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**SCHOOL TRIP SAFETY
AND URBAN PLAY AREAS**

FHWA-RD-75-109



volume VI

guidelines for planning school bus routing and scheduling



U.S. DEPARTMENT OF TRANSPORTATION • Federal Highway Administration

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16. Abstract The purpose of the School Trip Safety and Urban Play Areas research project was to develop guidelines for the protection of young pedestrians (5 to 14 yrs.) walking to and from school. The other six volumes produced under this project are: Volume I - Executive Summary Volume II - Student and Driver Perception of School Trip Safety and Traffic Control Devices Volume III - A Survey of the Characteristics of the Urban Play Street Volume IV - An Analysis of Daylight Savings Time-Related Student Pedestrian Safety Problems and Countermeasures Volume V - Guidelines for the Development of Safe Route Maps for the School Walking Trip Volume VII - Guidelines for the Creation and Operation of Urban Play Streets This document presents a set of procedures for planning and implementing safe school bus routing and scheduling, based on interviews with responsible school officials and traffic engineers and a review and synthesis of procedures used throughout the United States. School officials, traffic engineers, parents, police, and children share the responsibility for providing safe, efficient, and economical school transportation. Consequently, this guidebook is designed to demonstrate the roles and inputs of those persons involved in the process of providing safe school transportation programs.					
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PREFACE

We appreciate the numerous suggestions we received from school and safety officials throughout the country. The safety of the young pedestrian walking to and getting on and off the school bus is not the concern of the traffic engineer, the school system safety representative, the principal, the traffic safety expert, the principal, the crossing guard, the bus driver, the parent, the passing motorist, or the students. . .alone! *It is the job and should be the concern of each and everyone of them and us!*

We hope that this document will help you in improving school bus routing and, in that way, in making the students' walking trip to the school bus safer.

The Authors
Falls Church, Virginia
December 1974

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INTRODUCTION

Background

For many years, the people in the United States have accepted the principle that it is the responsibility of the state to afford every child the opportunity for an education. Some states discharged this responsibility through the establishment of small schools which were easily accessible to the pupils. Throughout our history, the demands for schools to broaden their educational programs increased. The small schools eventually could no longer meet their educational responsibilities. A movement toward larger schools was then instituted. The larger schools made necessary the transportation of pupils from large areas into a single school. With the improvement of roads and transportation equipment, the consolidation of small schools was accelerated. In recent years, needs for additional classroom space increased with a growing school-age population. Extensive demands were placed on the educational system at all levels. The reorganization of schools, the extension of transportation services for rural, urban, and suburban students, and provisions for special transportation for the exceptional students (special education students) have resulted in the transportation of pupils becoming a large, complex, and important function of the public school system.

There is a primary question which must be answered by each school transportation administration. That question is as follows: Under what circumstances should a student be transported? In most cases, the answer to this question is defined in terms of distance or safety hazards along a walking route.

With respect to which pupils should be transported, policies will usually say something like unless road or other conditions shall make it inadvisable to do so, school busses shall be routed on state-maintained highways. The school bus shall pass within (distance varies from area to area) of the residence of each pupil who lives (distance varies) or more from the school to which the pupil is assigned. Transportation is not required for any pupil living within (distance varies) of the school in which the student is enrolled.¹

The problem of fixing a walking distance for pupils is a relative one which cannot have a common single answer. The age and physical condition of the pupils, the climate and weather, the type of neighborhood or country through which the student must walk, traffic hazards, and the length of the pupil's ride after his walk to the bus are just a few of the factors which affect the answer to the reasonable walking distance question. Walking distance criteria is one of many

¹Pupil transportation in North Carolina April, 1973.

complex factors and is used for illustrative purposes only. The application of a single standard for walking distance, bus stop location, time in transit, etc. in an area as small as a district will cause a hardship in some cases. Therefore, flexible standards must be created. The transportation plan must be able to respond to exceptions to any standards that are created.

Purpose and Scope

The material in this publication has been compiled from a literature review consisting of regulations, laws, guidelines, and policies from forty states and two U.S. possessions, as well as from information received through interviews with school principals, transportation administrators, and personnel in the states of Massachusetts, Maryland, New York, and Virginia.^{1,2}

Transportation planning, school bus routing, the selection of criteria for school bus stops, the utilization of busses, etc. is an extremely complex subject that relates to *two primary areas of consideration: safety and allocation of available funding*. The table on the following page indicates those areas where states have provided written information for the conduct of their pupil transportation programs. The intent is to show that not only are the state and local approaches diverse, but the general guidelines available reflect a variety of philosophies and concerns.

Each year, approximately 500 children are killed and 11,000 are injured walking to and from school.³ These figures are based on accidents involving school age children during school hours Monday through Friday and during the months when school is in session.

Each year some 300,000 U.S. school busses travel two and one-half billion miles transporting some 21 million students. In 1972, 150 school busses were involved in fatal accidents in which 100 pupils were killed. In 1973 the figures rose: 240 school busses were involved in 125 pupil fatalities. Sixty-five of the 1972 accidents (60 of the 1973 accidents) involved young pedestrians approaching or leaving a loading zone. During both 1972 and 1973, 45,000 school busses were involved in accidents resulting in over 4,000 student injuries (4,500 in 1972; 4,200 in 1973).^{4,5} Safer, more comprehensive, planning, both in the area of the walking trip to school and in school transportation programs, can help to reduce the frequency of accidents.

¹Massachusetts State Department of Education, undated.

²New York State Department of Education, 1972.

³American Automobile Association, 1968.

⁴National Safety Council, 1973.

⁵National Safety Council, 1974.

Table 1

[illegible]

Inquiries were sent to 50 states and several U.S. possessions requesting printed literature describing school bus routing guidelines. This table represents the response to that inquiry. The presence of a dot in a cell represents information mentioned in the literature of a specific state.

Table 1 (Continued)

[illegible]

The guidelines have been compiled to aid school personnel in developing safe, efficient, and economical bus transportation. These programs should be used in conjunction with educational programs which train the students to use safe pedestrian practices. The guidelines will not cover vehicular safety features, school bus driver training, purchasing of school busses, or school bus specifications. The guidebook will cover the process of planning school bus routing and scheduling (see Figure 1). The planning process is divided into the following seven tasks:

1. Determination of Transportation Needs.
2. Preparation of School District Map.
3. Determination of Hazards.
4. Development of Criteria for Routes and Schedules.
5. Development of Routes and Schedules.
6. Evaluation of Routing and Scheduling.
7. Modification of Routing and Scheduling.

Each task represents a separate section in the guidebook and covers four areas. The areas covered are:

1. The objective of the task.
2. Information items concerning the task.
3. Procedures for accomplishing the task.
4. Suggestions for the preparation of a policy statement that reflects the planning accomplished in the task.

The objective of the task is presented as a specific statement denoting a particular end to be reached or achieved by the task. Information is then given to define or explain technical details related to the task. One or more alternative procedures for accomplishing the task are presented next. Finally, we suggest how the user may prepare school policy statements that best reflect his particular set of needs and constraints.

Written policy statements are recommended as the means of communicating the school transportation plan to those who will implement it. Therefore, the preparation of the policy statements is a crucial part of the total school transportation planning process. The following comments are offered to assist in the preparation of policy statements for each task.

Task Policy Statement

The policy statement should include information and policies concerning route modification, termination, parental complaints, driver complaints, addition of new routes, route extensions, and route reviews. The policy statement may read as follows: All routes shall be reviewed formally on an annual basis while specific cases where complaints are heard or problems appear to exist shall be reviewed more frequently. *The review process must be operating throughout.*

