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# EDUCATIONAL BULLETIN

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## MANUAL ON PUPIL TRANSPORTATION

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### STATE BOARD OF EDUCATION

H. W. PETERS

Superintendent of Public Instruction

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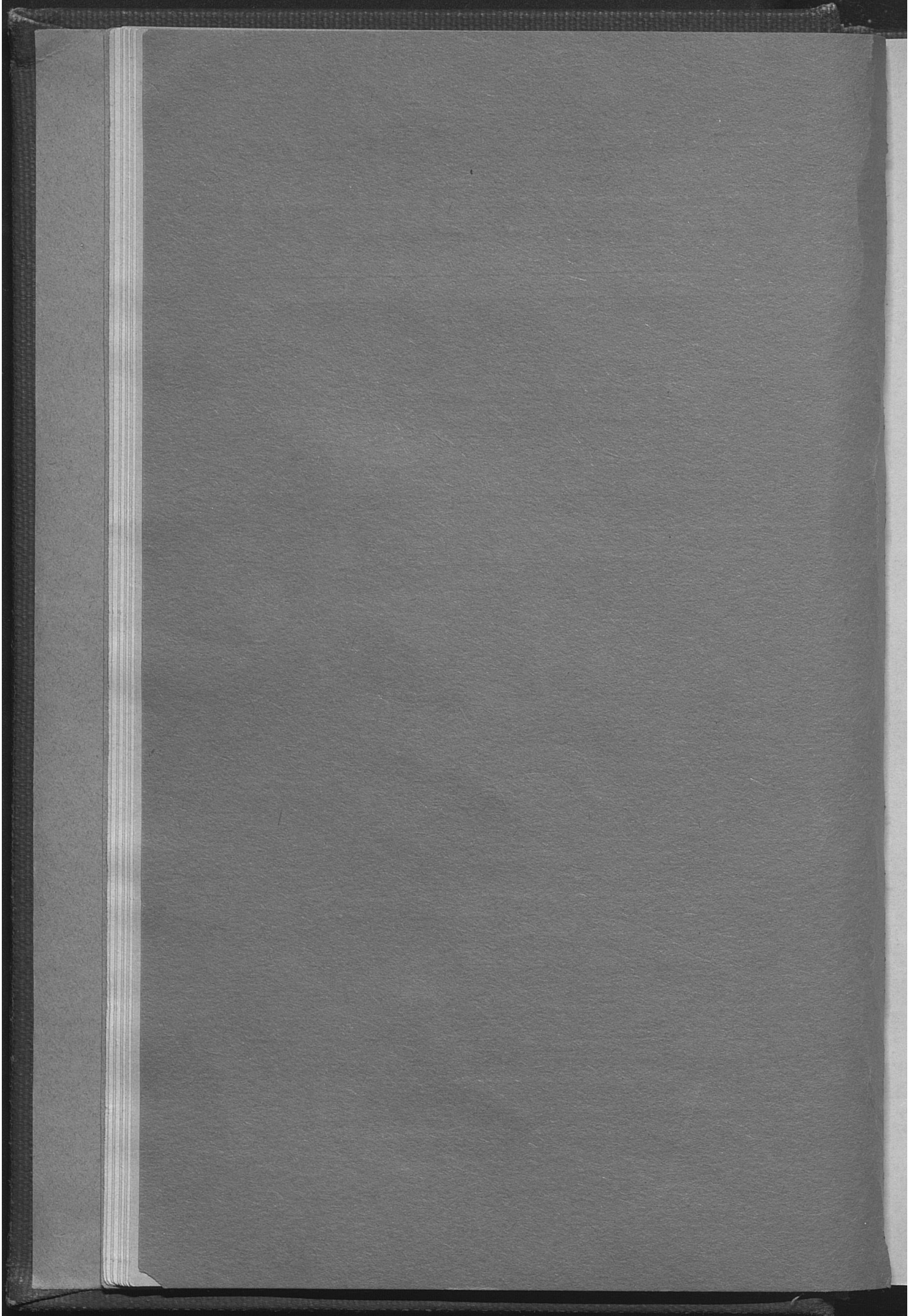
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MANUAL  
ON  
PUPIL  
TRANSPORTATION



Published by Order of the  
State Board of Education  
H. W. PETERS  
Superintendent of Public Instruction

## *Foreword*

By authority imposed upon me by Section 4384-25, Kentucky Statutes, I have caused to be prepared the materials contained in this Manual on Pupil Transportation. They have been adopted by the State Board of Education for use of boards of education in preparing rules and regulations governing the transportation of school children in their districts. The mandatory standards which all boards shall observe and include in their regulations may be found on pages 9-11, inclusive. They are starred on the different pages of the handbook where they appear under appropriate headings. It will be observed that these requirements pertain to specifications of buses and qualifications of bus drivers.

This material has been prepared and arranged by D. Y. Dunn, Superintendent of Fayette County Schools, N. O. Kimbler, Superintendent of Henderson County Schools, Everett Hilton, Superintendent of Mason County Schools, L. N. Taylor and Gordie Young of the Department of Education.

It is hoped that the information contained in this manual will help boards of education in safeguarding the lives and health of the school children as they attempt to provide economical and efficient educational facilities for their districts.

H. W. PETERS,  
*Superintendent Public Instruction.*

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## STATE BOARD OF EDUCATION REGULATIONS GOVERNING PUPIL TRANSPORTATION

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### Chapter 1—Legal Provisions Relating to Pupil Transportation.

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“Section 4384-25, Ky. Statutes. *Transportation of Children.*—The Superintendent of Public Instruction shall prepare, or cause to be prepared, and submit for approval and adoption by the State Board of Education rules and regulations concerning the transportation of children to and from school.”

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“Section 1376r-10, Ky. Statutes. *Act Regulating School Buses.*—All drivers of motor vehicles transporting school children are hereby required to stop each and every such motor vehicle before crossing over any steam or electric interurban railroad main tracks at a grade, stop to be made at not less than ten (10) feet nor more than thirty (30) feet from the nearest railroad over which the highway crosses, except where such crossing is guarded, crossing protected by gates or a flag controlled or operated by employees of such railroad. After making the stop herein required, the driver or operator of a motor vehicle shall carefully look in each direction for approaching cars or trains, and shall not start his vehicle until it is ascertained that no cars or trains are approaching in either direction. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than ten dollars nor more than one hundred dollars for each offense.” (Chap. 83, Acts 1930.)

“Section 4399-20, Ky. Statutes. *Powers and Duties.*— . . . Schools shall be maintained for pupils of elementary grade within a reasonable walking distance of their homes or the board of education shall furnish transportation from its general funds or otherwise for any elementary pupil or pupils who do not reside within such distance, and any board of education may provide transportation from its general funds or otherwise for any pupil or pupils of any grade or grades who do not live within a reasonable walking distance from the school; provided that such board shall adopt such rules and regulations as will insure the comfort, health, and safety of the children who are transported; and provided further that such rules and regulations shall be consistent with the rules and regulations of the State Board of Education dealing with the transportation of pupils.” (Chap. 65, Acts 1934.)

“Section 2739g-7, Ky. Statutes. *Government Automobiles.* Application for registration of automobiles owned exclusively by any county, city, town or board of education in the State or Federal Governments, shall be accompanied by a statement from the head

of the department of the State, Federal Government, county, city, town or board of education owning said automobiles, certifying that said automobile is exclusively owned and operated by the county, city, town or board of education or by the State or Federal Government. Said application and statement shall be forwarded by the county court clerk to the commission and special authority may be given to the clerk to register same, and upon receiving said authority the clerk shall issue a registration receipt and deliver a number plate as hereinafter provided *except that no charge shall be made for same by the commission or the clerk.* Any person using any plate or license in the operation of any automobile not owned exclusively by a county, city, town or board of education, State or Federal Government, shall be guilty of a misdemeanor, and upon conviction thereof fined in any sum not less than ten (10) nor more than one hundred (100) dollars for each offense." (C. 109, Acts 1926.)

"Section 2739m-6, Ky. Statutes. *Age limits for drivers of school buses and public passenger-carrying motor vehicles.* It shall be unlawful for any person, whether licensed under this act or not, who is under the age of eighteen years, to drive a motor vehicle while in use of a school bus for the transportation of pupils to or from school, or for any person, whether licensed under this act or not, who is under the age of twenty-one years to drive a motor vehicle while in use as a public passenger-carrying vehicle." (C. 18, s. 6, Acts 1934 Extra Session.)

"Section 2739m-2. *Operators shall be licensed.* Every person except those expressly exempted under Sections 3, 4, 7, and 13\* of this act, before operating any motor vehicle upon any highway in this Commonwealth, shall procure a driver's license. The first license under this act shall be obtained not later than September 1, 1934. License shall cost fifty cents (50c), fifteen cents (15c) to be retained by the examiner to defray expenses for administering the provisions of this act, and ten cents (10c) shall be forwarded to the department by the examiner for the use of the department for printing of necessary forms, inspections, and expenses for administering the provisions of this act, and the additional twenty-five cents (25c) derived from the provisions of this act shall be forwarded to the auditor of public accounts into the state treasury and credited to a revolving fund maintained for the purposes of paying salaries and expenses for the enforcement of the motor vehicle laws of the Commonwealth, said fund to be expended in the manner determined by the governor of the Commonwealth, and warrants to be issued by the auditor of public accounts against said funds for the aforesaid purposes upon the order of the governor of the Commonwealth." (C. 18, s. 2, Acts 1934 Extra Session.)

"Section 2739j-73, Ky. Statutes. *Certificate for Chauffeurs; Fees; Badge.* No operator of a motor vehicle for hire shall permit such vehicle to be operated upon the highways of this State unless the driver or chauffeur thereof has obtained, and from time to time has renewed, in accordance with the requirements of the Commission, a statement from said Commission certifying that said driver or chauff-



feur has met its requirements with respect to his health, vision, sobriety, intelligence, care, ability and experience as the driver or chauffeur of such motor vehicles. For the original issue, and for each renewal, of each such statement, there shall be paid a fee of \$2.00 (two dollars). The holder of each such statement shall at all times when operating a motor vehicle for hire have in his possession said statement, and shall wear a badge, to be issued by said Commission, indicating that the holder thereof is a certified driver or chauffeur." (1932, c. 104, Art. 4 and 5.)

Section 2739j-94, Ky. Statutes. *Exemptions.* There shall be exempted from the provisions of Section 2739j-78, Ky. Statutes, pertaining to excise tax, and Section 2739j-91, pertaining to certain violations, the following section:

"Section 2739j-94, Ky. Statutes. *Exemptions.* 1. Motor vehicles for hire while being used exclusively for the transportation of school children and school teachers to and from school, provided such vehicle is operated by, or the compensation for such transportation is paid by, a school district." (C. 103, p. 494, Acts 1934 Regular Session.)

Below is quoted a letter of instructions from the Automobile Department concerning Operators, Chauffeurs and Drivers Licenses. This letter explains the preceding sections of law dealing with the licenses above named:

STATE OF KENTUCKY  
AUTOMOBILE DEPARTMENT  
Frankfort, Ky.

October 15, 1934.

Dear Sir:

This letter is for the purpose of clearing up some points that have come up since writing you sometime ago, in regard to the operator's, chauffeur's and driver's license.

In my letter of August 31, I explained that three different kinds of licenses would be issued. *First*, the *operator's license* that will be issued by the Circuit Court Clerks; *second*, the *chauffeur's license* that will be issued by the County Court Clerks; and *third*, the *driver's license* that will be issued by the Department of Motor Transportation, Frankfort, Ky.

The license known as the *operator's license* will be issued by the Circuit Court Clerks and covers the operators of all motor vehicles that are not being operated for hire, and where the drivers of same are not employed as hired chauffeurs.

*Chauffeurs' licenses* will apply to all drivers employed to drive motor vehicles that are not being operated for hire. This will include drivers of school buses, where the school buses are owned by the county or school district, and where the drivers are employed to operate them. These licenses will be issued by the County Court Clerks.

*Drivers' licenses* will apply to drivers of motor vehicles being operated for hire, whether they be the owners or employed drivers. This license will apply to all drivers of buses being operated over regular routes, city buses and school buses, where the school buses are not owned by the counties, and drivers of taxi-cabs. Drivers' licenses will also apply to drivers of trucks that are being operated for hire, whether they be the owners or employed drivers, and will also apply to trucks being operated wholly within a city or within ten miles of its limits, or to trucks that are operated

for hire, not hauling the type of freight that brings the truck under the provisions of the law regulating trucks for hire. The applicant must state whether he proposes to operate a passenger hauling vehicle or a truck.

Where chauffeurs' licenses apply to drivers of school buses, they can be issued to drivers eighteen years of age, or above. Where drivers' licenses apply to the drivers of school buses or any other passenger hauling vehicle, the drivers must be twenty-one years old, or above. Drivers of trucks operated for hire must be eighteen years old or over, before they can be issued drivers' licenses.

Very truly yours,

(Signed) HENRY H. DENHARDT, Adjutant General.

C. W. WILLIAMS,  
Assistant State Tax Commissioner.

CLIFF CLAYPOOL,  
Supervisor of Motor Transportation.

Approved by Attorney General.

Department of Education,  
Frankfort, Kentucky.

Dear Sir:

At your suggestion I am writing a statement that covers the requirements of school busses operating over the highways of Kentucky.

The law provides that an official tag be issued to all school busses owned by the County or a School District. These busses will be permitted to haul school children backwards and forwards from school and the use of any such bus will be permitted for the purpose of making special trips to different athletic meets or any other place that it is necessary to transport pupils and teachers to educational meetings.

In case the busses are owned by an individual, license must be purchased from the County Court Clerk, and any such bus will be permitted to operate in the same way as the bus carrying official tag, but in no case will a school bus carrying only regular license plates or official license plates be permitted to haul passengers for hire except school children and school teachers in the way mentioned above.

Driver's License will be required of every driver of a school bus which license can be purchased from the Motor Transportation Department at Frankfort, Kentucky.

Yours very truly,

CLIFF CLAYPOOL,  
Supervisor of Motor Transportation.

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## STATE BOARD OF EDUCATION RULES AND REGULATIONS GOVERNING TRANSPORTATION OF SCHOOL CHILDREN

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At a meeting of the State Board of Education, held in the office of the Superintendent of Public Instruction, March 25, 1936, it was ordered that the following rules and regulations governing transportation of school children be and are hereby adopted.

### Transportation Equipment

*Brakes.* Use only chassis equipped with four-wheel brakes. Chassis should also be equipped with a hand-operated brake system which is entirely independent of the four-wheel service brake.

