

Ans. (a) Following traffic must stop in 44 states; slow down to 10 miles per hour in one state; slow down to a safe speed in one state.

(b) Meeting traffic must stop in 42 states (but not on divided-lane highways in five states); slow down to 10 miles per hour in one state; slow down to a "reasonable and prudent" speed in one state; slow down to a safe speed in one state.

(c) Traffic is controlled even when pupil does not cross highway in 40 states.

(d) No traffic control in one state.

4. What signaling devices are used to control traffic while bus is stopped on the highway?

Ans. (a) Flashing warning signal lamps in 36 states; either stop signal arm or flashing lights in one state; either stop signal arm or flashing lights or both in two states; either stop signal arm or continuous stop warning lights in one state.

(b) Stop signal arm in 24 states (by statute in 17 states). (One state uses two stop signal arms, one front and one rear.)

(c) Other: Safety patrol in one state; regular stop lights in one state.

(d) No signaling devices in one state.

(For national recommendation, see Item 5 under Lamps and signals, page 33.)

5. If flashing warning signal lamps are used, give number and color.

Ans. (a) Front: two in 23 states; one in ten states; one or two in two states. Red is the color in 23 states; amber in 18 states. (Color and number of front flashing lights are set by statute in 23 states.)

(b) Rear: two in 23 states; one in ten states; one or two in two states. Red is the reported color in 41 states. (Color and number of rear flashing lights are set by statute in 24 states.)

(For national recommendation, see Item 5 under Lamps and signals, page 33.)

6. If flashing warning signal lamps are used—

(a) Are they turned on before bus comes to a stop to signal intention to stop?

Ans. Yes: 24 states. No: 17 states.

(b) If "yes," how far in advance of stopping point?

Ans. Depends on road conditions in two states; before applying brakes in one state; when brake is applied in four states; reasonable distance in four states; 100 feet in five states; 150 feet in one state; 200 feet in two states; 300 feet in three states; 300 to 500 feet in one state.

(c) May lights be turned on only after bus has come to a stop?

Ans. Yes: 17 states. No: 24 states.

(d) Is their use restricted to stops for loading and unloading pupils?

Ans. Yes: 30 states. No: 10 states.

7. When leaving the bus, are children who must cross the highway required to cross in front of the bus and only while traffic is controlled?

Ans. Yes: 36 states. No: five states. Recommended: four states.

8. Is the driver of the bus responsible for signaling to pupils who must cross highway to indicate that it is safe for them to do so?

Ans. Yes: 37 states. No: seven states. Recommended: one state.

The discussion of the above survey led to a consideration of specific problems arising from lack of uniformity in state laws on stopping for, and on overtaking and passing, school buses. Drivers from out of state do not know what to expect. Truck traffic on some main highways needs more advance warning of stops by school buses. Traffic builds up behind the school bus on some major roads creating a difficult school public relations problem and, in some instances, unsafe conditions. Stop-for-school-bus laws in many states do not apply in business and residential areas, and this causes uncertainty for many motorists. Exempting traffic on the other side of divided-lane highways creates confusion in the minds of motorists. The fact that vehicles other than school buses are painted chrome yellow adds to the confusion.

Considerable attention was given in the discussion to ways of solving the growing problem. Devices other than flashing lights and stop signals arms were suggested. A report of a plan whereby the bus driver escorts pupils across the roadway brought negative reactions from some participants who felt that this procedure would involve far too great a hazard for the pupils temporarily left in the driverless bus. Also reported was the plan of routing buses so that stops are made

only on the side of the highway on which pupils live. Other suggestions would involve the ideas of giving school buses the right-of-way for three hours per school day (or 540 hours per year), and of adjusting school hours so as to reduce the periods of conflict with other traffic.

The discussion emphasized the great need for working with school bus drivers to help them develop more consideration for other highway users. Also pointed out were present efforts to teach children safe practices in crossing the roadway to and from the bus stop since they, too, have a responsibility for their own safety and that of fellow pupils.

Some Successful Practices in School Bus Driver Instruction

Many states, and often individual school districts within a state, have conducted good instructional programs for school bus drivers. The following summary, however, briefly describes only those successful programs presented by the Conference panel members who led the discussion on this topic.

New Mexico. A one-week school bus driver institute is held each summer at New Mexico Western College. Major emphasis is placed on driver attitudes rather than on skills in driving. Courses offered include rules and regulations, first aid, pupil relations, and public relations. Advanced work on special problems is provided for drivers who have attended previous institutes. Instruction is not compulsory, but drivers who attend enjoy certain benefits. School boards like the program. An institute report with pictures of those enrolled is published and sent to drivers. The state pays total costs for school transportation, including the cost of the training program. Efforts are made to hire drivers between the ages of 25 and 35. Drivers can retire on pension after 30 years' service, or after 20 years' service at age 60. Drivers are hired under bid, but after four years their services may be renewed without bids.

Iowa. Clinics are held for school bus drivers, and in five years all areas of the state have been served twice. Each clinic is a one-day affair (10 a.m. to 3:30 p.m.), planned for 75 to 80 drivers. Attendance is compulsory, and nearly 90 percent of the drivers participate. The clinics are conducted by the State Department of Public Instruction with help from other state agencies. The clinic program includes a review of state traffic laws, school transportation regulations, and a free discussion of the drivers' own problems. A portion of the clinic program is arranged for school administrators and school board members, and provides for consideration of local organization and supervision of transportation, and maintenance of buses.