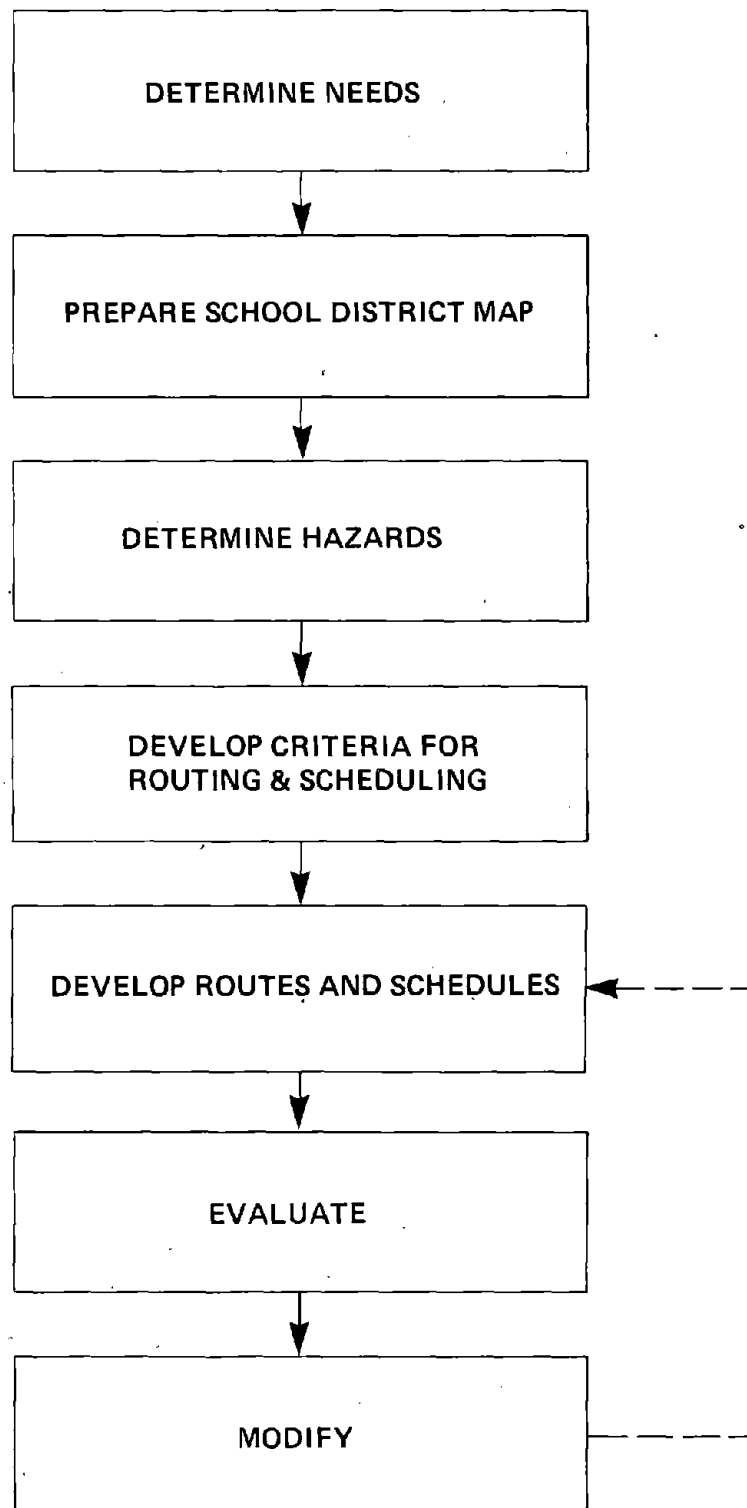


Figure 1. The Process of Planning School Bus Routing and Scheduling

Policy Statement Preparation. When the tasks of the planning process have been completed, the policy statements generated in each task must be consolidated and formalized. The following suggested procedure was developed by the Education Department of the State of Massachusetts.

- Step 1. The administrator and most concerned staff members may organize an initial draft which contains the task policy statements developed by the planning group. Some basic rules may also be formulated to guide the reviewers in formalizing the policy.
- Step 2. The initial draft should be circulated to all interested groups and individuals for review and criticism. The policy should contain a section requiring a periodical review and evaluation by the administrator and the school committee in order that it may reflect the current conditions and the needs of the district (see Tasks 6 and 7).
- Step 3. The draft resulting from Step 2 should be prepared and distributed. A meeting should be held to make final adjustments in the draft to be presented to the school committee. Discussions may indicate the need for joint meetings with staff groups or for more work by the preparing groups.
- Step 4. Legal counsel should review the final policy statements and they should be voted upon by the school committee.
- Step 5. Copies of the school policy should be distributed to the staff, news media, and interested citizens. If the policy has undergone major renovations or is new to the school district, then parental distribution may be considered.
- Step 6. A meeting should be held with the school department staff to explain the policy.

Policy Statement Considerations

1. Statements should be brief and to the point.
2. Statements should be consistent.
3. Policies should be written by groups of knowledgeable, concerned people.
4. Policies should be reviewed and updated periodically.
5. References concerning laws and applicable regulations should be current.
6. Policies should change with changing educational philosophies.
7. Policy statements should be clearly stated and easily understandable.

8. Policies should be understood by all personnel concerned with any aspect of the administration of school transportation.

Policy Statement Format

The policy statement should have the following format:

1. Index (for easy reference).
2. Philosophy of transportation policy.
3. Areas of responsibility.
4. Basic administrative practices.
5. References to the appropriate laws and rules of the department of education.
6. Glossary of terms (if applicable).

Legal Requirements

The legal requirements for school busses, signing, bus standards, and legal driving procedures vary from state to state. The legal requirements, usually provide guidance for school bus safety.

It is assumed, throughout these guidelines that the legal requirements regarding school busses are being used as guidelines and the bussing system is being planned and operated in accordance with federal and local laws.

Task 1

Determination of Transportation Needs

Objective

Before any transportation planning can be initiated, it is necessary to determine the extent to which service is needed. The objective of this task is to inventory pupil demand, environmental conditions, and available resources in order to form a basis for the transportation plan.

Transportation Needs Survey. New York State has developed an outline for a transportation needs survey which is being followed by many states. This outline suggests that a survey should provide the following information:

1. Locations of pupils' homes. This can be determined from school census data.
2. Relationship of pupil's home to his school. The distances involved must be known if the estimate of transportation needs is to be accurate. A map containing a precise scale (in terms of distance), may be utilized for this purpose.
3. Grade levels of pupils. This information may be obtained from the school census or the administrative staff. Many school policies set shorter walking distance limits for younger children.
4. Number of preschool children. This information will allow the transportation people to plan for future transportation needs. This information is usually available from the school census.
5. Conditions of roads in the district. The transportation system must operate on roads that are safe and usable year around. The terrain of the district should also be considered since it may affect the economics of bus operations. This information may be obtained from highway departments and local and state traffic engineering departments.
6. *Traffic and other walking hazards. These hazards may include rush hour traffic, inclement weather conditions, high accident locations, etc. In some areas, such hazards cause students who would normally walk to be transported. Other areas solve these problems by constructing more efficient sidewalks, drainage, or additional traffic control devices. These alternatives should be explored. The traffic engineering agencies, highway departments, planning agencies, police precincts, and conduct of on-the-spot investigations are recommended sources of information.*

7. Attitudes of parents. The expectations and viewpoints of the parents of the students should be actively solicited in reference to such issues as: bus stop locations, walking distance, and time spent on a bus. Their views should have an impact on the school policy and the standards which it will set. In some areas, the school principals and PTAs are familiar with the parental attitudes and can provide this type of information. Other areas utilize questionnaires or meetings with parents to obtain their views. The level of service desired by parents can be provided only when financial support is adequate and available.

8. Student health factors. This information is needed to determine the extent of special education transportation required. This information may be obtained from school medical records or lists may be prepared by the principals of each school or by the parents of the students.

9. Funds available for school transportation purposes. Not only should the current budget be examined, but also future budgets and other sources of income should be taken into consideration.

10. Approximate number of routes required. The following formula should assist in providing the necessary information:

Step 1. Find the total number of children to be transported.

Step 2. Find the average number of seats available per bus in the fleet.

Step 3. Divide the number of children to be transported by the average number of seats per bus in the fleet.¹

The number derived from this equation will be the approximate number of routes which the present bus fleet can accommodate. (Remember that the above number of routes is approximate. The exact number of routes will be determined in Task 5.)

Other Sources of Information

There are several channels open to the transportation planners, depending upon the responsibilities delegated to each person in the education system organization. The principals may be responsible for obtaining information items such as health, residence, grade levels, etc.

¹Schrader, Werner, & Clayton, 1973.

Another possibility, already mentioned, is the school census, and the planning division of the school board at the county or local level. The most important idea is to solicit information from as many concerned, responsible, agencies or persons as possible.

Some counties and districts have a computer program which prints out each student's name, address, phone number, school registration, health, and eligibility for school transportation. The inputs for the computer program come from the previously mentioned sources, e.g., school principals, bus drivers, school census, etc.

Maps, colored pins, markers, and survey forms are usually the tools needed for completion of this task.

Procedures for Obtaining the Information Required to Determine Transportation Needs

- Step 1. Decide how the information will be gathered. Some areas use interviews, questionnaires, etc. in gathering the necessary information.
- Step 2. Create a work plan and schedule for collecting the necessary data. The schedule should display the techniques to be utilized, the time required to obtain the information, and the deadline for finding the necessary data.
- Step 3. Obtain the required information.