*Color.* The body of the bus should be painted golden orange color. The inside of bus should be painted gray. (This is the standard color scheme used for school buses.)

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*Doors.* The *service* door should be under the control of the operator, and should be so constructed as not to open if children lean against it. This door should give a minimum clear opening of 24 inches and should be located opposite the driver, on the right side of the bus. The sedan type of door *should not* be used. The lower panels of service door should be of shatter-proof glass. Door jambs should be equipped with a channel of rubber hose to protect children's fingers. There should be no door on the left side of driver. The lever that closes the door should not have holes or notches that might injure the children's fingers and parts of the lever separated at least two inches to prevent shearing action. There should be *no outside handle* on the service door.

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*Emergency Door.* Every school bus should be equipped with an emergency door, located in the rear end of bus. The following specifications should be observed:

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- (a) It must give a minimum horizontal clearance of 18 inches;
  - (b) It must give a minimum vertical clearance of 48 inches;
  - (c) It must be conspicuously marked on the outside:  
"Emergency Door";
  - (d) It must be provided with a fastening device which may be quickly released in case of emergency from without as well as within, but which shall be protected against accidental release. This release should not be under the control of operator, as it would involve a complicated linkage between the fastener and the driver's seat, which might easily become jammed if the bus were involved in an accident.
- tion.

- (e) There should be no steps to the emergency door.
- (f) An unobstructed aisle at least 12 inches wide should lead to emergency door.
- (g) Upper panel of emergency door should be of glass.

*Gasoline Tank.* Should be located, filled, drained, and vented outside of the bus body.

*Glass.* All the glass used in the windshield, windows, and doors of buses bought after July 1, 1936, shall be shatter-proof.

*Horn.* Each bus must be equipped with a good horn of distinctive sound.

*Lighting.* In addition to the regular two headlights at the front, and the dashlights, there shall be provided two dome lights, a stop-light operated by the foot brake, and such other lights as are required by the state law.

*Mirrors.* An inside, non-glare mirror at least 12 inches long must be provided that will give the driver a full view of the interior of the bus and of the road immediately to the rear. A mirror must also be extended on the left to give the driver a view of approaching vehicles.

*Speedometer.* Each bus should be equipped with a working speedometer.

*Traffic Guard Rails.* All bus bodies should be equipped with a one-piece traffic guard rail on each side of the body, at the height of the seat line. In case of a collision or accident, this would help to resist the impact and to prevent the body side from being crushed in; also a great protection against side swipes.

*View.* All seats and body parts must be so designed and proportioned as to permit unobstructed vision from driver's seat.

*Windshield Wiper.* Each bus should be equipped with adequate power-driven windshield wiper, capable of manual operation in emergencies, and defroster during winter season.

### Qualifications of Bus Drivers

*Health Certificate.* No one should be employed to drive a bus who is not able-bodied or who has a communicable disease. He must be strong enough physically to handle the bus with ease. He must have normal use of his body, and use of both hands, both feet, both eyes, and both ears. He must present a certificate from a reputable physician, after a careful examination, annually.

*Vision.* He must present a certificate from a reputable oculist as to his vision.

*Morals.* No person shall be employed or kept in service as a driver of a school bus who uses intoxicating liquors; he must not use tobacco while in the bus or on the school grounds; and he must refrain from the use of profane and indecent language.

*Character.* He must be thoroughly reliable, and of good repute; a person whom the children will respect, and whose actions should

result in constructive influence over the pupils. He must be capable of maintaining order.

*Experience.* He shall satisfy the employing authority of his ability to drive a school bus by citing driving experience and by giving reliable references.

*License.* He must hold a driver's license. No one should be employed as a school bus driver who has had a driver's license revoked.

*Contract.* He must sign the driver's contract furnished by the school board, which contract covers "Regulations for Driver" furnished by school authorities.

*Personal Appearance.* Drivers should be required to keep clean and neat while operating a school bus.

*First Aid.* Bus drivers should be expected to attain a reasonable degree of efficiency in the use of first aid treatment. They should be regularly instructed concerning the best way to render first aid by some one thoroughly qualified to give instruction.

## Chapter 2

### TRANSPORTATION EQUIPMENT

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#### a. *Determining Need*

The question of need for transportation in any given situation will be determined in a large measure by conditions peculiar to that situation. No set of specific rules can be constructed that will serve as a definite guide in all situations. The distance from school is the most commonly employed measure. This usually ranges from one to three miles. Transportation need is most frequently created when schools are abandoned. This is usually a part of a consolidation program.

1. Factors to be taken into consideration are:

- (a) The effort the child must put forth due to distance, weather, and road conditions;
- (b) The physical ability of the child to walk to school as determined by age, health, and physical condition;
- (c) The traffic, weather, and other hazards required in walking.

With the increased number and the increased speed of cars and trucks on our highways today, it is much more dangerous for children to walk down the highways than it is to ride in a bus. If proper care is taken in the selection of a driver and a bus that is built with the safety of the pupils in mind, there is practically no danger to pupils riding in it.

Subject to state laws and rules and regulations of the State Board of Education, the local school board has control of all transportation in the local district. The board should exercise this control only through the formulation of policies and general rules. The transportation of school children must be placed in the hands of persons trained for the work. Railroad companies do not place untrained men in charge of their transportation. School transportation is just as important. The first requisite to successful transportation is centralized control and centralized responsibility.

The detailed administration of the transportation should be delegated to the head of the school system (the superintendent or principal of a single school district, or the county superintendent under a county system). It is properly a part of his business.

This chapter presents suggestions for selecting or building bus bodies and selecting chassis, which, if followed, will assist local school officials and administrators in obtaining desirable transportation equipment at a reasonable price.

b. *Specifications for Buses* (Mandatory regulations of the State Board of Education starred)

1. Factors to be considered for safety:

The first major factor to be considered in the purchase or lease of equipment for the transportation of pupils is the *safety* of the pupils.

Provisions for *safety* to be considered when buying buses for the transportation of pupils include:

*Body of Bus.* Bus bodies should be built as low as possible without sacrificing strength, in order to avoid swaying and undue strain on the body frame and chassis. Body overhang should be well balanced and the body should *not* be mounted on longitudinal sills. Body should conform to the size and strength of the chassis, and must be well braced.

*Body Covering.* Body covering should be of strong material. If of steel, it should be not less than 20 U. S. gauge in thickness and should be insulated to prevent excessive heat under direct rays of the sun during the summer.

*Body Height.* For younger pupils, 60 inches; for high school pupils, 66 inches, inside measurements.

*Body Width.* Minimum for two rows of seats 68 inches; for three rows of seats, 76 inches; the maximum not to exceed the legal limit.

*\*Brakes.* Use only chassis equipped with four-wheel brakes. Chassis should also be equipped with a hand-operated brake system which is entirely independent of the four-wheel service brake.

*Bumpers.* Bumpers should be anchored on the chassis at both the front and rear of the bus. The bumper on the rear end should be so constructed and guarded that hitching will be difficult, if not impossible. There should be no grab rods on the outside of bus for children to hang or ride on.

*Chassis.* The chassis of bus should be especially built for the transportation of people; that is, it should be a motor coach chassis. This will give the chassis sufficient strength. It will provide for greater comfort than a truck, and will prove equally, or more economical in the long run. All bodies should be mounted on chassis according to specifications of chassis manufacturer. Purchaser should require from manufacturer a guarantee that chassis is of sufficient strength to carry body loaded to capacity.

*\*Color.* The body of the bus should be painted golden orange color. The inside of bus should be painted gray. (This is the standard color scheme used for school buses.)

*\*Doors.* The *service* door should be under the control of the operator, and should be so constructed as not to open if children lean against it. This door should give a minimum clear opening of 24 inches and should be located opposite the driver, on the right side of the bus. The sedan type of door *should not* be used. The lower panels of service door should be of shatter-proof glass. Door jambs

\* State Board Requirements.

should be equipped with a channel of rubber hose to protect children's fingers. There should be no door on the left side of driver. The lever that closes the door should not have holes or notches that might injure the children's fingers, and parts of the lever separated at least two inches to prevent shearing action. There should be *no outside handle* on the service door.

*\*Emergency Door.* Every school bus should be equipped with an emergency door, located in the rear end of bus. The following specifications should be observed:

- (a) It must give a minimum horizontal clearance of 18 inches;
- (b) It must give a minimum vertical clearance of 48 inches;
- (c) It must be conspicuously marked on the outside: "Emergency Door";
- (d) It must be provided with a fastening device which may be quickly released in case of emergency from without as well as within, but which shall be protected against accidental release. This release should not be under the control of operator, as it would involve a complicated linkage between the fastener and the driver's seat, which might easily become jammed if the bus were involved in an accident.
- (e) There should be no steps to the emergency door.
- (f) An unobstructed aisle at least 12 inches wide should lead to emergency door.
- (g) Upper panel of emergency door should be of glass.

*Engine.* The size and power of the engine to be selected should be determined by the demands to be made upon it. The condition of the roads and load to be carried will be important factors to be considered. Economy of operation is very important. Remember proper types of engines lead to economy in operation. Purchase should be made from a reputable manufacturer and from a local dealer able to furnish service and parts.

*Fire Protection.* An uninsulated exhaust pipe must not run near the gas tank; must be securely protected against leakage; and no heater operated therefrom. Each bus must be provided with a *Fire Extinguisher*, one quart or one and one-half quart in size, of the non-freezing type, located on a bracket within convenient reach of the driver. Fire extinguishers should be inspected as often as indicated by the manufacturer, in order that they may be kept in good working condition.

*First Aid.* Every school body should be equipped with a standard first aid kit, which should be inspected each month.

*Floor of Bus.* Floor of bus should be covered with a good grade of corrugated rubber, linoleum, or mastipave, so that it may be easily swept and mopped each day.

*Fuses.* Two or three extra fuses should be carried with each bus.

\* State Board Requirements.



\**Gasoline Tank.* Should be located, filled, drained, and vented outside of the bus body.

\**Glass.* All the glass used in the windshield, windows, and doors of buses bought after July 1, 1936, shall be shatter-proof.

\**Horn.* Each bus must be equipped with a good horn of distinctive sound.

*Identification.* "SCHOOL BUS" and its number must be printed in large black letters at least four inches high on both front and rear of bus. The name of the school district should be printed on each side of the body.

\**Lighting.* In addition to the regular two headlights at the front, and the dashlights, there shall be provided two dome lights, a stoplight operated by the foot brake, and such other lights as are required by the state law.

\**Mirrors.* An inside, non-glare mirror at least 12 inches long must be provided that will give the driver a full view of the interior of the bus and of the road immediately to the rear. A mirror must also be extended on the left to give the driver a view of approaching vehicles.

*Rails.* Hand rails should be provided inside at entrance door; these should be low enough for the smaller children to grasp.

*Seat, Driver's.* The driver's seat should be high enough to enable the driver to see the road immediately in front of the bus.

*Speed.* If possible to secure a bus with a governor, it should be set at *not to exceed thirty-five miles* an hour. Power and reliable performance are more essential than speed. The school bus will be loaded to capacity every day and will have to meet road conditions and extreme conditions in weather.

\**Speedometer.* Each bus should be equipped with a working speedometer.

*Steps.* Suitable steps with risers not exceeding 10 inches should be provided. These steps should be enclosed to prevent accumulation of snow and ice.

*Sun Visors.* Each bus should be equipped with two sun visors.

*Tires.* *Heavy duty balloon tires* with tread not worn slick should be used on all school buses. They should be of sufficient strength to carry a capacity load. At least one spare tire properly inflated should always be carried for each size wheel.

*Tools.* A complete set of good tools for emergency repairs should be carried at all times on each bus. This should include a shovel, if bus is routed over dirt roads or where there is heavy snowfall.

*Top.* The top should be strong, weatherproof, and well covered, and must have ventilators of such nature to prevent rain and snow coming directly inside. And insulated all-steel top, covered with paint of aluminum base, is preferred.

\**Traffic Guard Rails.* All bus bodies should be equipped with a one-piece traffic guard rail on each side of the body, at the height of

\* State Board Requirements.

the seat line. In case of a collision or accident, this would help to resist the impact and to prevent the body side from being crushed in; also a great protection against side swipes.

*\*View.* All seats and body parts must be so designed and proportioned as to permit unobstructed vision from driver's seat.

*Wheels.* All school buses should have dual wheels in rear.

*Windshield.* Windshield should be of one piece, shatter-proof glass, providing a wide angle of vision, and large enough in its vertical dimension so that driver can see the road immediately ahead of bus.

*\*Windshield Wiper.* Each bus should be equipped with adequate power-driven windshield wiper, capable of manual operation in emergencies, and defroster during winter season.

## 2. Factors to be considered for comfort:

A second factor to be considered in the purchase of buses is the comfort and health of the children.

Provisions for *comfort* to be considered when buying buses for the transportation of pupils include:

*Aisles.* All single aisles leading from the front to the back of the bus should be at least 18 inches wide. If there is a middle seat, each aisle should be at least 12 inches wide. Pupils should not be permitted to stand in aisles so as to obstruct the view of the driver to the road in the rear of the bus.

*Heating.* All buses should be equipped with a hot water heater, located in the front of the bus on the right side of the dash. The heating system should be independent of the exhaust.

*Seating Capacity.* A space of 13 to 15 inches must be allowed for each pupil, depending on the age of the pupil; 15 inches for each high school pupil.

*Seats.* Should be comfortable. Unit spring type is recommended, covered with genuine leather or good quality of imitation leather. A space of 13 inches for each elementary pupil and 15 inches for each high school pupil should be allowed. All seats should be securely fastened to the bus.

*Size.* The size of the school bus will, in a measure, be determined by the number of pupils it is expected to carry. Buses that carry from thirty pupils up are proportionately more economical than buses that carry fewer children than that. Routes should be so planned that each bus will have a load of at least thirty pupils.

*Ventilators.* All buses should have adjustable ventilators, two on each side of the cowl, one on top of cowl, one above the windshield and two in the roof. Care should be used to see that exhaust fumes do not enter the bus.

*Windows.* All glass should be of shatter-proof type. Glass windows should be individually operated; adjusted to raise or lower in grooves, with metal frame sash, and when lowered should completely disappear in the bus body. They should be so designed that they can

\* State Board Requirements.

be opened for ventilation without admitting rain or snow. Guards should be placed over the windows to prevent children from thrusting their arms or hands outside.