Wisconsin. Wisconsin follows the Iowa pattern, with driver clinics being held during August and the first half of September. The state

supervisior of transportation attends each clinic. Purposes of the clinics are to make contact with new drivers and to provide a refresher experience for in-service drivers. Thru the clinic program an effort is made to create better driver attitudes and to develop the feeling among drivers that their job is important. Clinics are conducted with help from other state agencies, sheriffs, and county judges. One private school bus operator is having excellent results with a unique incentive plan for drivers. Starting as a "Class C" driver, a man qualifies thru series of tests for "Class B" and then "Class A" status, after which he receives more pay provided he retains "Class A" qualifications.

North Carolina. Ninety percent of 7100 school buses in North Carolina are driven by high-school students, 800 to 900 of whom are girls with a driving record as good as or better than that of the boys. Outstanding students, known in their home neighborhoods, are carefully selected. Nominees for school bus driving are made by the principal, passed on by the school committee, and approved by the county superintendent. All student drivers are given thoro instruction on rules and regulations, state board rulings, and good driving practices (for which many films are used), after which the driver receives a certificate of competency. There are at least two qualified drivers per bus. An in-service improvement program enables drivers to meet and discuss their own problems. Practice in driving a bus is provided as needed by student drivers, depending on their previous experience in driving other vehicles. Continuous vigilance is exercised thru close supervision to keep student drivers alert and keenly interested in their job. Problems with student drivers are no different from or greater than those with adults. The substitute driver serves as a monitor, and becomes a regular driver a year or two later, or in case the regular driver is dismissed for cause. The state pays a salary of $22 per month for each school bus driver. A local unit augments this sum as necessary if it employs an adult driver. The average school bus route (two trips) is about 18½ miles. The 90 percent of the school bus drivers who are high-school students have about 80 percent of the North Carolina school bus accidents; the 10 percent who are adult drivers have about 20 percent of the accidents.

Alabama (Tuscaloosa County). Alabama has a county unit organization in its 67 counties. School bus drivers are trained at the local level with the help of two persons from the State Department of Education. The 97 drivers in Tuscaloosa County have a one-week, 20-hour course each year. One big problem is arranging replacements for drivers who leave during the year. The County has a school transportation supervisor who works on all school bus transportation problems.

Michigan. Three years ago Michigan turned over to the colleges the job of providing school bus driver instruction. Michigan State

College has a full-time man working with drivers; one-third of his salary is paid from state vocational education funds. County superintendents set up a four-day instructional program (varied each year) for groups of about 25 drivers each. A tuition fee of $10 per driver is paid to the college by the state. Upon completing the program, each driver receives a certificate. A summer program also is offered each year for about 100 school transportation supervisors from the larger school systems. Help in school bus driver instruction is provided by other state agencies, but the colleges bear most of the responsibility for the program. The State Department of Public Instruction sees school bus driver instruction as an essential part of the total school transportation program. The cost of the instruction is more than offset by the resulting safety and efficiency of school transportation.

(See *Standards and Training Programs for School Bus Drivers*, recommendations of 1948 National Conference on School Transportation, obtainable from National Education Association, 1201 Sixteenth Street, N.W., Washington 6, D. C.; price 30 cents.)

Practical Procedures in School Bus Maintenance and Inspection

The following paragraphs summarize the school bus maintenance and inspection programs of only four states and one county whose representatives participated in the Conference panel discussion on this subject.

Florida. Pupil transportation is administered directly by each of the 67 county administrative units. Expanding enrolment is requiring a yearly increase of about 100 buses, as well as an increased use of larger capacity buses. The role of the State Department of Education is chiefly advisory. Since about 94 percent of the approximately 2200 school buses in Florida are owned by the county districts, 51 of the 67 counties operate their own maintenance garage. For many counties this is a relatively recent undertaking.

Since storage garages are not commonly used in Florida, the typical maintenance garage consists primarily of a series of work stalls and a large outside parking area. Good floors, good roofs, and good light are considered especially important in these maintenance stalls.

Emphasis is given to providing a high type of maintenance employee. Character and attitude are given priority when necessary over mechanical ability. Maintenance workers are usually required to do a variety of jobs. A series of training programs for maintenance workers is held each year. The mechanics themselves do as much of the instruction as possible.

In the maintenance program itself, emphasis is given to preventive maintenance—i.e., checking, adjusting, and replacing parts where necessary before mechanical failure occurs—rather than to the repair

or replacement of damaged or badly-worn parts discovered after breakdowns.

Each year the state highway patrol inspects all school buses and forwards reports to the county school districts.

Arkansas. All of the 423 school districts in Arkansas provide pupil transportation. About 90 percent of the buses are owned by the school districts and, altho maintenance practices vary a great deal, about half of the buses are cared for by district-operated maintenance programs. Emphasis in these programs is placed on preventive maintenance.

Annual inspections of all school buses are made by the county school supervisors. When buses fail to meet the inspection requirements, the state withholds support for the transportation program until appropriate maintenance work is performed.

Efforts are made to conduct training programs for school bus maintenance workers, and to keep the mechanics informed thru a series of maintenance and shop bulletins.

Idaho (Freemont County). About 66 percent of the school buses in Idaho are owned and operated by the school districts. About two-thirds of the districts which own their buses also provide maintenance programs. The Freemont County district reported upon does not provide its own maintenance program because of its large area and sparsity of population.

School buses are checked regularly according to an established schedule at intervals of 1000, 2000, and 5000 miles. For these inspections and for all repairs, work orders are sent to the garage. These orders must be signed by the driver and the work performed must satisfy the driver. Emphasis is given in this district to the training of drivers for preventive maintenance and to placing upon the drivers much of the responsibility for adequate bus performance.