Task Policy Statement

The policy statement should provide a framework for the type of information necessary to determine the transportation needs of the district. A means of collecting this information should also be suggested in the policy statement.

Task 2

Preparation of School District Map

Objective

The single most important tool utilized in transportation planning is an adequate map of the school district. The objective of preparing the map should be to display pictorially the information obtained in the transportation needs survey upon which the planning process is based. This map will be used to plot residences, bus stops, bus routes, and hazards as well as to aid in the establishment of bus routes and schedules.

Map Requirements

1. The map must be current.
2. The map must be to scale.
3. The scale should be large, generally 2 to 8 inches per mile, depending upon the type of district one is dealing with. Two inches to the mile may be sufficient in sparsely populated areas; however, 8 inches per mile would be more appropriate in densely populated areas.
4. The map must indicate all major manmade and natural physical features, including planned as well as present features.
5. *All* roads should be clearly identified.
6. District boundaries and school boundaries should be delineated on the map.
7. Houses and addresses may be added if desired.

Procedures

Step 1 Obtain map.

Maps may be secured from the following agencies:

1. Local or county planning agencies.
2. Bureau of Highway Planning.
3. County engineering departments.
4. State highway departments.
5. Map Information Office, United States Geological Survey, Washington, D.C.
6. March of Dimes, other charitable organizations, etc.

Step 2. Enlarge map to desired scale.

Sources available to enlarge basic maps to the proper scale are:

1. Blueprint companies.
2. Highway departments.
3. Printing firms.

In drawing up a school district map, allow up to one mile into the abutting school districts. A tracing paper overlay will aid in keeping the map in good condition.

Step 3. Add the following information to the map:

1. School boundaries.
2. School locations.
3. Pupil residences.
4. Existing construction.

The intent here is to get some major considerations on a map without adding so much information that the map becomes cluttered and thus confusing. For this reason, it is suggested that a notebook be used to record some of the information that is obtained in the process of developing safe school routing.

The information in the school map notebook should include:

1. *Street size or a street size coding scheme to aid in making decisions related to safe stopping and turning locations.*
2. Types of roadways, i.e., expressway, arterial, collector, local, one-way, etc. (this can be obtained from state and local traffic engineering personnel).
3. Proposed future construction.
4. Varying road conditions (i.e., floods during heavy rains, etc.).
5. Hazards not previously noted (i.e., heavy traffic volumes between 7 and 8 a.m., large sections of sidewalk not completed, roadway only place to walk after snowplow has been used, etc.).

6. Future developments and plans.
7. Other miscellaneous information gathered in the development of the Needs Survey (Task 1).

Step 4. Locate pupils to be transported.

Locate and mark on the map the residences and/or residential areas of all pupils to be transported. The following items may be helpful in accomplishing this step.

1. Colored pins.
2. Colored markers.
3. Straight edge.
4. Large work space for map.
5. All available maps.

Task Policy Statement

The policy statement should require that this task be carried out in its entirety. Some policy statements merely note that a map with a large scale should be utilized in the planning process. Although this task seems a bit overwhelming at this point, it can save a great deal of time in the future and thus require fewer unexpected route changes.

Task 3

Determination of Hazards

Objective

Safety is said to be a judgmental phenomenon. However, there are certain elements or trouble areas which seem common to situations many school transportation people consider hazardous. Since the safety of our children is of the utmost priority in transportation planning, one must consider many elements of the streets on which the children walk either to school or to a bus stop.

Before one can actually route a bus or establish bus stops or even establish a comprehensive school policy, it is important that one be aware of the existing hazards and potential hazards which may develop as the school year progresses.

The objective of this task is to determine and locate the potential pedestrian and vehicular hazards which pose threats to school age pedestrians and/or school busses.

Typical Hazards

- 1. Construction sites may be considered dangerous. Large trucks are constantly executing maneuvers which children of certain ages do not anticipate. In some cases, children must walk in the roadway to avoid the construction area, thereby exposing themselves to traffic hazards.*
- 2. Heavy traffic volumes on streets and at intersections may pose a serious walking hazard in that the number of adequate gaps in traffic during which pedestrians may cross the street safely is greatly reduced. The local traffic engineer should be called upon to determine the minimum length (in seconds) of a gap in traffic which will permit a majority (85 percent) of the young pedestrians to cross a roadway of specified width safely.**
- 3. Speed limits in excess of 25 mph may be considered walking hazards (at 25 mph, under wet conditions, the average stopping distance is 110 feet).*
- 4. Poor or no sidewalks may be walking hazards.*
- 5. Streets without sidewalks are walking hazards.*
- 6. Vehicular overpasses and underpasses may pose walking hazards.*

*Traffic volumes and speeds may be obtained from local traffic engineering offices. When this information does not exist or conditions change, new traffic counts should be requested.

7. *Areas having poor visibility are hazardous locations, especially areas which have early morning fog frequently.*
8. *High crime areas may be considered hazardous.*
9. *High volume intersections may be considered hazardous.*
10. *Restricted driver and pedestrian sight distances are walking hazards. In rural areas, where vehicle speeds are high and curves, trees, hills, etc. restrict sight distances, walking along the roadway is especially dangerous. See page 19, Task 5, Bus Stops, Visibility, for a discussion of stopping distance.*
11. *On street parking areas (potential dartout situations) may be hazardous.*
12. *Other specific hazards (railroad crossings, unique situations, etc.).*

Considerations

The following are the types of considerations used by Montgomery County, Maryland,* and might be considered in making decisions relative to the hazards listed above:

1. *The school and pupil's home must work together to provide the necessary instruction to ensure safe walking habits. Although parents teach their children safe practices from the day they first start walking, schools are expected to supplement safe walking instructions while en route to and from school.*
2. *Sidewalks and/or curbs should be provided in order that children may walk on a path separated from traffic lanes.*
3. *The absence of buffer strips between a sidewalk and the traveled portion of the roadway, telephone poles, or signs on the sidewalk shall be considered, recognizing that they do not automatically constitute a safety hazard.*
4. *The transportation staff, in cooperation with the police safety coordinator, shall work diligently to make certain that in every instance involving school children the need for safe walkways is made clear to the responsible county and state agencies, and, in particular, that walkways are built in areas of heavy traffic, preferably with buffer strips or guardrails.*

*Although these guides are those of a single county, they appear to be representative of those employed by other counties across the country.

5. Snow accumulation on sidewalks is not considered sufficient cause for providing transportation unless the area being serviced is regularly snow-covered. *When snow causes conditions which are generally considered unsafe, school may be cancelled or the starting time delayed until heavy traffic has subsided. Large snow accumulations on sidewalks or shoulders may cause students to walk in the roadway. This is a hazard and must be considered.*

6. *Crossing guards should be employed to assist children in crossing intersections because it is usually more economical to utilize crossing guards than to provide bus transportation.*

7. Secondary students are expected to be able to cross all controlled intersections safely.

8. Children are expected to be able to walk to centralized pickup points to await the arrival of school busses.

9. Children should be encouraged not to walk across private property en route to or from school.

Procedure

Step 1. Study or survey the areas within the school district by observing hazards and speaking to policemen, traffic engineers, developers, parents, students, planners, or anyone else who is knowledgeable about local hazards. The information gathered in Task 2 should provide most of the information required.

Step 2. Plot all hazards on the map prepared in Task 2 and note details concerning the hazards in the map notebook.

Task Policy Statement

The policy statement for this task should indicate the types and locations of the hazards – that exist as well as procedures which should be followed to cope with them.

Task 4

Development of Criteria for Routes and Schedules

Objective

The objective of this task is to establish criteria which will guide the school transportation planners in developing safe routes and efficient schedules.

Procedures

Step 1. Specify the maximum distance that a student should be expected to walk in order to get to school. This distance should vary with grade level, walking conditions, physical condition of the student, type of area to be walked through, number of streets to be crossed, etc. The following are examples of maximum walking distances to school: $\frac{3}{4}$ mile for elementary school, 1 mile for junior high, and $1\frac{1}{2}$ miles for high school.