*Inspection.* The board of education shall see that all buses are maintained in good mechanical operation by providing for inspection of their entire mechanical structure of each bus by an experienced mechanic at least once each month.

### 3. Cost:

A third factor to be considered is the cost. The use of acceptable buses should be obtained at the lowest possible market price, from the most reliable manufacturers and dealers. The bodies and chassis should have sufficient capacity to take care of the transportation program of the district under all conditions. Publicly owned buses should be run only as long as the maintenance cost is less than the depreciation on new buses.

### 4. Six questions in the purchase of school buses:

- (a) Do the vehicles meet the recommendations of the State Board of Education?
- (b) Are there conveniently located service stations for the particular type of vehicle so that parts may be replaced and other adjustments made without interruption of service?
- (c) Will the body of the bus adequately meet the seating requirements for pupils to be transported?
- (d) Have both body and chassis a reputation for durability?
- (e) Is the motor sufficiently powerful to carry the number of pupils which may be loaded into the body?
- (f) Is proper provision made to heat the bus in cold weather?

c. *Homemade Bodies.* Many school districts, as well as contractors who furnish their own bus bodies, use homemade bodies. This practice began in the early day of transportation before body builders began specializing in school bus bodies, and has continued to the present time. The recent depression, with its consequent reduction of school revenues, has given added impetus to the use of homemade bodies. In some instances these bodies are made by the contractor; in others they are made by local carpenters. Occasionally, a blacksmith or carpenter in a town of medium size makes school bus bodies for surrounding districts. Most of these bodies, however, are made by individuals who have had little or no experience in building bodies. Consequently, homemade school bus bodies in Kentucky vary from a flimsy structure erected on an ordinary stake body floor costing approximately \$50.00 to bodies built on the frame and reinforced with steel, costing \$275.00. Some of the cheaper bodies are not safe for transporting children; many of them are decidedly uncomfortable and dangerous to the health of the pupils.

The following description of the bus bodies used in Oklahoma, is presented to help inexperienced school bus body builders obtain a comfortable, safe, economical and otherwise fairly satisfactory bus body for districts not able to make the large outlay of four to eight hundred dollars required to purchase an all-steel commercially made body. The diagrams and specifications are intended as suggestions only. Due to variation in chassis, frames and cowls, all measurements should be verified by the body builder. (Note: See pages 21-29, inclusive for diagrams and explanation of diagrams of bus body.)

d. *Ownership of Buses*

There is a difference of opinion as to whether the school should own the buses or whether the transportation should be contracted. In almost all states we find transportation being furnished in some cases by district-owned conveyances, and in others by individual or corporation-owned and operated equipment. In many instances joint ownership is practiced.

1. Reasons usually advanced for *school district ownership* are:

- (a) The school system has no object in making money from its transportation system, and for that reason school ownership generally means better and more comfortable buses.
- (b) Ownership permits better supervision and control of the system. With reasonably equal competence in management, transportation is generally cheaper under school control.
- (c) Buses are generally kept in better repair, since they can be regularly and uniformly inspected and maintained.
- (d) Drivers can be secured at lower cost under district ownership. These drivers are commonly of high grade.
- (e) There is a tendency throughout the country to change from private to public ownership.
- (f) The method of competitive bidding does not insure either the best drivers or the best equipment.
- (g) Buses belonging to the school district can be used for all school purposes, such as athletic trips, field trips, programs, excursions, etc. Schedules under such arrangement can be made to serve pupils' needs better.
- (h) Under the contract system, the district does not escape the capital outlay costs incident to purchase of buses and equipment; they are charged in by one method or another.
- (i) School ownership retains the opportunity for close and adequate supervision of the transportation serv-

ice at all times and thus insures adequate attention to the vital factors of adequacy, comfort, convenience, flexibility, and safety in the transportation system.

- (j) The school district should not permit the superintendent to escape his legitimate opportunity to assume full responsibility for training himself and his staff to administer the transportation system with competence equal to that with which he now administers older and well-established functions like janitorial and maintenance services, attendance, and supervision.

2. Reasons usually advanced for *contracting for transportation* are:

- (a) The system of contract relieves the district from large initial capital outlays necessary to its inauguration of a transportation system.
- (b) The driver will take better care of his own bus than of one belonging to the school district.
- (c) There are no arguments under this system as to where the buses are after school hours, nor of what use is made of them off schedule.
- (d) The district knows exactly what the transportation will cost under the contract system.
- (e) Responsibilities incident to inspection, repair, and maintenance can be shifted from the superintendent to the contractor.

e. *Publicly Owned Body and Privately Owned Chassis*

It is the practice of some boards of education to own the body and the bus driver to own the chassis. The advantage of the school district owning the body is that it tends to provide a comfortable and safe bus body for use daily.

It does not cause the driver to have as an investment a sum of money which will not yield an income except during the school term.

f. *Courses in Transportation*

Many teachers' colleges are putting courses on transportation into their curricula. Every principal and superintendent who has a transportation problem in his school should train himself for this kind of work. He should include one or more courses on transportation in his summer school work. Transportation problems are as important as any other administrative problems.

g. *Liability of School Districts*

There is no statute which makes it mandatory on the school board of a school district in Kentucky to carry liability insurance. It is generally conceded that school districts are not liable for damages, and that they are not subject to suit. However, a driver may be held personally liable if his neglect or carelessness causes an acci-

dent. We can only cite one Kentucky case, *Ernst v. City of West Covington*, 116 Ky. 850. The courts of our country are agreed that education is a function of government and do not hesitate to apply the rule of non-liability to school districts. Though not legally liable, boards of education should recognize their moral obligation to carry liability insurance from \$5,000 to \$10,000 on the individual and up to \$30,000 group liability to protect children who might be injured.

h. *The Reporting and Investigating of Accidents*

Every accident involving a school bus or passenger should be reported immediately by the driver to the school authorities. Every accident resulting in personal injury, or property damage to the extent of \$10.00 or more, should be investigated by a committee representing the board of education, the superintendent of schools, and a member of the governing board of the school district. Such committee shall endeavor to ascertain the causes of the accident and the individual responsible for the accident, and shall recommend steps to be taken to prevent occurrence of similar accidents. The investigating committee shall make a report to the proper school authorities.

i. *Accident Prevention*

At frequent intervals, each teacher should assume the responsibility for explaining in detail to the pupils the rules and regulations for the conduct of pupils on school buses. A regular course in safety education should be given by each teacher in the school system.

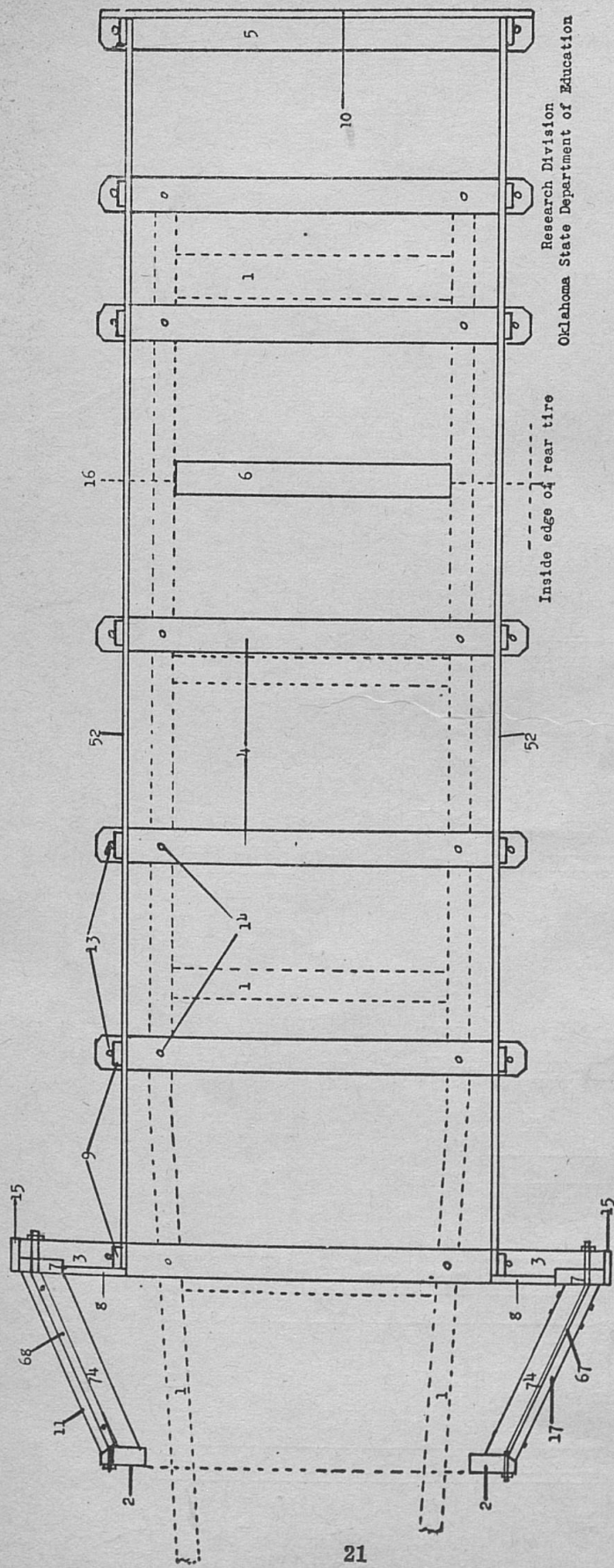
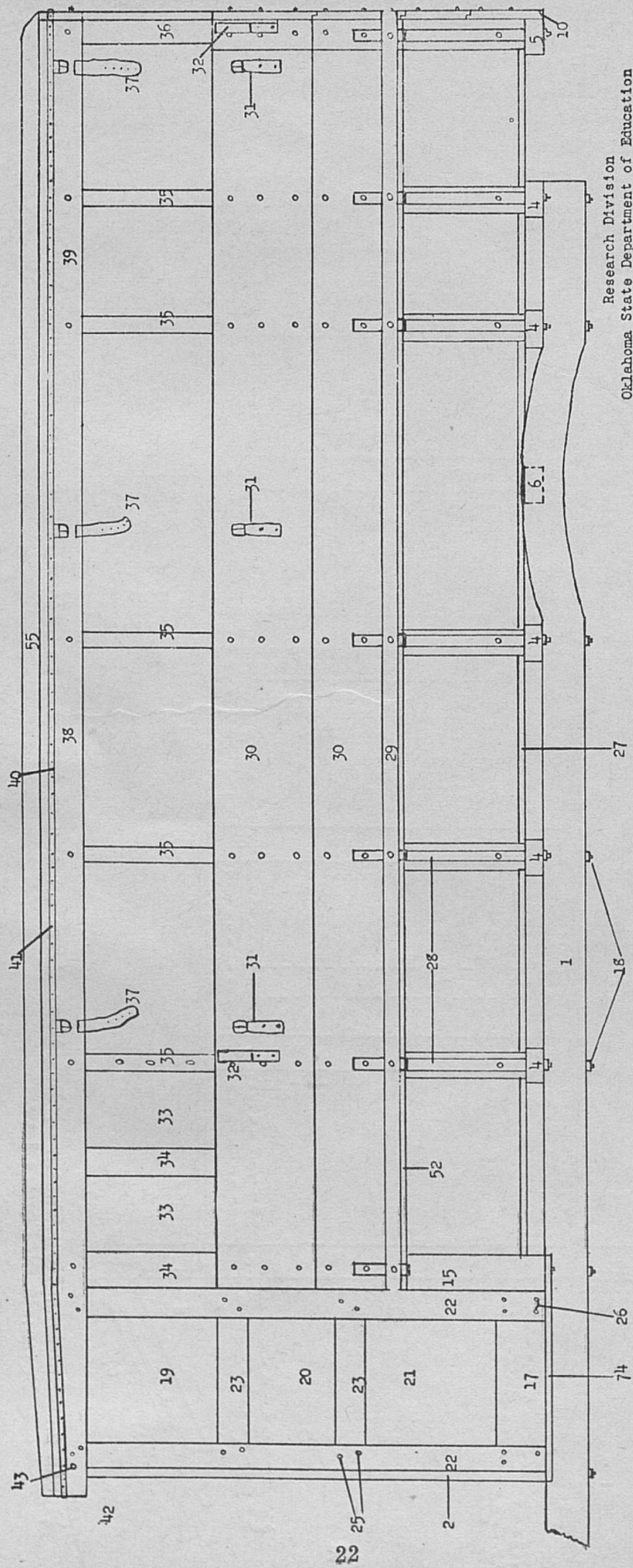


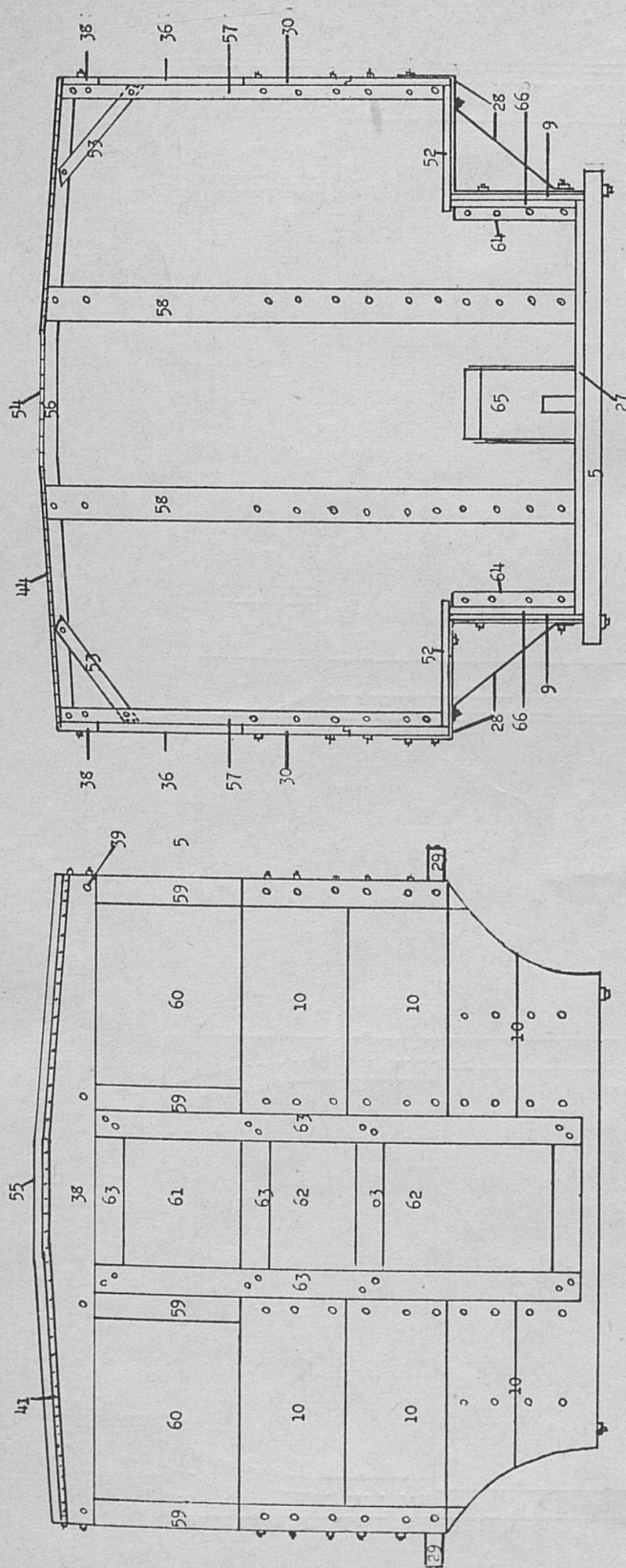
FIGURE 2. SHOWING HOW FRAME OF BUS BODY RESTS ON AND IS ATTACHED TO CHASSIS FRAME. (DOTTED LINES INDICATE CHASSIS FRAME).  
SCALE: 1/2 IN. EQUALS 1 FT.