An accurate and complete cost analysis of the transportation program, including maintenance, is kept for each bus in the fleet. This record to date has indicated that for the types of routes these buses travel, springs and brakes have required proportionally the most maintenance. Specifications now in preparation will reflect these findings.

Minnesota. Records for about 7000 regular and alternate drivers are kept by the State Department of Education. Drivers must be between 18 and 60 years of age, hold a chauffeur's license, and pass a physical examination yearly. Beginning in 1954-55, a special "school bus driver's license" will be provided.

Inspections of buses are made each year on a county basis. School districts are notified of the inspections in advance so that they will have adequate time to bring all buses up to inspection standards. Inspection service is provided cooperatively by the State Department of Education, state highway patrol, and accident prevention bureau

of the state labor department. Check sheets are used and deficiencies noted. One feature of the inspection program involves use of a machine to detect the presence and measure the extent of carbon monoxide inside the bus.

Vehicles found to have a number of deficiencies are removed from service until appropriate repairs are made. The greatest weakness in the inspection program is believed to be the lack of follow-up in instances where deficiencies are discovered.

Virginia. About 80 percent of the 3351 school buses used to transport more than 300,000 pupils in Virginia are owned by the 98 county and seven city school districts. About 65 of the counties provide maintenance garages, built generally according to specifications furnished by the State Department of Education.

In maintaining school buses, emphasis is given to preventive maintenance. It is recommended that each district provide one spare bus for each 20 buses in service. The spare bus is put into service while each regular bus is sent to the shop (one day each month for each bus) for regular monthly inspection and repair. Inspection reports are completed and filed with the driver, the mechanic, and the county school superintendent.

In addition to the monthly inspections, all vehicles in the state are inspected twice yearly at official inspection stations under the supervision of the state police. When buses fail to meet inspection standards, state financial support (distributed to districts according to number of pupils transported, miles traveled, and number of bus units operated) is withheld. The safety record of school transportation in Virginia demonstrates the value of vigilance in school bus inspection and maintenance.

Sound Practices in Providing Adequate School Transportation Insurance

Discussion was limited to a consideration of the varying conditions among the states regarding liability and insurance to cover claims. It was indicated that the states may be divided into two general groups—those in which school districts are immune from liability under the old, common law principle that "The state can do no wrong," and those in which the common law immunity from suit has been abrogated by statute. School districts in most states are immune from liability and suits.

Even within these two general groups, particularly the group in which the states are immune from liability, there is considerable variation regarding the extent to which school districts may accept responsibility and provide insurance as protection against damages. The extent of liability and provisions for insurance were briefly indicated for a few states. Some are liable for damages and may be sued (California, New York), some are immune from liability and

do not carry insurance (Massachusetts), and a number, altho immune, have permissive laws under which school districts may purchase insurance (Illinois, Kentucky, Maryland, New Hampshire, Oklahoma, Oregon, South Dakota, West Virginia).

Regarding the provisions of insurance policies, the question was raised as to whether an insurance company accepts responsibility and pays damage claims directly, permitting itself to be sued, or whether it accepts responsibility only for judgments brought against school districts. It was reported that insurance companies have been happy to pay all claims, the total amount of claims actually representing only a small portion of the premiums paid. In some states, insurance contracts specifically indicate that the insurance company will not "hide behind" school district immunity. In other states, however, there is some confusion on this point and possible doubt as to whether an insurance company would be legally obligated to pay claims if it elected to refuse to do so.

The self-insuring plans of Alabama and North Carolina were briefly reported. In these states, claims are paid from state funds without actual insurance coverage. It is believed in these states that the self-insuring plan provides school districts with greater coverage for damages at a much lower cost than would be the case were insurance purchased.

In the general discussion it was reported that: (a) the safety records of our pupil transportation programs are exceptionally good; (b) there is a great deal of variation among the states, and some uncertainty, as to the actual responsibility of insurance companies where the school districts themselves are immune from liability; (c) many states have laws permitting school districts to purchase insurance protection without waiving school district immunity; (d) the cost of insurance where it is provided is very great in proportion to the amount of claims paid; (e) school districts, whether or not immune from suit, have a moral responsibility for injuries to pupils and pedestrians, and for property damage arising from district-operated transportation equipment; and (f) the personal responsibility and liability of school bus drivers is great and is generally not understood by the drivers themselves.

The discussion concluded with a clear recognition that pupil transportation programs should be operated so as to avoid injuries and damages to the fullest possible extent.

Adequate Records and Reports for School Transportation

Thruout this discussion emphasis was given to the fact that pupil transportation is a big business operation. Educational leaders, it was agreed, have a responsibility to account for every aspect of the opera-

tion in order to justify fully the present program and to have some reasonable measure of future transportation needs.

The importance of having complete, adequate, and accurate records in the state education department (and thus a comparable system of records in the local school administrative unit) was stressed. It was pointed out that good state records, based on well-kept local records, are essential if the state is to meet its transportation needs thru legislative planning and appropriation.

Various types of specific information included in the reporting and records systems of several states were indicated briefly. Among the special problems noted was the frequent difficulty encountered in obtaining some of the essential information on contract school bus operations. It was generally agreed, however, that the desired information can be obtained if report forms are kept simple, if the information requested is specific, and if the use to which the information requested is put is understood by those making reports.