Step 2. Set a maximum time which a student should be expected to spend in transit. This time must include the time the student leaves his doorstep until he enters the school. *This limit may be set higher or lower depending on age, grade level, and health.* Most areas usually set a maximum one-way limit of 30 to 45 minutes in transit. The total time the student spends en route to school, at school, and returning from school should be considered in setting this limit. *Students should not be required to spend so much time in transit that when they reach their homes in the afternoon, they are fatigued.*

Step 3. Set the maximum distance a student can be expected to walk to his or her bus stop. This distance should be less than the maximum distance a child is expected to walk to school since one must consider that the student's walk to the bus stop is only a fragment of his trip to school. This distance should be determined giving consideration to transit time. In some areas, this distance works out to be approximately one-half to one-fourth of the distance a student is expected to walk to school. In many areas, the *average walk to the bus stop is from 2.5 to 3 blocks. Consideration must be given to the walking conditions within the area in which children are to be transported.*

Step 4. Determine the minimum distance between bus stops. Several problems arise when bus stop locations are too close together. Students will use stops to which they have not been assigned. *Clowning around between the stops may occur. When the bus is servicing these stops, it requires long boarding times. This may cause impatient drivers of other vehicles to pass the school bus.* Some areas set a 2-block or $\frac{2}{10}$ of a mile minimum distance between stops to avoid these problems.

Step 5. Determine the maximum number of students to be picked up at a single stop. *The larger the school bus riding population per bus stop, the higher the likelihood of clowning around, property damage, and danger to the students at the stop. Some areas set this limit at 10 to 20 students per stop with exceptions being staging areas* where none of the previously mentioned hazards exist.* In areas where the bus stop is situated in an ideal location, e.g., a location where serious vandalism cannot occur, where traffic is scarce, where the bus stop visibility is well over 200 feet, and where virtually no other hazards exist, the maximum may be either increased or removed. Depending on the type of area to be serviced, the number of hazards in the district, etc., this step may not be necessary.

Step 6. Set the maximum arrival and departure time before and after school convenes and dismisses. The arrival time should be agreed upon by the transportation administrators and the school administrators in order that teachers are already at the schools when the busses discharge students. *The dismissal time limit should be set in order to minimize student exposure to the vehicular threat caused by teachers leaving the schools, parents picking up children, and other postschool vehicular traffic.*

Task Policy Statement

The policy statement should include the maximum walking distance, a maximum time in transit, a minimum distance between bus stop locations, a maximum number of students using each bus stop, and all other requirements regarding times, distances and numbers of students transported.

*Staging areas are defined on page 25 (Item 8)

Task 5

Development of Routes and Schedules

Objective

The objective of this task is to develop workable routes and schedules which are safe and efficient as well as economical.

Routing and scheduling involves selecting the type of route, the type of service, creating bus stops, assigning busses to routes, assigning students to busses, and assigning drivers to busses.

Type of Routes

School officials responsible for routing and scheduling should be familiar with the various route types currently in use. These route types may be used individually or in combination, depending on local conditions.

1. Circular Route – This is a main route which circumscribes an area by using different roads to complete a round trip. The circular route has the advantage of equalizing the time which students spend on the bus. This will occur when the bus travels in the same direction on each trip so that the first child on in the morning is the first child off at night. *The major disadvantage of this route type is excessive exposure for the first students on the bus who travel away from their destination half of the time.*

2. Spoke or Shoestring Route – This is a main route which extends from the school to some terminal point in the district. If the bus is stored at the school, the same road or roads are used on the outgoing and incoming trips. On this type of route, children travel more or less directly toward the school, whereas on a circular route, the first children to board the bus may be transported via an indirect route. The shoestring route is frequently used where the routes are so long that it would be impractical to return the busses to the school each night. Using busses in this manner helps to keep mileage to a minimum.

In order that this type of route be most effective, the driver should live at or near the point at which the service begins or ends.

3. Trunk and Feeder Route – This is a route which provides for cars or small busses to collect children on minor roads in sparsely settled areas and bring them to main roads to meet a regular school bus. This type of route is necessary where the population is sparse and distance between students is great.

The location on the main road to which a feeder car or bus brings children to meet the school bus is called a transfer point. Transfer points can be set up at homes, or at any other location where *safe* waiting places exist.

Trunk and feeder routing is usually more complex than the other routing types. Therefore, it is quite important that the regular busses routed along transfer points operate according to accurate schedules.

The use of a feeder route may be advisable for one or more of the following reasons:

- a. To limit the use of large busses to improved roads.
- b. To reduce travel time on the main route.
- c. To provide horse-drawn conveyances on roads which at times may not be passable to motor vehicles.

4. Shuttle Route – This is a route which extends between two or more school buildings. These routes are used for transferring pupils in districts operating schools in two or more buildings at different locations.*

Route Service

In planning routes, the various methods of serving them must be considered. The plans for serving routes have an important effect upon the number of drivers required, as well as upon the quality of the service. There are two principal types of trips: single, and multiple.

1. Single Trip – This involves a morning and afternoon trip by one bus on each route. This service is sometimes used in rural areas. It meets the needs of schools where instructional programs require that both elementary and secondary students arrive at their respective schools at the same time. The single trip plan is one of the most expensive types of route service because it requires a maximum number of busses and drivers and because each route is covered only once and each bus serves only one route. If this type of service seems practical for a majority of your routes, then synchronizing school hours for the elementary and secondary schools is strongly advised. If the hours are staggered such that high school students begin school at 8 a.m., junior high students at 8:30 a.m., and elementary school students at 9 a.m., then you probably will be able to provide much more economical and efficient service by using another type of service.

*New York State Department of Education, 1971.

2. Multiple Trip – This plan calls for each bus to cover two or more different routes in the morning and in the afternoon. This plan is suited to districts of a relatively dense population where distances are not too great. As children of all grades may be carried on each trip, program adjustments in the instructional schedule are necessary to avoid idle waiting time at the school. These adjustments can usually be made without harm to the best interests of the children. The multiple trip plan is usually the most economical means of service which may be provided since it requires the minimum number of busses as well as the minimum number of drivers.

Economics in route service can be realized by utilizing the multiple trip plan. This method can reduce the number of busses needed by a district by as much as 50 percent. Any reduction in the number of busses represents substantial savings in fixed charges and other transportation costs. In some cases, where routes are necessarily long, a driver might make a long run and then a short run. In some districts where there is an abundance of long and short runs, it is advisable to have some busses making three or four short runs and others making one extremely long run. These manipulations are the key to economical scheduling and service. The requirements of the educational program must not be neglected through the use of multiple route service. This is simply a matter of effective coordination between the transportation director and the educational administrator. Staggered hours may, for example, be agreed upon without causing any harm to the educational program or to the length of the school day.

The multiple trip plan requires fewer drivers to work longer hours thus making the drivers more than part-time employees. This means that more attractive salaries may be paid which should facilitate the recruitment of qualified drivers.

Bus Stops

Bus stops should be located at points where pupils can be loaded and unloaded safely and conveniently. Safety considerations in designating bus stops include:

1: Visibility – *Where buses will be loading and unloading, students should be visible from a reasonable distance to drivers approaching from any direction (over 200 feet in each direction).* The Manual of Uniform Traffic Control Devices implies that school bus stops should be visible to approaching motorists from at least 500 feet in either direction. If this condition cannot be met, a school bus stop ahead sign (53-1) should be installed at least 500 feet in advance of the school bus stop in accordance with the specifications outlined in the Manual (Section 7B). As in most cases with school or traffic signing, the local traffic engineer can best assist with these provisions and his cooperation should actively be sought.

2. Property Damage — Property owners sometimes become upset when bus stops are located in front of their property or homes. In selecting a site for the placement of a bus stop, consideration must be given to the property owner. The bus stop should be located away from wooden fences, shrubs and other private property to prevent damage by students waiting to be picked up. Sometimes, property owner complaints may be reduced by locating stops in front of the houses of people with children using the bus stops.

3. Traffic Volume — *The traffic volume of the road on which the bus stop is to be located should not be high during the hours when school buses will be stopping.* Bus stops should not be located on heavily traveled streets. In areas where school districts have adopted the policy of not establishing any pupil stops on heavily traveled thoroughfares, some other method of loading and discharging students is utilized. For example, the bus turns off the main thoroughfare at certain intervals and loads and discharges pupils at stops on a side street or road that parallels the main road. Where possible, it is safer to utilize side streets for loading and discharging students rather than arterials. Recent traffic counts should be available from state and local traffic engineering departments, and should be utilized in determining the traffic volume of a particular street.

It is desirable to load and discharge students on the side of the street where they reside. In urban areas, stops should be established in the middle of a block rather than at intersections, so that the loading and discharging of students does not greatly interfere with normal intersection traffic. If students must cross the arterial, the crossing must occur at a signal controlled intersection unless the intersection is 150 feet* or more from the bus stop. If this is the case, then a signal controlled mid-block crossing should be initiated.

4. Walking Distance to Bus Stops — The walking distance to bus stops should be determined by considering the time each student must spend on the bus and adding the time it takes the student to walk to the bus. The total time must be under the maximum time in transit previously determined in Task 4. The walking distance of bus riders will usually be considerably less than that of the walking students. Some areas set a maximum walking distance to the bus stop at ¼ mile for elementary students (2½ blocks) and ½ mile for older students (5 blocks).