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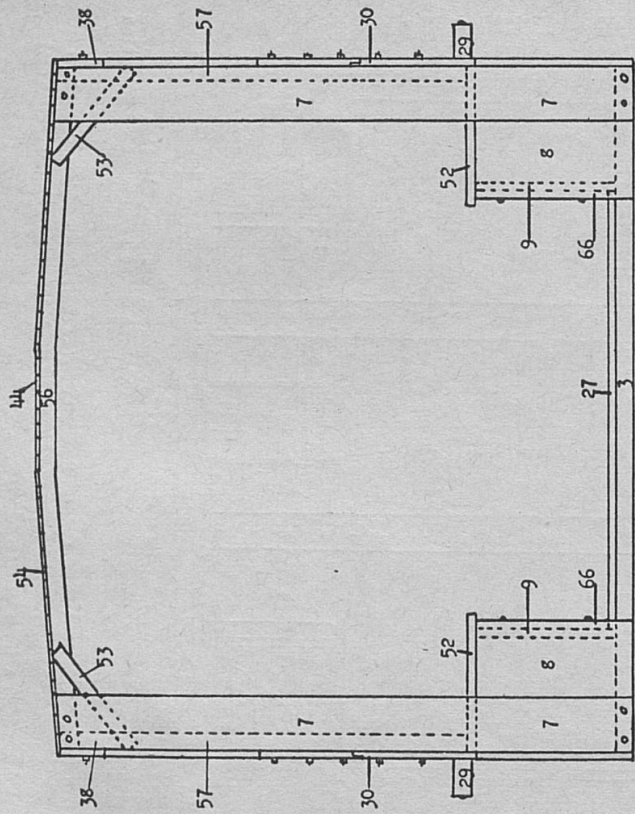
FIGURE 3. LEFT SIDE VIEW OF 14 FT. BUS BODY RESTING ON FRAME OF 157 INCH WHEEL BASE CHASSIS. SCALE: 1/2 IN. EQUALS 1 FT.





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FIGURE 4. REAR VIEW OF BUS BODY. SCALE: 1/2 IN. EQUALS 1 FT. FIGURE 5. REAR VIEW OF BUS BODY WITH SIDING AND FACINGS REMOVED TO SHOW CONSTRUCTION OF BODY. SCALE: 1/2 IN. EQUALS 1 FT.



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FIGURE 7. CROSS SECTION VIEW OF BODY AT FRONT EDGE OF SEATS, AS SEEN FROM THE EXTREME FRONT END OF THE BUS. SCALE: 1/2 IN. EQUALS 1 FT.

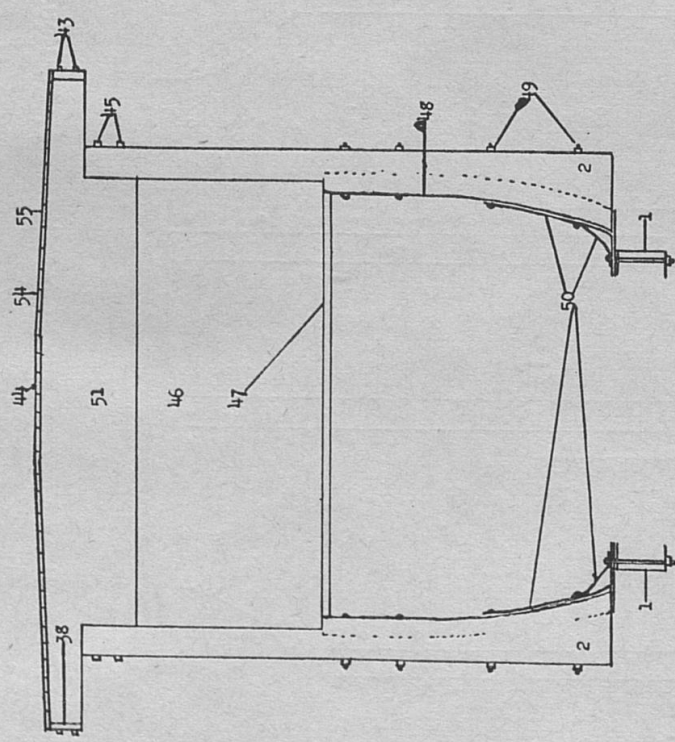
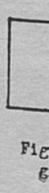
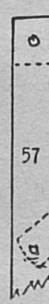


FIGURE 6. VIEW OF COWL AND BODY FRAME AROUND IT, AS SEEN FROM THE DRIVER'S SEAT. SCALE: 1/2 IN. EQUALS 1 FT.



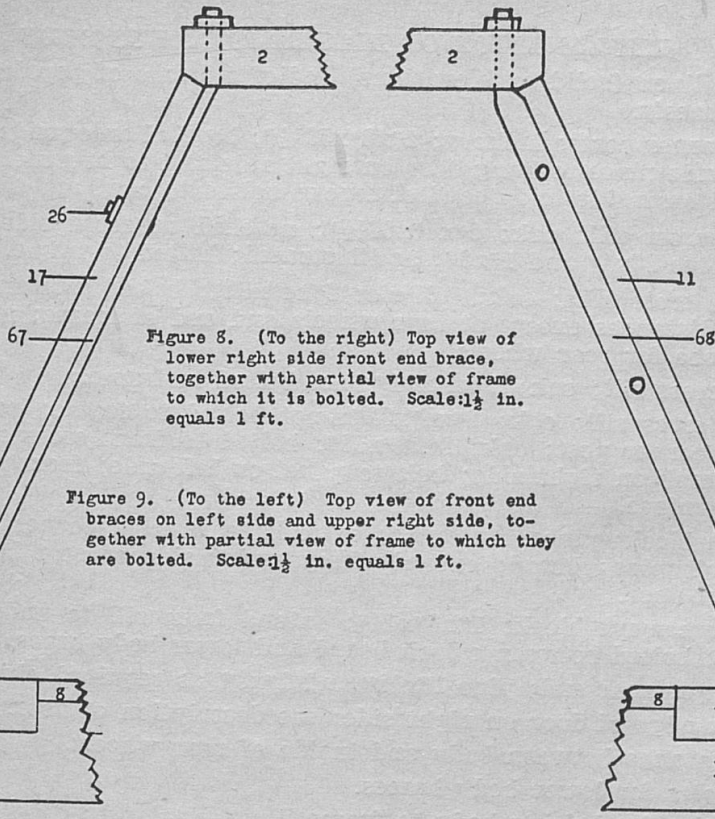


Figure 8. (To the right) Top view of lower right side front end brace, together with partial view of frame to which it is bolted. Scale:  $1\frac{1}{2}$  in. equals 1 ft.

Figure 9. (To the left) Top view of front end braces on left side and upper right side, together with partial view of frame to which they are bolted. Scale:  $1\frac{1}{2}$  in. equals 1 ft.

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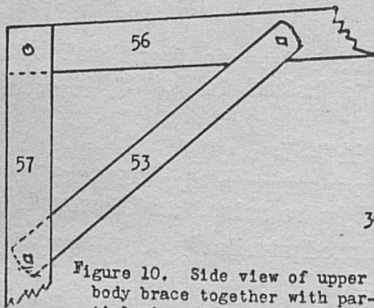


Figure 10. Side view of upper body brace together with partial view of frame to which it is bolted. Scale:  $1\frac{1}{2}$  in. equals 1 ft.

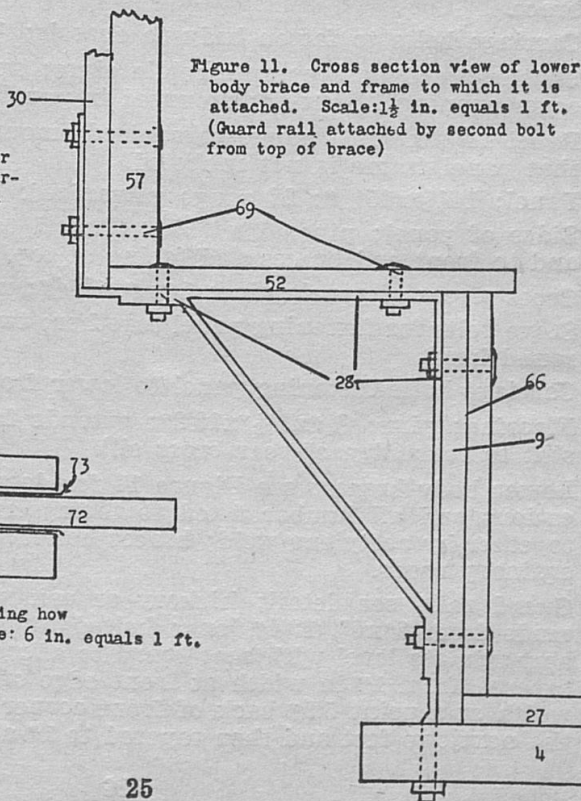


Figure 11. Cross section view of lower body brace and frame to which it is attached. Scale:  $1\frac{1}{2}$  in. equals 1 ft. (Guard rail attached by second bolt from top of brace)

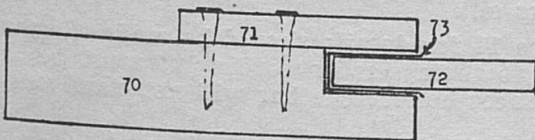


Figure 12. Cross section view showing how glass is mounted in panels. Scale: 6 in. equals 1 ft.

### EXPLANATION OF DIAGRAMS OF BUS BODY

1. Dotted lines (solid on elevations) indicate frame of popular 157" wheel base chassis.
2. Cowl corner posts; hickory; 2"x8"x53½"; beveled on outside rear corners to provide place to hang door on right side and to fit panel on left side; shaped on inside to fit cowl of truck; bolted to cowl and frame.
3. Front cross sill; oak; 2"x4"x68½"; notched on front side of each end to receive 2"x4" and 1"x8"; as illustrated; bolted to frame.
4. Middle cross sills; oak; full size 2"x4"x51"; bolted to frame; spaced at equal distances except at rear wheels and end of frame; allow required clearance for rear wheels.
5. Rear cross sill; oak; 2"x4"x51"; not bolted to frame.
6. Short cross sill; oak; 2"x4"x32"; not bolted to frame; nailed to floor.
7. Front corner post; oak; 2"x6"x58"; bolted to front cross sill; serves as door jamb on right side; bolt to panel on left side; front stud bolted to back surface.
8. Splash block; pine; 1"x8"x16"; extends from front corner post to inside edge of splash board; extends from under side of seat board to lower edge of floor.
9. Reinforcement block; 1"x3"x14"; extend from sill to underside of seat board; bolted between splash board and lower body brace.
10. Siding on rear end; pine 1"x12" and 1"x8", as required, ship-lapped.
11. Lower edge of door on right side; see description of door.
12. 3" clearance between body and inside of rear wheels.
13. ½" holes for lower body braces.
14. ½" holes for bolting body to frame.
15. Facing extending vertically from end of front cross sill to lower outside edge of seat board.
16. Center of rear axle.
17. Lower end piece of panel to left of driver; bolted to front end brace. Bottom piece of panel; pine; 1"x6"x14½"; bolted to lower front end brace.
18. Carriage bolts to fasten body to chassis; ½"x8".
19. Shatter-proof glass or automobile glass; approximate size 15½"x16"; to cover opening 14½"x18"; mounted in panel to be raised and lowered.
20. Panel 14½"x7"; 22 gauge galvanized; mounted similarly to glass except that panel frame is not rabbeted.
21. Panel; 14½"x15½"; 22 gauge galvanized.
22. Sides of panel; pine; 1"x4"x53"; bolted to front end braces at bottom and to front end braces and facing at top.
23. Cross pieces of panel; pine; 1"x4"x14½"; mortised into side pieces (22).
25. Stove bolts for fastening panel together; two in each corner; 3/16"x1½"; round head.
26. Carriage bolts fastening panel to lower front end brace; ¼"x1¾".
27. Flooring; pine; ¾"x3½"x12'2"; extends from front edge of front cross sill to rear edge of rear cross sill.
28. Lower body braces; see Figure 11 for detail; should be made to specifications and all lumber fitted to them sized accordingly; must be held together by acetylene weld; braces bolted together will not stand use on ordinary roads.
29. Guard rail; see detail; hickory or oak with perfectly straight grain; made from 2"x4", 12'4" long; bolted to body at each stud at point on approximate level with seat board to afford most protection to children; tapered from 1" in width at front edge of front corner posts to 3½" in width at a point 5'3" back of front corner posts, then 3½" in width for the next two feet and then tapered to 1" at rear of bus. The purpose of