Considerable attention was given to school bus accidents and accident reports. Altho the responsibility of the state education department regarding the investigation and reporting of school bus accidents varies among the states, the need for adequate records was strongly emphasized. Appropriate reports make possible an analysis of the "what, when, where, why, and how" of school bus accidents so that intelligent steps can be taken to reduce and eliminate them. Brief consideration was given to plans of recognizing drivers for safe school bus driving records thru citations, certificates of merit, and the like, and also to means by which school bus drivers who seem to have accident tendencies, may be detected and reoriented or removed from bus driving responsibilities.

APPENDIX

Development of National Standards for School Bus Construction

The National Conference on School Bus Standards, sponsored by the National Council of Chief State School Officers and held at Columbia University in 1939 under the direction of Frank W. Cyr, pioneered in the development of nationally recommended standards for the construction of school buses.

1945 National Conference on School Transportation

At the close of the War in 1945 a National Conference on School Bus Standards, sponsored by the National Council of Chief State School Officers and administered by the National Commission on Safety Education of the National Education Association, was held at Jackson's Mill, West Virginia, to revise certain existing standards and develop others which were felt to be essential. The general policies for this Conference were worked out with the Chief State School Officers under the direction of a planning committee headed by Frank W. Cyr. In addition to revising the standards developed earlier, the 1945 Conference set up standards for small vehicles to meet the needs of schools in sparsely settled areas.

1948 National Conference on School Transportation

The primary purpose of the 1948 Conference, also held at Jackson's Mill, West Virginia, was to develop standards for the selection and training of school bus drivers. On the advice of state transportation officials and school bus manufacturers, however, it was decided that one day of the Conference would be devoted to revising certain sections of the 1945 revised edition of *School Bus Standards*. Information on sections of the standards to be revised was compiled under the direction of Frank W. Cyr by A. C. Bock and D. P. Culp, then graduate students at Teachers College, Columbia University.

A significant revision of the standards at the 1948 Conference was the adoption of flashing stop lights (now called school bus warning

signal lamps) in preference to the stop signal arm. A special committee of transportation officials worked jointly with the Society of Automotive Engineers on the specifications for the flashing lights. Several other adjustments and revisions were made in other parts of the standards.

1951 Interim National Conference on School Transportation

In 1950 the National Council of Chief State School Officers adopted the following resolution:

> Some urban centers have been purchasing, in recent years, transit type buses for use in pupil transportation. Such buses cannot be constructed to meet the present "minimum standards for school buses" as approved by representatives of state departments of education in the 1948 National Conference.
>
> The Council recommends that the National Commission on Safety Education of the National Education Association assemble a small committee composed of representatives of state and local school systems to develop, with the assistance of invited consultants and representatives of interested manufacturers, tentative standards for transit type buses which can serve as guides to state and local school administrators who purchase school buses.

In response to this request, an Interim National Conference on School Transportation, administered by the National Commission on Safety Education of the National Education Association, was held in Washington, D. C. The recommendations of the 1951 Interim Conference were published as *Tentative Minimum Standards for Transit and Metropolitan Types of School Buses.*

1954 National Conference on School Transportation

At the request of the National Council of Chief State School Officers, the National Commission on Safety Education of the National Education Association administered the 1954 National Conference on School Transportation which was held in East Lansing, Michigan. Among the purposes of the 1954 Conference were the following:

> Revision of the 1948 *Minimum Standards for School Buses*; revision of the 1951 *Tentative Minimum Standards for Transit and Metropolitan Types of School Buses*; development of recommendations for extended educational uses of school buses; consideration of the so-called "school bus stop law" and other laws and regulations on which national uniformity is desirable; and development of recommendations to further the training of school bus drivers.

In preparation for the 1954 Conference, the U. S. Office of Education planned and held regional conferences on school transportation in Chattanooga, Chicago, Denver, New York, and Sacramento. The state supervisors of school transportation who attended these regional conferences suggested numerous revisions of both the 1948 and 1951 minimum standards, and other problems. The results of these regional conferences were used in planning the program of the 1954 Conference.

The 1954 Conference authorized the appointment of two committees to carry forward the interests of the Conference until such time as the next national conference may be held. The Conference Interim Committee* was asked (1) to work with the School Bus Body Manufacturers' Association in developing a test code for strength of school bus bodies on which to base minimum standards for school bus body construction (done during August, 1954), and (2) to study any and all other matters regarding minimum standards for school buses and to make pertinent recommendations for the guidance of state education departments prior to the next national conference.

The second committee (see page 57) was asked to work on the matter of uniform traffic regulations affecting school transportation, so that proposals of state education departments for changes in the *Uniform Vehicle Code* may be combined and articulately presented for consideration by the National Committee on Uniform Traffic Laws and Ordinances in advance of any meeting it may hold prior to the next national conference on school transportation.

The achievements of the 1945, 1948, 1951, and 1954 National Conferences on School Transportation were made possible by the cooperation of many individuals and national organizations interested in highway transportation. In each case the Conference was co-sponsored by the National Council of Chief State School Officers, American Association of School Administrators, Department of Rural Education of the National Education Association, and the U. S. Office of Education. These Conferences were administered by the National Commission on Safety Education of the National Education Association. In addition to participation by more than 40 state departments of education (except in 1951), local school officials, and manufacturers of school bus bodies, chassis, and equipment, representatives of governmental and private agencies gave generously of their time and effort to assure the success of each Conference.

* T. Wesley Pickel of Tennessee (*chairman*), Ronald W. Cox of California, Michael J. Haggerty of Minnesota, Maurice G. Osborne of New York, and J. T. Reece of New Mexico.

National School Bus Chrome

National School Bus Chrome, as the uniform color for all school buses thruout the United States, was adopted by the 1939 Conference on School Bus Standards. The first consideration in adopting a uniform color was to provide the safety which accrues when, thruout the United States, a school bus is recognized by its color. The second consideration was economy, since school bus manufacturers are forced to make an additional charge for special colors.