*Manual on Uniform Traffic Control Devices for streets and highways, Section 4C-5, 4C-6, 1971, p. 238.

*The walking trip should be free from hazards. An attempt should be made to avoid heavily traveled roads, roads with high speed limits, high volume intersections and uncontrolled intersections. This can be accomplished by establishing an alternate or emergency route. Every effort should be made to have students cross as few streets as possible. Pupils should be instructed in the safest routes to follow between their homes and the bus stops. The assistance of traffic engineering personnel should be solicited in developing safe walking maps (see, *School Trip and Urban Play Areas, Final Report, Volume V*). Where unavoidable obstacles or dangers exist, the district must make every effort to have them eliminated or the student should be picked up at a location nearer to his residence.*

Health and safety considerations must be coupled with travel time in establishing the walking distance to bus stops. *Severe weather and the availability of walking paths are important factors in determining the walking distance.* The policy governing the minimum and maximum distances that children will be transported should be applied equitably and consistently. *Some exceptions may be necessary because of particular hazards or the physical or health limitations of individual pupils.*

5. Additional Hazards – *Avoid locating bus stops near hazards such as steep hills, dangerous approaches to intersections, railroad crossings, narrow bridges, sharp curves, crowns of hills, and obstructions to visibility. In most cases, using a parallel street, staging area, or another route may aid in avoiding such hazards. Identify those areas where fog is prevalent and avoid using them as bus stops, if possible.*

In some areas, locating stops under these conditions is unavoidable. Where this is the case, these stops should be well marked (Manual on Uniform Traffic Control Devices (Sign S3-1)). When it becomes necessary to locate stops on steep hills, make certain that the bus is traveling downgrade when servicing these stops. (A bus stopping on a grade may drift back before accelerating causing a hazardous situation.) These stops must be highly visible.

6. Shelters – Shelters are not usually recommended at bus stop locations. Experience reveals that buildings provided as shelters are both unnecessary and unsatisfactory. If the busses adhere to a well-planned schedule, children do not have to spend much time at the bus stop. Where shelters have been provided, children have made little use of them except for climbing, vandalism, etc. An additional objection to shelters is the fact that vagrants and others use them for purposes other than those for which they were intended. Finally, the question of liability arises, since the shelter is not situated on school property. *

*Massachusetts State Department of Education, undated.

7. Spacing of Bus Stops – Where pupils live at considerable distances from each other, the bus may be required to stop at each point that is nearest the student's residence rather than at central gathering points. Where pupils live close together, they may be required to walk a certain reasonable distance (2/10 mile) to a designated bus stop located at convenient intervals along the route.

• *Reducing the number of stops made to load and unload reduces hazards to pupils, speeds up trip time, and, therefore, can save the district a considerable expense.* In general, students should be picked up such that they are moving toward their destination, be it en route to school in the morning or home in the afternoon. *Everytime a school bus stops on a busy road, it presents a hazard for the children on the bus and for the motoring public.*

8. Staging Areas – These are gathering places for large populations of students to be picked up. Staging areas are generally high school, elementary or intermediate school parking lots, football fields, campuses, or other large areas *not* in use at the time the students are awaiting their busses. Staging areas work well in places where the schools are in close proximity to one another. *Staging areas can only be designated where the students can safely and conveniently walk to the area.* This is normally done with older students. *The practice of eliminating unnecessary bus stops increases safety, cuts travel time and expense and is, therefore, recommended where practical.*

9. Parental Selection – In order to avoid parental complaints at a later date, some areas have instituted parental bus stop selection. The transportation planners follow the same procedures as they would in assigning and locating sites for bus stops. They number each bus stop and send a copy of the route and the bus stop locations to the parents of the children to be transported. The parents are able to choose between two or three bus stops which their child is eligible to use (See *Final Report*, Volume V). The parents and their children have the option of selecting the child's walking route to the bus stop as well as selecting which bus stop the student will use.

Some guidelines for loading and unloading are:

- *The driver of a school bus should have 200 feet of clear visibility in front and to the rear of the bus during loading and unloading procedures. Adequate warning must be given to the motoring public.*
- *Since continuous supervision of bus students is a responsibility of school authorities, busses should not arrive before the school building is open and teaching staff members are on duty.*
- *Children should remain seated until the driver opens the bus door. Hazards from the vehicles can be avoided by discharging pupils on the school building side of the loading area.*

- *Loading and unloading should be orderly, without pushing or shoving. Many districts achieve good results by utilizing staff members or safety patrols to supervise the children when loading and unloading.*
- *Normal en route loading and unloading should be accomplished with the bus stopped on the extreme right traveled portion of the roadway with the red flashers activated.*
- *Students should not be permitted to run or crowd on the bus steps or in the bus stop area.*
- *Supervise the loading and unloading to assure that little children are not being knocked down by older children.*
- *En route loading and unloading should take place only at assigned stops.*
- *All students must utilize their assigned bus stop.*
- *It is the school's responsibility to have each student leave the bus at the designated stop nearest the student's house. Each driver should be supplied with a list showing the names, addresses, and bus stop number of each student being transported.*
- *Drivers of busses which arrive at school early should move their busses out of the loading area in order that busses arriving later will have sufficient space to unload.*
- *Some schools assign a loading position to each bus serving that school. In this situation, the driver should make every effort to be in the correct position on time.*
- *Eliminate overcrowding and congestion by checking and updating student assignments to busses.*
- *Ensure that every child boards the proper bus.*
- *Two techniques may be applied to help young children board the proper bus at dismissal. One method is to assign a number to each bus or a pictorial design such as a famous cartoon character on a window near the service door. A second technique especially helpful to kindergarten children, usually used the first few weeks of the school year, is the issuance of a name tag containing the proper bus number which is to be worn on the child's clothes. With this identification tag, the teachers and the drivers can ensure that the children board the proper bus.*
- *Eliminate unnecessary waiting.*

Other considerations of loading and unloading which the driver must be aware of include:

- *The driver must be aware of each and every unloaded student's presence before moving forward to the next stop.*

- Even though the driver has allowed oncoming traffic to clear, there may be other vehicles approaching the bus that fail to stop while the bus is engaged in the loading and unloading procedure. *The driver must be alert to this so that he may warn by voice or horn those students who are crossing of the oncoming danger.*
- A motorist may attempt to pass the bus on the right side after approaching from the rear. This is particularly dangerous during the loading and unloading procedure.
- *The driver must be particularly attentive and cautious in inclement weather.*

Many schools protect younger students and avoid congestion by staggering the dismissal schedule; for example, kindergarten through grade three are dismissed at 3:20 p.m., grades four through eight are dismissed at 3:25 p.m., and grades nine through twelve at 3:35 p.m. *It is also common practice for elementary teachers to supervise their students from their classrooms to the loading area and to ensure that the students board the proper busses.**

The protection of pupils from the hazards of vehicular traffic is of the utmost importance in loading and unloading a school bus. Whether located within the school grounds or along a side street, the loading area must be protected. Adequate supervision will benefit the students and add greatly to their safety. The utilization of school bus safety patrols is strongly recommended.

All other traffic should be prohibited from the loading area. Some schools use a fencing system and gates which require busses to stop with their service doors located at the assigned gates. The use of this type of fencing system contributes to orderliness and safety during the loading operations.

Student Safety Rules

1. *Use the crosswalk areas.*
2. *If sidewalks are available, use the side with sidewalks.*
3. *When walking along a highway with no sidewalks, walk on the left facing oncoming traffic.*
4. *Walk, do not run, when crossing the street.*
5. *Look both ways before and during the crossing.*
6. *At school bus stops, wait for the bus to come to a complete stop before moving toward the door.*
7. *Remain seated if the bus is delayed on the road.*
8. *Be of assistance to smaller children. (Crossing streets, boarding busses, etc.).*
9. *Go home promptly after leaving the school bus.*

*Massachusetts State Department of Education, undated, p. 38.

School Bus Safety Patrols

The school bus safety patrol is the usual designation of any student group which assists with the pupil transportation program. The safety patrols act as assistants to the bus driver. Safety patrols usually perform the following functions:

1. *Assist with loading and unloading at the school and at bus stops.*
2. *Assist the driver in checking the attendance.*
3. *Call attention to hazardous conditions*
4. *Aid in protecting the students en route to and from the bus stop.*
5. *Aid in maintaining good behavior at bus stops.*
6. *Aid students crossing streets.*

The students designated as patrols are usually the older students of each group who are generally more capable of dealing with the situations which may arise.* The patrols may be appointed by the bus driver, the administrator, teachers, or they may be elected by the students from among those who meet the qualifications.