- the guard rail is to protect the body from side swipes and collisions and to prevent it crashing in at a particular point along the side; to be bolted on with carriage bolts extending through guard rail, lower body brace, siding and studs; head of bolt to be counter sunk on outside and nut to be counter sunk in stud on inside; end of bolt on inside must not project out in such a way that children's clothing may be torn by it.
30. Siding; 1"x12"x12'2"; pine, ship-lapped; each board bolted to each stud with three carriage bolts,  $\frac{1}{4}$ "x2 $\frac{1}{2}$ "; bolt heads on inside.
  31. Buckles; to fit 6" heavy hame string leather straps; straps fastened to siding with stove bolts,  $\frac{3}{16}$ "x1 $\frac{1}{4}$ "; all leather must be oiled occasionally to keep it from cracking.
  32. Curtain brackets; strap iron  $\frac{1}{8}$ "x1"; 3" to fasten to body; 1 $\frac{1}{4}$ " offset; 3 $\frac{3}{4}$ " behind which curtain pole rests when curtain is in use.
  33. Panels; shatter-proof glass; mounted as shown in detail; 10"x16" to cover opening 8 $\frac{1}{2}$ "x15 $\frac{1}{4}$ ".
  34. Panel sides; pine; 1"x4"x15 $\frac{1}{4}$ "; notched or mortised into siding at the bottom and facing at the top; fastened with stove bolts  $\frac{3}{16}$ "x1 $\frac{1}{4}$ ".
  35. Facings on studs; pine; 1"x1 $\frac{5}{8}$ "x15 $\frac{1}{4}$ "; front facing to be cut to receive glass; three Common Sense buttons fixed on outside of facing to hold front end of side curtain close.
  36. Facing on rear studs; pine; 1"x3"x15 $\frac{1}{4}$ ".
  37. Heavy hame strings for fastening curtains up when they are not in use; fastened through top facing by means of two slots for each strap; straps should be 10" long.
  38. Facing around body under top; pine; 1"x5" boards, full width from rear to front corner post; tapers two inches between front corner post and cowl post; same on both sides; extends 2" in front of cowl posts; extends across front and back; front top facing 2" narrower.
  39. Bolts for fastening top facing to studs;  $\frac{1}{4}$ "x2 $\frac{1}{2}$ " carriage; two bolts in each stud. (Some of the bolts are not shown on Figure 3 because they are covered by the top material.)
  40. Binding strip of 10-oz. khaki duck treated with waterproofing material; three thicknesses with folded edge on top; strip  $\frac{3}{4}$ " wide extending around the body 1" below the top edge.
  41. Upholstery nails; every two inches;  $\frac{1}{2}$ " nails.
  42. Top projects 2" over front.
  43. Wood screws to fasten top facing to front bow;  $\frac{3}{8}$ "x3".
  44. White pine bats covering top; fastened to oak bows with Number 6 screws 1 $\frac{1}{4}$ " long.
  45. Wood screws fastening cowl posts to front bow  $\frac{3}{8}$ "x6".
  46. Windshield space; must be varied to meet demands of particular windshield used; all windshields should have shatter-proof glass.
  47. Top edge of cowl.
  48. Flange of cowl, to which is bolted the front corner posts.
  49. Bolts; machine; 2- $\frac{3}{8}$ "x8"; 6- $\frac{3}{8}$ "x6".
  50. Cowl braces; same type of construction as lower body braces; specifications vary according to chassis used.
  51. Front bow; pine; 2"x10"x6 $\frac{1}{2}$ "; shaped on top like other bows; lower edges notched at both ends to receive cowl posts; vertical width at ends 3 $\frac{1}{2}$ ".
  52. Seat Boards; 1"x14"x12'2"; bolted to lower body braces; notched on ends to fit front corner posts; extends flush with outer edges of splash blocks; extends over splash boards  $\frac{1}{2}$ " to 1".
  53. Upper body braces;  $\frac{1}{4}$ "x1"x12";  $\frac{1}{4}$ " holes in ends; fastened across corners to studs and bows.
  54. Heavy building paper laid on bats before fastening top material.
  55. Top covered with 10-oz. khaki duck treated with water proofing mate-

- rial; use 30" material; extends down over top facing all around body; fastened with binding strip and upholstery nails.
56. Bows; oak; 1-5/8"x1-5/8" cut from material 68 1/2" long. Allow 12" flat space in center; fixed to allow fall of 2" from center to each side; three bows may be cut from a 2"x8" piece; seven bows besides one over cowl.
  57. Studs for sides; one for each cross sill and bow; oak; 1-5/8"x1-5/8"x41"; set on seat boards, bolted to lower body brace with two carriage bolts 3/8"x2 1/2"; fastened to siding with carriage bolts, fastened to bows and fastened at top with carriage bolts.
  58. Studs for rear end; pine; 2"x4"x57"; set to allow 18" clearance for emergency door. Bolted to rear sill with strap bolts and to rear siding and top facing with carriage bolts; emergency door must be hung to stud on right side with three strap hinges; siding on rear end should stop 1/2" to 3/4" from inner edges of rear studs to allow surface against which emergency door may close.
  59. Facings, four, pine; 1"x3"x15 1/4" to fit on outside edges of rear studs; cut to allow glass to be mounted as shown in detailed diagram.
  60. Glass panel; 21"x16 1/2" to cover space 19 1/2"x15 1/4"; may be divided into two glass panels or one glass and one 22-gauge metal panel.
  61. Glass panel in emergency door; 15"x13 1/2" to cover opening 14"x12 1/2".
  62. Metal panels in rear door; 22-gauge material.
  63. Sides and cross pieces of emergency door to be constructed similarly to service door at right front corner of body, except that regular 1" material may be used for emergency door, whereas 1-1/8" material should be used for service door.
  64. *Rear end braces*; angle iron; 1/4"x1 1/2"x13"; bolted to splash boards with two bolts extending through lower body braces on outside; bolted to two lower siding boards by means of four carriage bolts; 1/4"x1 1/4".
  65. *Straddle seat*; top board made of 2"x8", 10' long; supported by four legs each 2"x8"x8", notched in center at floor to receive regular 2"x4" set on edge; fastened to bottom of body by means of at least four strap bolts through cross sills; top board rounded on edges and sandpapered; 2"x4" under straddle seat provides foot rest for outside seats along sides.
  66. *Splash boards*; pine; 1"x14"x12'2"; sets on floor bolted to lower body braces; must be fastened securely to seat board to minimize strain.
  67. *Lower left front end brace*; see detail; bolted to front corner post, cowl post and panel.
  68. *Lower right front end brace*; see detail.
  69. *Bolts*; carriage; for fastening lower body brace to body; 4-3/8" by 1-3/4"; 1-3/8"x2 1/2"; 1-3/8"x4 1/2".
  70. *Panel piece* on which glass is to be mounted.
  71. *Stop* for holding glass in panel.
  72. Shatter-proof or plate *glass*.
  73. *Felt* or *rubber*.
  74. *Supports* for ends of floor boards; pine; 1"x4" material; bolted to front end braces right.
  75. **Materials needed for bus body.**

(a) *Lumber*

- (1) Hickory.—The corner posts should be made of the best grade of hickory.
- (2) Oak.—All cross sills, studs, bows and guard rails should be made of the best quality, straight grained, red oak.
- (3) White Pine.—Bats for top and stops for mounting glass and metal panels should be white pine.
- (4) Yellow Pine.—All other lumber used in the construction of the bus should be Number 1 yellow pine, or better. It should be absolutely free from knots of any kind.

- (5) *Galvanized Metal*.—All panels and binders should be made of 22-gauge galvanized material.
- (6) *Iron*.—Lower body braces, top body braces, and front end body braces should be made of strap iron  $\frac{1}{4}$ "x1". Where these braces die into bolts, the bolts should be  $\frac{1}{2}$ " in diameter. Iron braces should be oxyacetylene welded—not merely stuck together.
- (7) *Cloth*.—All the material used for top and curtains should be 10-oz. khaki duck treated with water proofing material. Upholstery for seats should be 8-oz. duck, painted to match interior of body.
76. *Binding Strips*.—All outside corners of the bus may be bound with 22-gauge galvanized metal extending 3" over each side. These binders should be fastened on the body under the bolts.
77. *Upholstery*.—The side seats should be upholstered with linters, cotton or better material. The best way to do this is to split 30" duck into two pieces of equal width. Fold the raw edge over  $\frac{1}{2}$ " and nail close into the corner at outer edge of seat board. A No. 4 canvas tack should be placed every two inches through the two thicknesses of duck. Fold the selvage edge and nail to the splash board close up under the front edge of the seat board. Do not nail more than 12" along the front edge at any one time. Then, beginning at the lower front corner of the seat board, pack the upholstery material under the canvas. Use the end of the hammer handle or other convenient solid piece to pack the upholstery material. It is necessary to place the material around the front edge of the board before packing it over the seat further toward the back edge. If the material is packed tightly under the duck, it will not shift or get loose.
78. *Service Door*.—The service door should be constructed to look exactly like the panel shown at the driver's left in Figure 3, with one exception. The lower panel should be made of glass to enable the driver to see the position of children to be taken on. While users state that no more glass in this panel is broken than panels along the sides of the bus, the body builder may use wire glass in this panel, if he so desires.

## Chapter 3

### PLANNING BUS ROUTES

---

#### *a. Map of the Transportation Area*

Routes should be carefully planned, showing all the bus routes for each school in the district; each principal should have on file a complete and accurate map of the bus routes of his particular school. Such a map should be mounted in the principal's office, so that it may be readily referred to by the teachers, pupils, drivers and patrons. In making this map of each new route, the principal or superintendent should go over it in advance of the opening of school.

1. Transportation maps should show the following items of information:
  - (a) The location of the schoolhouse;
  - (b) The points of the compass;
  - (c) The various bus routes should be shown in different colors as near as possible;
  - (d) Arrows should be used to indicate the direction in which each bus travels;
  - (e) Every driving hazard on the route should be carefully noted, and suggestions made for the taking care of it;
  - (f) The home of each driver should be indicated by a square with a capital "D" beside it;
  - (g) The point where the first child is picked up should be indicated by the letters "FP";
  - (h) Each house from which children are transported should be indicated by a circle at its exact location;
  - (i) All roads over which buses can be run should be indicated on the map, preferably by means of double lines;
  - (j) Each bus stop should be indicated by a triangle, and the number of children getting on at the stop indicated on the inside of the triangle;
  - (k) The superintendent or principal should prepare a schedule showing the stops and the time the bus arrives at each. Every pupil and patron, as well as the drivers, should be provided with a copy of this schedule;
  - (l) It will be helpful if the type of road surface should be shown.



b. *Time on the Road*

Bus routes should be so planned that small children will not be on the road more than one hour each way, subject to exceptions in extreme cases.

c. *Safety*

School buses should be routed from the point of view of safety, as well as expediency. Safety should never be sacrificed for speed. Ample time should be provided for the driver to cover his route at a reasonable rate of speed and arrive at the school in the morning at a time specified by the superintendent or principal.

All bridges on the route should be carefully checked by the county road engineer to see that they will support the weight of the bus. If new bridges, or improvements in the bridges, roads or safeguards for the grade crossing over which the buses travel are needed, the board of education should ask their correction of the highway department.

d. *Shelters and Waiting Stations*

It is impossible for the school bus to go by every home. In some instances children must come to the road at a place that is not near any home. In that case, a small waiting room boxed on three sides should be built.

e. *Bad Road Problems*

Nearly half of the districts of the state consider bad roads their major problem. Districts experiencing this type of trouble should take a careful survey of their district and be sure that they are operating their buses over the best roads in the district. It is very bad operating practice to route buses over roads that are sure to be impassable during stormy weather. It might be possible to make arrangements for a small car to drive over the worst part of the route and bring the pupils to the bus rather than attempt to use the bus and take a chance on being stalled.

Public transportation should not be undertaken without roads that are passable in all seasons for school buses. Road officials are usually eager to keep school bus roads passable and will cooperate to this end.

School bus drivers should report parts of road that become impassable.

f. *Routing the Transportation so that It is Satisfactory to All*

The board of education should appoint in each school community a transportation committee of from three to five persons to consider and make suggestions to patrons of the school for improving transportation service in the community. The functions of this committee shall be to make recommendation to the board of education concerning location of bus stops, requests for extensions of route on side road, and change in time schedule, etc.

g. *Determining Who is Eligible to Ride*

In determining which students should be eligible to ride in the bus, several factors must be borne in mind.

A distance of one mile or a fraction of a mile along a much traveled, paved highway may make transportation necessary for younger pupils where it would be unnecessary over even a greater distance on a less traveled roadway. Distances, weather, road conditions, age of pupils, kinds of schools attended, traffic hazards, and physical conditions of the child are all factors to be considered in providing transportation except over traffic hazard as provided here.

## Chapter 4

### AUXILIARY USES OF SCHOOL BUSES

The uses of school buses for other purposes than the transportation of children to school should be strictly limited. Nevertheless, there are some purposes for which the principal should not hesitate to use the buses. The buses may be used for any strictly educational work which takes the pupils some distance from school.

#### a. *Transportation of Athletic Teams*

One of the most difficult problems in the administration of the transportation of school pupils is the making of arrangements for caring for boys and girls who play on the athletic teams and ride the buses. Athletic teams must practice after school hours, and the buses should leave school with the children as soon as school closes. A school is never justified in holding a bus an hour or more after school to wait for a few of the pupils to practice on athletic teams. The regular schedule of the bus must be rigidly adhered to.

In transportation, as in all other school activities, it must be remembered that as important as inter-school athletics are, they are merely a means to an end and not the end in themselves. They must exist to serve the regular school, and not the school to serve them.

#### b. *Other Uses of School Buses*

Some of the other uses to which the buses could very well be put are:

1. Transporting debating teams, etc., officially representing the school to take part in contests;
2. To take children to fairs and exhibits in which they are participating;
3. To take any sick or injured child home or to medical service;
4. To transport pupils and patrons to and from programs connected with the public school service.

No school bus should be permitted to be used in this way, except with the special permission of school authorities, the bus to be driven by its regular operator, who is to be cautioned against the evils of overcrowding and speeding. It would be a good safeguard to require that the bus must be accompanied by the school principal, one of the teachers, or a member of the school board.

The school principal should remember that it will cost as much to transport pupils or patrons in the above instances as it will to transport pupils, and the buses should not be used in this way unless sufficient funds are available to pay for same.

School buses whether privately owned or publicly owned shall not be used to haul livestock, commodities, or anything that will render it unsuitable for use on short notice.

## Chapter 5

### SELECTION OF DRIVERS

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A dependable driver for every school bus is absolutely essential for the successful operation and maintenance of the buses. The best driver obtainable is none too good for school buses. Boards of education and school superintendents should be very careful in their selection of men to drive school buses.