Scientists of the National Bureau of Standards prepared the samples and provided technical advice upon which the choice of National School Bus Chrome was based.

In the 1951 Interim Conference a technical specialist of the National Bureau of Standards presented convincing arguments for tightening up the colorimetric specifications for National School Bus Chrome. The Interim Conference adopted and included in its published report these more exact specifications.

In 1954 the National Bureau of Standards provided for each participant in the Conference an individual color chip of National School Bus Chrome based on the specifications drawn up in 1951. The 1954 Conference adopted this color and the specifications for it as the uniform color for all school buses in the United States. The exact colorimetric specifications for National School Bus Chrome may be obtained from the National Bureau of Standards, Washington 25, D. C.

Enactment of Proper Statutory Provisions for School Transportation

The function of a legislative statute concerning school transportation should be to authorize the state education department or some other state agency to make necessary regulations governing school bus construction and equipment. Such regulations should not be incorporated in the statute itself. States in which proper statutory provision does not exist should give careful consideration to the following statements:

1. The increasing number of pupils being transported is adequate evidence of the need for state regulations governing the construction and equipment of school buses. State regulations for school buses constitute the best assurance that pupils will be transported in safety and with reasonable economy.

2. Both educational theory and the experience of a majority of the states indicate that the agency best qualified to establish such regulations is the state department of education, or a committee of the state authorities directly concerned with safe school transportation, with the chief state school officer as executive officer.

3. The responsibility of the state department of education to estab-

lish rules and regulations governing school bus construction and school bus equipment should be fixed thru a single statutory provision which confers broad powers upon the department. Following are two examples of desirable types of laws which are reproduced as suggestions to states desiring to enact an effective statute:

California: ". . . The State Board of Education shall have the power to adopt reasonable regulations relating to the construction, design, operation, equipment, and color of school buses. No regulations relating to the construction, design, or color of school buses shall apply to buses purchased prior to the effective date of this section, except that any school bus repainted after the effective date of this section shall, regardless of the date when purchased, be painted to conform to all the regulations relating to the color of school buses. Such regulations, if approved by the Chief of the California Highway Patrol, shall be enforced by the California Highway Patrol. The State Board of Education shall have the authority to issue an order prohibiting the operation on public streets and highways of any school bus which does not comply with such regulations, and any such order shall be enforced by the California Highway Patrol. . . ." State of California School Code, Article 3, Section 191.

Pennsylvania: "All vehicles hereafter purchased or placed in use for the transportation of pupils, whether owned or hired by the school district, shall conform to standards prescribed by the State Council of Education. Such standards when promulgated by the State Council of Education, may be revised not oftener than once each year, and whenever new requirements are made, they shall be published at least six months before they shall become effective, and shall apply only to vehicles thereafter purchased or put in use." School Laws of Pennsylvania, Article XIV, Section 1406.

4. State departments of education, in those states which have not already placed upon some state department the responsibility of setting up state rules and regulations for school buses, should use the first opportunity to request their legislatures to place this responsibility upon the state department of education.

Uniform Vehicle and Traffic Regulations

The need for uniform state legislation on a nationwide basis concerning vehicles and traffic was formally recognized in 1924 when the Secretary of Commerce called the first National Conference on Street and Highway Safety. During the following two years a committee appointed by that Conference drafted the *Uniform Vehicle Code*. This *Code* represented a compromise reached after a study of

all state statutes on vehicles and traffic, and thus became a distillation of the best thought and practice in the field. Judges, prosecutors, lawyers, police, motor vehicle administrators, educators, traffic engineers, safety specialists, business people, and others have participated in developing the *Uniform Vehicle Code* and in revising it from time to time.

Numerous professional and non-professional groups, both official and non-official, recommend adoption of the *Uniform Vehicle Code* by all states. Altho much progress has been made in this direction, a great deal more is needed to assure reasonable uniformity of the vehicle and traffic laws among all the states.

For a number of years, the National Committee on Uniform Traffic Laws and Ordinances has carried forward the work of revising the *Code* to keep it up to date. As a result it meets changing conditions, improved technics, and advances in the design and construction of highways and vehicles.

The 1945 National Conference on School Transportation recommended uniform traffic regulations regarding school transportation, and proposed a change in the *Uniform Vehicle Code* regarding overtaking and passing school buses. The National Committee on Uniform Traffic Laws and Ordinances reviewed the proposed change and suggested a further revision of the pertinent section in the *Code*. After studying the suggested revision, the 1948 National Conference on School Transportation approved it and, in addition, recommended that flashing stop lights be used on school buses. The *Code* was subsequently revised to include provisions both on overtaking and passing school buses and on special lighting equipment on school buses. Thus, the efforts of the National Committee on Uniform Traffic Laws and Ordinances and the National Conference on School Transportation were combined in support of agreed-upon objectives.

Altho the 1954 Conference discussed many problems which uniform state laws could help solve, it took no official action regarding recommendations for changes in the *Uniform Vehicle Code*. However, the Conference authorized the appointment of a three-man committee * to work on the matter of uniform traffic regulations affecting school transportation. It is important that preliminary work be done by this committee so that proposals of state education departments for changes in the *Code* may be articulately presented thru the committee in time for consideration by the National Committee on Uniform Traffic Laws and Ordinances at any meeting it may have prior to the next national conference on school transportation.

* D. W. Zimmerman of Maryland (*chairman*), Ronald W. Cox of California, and John L. Vickers of Kentucky.