The participation of pupils in planning operative safety programs can be of great help in making the program effective. Use of school bus safety patrols is one method of obtaining such participation. The patrols should not be responsible for disciplining the students. The patrols may, however, report misconduct to either the bus driver, the school principal, or a designated teacher. Some schools have teachers designated as safety patrol leaders. These teachers train and supervise the patrol program. Safety patrols should receive extensive training as to their duties and responsibilities. Patrols should be instructed by qualified police and school safety personnel.

Assigning Busses and Pupils

The three main considerations in assigning pupils to busses are bus capacity, residential proximity, and student grade level.

Due to size differentials in students, the maximum load on busses transporting only high school students should not exceed 90 percent of the capacity of the bus. Busses transporting only elementary students may be loaded to 110 percent of the capacity of the bus if bench-type seats are used. Bench-type seats may accommodate three small elementary students while they may only accommodate two high school or older students.

*Massachusetts State Department of Education, undated, p. 41.

The suitability of seating arrangements has both health and safety implications. Crowded conditions tend to increase the transmission of virus infections, skin diseases, etc. The adequacy of seating arrangements is related to fatigue which makes the individual more accident-prone. Standing should never be permitted in transit. Children standing in the aisle have a greater accident potential than those seated.

Assigning Drivers

It is advisable, where possible, to assign drivers to routes with which they are familiar. This will reduce the driving time and aid in avoiding hazards since the driver is already knowledgeable of the area and is not likely to get lost. It is advisable to have new drivers drive their routes prior to driving them with students.

Time Schedules

Driver travel time should be equalized when possible. This may be accomplished through multiple routing schedules which combine short and long trips to balance driver travel time. Some routes will require additional time because of traffic congestion, high traffic volumes during peak hours, or when industrial plants change shifts at the same time the bus is scheduled to travel that portion of its route.

Many of the aspects of scheduling have been discussed since scheduling involves establishing bus stops, assigning busses to routes, loading and unloading, and determining time schedules.

To determine accurately the time schedule of stops, a trial run of each route is necessary. The use of an automobile for trial runs is *not* advisable, since the results will be inaccurate due to differing times needed for turning, accelerating, stopping, etc.

The trial run should be executed by a regular bus driver (at the time of day at which the route will be driven during the year) who is familiar with most of the routes, accompanied by a transportation administrator who is able to determine hazards. The driver should drive exactly as he would if he were transporting children over the routes, picking up and unloading students at each designated stop. Since children are not actually being loaded, it is suggested that the driver stop at each stop for a 10- to 20-second interval, depending on the number of children scheduled to board or depart at each location. A log of the starting time, time of arrival at each stop and completion time of the run should be accurately kept.

Accurate time measurements should be taken for each bus route to determine how long it will take the bus to cover the route under normal operating conditions and to determine when each bus can be expected to reach each stop along each route.

After the timing of the routes is thoroughly considered and each time is accurately determined, time schedules should be drawn up. Each time schedule should list the location of each bus stop, the expected arrival time of each bus at the stop, and the names of the students to be picked up or discharged at each location. *Every parent of children along the route should be given a copy of this schedule. A monitoring period may be appropriate.*

Drivers should, therefore, operate their busses on time and should never leave a stop ahead of the scheduled time for that stop. However, risks should not be taken that will in any way lessen the safety of the pupils, the driver, or others.

The driver should not have to wait for students at bus stops. Pupils should be punctual in getting to their stops. Emergencies at home, accidents en route, and inclement weather will sometimes cause the children or the bus to be late. Such conditions may create problems in rural areas. Occasionally, children will be absent from school without informing the driver.

These and other considerations require a definite policy on the question of whether bus drivers should wait for pupils. In some areas, drivers are instructed not to wait for pupils unless they can be seen en route to the bus stop. A bus loaded with students sitting on the side of the road for any length of time may be a hazard and is inadvisable.

A closely observed time schedule helps to achieve the following results, all of which are vital to a safe, smoothly functioning transportation system:

1. *Pupils can be at the bus stop on time, eliminating long waiting periods.*
2. *The bus does not have to wait for pupils.*
3. *The bus can arrive at school on time, in order that classes may begin on schedule.*

The number of routes required and the degree of efficiency in how the busses are utilized to serve the schools determine the number of busses needed. The importance of careful planning in establishing a viable schedule should, therefore, be apparent.

Travel Time

In planning routes and schedules, those responsible should realize that the school day (for the child) begins when he leaves his home in the morning and ends when he enters his home in the evening. Therefore, the time it takes the student to get to the bus stop, board the bus, ride to school, depart from the bus, etc. are all included in the child's educational day. *The child's educational day should not be of such length that the child's health is adversely affected. Under no conditions, should a student's educational day exceed 8 hours.*

Although the maintenance of a time schedule is important, it is secondary, as are all aspects of the transportation system, to safety considerations. Do not allow economic or any other constraints to take priority over safety considerations. Safety is the single most vital factor to be considered throughout the pupil transportation planning process.

Special Considerations

1. Transportation of the Handicapped Students. Some handicapped children are unable to fully profit from attendance at a regular public school. The same may be true of many children with retarded mental development. In both cases, transportation to special schools or special classes may be required if the handicapped children are to achieve a maximum development of their potentialities. In other cases, children who might profit from attendance at regular classes have handicaps which make it impossible for them to walk to school or ride on standard school busses.

2. Activity Busses. *The safety features of the regular school bus routing procedures should be followed with regard to activity or late busses.* The same routing principles should be applied.

Late busses may be scheduled at the high school and the junior high school levels to provide transportation for those students remaining after school to participate in extracurricular activities. Where this is a practice, drivers must be notified which students will be utilizing which bus and which students will not be riding their regular busses. This is necessary to prevent ineligible students from riding the activity or late busses. The use of bus passes is a common procedure.

3. Field Trips. It is recommended that a *minimum* of one teacher ride the bus on field trips. A great deal of coordination is required to successfully accommodate field trips. Depending on the length of the trip, several drivers may be utilized. If the trip involves a great distance, then it is advisable to use one driver who stays with the group. However, if the trip is local, then it is possible to have one driver drop off the pupils and make his regular runs and return to pick up the activity group. This type of scheduling lessens the need to set aside special busses for activity trips, thereby maximizing fleet usage.

Procedures for Mapping Out the Bus Route

- Step 1. Select the students who live the greatest distance from the school and who require transportation. These students will be the starting points of the routes (see figure 1).
- Step 2. Begin by drawing lines from these students' residences to the school, utilizing the least hazardous, most direct roads. The line should connect (within three or four blocks) the rest of the students as it proceeds toward the school (refer to figure 1).
- Step 3. Count the number of students who may be serviced by this route. Begin counting with the students living furthest from the school. Continue counting until the number of students reaches the recommended total for that type of bus (see figure 1).
- Step 4. Determine the bus stop locations along the route. Number each bus stop consecutively beginning with the stop furthest from the school and ending with the stop closest to the school. (see figure 2).
- Step 5. *Determine the safest walking route to the bus stop for each child requiring service (refer to figure 3; see Final Report, Volume V, Safe Walking Trips.).*

Task Policy Statement

The policy statement should state the specific route type and service to be used, criteria for the location of bus stops, bus loading and unloading procedures, walking trip route selection procedures, and special considerations. The policy statement should require alternate or emergency bus routes for all routes, and especially for those areas which experience severe weather conditions.