Since the development of pupil transportation is comparatively recent, it is natural that qualifications for school bus drivers have not become uniform. There are a few standards which are generally observed throughout the United States, but practices in the different states bear no evidence of a national influence. The driver should be selected for dependability, good habits, his knowledge of the rules of the road, and his tested ability to drive a bus properly. The driver should be selected with the same care that the teachers are selected. It is never wise to put the selection of the driver on a competitive basis, with the job awarded to the lowest bidder. A salary schedule should be established, and the best qualified driver that can be secured for the salary available should be employed.

In the matter of age, there is a difference of practice. Some districts hire only mature men who have a reputation for good driving judgment. Some districts use high school boys. This is a practice that should be weighed very carefully before a person of high school age is put in charge of a bus. The reasons that are usually advanced are that these boys may be secured at a cheaper price, and as a rule, are just as good and careful drivers as old men. This, of course, depends on the individual boy.

A study made by Eddleman in his bulletin entitled, "Regulations of Pupil Transportation in the United States", indicates that a few districts in widely scattered states use high school pupils as bus drivers. This is practiced in varying degrees in different states. Most southern states, with the exception of Virginia, appear to use more high school pupil drivers than adult drivers. In the state of Washington adult operators outnumber pupil operators by six to one.

In some districts teachers are used as drivers. Arguments for and against this action may be found in almost every school district. Usually the arguments used for the teachers as drivers are: Better discipline along the route, more contact with pupils, and economy. Some of the arguments against it are: Teachers take up time and energy in truck driving that should be used for teaching. They have less time for recreation, no time for faculty meetings, and a good teacher may be a bad driver, or vice versa. All in all, it is more satisfactory to use other drivers than teachers.

#### a. *Health of Driver*

In his study, Eddleman found that such important matters as sight, hearing, hands, feet, and health have been largely disregarded in the framing of qualifications for school bus operators. An exception is found in Indiana where the State Board of Health requires that no person be employed as a driver of a school bus who is not able-bodied, nor of normal mind, or who has tuberculosis or other communicable diseases. The standards of the Department of Public Instruction of Pennsylvania require the driver to have good health and good use of both hands and both feet. Provision in many states for licensing drivers in a measure takes the place of such regulations.

#### b. *Morals*

Eddleman's study showed that the most frequently used requirement of boards of education for drivers in regard to conduct is that against the use of intoxicating liquors. The following most emphatic statement is a part of the regulations of the State Board of Education of Virginia:

No person shall be employed as a driver of a school bus about whom there is even a suggestion of a suspicion that he uses intoxicating liquors.

Almost as frequent as the drink provision come regulations against the use of profane and indecent language, and against the use of tobacco while in the bus or on the school grounds. The driver is expected to conduct himself in such a manner as to exercise a helpful influence over the children in his care.

#### c. *Standard First Aid Course*

The American National Red Cross has arranged with the Highway Commission of this State to place a sign on a standard, to be furnished by the Highway Commission, at gasoline stations, where people are trained in first aid work. They state that they will give to any or all school bus drivers of a county a course in first aid work, to the extent of 15 clock hours, without cost to the party, except for a textbook which sells for sixty cents. This course will enable any person to successfully handle many accidents, and to give first aid treatment to the pupils in his bus.

#### d. *Duties of the Driver*

The duties of the driver are set out in detail in regulations pertaining to all bus drivers and regulations pertaining to the conduct of pupils, set out in Chapter 6.

The bus drivers should be under the control of the head of the school just as the teachers are under his control. The school board and the head of the school should require reports from the drivers, and should have regular meetings with them to discuss their problems.

Should the driver live at or near the end of the route, a great saving would be effected in that the bus could start from the end of the route.

Some kind of bond for the faithful performance of the contract should be required from the driver. This is especially true when the

district contracts for the transportation. Some districts require a bond from a surety company; others require a personal bond; and some districts withhold ten per cent of the monthly salary until the end of the term as a guarantee of the successful performance of the contract.

So much hinges on the work of the driver that districts should be very exacting in their requirements.

- e. *Minimum Qualifications in the Selection of School Bus Drivers* (Requirements of the State Board of Education starred.)

The following standards might serve as minimum requirements in all districts of Kentucky for the selection of school bus drivers:

*Age*

1. No one should be employed to drive a school bus who is less than eighteen or more than fifty years of age.

*\*Health Certificate*

2. No one should be employed to drive a bus who is not able-bodied or who has a communicable disease. He must be strong enough physically to handle the bus with ease. He must have normal use of his body, as use of both hands, both feet, both eyes, and both ears. He must present a certificate from a reputable physician, after a careful examination, annually.

*Vision*

3. He must present a certificate from a reputable oculist as to his vision.

*\*Morals*

4. No person shall be employed or kept in service as a driver of a school bus who uses intoxicating liquors; he must not use tobacco while in the bus or on the school grounds; and he must refrain from the use of profane and indecent language.

*\*Character*

5. He must be thoroughly reliable, and of good depute; a person whom the children will respect, and whose actions should result in constructive influence over the pupils. He must be capable of maintaining order.

*\*Experience Test*

6. He shall satisfy the employing authority of his ability to drive a school bus by citing driving experience and by giving reliable references.

*\*License*

7. He must hold a driver's license. No one should be employed as a school bus driver who has had a driver's license revoked.

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\* State Board Requirements.

*\*Contract*

8. He must sign the driver's contract furnished by the school board, which contract covers "Regulations for Driver" furnished by school authorities.

*\*Personal Appearance*

9. Drivers should be required to keep clean and neat while operating a school bus.

*\*First Aid*

10. Bus drivers should be expected to attain a reasonable degree of efficiency in the use of first aid treatment. They should be regularly instructed concerning the best way to render first aid by some one thoroughly qualified to give instruction.

f. *Contracts*

A written agreement shall be entered into by the governing board of each school district providing pupil transportation with any person employed by such board, or contracting with such board for the transportation of pupils. Such agreement shall provide that the party contracting with the board for transportation of pupils or the driver employed by the board, as the case may be, agrees to comply with and observe all the provisions of the Motor Transportation Act, and further agrees to comply with all rules and regulations pertaining to school bus drivers and the operation of school buses prescribed by the State Board of Education and local school authorities relating to the transportation of pupils.

Every contract should include at least the following :

1. The contractual agreement ;
2. Specifications of performance.

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\* State Board Requirements.

## Chapter 6

### OPERATING RULES AND REGULATIONS

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Many districts in the state are operating their buses without any published rules. Safety of pupils, economy of operation, and the maximum realization of educational values, demand that the board of education of every school district in the state furnishing transportation adopt for the operation of all school buses definite operating rules and regulations for the guidance of bus drivers, and for the conduct of pupils. A copy of these regulations should be placed under a glass in each school bus, for the information of both pupils and drivers. Copies of these regulations should also be posted on the school bulletin board and in the truck barn, if there is one. A clause requiring the operation and enforcement of these regulations should be a part of every driver's contract.

#### a. *Regulations Pertaining to Driver*

The driver of a school bus is charged with a heavy responsibility for the safety of the children in his care. The continuance of his employment should depend on his hearty and faithful acceptance of the responsibility. The children will not be safe unless he observes the rules set forth below, which are to become a part of the bus driver's contract:

1. No one but the driver shall occupy the driver's seat.
2. Driver shall not permit any pupil to drive the bus.
3. It is the duty of the driver to enforce all regulations governing the conduct of pupils from the time the pupils enter the bus in the morning until they alight from it at the school house, and from the time they enter the bus at the school house until they alight at their regular stops.
4. Before starting on each trip, the driver must check the condition of the bus, including brakes, steering gear, lights, and frequently its general mechanical condition.
5. Drivers must observe carefully the traffic laws of the state and of the local community, and all commonly accepted "Rules of the Road".
6. When it is necessary to overtake and pass a slow moving vehicle, he must be sure no third vehicle is drawing near from any direction within 500 feet.
7. Never pass another vehicle on a curve or at the crest of a hill.
8. All drivers must slow down to 10 miles an hour and give the customary hand signal before turning left.



9. Never turn or swerve suddenly. Go slowly over bumps and rough places. Avoid jerky starts and sudden stops, especially when some passengers are standing.
10. When carrying children, do not drive faster than thirty-five miles per hour on the best concrete roads, and more slowly on gravel or dirt roads, or when required by crowded traffic, bad weather, poor roads or other conditions.
11. Driver must observe the definite limits for different parts of his route which the school authorities have set for him.
12. Driver must not take on or discharge passengers except at regular designated stops.
13. Driver must keep inside lights on at night when transporting children.
14. Driver must exercise extreme care in the loading and unloading of pupils. Pupils must not be permitted to leave their seats until the bus has stopped in the proper position; then pupils must get out of bus in proper manner, without crowding or in any way disturbing others.
15. Driver should see that no pupil is imposed upon by any other pupil or by any other person whomsoever.
16. If at any time the school has a night session, or an entertainment is given by the school or for the school, he must transport pupils and teachers to and from school without extra pay.
17. In rolling or hilly country, no bus should stop on hills within 500 feet of the top, in order to let pupils on or off.
18. Driver must not stop on curves to let pupils on or off, unless the road is visible at least 500 feet in both directions. On hard surfaced roads, where possible, no stops should be made unless the bus can stop off of the road bed.
19. Buses must come to a dead stop before crossing state and national highways, either hard surfaced or brought to standard grade, or railroad as provided by law.
20. Drivers must never operate with the clutch disengaged, except when coming to a stop.
21. The bus must not be left in gear when it is standing.
22. Driver must always bring the bus to a full stop before taking on or letting off children. Wherever possible, stop off the pavement at a place where the road may be clearly seen for several hundred yards in both directions.
23. All doors must be kept closed while the bus is in motion.
24. Driver must not leave the bus without stopping the engine and setting the brakes.
25. Driver must always signal to drivers coming up from the rear before stopping or turning.
26. Never run the bus backwards on school grounds.
27. Never operate a school bus with a trailer attached.

28. In case of accident or breakdown while the bus is hauling children, the driver must not leave the bus to go to telephone or to summon help. Send two of the patrol boys, or other responsible children to the nearest house for these purposes.
29. School buses should run at least 75 yards apart.
30. Bus driver shall pick up only those pupils designated by the principal or superintendent.
31. Under no condition shall the driver carry in his bus a load exceeding that which is prescribed by the board of education. The board of education should be advised by the manufacturer.
32. All drivers must carry a reasonably accurate watch, which must be checked by the clock at the schoolhouse. All buses must be operated by the school time.
33. No driver is to wait over two minutes for any pupil unless the pupil is observed as making an effort to meet the bus.
34. Driver must not run ahead of the schedule approved by the school authorities.
35. Unless by permission of the principal, no pupil should be permitted to leave the bus except at his regular stop.
36. Driver must not permit anyone to enter the bus who is under the influence of intoxicating liquor or drugs, or who is known to be drinking.
37. Driver must not permit a loaded weapon of any sort on the bus.
38. Driver must not permit dogs or other animals in the bus.
39. Drivers shall not haul any person who is not a pupil of the school, a teacher or an employee of the school, without the written consent of the superintendent of the school, or the board of education.
40. Bus drivers are required to report all cases of disobedience to the principal at once.
41. Gas tank must never be filled while the engine is running, or while the children are in the bus.
42. Driver must see that the bus has the required amount of gasoline, oil, water, and skid-chains on if the roads are slick, and must have the bus in position for loading at the time school is dismissed. The loading procedure designated by the principal should be observed throughout the school term, both in taking the children to school and in bringing them home.
43. Bus drivers shall be expected to keep their windshields free from dirt and ice; to change tires and repair tubes; not to run on flat tires; to drain their radiators in cold weather to keep them from freezing (unless an adequate amount of anti-freeze is used); and must not drive the bus when an inadequate amount of oil is in the crank case.

44. Bus drivers must not start on a route, or at any time transport children, when the brakes on his bus are known or thought to be loose or otherwise faulty.
45. All buses must be equipped with skid-chains and the drivers are required to use them when the roads are slippery.
46. Drivers are responsible for reporting the condition of headlights, brakes, steering apparatus, tires, emergency doors, windshield wipers, horns, speedometers, and other mechanical features affecting the safety of children on the buses they drive.
47. If anything goes wrong with any part of the bus, or if there is any disorder on the part of the pupils while the bus is in motion, *the driver must stop the bus immediately*. The bus must not be started again until the trouble is remedied.
48. Bus drivers should not make any except emergency repairs to a publicly owned school bus or its equipment, unless he be the mechanic charged with the maintenance of the bus.
49. Bus drivers should be expected to attain a reasonable degree of efficiency in the use of first aid treatment. They should be regularly instructed concerning the best way to render first aid by someone thoroughly qualified to give instruction.
50. The driver must keep his person neat and clean, and his deportment comparable to that which is expected of a teacher. He must never use tobacco in the bus and must not permit children to do so. He must under no circumstances at any time drink intoxicating liquor; a violation of this rule forfeits his contract.
51. The schedule of the bus shall be posted in the bus. Any change in the time should be reported to the parents in advance.
52. A school bus must not be used for other than school purposes without permission from the board of education.
53. Driver shall not assign his contract to any third party or employ any third party as a driver without the consent, in writing, of the principal of the school, and of the board of education.
54. No bus driver shall drive a school bus for more than ten hours in any twenty-four-hour period, and no driver should work more than twelve total hours a day, including the driving of the school bus and other work.
55. Every school bus driver should keep his bus clean, well ventilated with no drafts, and properly heated (if bus is equipped with heater), at all times.
56. Every school bus should be cleaned once a day, and washed on the inside with a disinfectant solution at least once a week during epidemics.
57. If patrols are appointed by the principal, driver must support the patrols whose job it is to help see that all children

obey the rules of safe conduct, and maintain order, both in going to and from the bus, boarding the bus and alighting, and while the bus is in motion.

58. If at any time the school has a night session or an entertainment given by the school or for the school, the driver shall transport the pupils and teachers to and from school without extra pay.
59. The driver must report to the school authorities, or to a delegated representative, each week, on the condition of the vehicle, and recommend any repairs deemed necessary.
60. Every school bus must be inspected at least once a week by competent mechanics, who will check engine, headlights, brakes, steering apparatus, tires, emergency door, windshield wipers, horn, speedometer, and other mechanical features of the car.
61. School bus drivers must make all reports required by the State Superintendent, county superintendent, the district superintendent, and the district board of education.
62. All school bus drivers must follow both the letter and the spirit of the instructions of the superintendent of schools.
63. In case it is necessary to stop the school bus on the highway because of an emergency while the bus contains children, the bus driver shall put out a student with a flag one hundred yards in front and behind the bus while stopped on the highway.

b. *Regulations for the Conduct of Pupils*

The matter of conduct in transit might well be the subject of an assembly program at the beginning of the term, and at other times deemed necessary during the year, when the pupils should be advised of the Regulations of the Board, when both pupils and drivers might be invited to make suggestions. The whole policy should be made to rest upon willing cooperation. Student government is reported as operating successfully in some places, but the writer would prefer to rest discipline upon the above mentioned basis with the driver in charge.