The combined efforts of state education departments and the National Committee on Uniform Traffic Laws and Ordinances on school transportation matters can bring about more uniform state laws that will greatly enhance the safety of the millions of pupils who ride daily to and from school in buses.

The *Uniform Vehicle Code** as revised in 1954 defines a school bus, and includes provisions relating to the minimum age of school bus drivers, overtaking and passing school buses, special lighting equipment on school buses, identification of school buses, and the authority of state boards of education to regulate the design and operation of school buses.

* Obtainable from National Committee on Uniform Traffic Laws and Ordinances, 1604 K Street, N. W., Washington 6, D. C.; price 75 cents.

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Ordinances,

TITLES AND ADDRESSES OF PRINCIPAL STATE SCHOOL OFFICERS

(for use by manufacturers in furnishing information to state departments of education)

Superintendent of Education
State Department of Education
Montgomery 4, ALABAMA

Superintendent of Public Instruction
State Department of Public Instruction
Phoenix, ARIZONA

Commissioner of Education
State Department of Education
Little Rock, ARKANSAS

Superintendent of Public Instruction and Director of Education
State Department of Education
Sacramento 14, CALIFORNIA

Commissioner of Education
State Department of Education
Denver 2, COLORADO

Commissioner of Education
State Department of Education
Hartford 15, CONNECTICUT

Superintendent of Public Instruction
State Department of Public Instruction
Dover, DELAWARE

Superintendent of Public Instruction
State Department of Education
Tallahassee, FLORIDA

Superintendent of Schools
State Department of Education
Atlanta, GEORGIA

Superintendent of Public Instruction
State Department of Education
Boise, IDAHO

Superintendent of Public Instruction
Office of the Superintendent of Public Instruction
Springfield, ILLINOIS

Superintendent of Public Instruction
State Department of Public Instruction
Indianapolis 4, INDIANA

Superintendent of Public Instruction
State Department of Public Instruction
Des Moines 19, IOWA

Superintendent of Public Instruction
State Department of Public Instruction
Topeka, KANSAS

Superintendent of Public Instruction
State Department of Education
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State Department of Education
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Augusta, MAINE

Superintendent of Schools
State Department of Education
Baltimore 1, MARYLAND

Commissioner of Education
State Department of Education
Boston 16, MASSACHUSETTS

Superintendent of Public Instruction
State Department of Public Instruction
Lansing 2, MICHIGAN

Commissioner of Education
State Department of Education
St. Paul 1, MINNESOTA

Superintendent of Public Education
State Department of Education
Jackson 106, MISSISSIPPI

Commissioner of Education
State Department of Education
Jefferson City, MISSOURI

Superintendent of Public Instruction
State Department of Public Instruction
Helena, MONTANA

Superintendent of Public Instruction
State Department of Public Instruction
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Carson City, NEVADA

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State Department of Education
Concord, NEW HAMPSHIRE

Commissioner of Education
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Superintendent of Public Instruction
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State Education Department
Albany, NEW YORK

Superintendent of Public Instruction
State Department of Public Instruction
Raleigh, NORTH CAROLINA

Superintendent of Public Instruction
State Department of Public Instruction
Bismarck, NORTH DAKOTA

Superintendent of Public Instruction
State Department of Education
Columbus 15, OHIO

Superintendent of Public Instruction
State Department of Education
Oklahoma City 5, OKLAHOMA

Superintendent of Public Instruction
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Commissioner of Education
Texas Education Agency
Austin 11, TEXAS

Superintendent of Public Instruction
State Department of Public Instruction
Salt Lake City 1, UTAH

Commissioner of Education
State Department of Education
Montpelier, VERMONT

Superintendent of Public Instruction
State Board of Education
Richmond 16, VIRGINIA

Superintendent of Public Instruction
Office of State Superintendent of Public
Instruction
Olympia, WASHINGTON

Superintendent of Free Schools
State Department of Education
Charleston 5, WEST VIRGINIA

Superintendent of Public Instruction
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E. GLENN FEATHERSTON, director, Administration of State and Local School Systems Branch, Office of Education, Department of Health, Education and Welfare, Washington, D. C.

MELVIN GRUWELL, superintendent, Freemont County Joint School District, St. Anthony, Idaho

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LESLIE R. SILVERNALE, coordinator, Driver Education, Continuing Education Service, Michigan State College, East Lansing

NEA Staff Consultant:

FRANK W. HUBBARD, director of research, National Education Association

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SHIRLEY COOPER, assistant secretary

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For—National Commission on Safety Education

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NORMAN E. BORGERSON, deputy superintendent of public instruction, State Department of Public Instruction, Lansing, Michigan; *panel discussion chairman on "What are the Successful Practices in School Bus Driver Instruction?"*

CLYDE E. BOYD, field supervisor of transportation, Texas Education Agency, Austin

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6 Mfgrs.
5 Carriers

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WILLIAM M. MARTIN, sales representative, Armstrong Cork Company, Cincinnati, Ohio

J. O. MATTSON, president, Automotive Safety Foundation, Washington, D. C.; *keynote speaker*

G. E. MEESE, lighting engineer, General Electric Company, Cleveland, Ohio

WILLIAM THOMAS MENEWISCH, engineer, GMC Truck and Coach Division, General Motors Corporation, Pontiac, Michigan

G. R. MILLER, field representative, Floor Covering Division, Pabco Products, Inc. Detroit Michigan

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*J. C. MUTCH, assistant superintendent, State Department of Public Instruction, Springfield, Illinois

*A. R. NESTOSS, deputy superintendent, State Department of Public Instruction, Bismarck, North Dakota