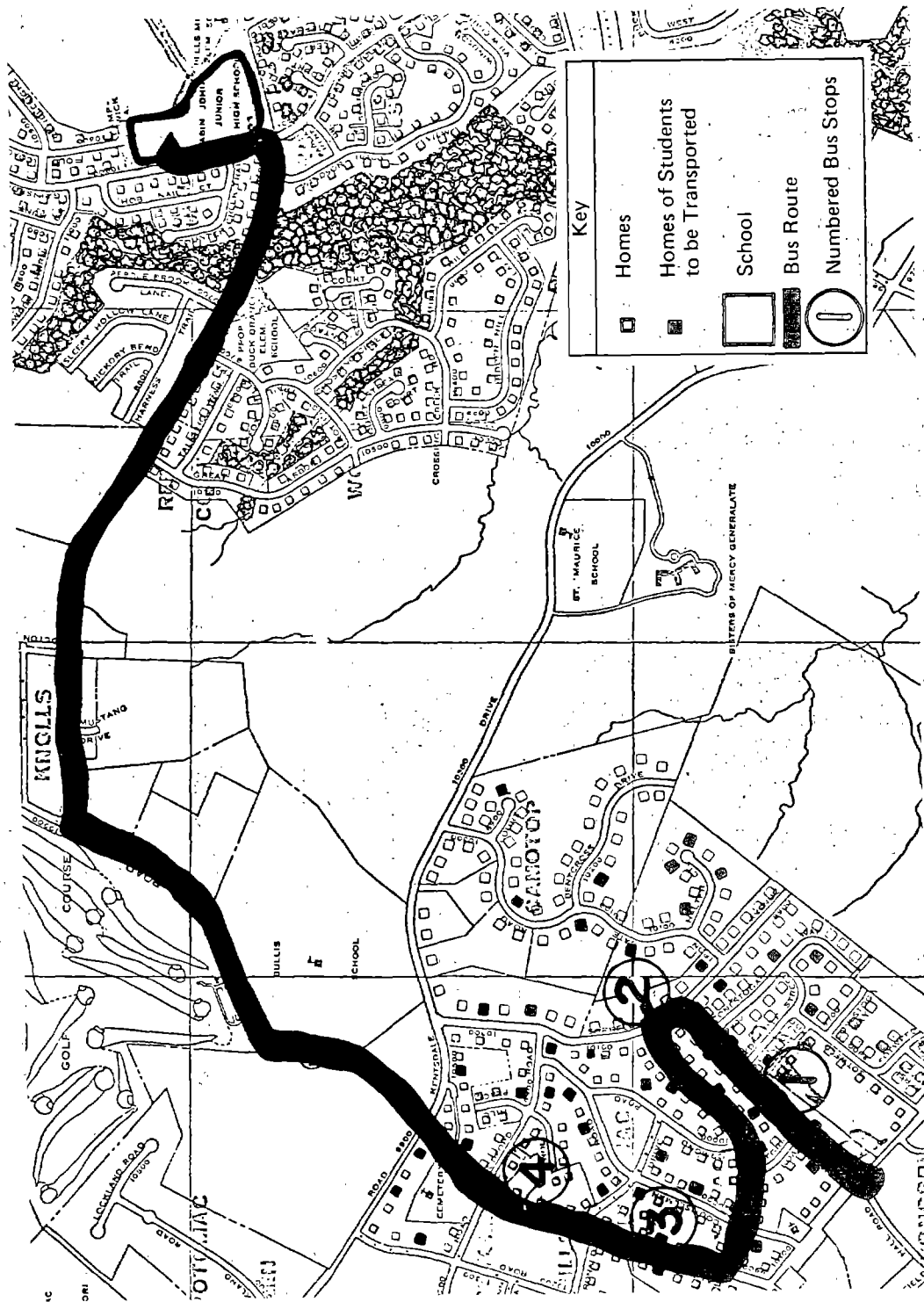
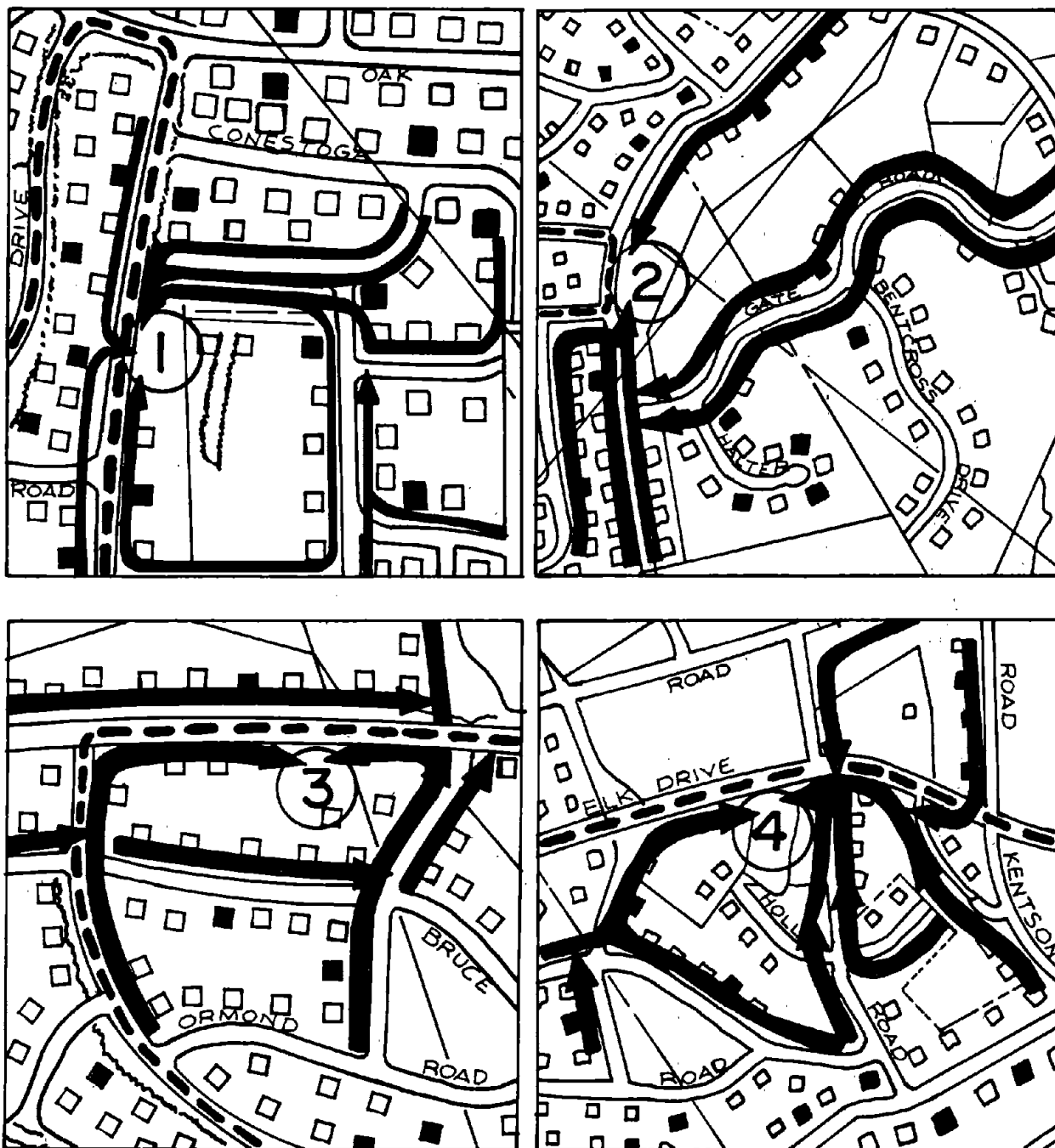


Figure 3. Typical Bus Stop Locations



Key			
	Homes		Bus Route
	Homes of Students to be Transported		Numbered Bus Stops
			Safe Walking Route to Bus Stop

Figure 4. Typical Walking Route to Bus Stop

Task 6

Evaluation of Routing and Scheduling

An evaluation is necessary to determine the quality of the school transportation program. *This procedure will assist school officials in judging the degree to which their service meets the objectives of safety, efficiency, and economy.* An evaluation is also helpful in identifying and correcting any deficiencies within the system. *Transportation officials should always be checking for areas that might be improved in order that maximum safety, efficiency, and economy may be provided throughout the system.* This evaluation assumes that all of the legal requirements which district transportation must meet have been met and that the laws and regulations affecting pupil transportation have been drafted to ensure adequate minimum standards of service.

Objective

The objective of this evaluation is to assess the ways in which the standards of transportation service have been met and to reveal the areas of school transportation service where improvement may be warranted.

Procedure

The evaluation has been constructed in such a manner that each statement which produces a *no* answer indicates an aspect of the transportation program which needs improvement in order that the system realizes its full potential. A majority of the statements in this evaluation were taken from the School Bus Management Handbook compiled by New York State. The steps are as follows:

- Step 1. Answer each statement with a check mark indicating either "yes" or "no".
- Step 2. For each "no" answer, go to the task in this guidebook and read the section covering that information.
- Step 3. Take the proper action to remedy the situation in order to improve your transportation plan.

The statements which should be taken into consideration in an evaluation of any school transportation program are:

1. *Safety is regarded as a primary objective in pupil transportation (refer to Tasks 3 and 5).*
2. Standards of service are adequate in terms of the needs and ability of the local district, including required service to nonpublic schools (refer to Task 1).