1. The driver is in full charge of the bus and the pupils. Pupils obey the driver cheerfully and promptly.
2. Pupils must obey and respect the orders of monitors or patrols on duty.
3. Pupils must occupy the space designated for them by the driver. Pupils in less desirable spaces may move into the more desirable spaces when the pupils occupying the latter are not in the bus.
4. Pupils must be on time; the bus cannot wait for those who are not at the bus stop at the time indicated on the schedule. This rule must be enforced in a reasonable manner. The health of the child must be cared for. Bus drivers should not leave young children who are in sight of the bus.

5. Pupils should never stand in the road while waiting for the bus.
6. Pupils must clean their feet of mud or snow before entering the bus.
7. Spitting on the floor of bus is prohibited, and anyone so doing must be reported to the principal.
8. Pupils should help driver keep the bus clean.
9. Pupils must not throw waste paper or other rubbish on the floor of bus.
10. Pupils must not mar or otherwise deface the bus.
11. Pupils should not start for school when sick or when any member of their family has a contagious disease.
12. Unnecessary conversation with the driver is prohibited when the bus is in motion.
13. In entering or leaving the bus, pupils must avoid crowding or in any way disturbing others.
14. Pupils must conduct themselves in the bus as in the classroom, except that conversation in a normal tone of voice may be carried on.
15. The use of tobacco in any form shall not be permitted on the bus.
16. Insofar as it is possible, boys and girls should sit on opposite sides of the bus.
17. The use of profane or indecent language is not permitted.
18. Windows are not to be opened without permission of the driver.
19. Pupils must not at any time extend arms or head out of the bus windows.
20. Pupils must not try to get on or off of the bus, or move about within the bus, while it is in motion.
21. Pupils shall not at any time ride on the outside of the bus.
22. When leaving bus, pupils must observe directions of patrol or driver.
23. Pupils who must cross the road after alighting from the bus, should pass in front of the bus and *not behind it*, and should not attempt to cross until bus is 500 feet away. The driver should see that the way is clear before the child is permitted to cross the road.
24. Pupils should look both ways before crossing to the opposite side of the road.
25. Throwing or snatching of hats, caps, books, dinner pails, etc., will not be permitted on the bus.
26. No pupil must leave bus without driver's consent, except at home or at school.
27. Pupils should be respectful to persons whom they pass on the routes.

28. Pupils must not be in or around the bus while on the school grounds.
29. Any damage to the bus from any cause shall be reported at once to the driver.
30. Pupils shall not leave bus on way to school or home without written permission of parent or principal.
31. Pupils not transported should walk on the side of the road to their left so they will face the traffic on that side of the road. Teachers should so instruct their pupils.

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## Chapter 7

### KEEPING UP WITH TRANSPORTATION

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#### a. *Necessity for Records*

It is necessary to keep a detailed record of the cost and the extent of the pupil transportation program in this state, if it is to be managed on an economical basis. Therefore, several record forms are proposed in this chapter.

To the inexperienced superintendent or board member, these forms may seem too elaborate. The proposed forms, however, are more simple and less extensive than those usually recommended by other state departments and by writers on the subject.

No one would attempt to operate a private business, spending a million dollars a year, with so few records. Certainly the school children and the taxpayers are entitled to as much consideration as the customers and stockholders of a private concern.

#### b. *Information Heads of Schools Must Have on File*

1. A transportation map showing the bus routes in detail;
2. A list of the names of all children eligible to transportation in new routes or in doubtful walking distance zones.
3. A schedule of the stops on each route, and the time that the bus reaches each stop (This information should be available for every parent upon request);
4. Information about each driver, his residence, telephone number, and who will substitute for him in case he is incapacitated;
5. The make and age of each bus, condition of the chassis, body and engine, load limit, repairs needed, and a list of all repairs made;
6. Cost sheet for each school-owned bus, which gives the exact items of expenditures for each bus;
7. The average number of pupils transported each day, and the number transported each month;
8. Copies of the contracts with each driver. Copies of these contracts shall be made—for the driver, for each of the schools served, and for the county superintendent;
9. Bonds of the drivers;
10. Operating Rules and Regulations;
11. Specifications for buses;
12. Monthly and annual reports of bus drivers;
13. Reports of the monthly and annual cost of transportation in each school district.

c. *The Driver's Contract*

Three forms of contract are presented in this bulletin. The first form is for use in districts which own all of their transportation equipment. The second form is for use in districts which employ one or more contractors to furnish the buses, both chassis and bodies, to transport the children to school. The third form is for use in districts which employ a contractor who furnishes his own chassis, but uses a bus body owned and furnished by the school district.

It will be noted that the operating regulations ordinarily shown in drivers' contracts are omitted from the forms shown in this bulletin, but that these forms do contain a clause providing that the driver shall conform to all regulations written into the minutes of the board of education. This procedure is similar to that followed with teachers' contracts.

d. *Bond Form*

Drivers or contractors should be required to furnish a bond for the faithful performance of their contracts. A bond of \$250.00 or more in some states is required of drivers of school district owned buses.

e. *Bus Driver's Daily and Monthly Report*

Every bus driver should be required to keep a daily and monthly record. The report form may be placed on a bulletin board in the superintendent's office, or on a clamp board in the truck barn. Most schools place this record in the superintendent's office. The count of the pupils transported each morning may be made by the bus driver or by an older pupil selected for this purpose.

The bus driver's daily and monthly report is the most important transportation record to be kept. It is the basis of budgetary requests for transportation purposes for the following school year. This record must be kept up from day to day, if it is to be accurate.

f. *Superintendent's Monthly Report to the Board of Education*

Every superintendent should summarize his bus drivers' daily and monthly transportation reports, according to the form presented. This monthly report should be submitted to the board of education at its regular monthly meeting.

g. *Superintendent's Annual Transportation Report to the Board of Education*

The superintendent of schools should make an annual transportation report to his board of education. The first section of this report should be a summary of his several monthly reports to the board and should be in the same form.

The second section of this report should consist of an inventory of all transportation equipment owned by the district, together with a statement of its condition and the probable cost of such repair or replacement as will be necessary to carry on transportation during the ensuing year.

The third section of this report should consist of a complete



transportation map of the school district and any surrounding territory which may be served, with all recommendations for revising the transportation program for the ensuing year.

h. *Record of Transportation Equipment Owned by the District*

Every school district which uses publicly owned chassis and/or bodies should keep a complete record of the description and cost of its equipment on forms similar to those presented.

i. *Explanation of Forms*

No reports should be required from the drivers and principals that are not needed. Commercial transportation companies keep a detailed system of records on their buses and drivers. They do this as a matter of business economy. It seems just as essential for a public school which is supported by public money to use every means to cut expenses and increase efficiency. Every school administrator wants to provide the best transportation possible at the least cost.

The suggested forms may seem a bit complicated, but they are as simple as they can be made to be adequate. It is not intended that any one school use all the forms here submitted. Each school should select the ones most needed for that particular situation.

The records and forms submitted may be used either under a county unit system or under a district system.

1. The driver's personnel card is especially important where several drivers are employed. It also leaves a record of various drivers for future school administration.
2. The accident report blank gets all information about accidents on a uniform blank and gets the information which may seem useless at the time, but will be vital later on.
3. If reports are made regularly on the bad spots in the roads and these reports referred to persons who can act with authority, some improvements will probably be made.
- 4, 5. Bonds for faithful performance of duty should be required of all drivers or contractors. If a personal bond is to be made, these forms are good. Other forms may do as well. A bond by a bonding company will probably be more satisfactory.
- 6, 7, 8. Contracts in written form are essential.
9. Instead of making a contract with an individual to furnish his bus and bear all expenses, the district may lease the bus and then contract with the owner as a driver. (Please note that Section 2739g-7, Kentucky Statutes, requires that the bus must be actually owned by the district before free license can be furnished for it.)
10. The bus drivers should make a daily report to the principal. These forms can be had in pads with stubs for his record.
- 11, 12. Monthly and annual reports must be made of the transportation. A good printed form helps in making these reports.

13. The record of the bus driver is here given by weeks, *although* the record is for each day.
- 14, 15, 15a. These are suitable forms for the superintendent to make monthly and annual reports of the transportation.
16. The amount of money spent each day on each bus should be kept accurately. This is a convenient form for that.
17. If repairs or replacements are to be made, some kind of an order needs to be given by the principal. If the school has its own garage, this order should go to the head mechanic; if not, it should go to the garage where the work is to be done. It is made out by the driver and approved by the principal.
18. An insurance record helps in keeping up with the expiration of policies and in distributing costs.
- 19, 20. An annual inventory and record should be made of all buses and equipment.
21. Oftentimes drivers are compelled to make emergency purchases. This form, filled out by them, is a record for the firm the supplies are purchased from and aids in accounting for expenditures. Drivers should not be permitted to purchase equipment promiscuously.
22. A record of each tire, with the upkeep, mileage, etc., will aid considerably in determining future purchases, and showing future needs.
- 23, 24. If a school has its own garage, the head mechanic needs to make daily and monthly reports to the principal.

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**DRIVER'S PERSONNEL CARD**

**Form 1**

..... Date.....  
(Family Name) (Given Name)  
Age..... Nationality..... Sex..... Married.....  
Experience driving bus..... Schooling.....  
Do you use intoxicating liquor?..... Have you ever been convicted  
of crime?..... What physical defects have you?.....  
Where were you last employed?.....  
List references: .....

**FOR SCHOOL OFFICIALS**

Date employed..... Date left employ.....  
Was driver discharged?..... If so, give reasons.....  
Describe accidents he had, giving causes.....  
Was driver satisfactory?.....

**ACCIDENT REPORT**

**Form 2**

Bus No..... School..... Driver.....  
Date....., 19..... Time..... Place.....  
Kind of accident.....  
Speed of your bus..... Speed of other vehicle.....  
Name and address of owner of other vehicle.....  
What laws were violated and by whom?.....  
License No. of other vehicle..... Operator's No. ....  
What signals were given?.....  
If at night, were lights on both vehicles lit?.....  
What, in your opinion, caused the accident?.....  
No. of students on bus when accident occurred..... Make a diagram  
on back of this blank of how the accident occurred.  
Names and addresses of other witnesses:

**PERSONAL INJURIES**

Name	Address	Nature of Injuries
------	---------	--------------------

**PROPERTY DAMAGE**

Damage to property of others.....  
Damage to your own vehicle.....  
Final Settlement: .....

**REPORT ON ROAD IN BAD CONDITION**  
Form 3

Date.....

To the Superintendent:

The following section of the road on my route is in need of immediate repairs in order to make it passable:

Location of road.....

The trouble with the road is.....

Repairs could be made by.....

Is it possible to make the route by making a short detour?.....

Are there any people near the bad part of the road who would be willing to make repairs?..... If so, who?.....

Driver

**BUS DRIVER'S DAILY REPORT**  
Form 10

Date....., 193..... Name of School .....

..... children transported No. of Bus Line .....

on Bus Line No. .... on the above date.

To School Principal:

(Stub)

I certify that I have transported..... children to school this morning over this line, and all children counted live more than two miles from the school to which they were transported. Time of arrival at ..... o'clock.

Remarks: .....

Date ....., 193.....

(Signed) .....

Driver

Note.—This report must be filed with the Principal of the School each morning.

**MONTHLY CONTRACT TRANSPORTATION REPORT**  
Form 11

Route.....

Day	Number of Students			Total Mileage	No. Round Trips	No. Loads
	A. M.	P. M.	Total			

Form will contain enough lines (20) for whole month.

**ANNUAL CONTRACT TRANSPORTATION REPORT**  
Form 12

Center or County \_\_\_\_\_, 19\_\_\_\_\_

Name of Contractor	School or Route	Total No. Carried	Total Mileage	No. Round Trips	No. Days Operated	No. Loads	Total Cost	Cost per Bus Mile	Cost per Student per Day	Cost per Pupil Mile

Form will contain enough lines for 20 routes.

**DRIVER'S DAILY RECORD**  
Form 13

Week ending \_\_\_\_\_, 193\_\_\_\_\_

Bus No. \_\_\_\_\_ School \_\_\_\_\_  
\_\_\_\_\_, Driver

	No. of Children Carried		No. of Miles Traveled Not on Regular Route	Total No. of Miles Bus Traveled	No. of Gallons Gasoline Procured	No. Quarts Oil Procured	Time You Left Going Out on Route	Time You Arrived at School	No. of Miles Traveled on Regular Route	Did You Inspect Your Truck and Report All Trouble?
	Morning Trip	Afternoon Trip								
Monday										
Tuesday										
Wednesday										
Thursday										
Friday										
Total										

**PRINCIPAL'S MONTHLY REPORT OF TRANSPORTATION**  
Form 14

By ....., Principal of ....., School No. ....  
Month ending ....., 193.....

Bus No.	Total Bus Mileage			Statistics of Operation							Expense Operation				Expense Maintained			Grand Total Expense Operation and Maintenance							
	Surfaced Road	Unsurfaced Road	Total	No. Round Trips Daily	No. Loads Daily	Total Number Carried	No. Times Not on Time	Days Operated	Gas, Gallons	Grease, Pounds	Oil, Quarts	Cost Gas	Cost Oil	Cost Grease	Cost Tires and Tubes	Battery Expense	Material		Labor	Material	Labor	Material	Labor		

Total Number Students Transported by Wagon....., Trolley....., Parents....., Other Means....., Total.....  
Total Mileage Students Transported by Wagon....., Trolley....., Parents....., Other Means....., Total.....

Remarks:

Form will contain lines for 20 buses.