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CARL A. NYSTROM, schoolbus engineer, Ford Motor Company, Dearborn, Michigan

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G. A. O'NEAL, assistant director of transportation, State Board of Education, Oklahoma City, Oklahoma

*MAURICE G. OSBORNE, chief, Bureau of Field Financial Services, State Education Department, Albany, New York

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LYNN PARKS, engineer, Oneida Products Corporation, Canastota, New York

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*T. WESLEY PICKEL, co-director, Division of Schoolhouse Planning and Transportation, State Department of Education, Nashville, Tennessee; *work session chairman on "Laws and Regulations on which National Uniformity May be Desired"*

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D. V. PRICE, inspector, Traffic Safety Division, Salem Oregon

JEAN L. PROETSCH, office secretary, National Commission on Safety Education, National Education Association, Washington, D. C.

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WAYNE O. REED, assistant commissioner, Division of State and Local School Systems, Office of Education, Department of Health, Education and Welfare, Washington, D. C.; *keynote speaker*

GEORGE RICHARDS, superintendent of schools, Okemos, Michigan

LEE C. RICHARDSON, director, Driver and Vehicle Services, Department of State, Lansing, Michigan; representing American Association of Motor Vehicle Administrators

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C. DALLAS SHIELDS, sales manager, School Bus Division, Superior Coach Corporation, Lima, Ohio
ELMER B. SIEBRECHT, professor of psychology and research, Iowa State College, Ames
LESLIE R. SILVERNALE, coordinator, Driver Education, Continuing Education Service, Michigan State College, East Lansing
ROBERT T. SKILLITER, vice president, The Acme Specialty Manufacturing Company, Toledo, Ohio
PATRICK C. SMITH, assistant director, State Educational Finance Commission, Columbia, South Carolina
VERL W. SNYDER, superintendent, Morgan County Schools, Berkeley Springs, West Virginia
*THEO A. SORENSON, director of pupil transportation, Department of Public Instruction, Madison, Wisconsin
CHARLES W. STARK, secretary, National Committee on Uniform Traffic Laws and Ordinances, Washington, D. C.
CARROLL STINSON, safety director, State Highway Commission, Pierre, South Dakota
*RALPH STINSON, supervisor, Secondary Education, State Department of Education, Topeka, Kansas
CHARLES D. STOUT, supervisor of transportation, Jefferson County Board of Education, Louisville, Kentucky
REID STOUT, president, Safety Cross Mirror Company, Lambertville, Michigan
J. B. SULLIVAN, assistant superintendent in-charge-of business, Davidson County Schools, Nashville, Tennessee
*ARTHUR L. SUMMERS, director of transportation, State Department of Education, Jefferson City, Missouri
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*PAUL W. SWOPE, state director of school transportation, State Department of Education, Charleston, West Virginia
*WINN L. TAPLIN, director of educational planning, State Department of Education, Montpelier, Vermont
*BURTIS E. TAYLOR, assistant commissioner of education, State Department of Education, Denver, Colorado

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MARIAN TELFORD, senior field representative, National Safety Council, Chicago, Illinois

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JOHN W. THOMAS, JR., sales manager, Perley A. Thomas Car Works, Inc., High Point, North Carolina

RICHARD O. THOMAS, eastern sales manager, Wayne Works, Inc., Richmond

M. H. THRASHER, Indiana Association of School Bus Drivers, Huntington, Indiana

M. R. TRABUE, dean, College of Education, The Pennsylvania State University, State College; *conference chairman; work session chairman on "Extended Educational Uses of School Buses"*

CHARLES W. TROUT, division of sales, Oneida Products Corporation, Canastota, New York; president, School Bus Body Manufacturers' Association

HAROLD R. TURNER, engineer, Oneida Products Corporation, Canastota, New York

MELVIN B. TURNER, superintendent of transportation, Davidson County Schools, Nashville, Tennessee

*JOHN VICKERS, director of pupil transportation, State Department of Education, Frankfort, Kentucky; *panel discussion chairman on "What are Practical Procedures in School Bus Maintenance and Inspection?"*

KNOX WALKER, second vice president, National Congress of Parents and Teachers, Atlanta, Georgia

WILLIAM J. WARREN, assistant treasurer, Great Lakes Marmon-Herrington Coach Company, Dearborn, Michigan

W. L. WEBSTER, president, W. L. Webster Manufacturing Company, Detroit, Michigan

ROLAND C. WEEKS, superintendent of schools, Superintendency Union # 44, Southwick, Massachusetts

WALTER W. WEIKER, superintendent, Acme Specialty Manufacturing Company, Toledo, Ohio

EARL C. WELSHIMER, director of research, Carpenter Body Works, Worthington, Ohio

HUBERT WHEELER, commissioner of education, State Department of Education, Jefferson City, Missouri; *panel discussion chairman on "What are Sound Practices in Providing Adequate School Transporation Insurance?"*

*RAYMOND L. WIMBISH, supervisor of transportation, State Board of Education, Richmond, Virginia

* Official representative of state department of education.

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Depart-

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L. C. WINDER, director of transportation, Normandy Consolidated School District, St. Louis, Missouri

White DUANE B. WOLF, manager, School Bus Division, White Motor Company, Cleveland, Ohio

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JESSE E. WOOD, director of transportation, Cassia County Schools, Burley, Idaho

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LOUIS A. YANDELL, transportation supervisor, Fayette County Board of Education, Lexington, Kentucky

*DAVID W. ZIMMERMAN, assistant state superintendent, State Department of Education, Baltimore, Maryland; *group discussion chairman on "What is an Adequate System of School Transportation Records and Reports?"*

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1 Mfgs.
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COLOR "in Sep. Schools: from Digest of Motor Laws (1956)

Ala. Y.
Ariz. Y.
Ark. NSBC
Cal. Ch.Y.
Col. N. special colleges.
Conn. NSBCh.
Del. Ch.Y.
Fla. Ord. [illegible]
Ga. No state law on color
Idaho NSBCh.
Ill. No state law on color
Ind. Y.
Iowa [illegible] Y.
Kans. Ch.Y.
Ky. Y
La. C.
Me. [illegible]
Md. [illegible]
Mass. [illegible]
Mich. NSBCh.
Minn. [illegible]
Miss. Y.
Mo. [illegible]
Mont. NSBCh.
Neb. No state law on color
Nev. No state law on color
N. Mex. Y
N.Y. NSBCH (principally owned vehicles only)
N.C. O.
N. Dak. Y.
Ohio Y.
Okla. Y. Statute.
Ore. NSBCh.
Pa. C.
R.I. NSBCh.
S.C. Y.
S. Dak. No state law on color
Tenn. Y.
Tex. NSBCh.
Utah. NSBCh.
Vt. No state law on color
Va. Y.
Wash. Ted. Y.
W. Va. Golden O.
Wisc. NSBCh.
Wyo. Y.

Alberta Y.
B.C. Y.
Manitoba - No law on color
N.S. "
Newfoundland — "
Nova Scotia - NSBCh.
Ontario - No law on color
Prince Edward Is. — "
Quebec — "

In Oct. 1955 "Mod. Tchr. Asst. State Supt. (Dr.)

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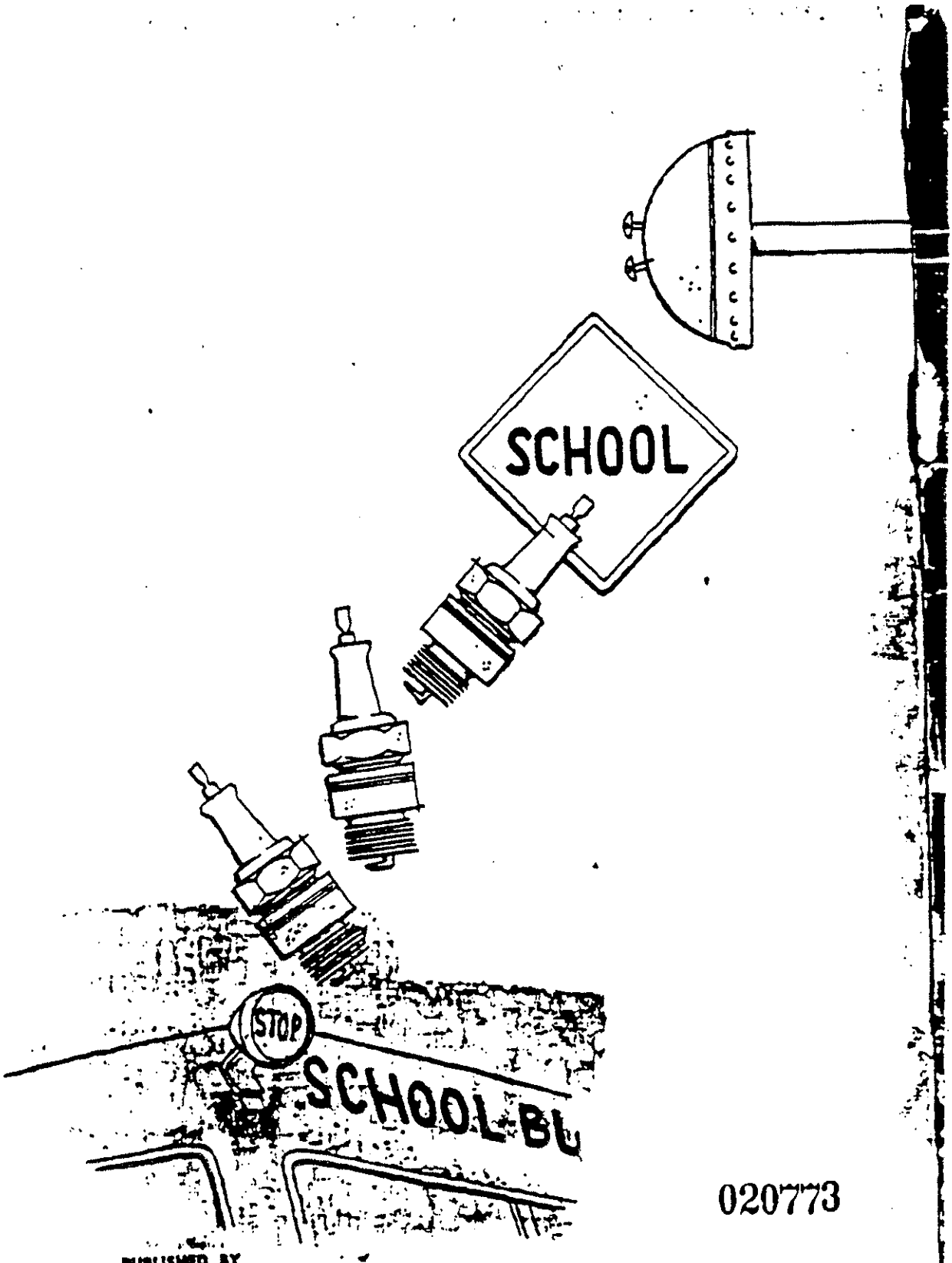

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