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**MONTHLY REPORT OF SUPERINTENDENT OF TRANSPORTATION**  
Form 15

Dist. .... Year or Month Ending ....., 193..... County

Operation and Maintenance	Bus Numbers							Total
	No.	No.	No.	No.	No.	No.	No.	
<b>EXPENSE, OPERATION:</b>								
Gas								
Oil								
Grease								
Batteries								
Tires and Tubes								
<b>TOTAL</b>								
<b>EXPENSE, MAINTENANCE:</b>								
Labor								
Materials								
<b>TOTAL</b>								
<b>STATISTICS OF OPERATION:</b>								
Bus Mileage								
No. of Round Trips Daily								
No. of Loads Carried Daily								
<b>TOTAL NO. CARRIED</b>								
No. Times Not on Time								
Days Operated								

Total Number Students Transported by Wagon....., Trolley.....,  
Parents....., Other Means....., Total.....  
Total Cost Students Transported by Wagon....., Trolley.....,  
Parents....., Other Means....., Total.....  
Total Number Students Transported by Contract..... Total Cost.....

Form will contain spaces for 20 buses.

**ANNUAL REPORT OF SUPERINTENDENT OF TRANSPORTATION**  
Form 15a

Cost Accounts	Bus Numbers							Total
	No.	No.	No.	No.	No.	No.	No.	
<b>EXPENSE, OPERATION:</b>								
Gas								
Oil								
Grease								
Batteries								
Tires and Tubes								
TOTAL								
<b>DRIVER SERVICE:</b>								
Driver's Salary								
<b>FIXED CHARGES:</b>								
Insurance								
Bond								
Rent of Buildings								
TOTAL								
<b>DEPRECIATION:</b>								
Rolling Stock								
Repair Shop Building								
Garages								
Equipment								
TOTAL								
Interest on Investment								
<b>GRAND TOTAL ALL COST</b>								
Total Mileage								
Total Number Carried								
Number Round Trips Daily								
Number Loads Carried Daily								
Total Days Operated								
Number Times Not on Time								
Average Number Carried Daily								
Cost per Pupil per Year								
Cost per Bus Mile								
Cost per Pupil Mile								
Total Number Students Transported by Wagon....., Trolley.....								
Parents....., Other Means....., Total.....								
Total Cost Students Transported by Wagon....., Trolley.....								
Parents....., Other Means....., Total.....								
Total Number Transported by Contract....., Total Cost.....								
Total Mileage.....								
Number Contracted Buses....., Cost per Bus....., Cost per B								
Mile....., Cost per Pupil Mile.....								
Grand Total Number Transported....., Grand Total Cost.....								
Average Daily Cost per Pupil.....								
<b>REMARKS:</b>								
.....								
..... Superintendent of Transportation.								

Form will contain spaces for 20 buses.

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**DAILY LEDGER OF EXPENDITURES**

Form 16

Bus No.	Date	Item of Expenditure						Operation Expense				Maintenance Expense				Grand Total Expense Operation and Maint.				
		Material	Material	Labor, Hours	Gas, Gallons	Oil, Quarts	Grease, Pounds	Tires and Tubes	Cost Gas	Cost Oil	Cost Grease	Cost Tires and Tubes	Battery Expense	Labor	Material		Labor	Material	Labor	Material

Form will contain lines for 20 buses.

**SHOP WORK ORDER**

Form 17

Date.....

TO HEAD MECHANIC OR GARAGE:

Please make repairs on items below marked "R" and adjustments on items marked "A".

Motor	Gas System
Brakes	Transmission
Electrical System	Body
Steering System	Cooling System
Differential	Chassis
Remarks:	

Approved:

Supt. or Prin.		Driver	
Cost of Labor	Hours at	Per hour	\$
Cost of Materials		Per hour	\$
			\$
			\$
Total			\$
Date completed			Mechanic

**PARTS AND MATERIALS USED**

Description of Parts	Number	Unit Cost	Total Cost

(Note.—"Parts and Materials Used" should be printed on back of above "Work Order".)





## DAILY RECORD OF HEAD MECHANIC

Form 23

Date.....

Work Done	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.
<b>ADJUSTING:</b>												
Valves Ground												
Wheels												
Brakes												
Clutch												
Springs												
<b>CLEANING:</b>												
Carbon												
Motor												
Body												
<b>GREASING:</b>												
Universal Joints												
Transmission												
Steering Gear, Springs												
Fan, Clutch, Pump, Jackshaft												
<b>REPAIRS:</b>												
<b>NEW PARTS:</b>												
Gallons Gas Issued												
Quarts Oil Issued												
Pounds Grease Issued												
Hours of Labor												
Supplies												
Cost Gasoline												
Cost Oil												
Cost Grease												
Cost Labor												
Cost Supplies												
<b>TOTAL COST</b>												

Form will contain columns for 20 buses.

**MONTHLY REPORT OF HEAD MECHANIC**  
Form 24

For Month Ending....., 193.....

Work Done	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.	Bus No.
<b>ADJUSTING:</b>												
Valves Ground												
Wheels												
Brakes												
Clutch												
Springs												
<b>CLEANING:</b>												
Universal Joints												
Transmission												
Steering Gear, Springs												
Fan, Clutch, Pump, Jackshaft												
<b>REPAIRS:</b>												
<b>NEW PARTS:</b>												
Gallons Gas Issued												
Quarts Oil Issued												
Pounds Grease Issued												
Hours of Labor												
Supplies												
Cost Gasoline												
Cost Oil												
Cost Grease												
Cost Labor												
Cost Supplies												
<b>TOTAL COST</b>												

Total Cost Equipment..... Supplies..... Total.....

.....  
Head Mechanic

Form will contain columns for 20 buses.

## Chapter 8

### COST OF TRANSPORTATION

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#### a. *Suggestions for Increasing the Efficiency of Transportation*

Districts should keep a system of records which would enable them to know exactly what their transportation costs them, what it has cost them, and thereby have a basis for cutting down the costs of transportation. Before any progress can be made in correcting costs, you must first find out where the money is being spent.

#### b. *Garages*

Every school-owned bus should be provided with a shelter and the bus kept in it every night, during school hours every day, and during the vacations. If the school has its own garage, arrangements must be made to keep all supplies and equipment in a place where they will be free from thefts or pilferage.

#### c. *Unsafe Vehicles Must be Discontinued from Use*

In no case shall any school bus, reported unsafe by the driver, be continued in use for transporting pupils until examined, and, if necessary, repaired, and certified by a competent mechanic to be safe for such use.

#### d. *Should Size of Load Effect Costs?*

Bus routes should be so planned that each bus will be loaded nearly to capacity. On short routes the cost per pupil is almost prohibitive. One bus can easily make two short routes, thus decreasing the per capita cost. If one district has elementary schools in connection with the high school, and transportation must be provided for both, the same bus that transports pupils to the elementary schools should take the high school pupils from the elementary schools to high school. If one bus accommodates both the elementary school and the high school, the elementary school should open each morning earlier than the high school, so that the pupils brought in on the bus would not have to wait at school very long with nothing to do. The elementary school should also close later in the afternoon.

It is more economical to use one extra large bus on a route than two medium sized buses, if there are enough pupils to justify it, and the roads are in such condition that a large bus can travel them.

#### e. *Equipment Wearing Out*

School authorities must recognize that sooner or later buses will wear out and will have to be replaced. To that end, a certain sum should be set aside each mile the bus is operated in order that equipment may be replaced when it is no longer serviceable.

In figuring the depreciation on a bus, it is a little easier to allow so much a mile. In figuring the mileage, all miles operated must be included, whether empty or loaded. All routes in the district may be measured by driving a car with an accurate speedometer over all the routes. These measurements should be used for the basis of figuring depreciation. The depreciation allowed should be enough so that at the end of *five years*, there will be enough money on hand to replace the bus. With buses operating a hundred miles or more a day, a cent and a half per mile will replace the bus in five years. For shorter routes, two cents a mile will replace the equipment in the allotted time of five years.

f. *Computing the Cost*

With the record of pupil miles available, it is possible to figure exactly what it costs to haul one pupil one mile. The following example may better illustrate the keeping of pupil miles:

A bus goes empty from town, or the garage, to the beginning of the route. The route is ten miles long, so you have ten miles of operating cost to be charged up to the bus. At the beginning of the route say you have three pupils board the bus to ride to school. As they will ride the entire ten miles to school, you will have thirty passenger miles. Nine miles from school, say two more pupils board the bus. This makes eighteen additional passenger miles, or a total of forty-eight passenger miles. Assuming the bus had to be run twenty miles, ten out and ten back, and that the cost is fifteen cents a mile, you would have a cost of \$3.00 for rendering this service. Now to find what it is costing you per pupil mile to render this service, you divide the total number of pupil miles into the total cost of performing the service, and in that way find the cost is \$.0625 per pupil mile. In other words, it is costing the district six cents and two and a half mills to haul one pupil one mile on this route.

With this information available on all routes, it is then possible to tell which route is operated the cheapest and which costs the most. If all districts would cooperate, it would be possible to tell how costs in one district compare with costs in another.

Bear in mind that a lump sum in one district may be lower than the lump sum for transportation in another district, yet in the first instance transportation of pupils may be a costly performance when figured on a basis of pupil miles. The second district, with a seemingly higher cost than the first, really is transporting pupils cheaper when figured on the basis of the number of pupils handled by the district.

g. *Factors Determining the Cost*

Every school board when contemplating a system of transportation wants to know, and rightly, what it will cost. Very little information is available at present to indicate just what the transportation should cost. The cost will vary from community to community, and from year to year in the same community. With a better system of

accounting for transportation costs, the costs will become more standardized. The following are suggested as factors which determine the cost of transportation:

1. Supply of bus drivers;
2. Density of school population;
3. Condition of the roads;
4. Local economic conditions;
5. Organization of bus routes;
6. Method of transportation.

#### h. *A Regular Program of Maintenance*

Too few schools have set up a regular program of maintenance. As a result, the equipment in many districts is being operated in very poor condition and is subject to unusual wear.

There is evidence everywhere that districts do not exchange ideas on transportation or maintenance. Rather there is a tendency to ridicule what the other districts are doing. Districts should not do this, but should get together and exchange ideas and use the best from other districts. This would tend to make all phases of transportation much more uniform than they are at present.

Three plans of maintenance may be noted on visits to various schools. Each is quite different from the other and seems to be a product of the district's attempt to solve its own maintenance program.

##### 1. One-Man Maintenance Program:

In this particular district a prominent citizen owned a garage. He was also a very good mechanic. He took great pains in keeping the buses in the best of condition. He purchased all the gasoline, oil and grease. He did all the regular work. He looked over the motors and bodies each day. The board acted entirely upon his recommendations. Due to this man's efforts, the operating costs were surprisingly low and fairly accurate.

##### 2. Driver-Boss Plan of Maintenance:

In this district, one driver was hired, not only for his driving ability but for his mechanical ability as well. He was given the title of driver-boss, having charge of the other drivers and the checking of the equipment. He could not buy anything but minor repair parts without the board's permission. This sometimes resulted in delay in the maintenance program.

##### 3. Putting the Repair Work Up for Bid:

Another district placed the work of overhauling and inspection up for bid. All the garages in the town bid on the work. The lowest bidder was given the work. There was nothing regular about this work, however, as bids were posted only after a bus had actually broken down.

##### 4. Recommended Plan:

After looking over the results of surveys in a good many states, and carefully checking methods of commercial companies, it is the



opinion that the best plan to follow when a school has a minimum of ten to twelve buses, is that in which a mechanic is hired by the district to take care of the buses. He should be on the payroll by the month the year round. Such a mechanic should be required to clean and check each bus each day. A supply of paint should be on hand at all times in order that the paint on the buses may be kept up. During the vacation months, a program of general inspection and overhauling should be undertaken. In this way equipment is in good condition all the time and will tend to run longer. As a result, over a long period of time the cost of operation will be cheaper than it is likely to be when operating under any of the three plans suggested.

#### 5. Repairs:

If a school operates as many as ten buses, it can afford to install equipment and make its own repairs. In that case one driver should be employed who is an expert mechanic and should be held responsible for all repairs on the buses. He can make the regular inspections of the buses, oil them regularly, paint them when needed, patch tires, keep them filled with gas and oil, and make all repairs needed. With the coming of the County Unit Plan, this will probably be done on a county basis. Two or more school districts might do this on a cooperative basis. In this way all supplies for the buses may be bought in wholesale lots.

##### i. *Costs in Other States*

A number of studies have been made of the comparative costs of the two plans of transportation—district ownership and the contract system. The findings have in most instances revealed a lower cost for district-owned buses. In Michigan for 1930-31 the average annual cost per pupil transported by privately-owned conveyances was \$37.92, while the cost with district-owned buses was \$19.29. For 1931-32 a much smaller difference was found in Minnesota. Using the per child-mile-day unit the district-owned cost was \$.057 and the privately-owned cost was \$.064.

In 1929-30 the average cost per pupil per mile in Arkansas was "one cent for school-owned buses and one and one-half cents for transportation under contract." In Utah Lambert found the district-owned cost per pupil mile was \$.0093 and the privately-owned cost was \$.0169.

In Arkansas it will also be noted that the school-owned buses accommodated on the average 9.4 more pupils per bus and traveled on the average 1.2 miles per route more than the buses under contract. The average cost per pupil per mile was eleven cents less per month with school-owned buses than with buses contracted to individuals. This includes an allowance of twenty per cent per year for depreciation on school-owned buses. It will be noted from the above that the cost is less with school-owned buses in every size bus in Arkansas.

In Arkansas the average cost per pupil, per mile, per month, is over twice as high, on the average, for buses that transport less than twenty pupils as for buses that transport more than that num-

ber. This would seem to indicate that some of the bus routes in Arkansas are too short and that too few pupils are transported per bus.

The average salary for drivers for school-owned buses was \$27.90 a month, ranging from \$10 a month to \$75 a month.

The average upkeep per month on school-owned buses, including gasoline, oil, tires, replacements, and repairs, is \$26.67, ranging from \$5.00 per month to \$79.20 per month.

The average purchase price of the school-owned buses is \$925, and the average depreciation per month (20 per cent per year) is \$23.37, considering that all the depreciation for the entire year takes place in eight months. The average cost of buses contracted to individuals is \$81.20 per month. The average cost of school-owned buses per month, including depreciation, is \$77.54.

In Michigan for 1926-27, the average net annual cost per pupil was \$20.81 for privately-owned buses and \$13.12 for school-owned buses. In Arkansas it is \$21.36 for privately-owned buses and \$10.94 for school-owned buses. In North Carolina the cost for all kinds of transportation was \$10.44 per pupil per year. The reason that the per capita cost is less in North Carolina is probably because they transport so many more pupils than does Arkansas.

In New York the average cost per pupil per mile for 1927-28 was \$.014. In Arkansas it was \$.010 for school-owned buses and \$.015 for buses under contract. The average for Florida on the same basis was \$.0094, or considerably less than for Arkansas or New York.

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