3. Policies and regulations are clearly stated and are readily available to those interested in them (refer to Introduction).
4. The policy governing walking distances is clearly defined and consistently applied (refer to Task 4).
5. Routes do not include any unnecessary mileage (refer to Task 5).
6. *Routes are planned to keep hazards to an irreducible minimum* (refer to Tasks 3 and 5).
7. The transportation needs of handicapped children have been met (refer to Task 5, Special Considerations).
8. Bus schedules are planned to meet the needs of the instructional program (refer to Task 5).
9. *Seats are provided for all pupils (refer to Task 5).*
10. Busses are operated on schedule insofar as possible (refer to Task 5).
11. *Supervision is provided for children as they leave the bus in the morning (Task 5).*
12. *The loading of busses at the close of the day is carefully planned and well supervised (refer to Task 5).*
13. *In the planning of special trips, adequate consideration is given to safety and supervision (refer to Task 5.)*
14. A means is provided whereby pupils may contribute to the planning and/or operation of the transportation system (refer to Task 5, Safety Patrols).
15. Appropriate use is made of the various media of communication (refer to Task 5, Policy Statement Procedures).
16. Parents always have reason to feel that their communications relative to transportation problems are welcomed by school officials (refer to Task 1).
17. Efforts are made to secure a constructive attitude on the part of parents with regard to pupil transportation problems (refer to Task 1).
18. *Pupils are adequately instructed as to what constitutes good behavior on busses.*
19. Insurance is adequate with respect to both limits and types of coverage (refer to Exhibit A, page 44).
20. *School bus safety patrols are utilized on all elementary school busses (refer to Task 5).*
21. *Routes are planned to eliminate trips of over 45 minutes riding time (refer to Tasks 4 and 5).*
22. *Drivers are encouraged to report route hazards.*
23. *Safety instruction by teachers includes attention to transportation safety.*
24. *School personnel accept their responsibility for cooperating in the enforcement of the school bus passing law (refer to Task 5).*

25. *Emergency drills are carefully planned and executed so as to realize the full benefits of such drills.*
26. *Emergency drills are conducted by members of the teaching staff and police safety officers.*
27. *Safety rules for pupils are understood and enforced.*
28. *There is a local program of safety citations.*
29. *School officials make use of the State Police and County Sheriff's Departments which cooperate in the safety effort.*
30. *Bus pull-outs and turn-arounds are at a minimum.*
31. *All routes are evaluated at least once a year.*
32. *All routes are pretested via bus trial run before students ride them (refer to Task 5).*
33. *All drivers follow precise bus routes and stop only at designated stops (refer to Task 5).*
34. *Emergency (alternate) routes exist for all routes (refer to Task 5).*
35. *Bus stops are not located on steep grades, on curves, or at busily traveled intersections (see Task 5).*
36. *Bus stops are located such that students using them must cross an irreducible minimum number of streets to get to them.*
37. *Size and number of busses are adequate to meet safety standards.*
38. *Spare busses are available.*
39. *Drivers can secure help with problems when needed.*
40. *Students are not required to walk by construction sites, on streets with high traffic volumes and high speed limits, etc. (refer to Task 5).*

Task Policy Statement

The task policy statement should list all the evaluation statements deemed necessary by those persons creating the school policy. It is vital that the evaluation written in the policy statement be comprehensive and include statements which clearly relate the considerations and steps which are required for safe transportation practices.

Task 7

Modification of Routing and Scheduling

A major task of the school administrator in most school districts is to analyze, create, or change bus routes annually. This routing is usually handled by the transportation supervisor. Minor changes in a route can sometimes be made in minutes but frequently *one or more entirely new routes must be worked out. This can involve many hours spent planning each new route when all safety factors and scheduling problems are considered. All too often, because of inexperience, lack of knowledge, or lack of time, routes have been patched, modified, or otherwise altered to the point that children are exposed to unreasonable conditions. Unless all routes are systematically reworked periodically, they become unbalanced in length, time, and miles as well as in terms of the number of children transported. Inefficient and unsafe operation is the certain result of not considering all factors that must be checked in planning good route design.*

Changes in our environment are constantly occurring: new housing complexes are opening daily, new subdivisions are growing, towns are being consolidated, roads are expanding, more vehicles are using the roads, etc. *A route which is well planned and extremely safe in all respects at the beginning of the school year may not be as safe after four months of school. Therefore, the safety factors involved throughout the transportation program need constant review.*

Objective

The objective of modifying routes and schedules is to establish procedures which may be followed in order to make existing bus routes safer, more efficient, and more effective. This objective includes the addition of new routes where necessary.

Procedure

Bus routes should be reviewed continuously, especially in transient areas where new developments are opening and people are constantly moving. The routes should be reviewed for:

1. Changes in the number of students requiring transportation.
2. Changes made in regulations or policy.
3. Road construction and street improvements.
4. The addition of median strips to streets.
5. Changes in the number of busses available.
6. The addition of crossing guards or safety devices on some streets.
7. Changes in road conditions.

8. Political reasons.
9. Property owner requests.
10. Parental concerns.
11. Driver concerns.

Inputs for the review may come from the drivers who are on the routes daily or from parental complaints.

In most cases, when there is reason to believe that the existing route (s) are not operating at their potential optimal levels, then an onsite route investigation may be warranted.

- Step 1. Review driver trip sheets, parental complaints, physical layout of bus routes on the map discussed in Tasks 2 and 3.
- Step 2. Decide the extent of modification necessary. Task 6 will be helpful.
- Step 3. Reorganize the entire system or modify the existing route (s) following the tasks and steps applicable to the situation as described in this guidebook.

Procedures for Handling Parental Complaints

- Step 1. The police safety officer and the supervisor or coordinator of transportation should receive and review the complaint.
- Step 2. Each must conduct an onsite investigation of the problem.
- Step 3. Each must make a recommendation.
- Step 4. The recommendation should be given to the administrator (superintendent) for final decision.
- Step 5. Action must be taken to remedy the situation if a problem does exist.
- Step 6. Results of action taken or the reasons for no action should be made known.

Bus Route Extensions

After bus routes have been established, regular bus routes should not be extended unless the walking distance from the home to an established bus stop is greater than the distance set in the school policy, or any of the safety factors are violated.

Removal of Bus Service

When, because of hazards, bus transportation has been provided for pupils whose walking distance is less than that authorized by school policy and, subsequently, the hazards are eliminated or conditions change so that pupils may walk *safely* to and from school, the removal of bus service may be warranted.

In cases where new subdivisions open during the school year and the number of students requiring new service is greater than the existing routes and busses can accommodate safely, the addition of new busses and new routes may be required. In cases of this type, the procedures for determining routes discussed throughout these guidelines should be followed.

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ATTACHMENT A

The following is an example of the insurance considerations and regulations used by the State of New York. Although these guides are those of a single state, they appear to be representative of those employed by other states across the country.

Insurance¹

A. *Coverage for Damage to Vehicles*

"It is common practice for school districts to insure their buses against fire, especially where many buses are stored together and are subject to one loss. The value of theft coverage on vehicles larger than station wagons is open to question. However, fire and theft are generally written in a combined policy at rates not greatly in excess of the fire rates. At a somewhat higher cost, comprehensive coverage may be secured which provides protection from loss, including glass breakage, caused by virtually all perils except collision. Important extra coverage is provided for loss due to windstorm and vandalism.

B. *Bodily Injury and Property Damage Liability*

1. The comprehensive automobile liability policy protects the district from loss due to liability incurred by reason of the operation, ownership, or maintenance of motor vehicles. While this protection is not required by law on district-owned equipment, it is highly recommended that boards of education provide adequate coverage. In recognition of the need for high limits of liability, many districts have purchased catastrophe-excess policies to provide additional protection over basic automobile and general liability policies. A recent check indicates that every district in New York State with district-owned buses carries bodily injury and property damage liability insurance on such equipment.

2. In the operation of contract equipment, the law requires coverage as specified in the table on the next page.

¹State of New York, *School Business Management Handbook, Transportation*, New York, 1972.

**Minimum Statutory Insurance Requirements
for Contract Vehicles**

Property Damage

Five thousand dollars property damage insurance is required on any contract motor vehicle used by the district for the transportation of district pupils.

Bodily Injury

Seating Capacity	Minimum Coverage Requirement	
	Each Person	Each Accident
Not over 7	\$10,000	\$ 20,000
8-12 inclusive		40,000
13-20 inclusive		60,000
21-30 inclusive		80,000
Over 30		100,000

Statutory limits are minimums only and boards of education are encouraged to consider more adequate coverage. If a board of education desires insurance in excess of the minimum legal requirement, the amount of coverage must be stated in the specifications for transportation contract bids. It is specifically pointed out that the board may not require the contractor to increase the limits of coverage above legal requirements after the contract has been let. Although the contractor's liability insurance covers both the contractor and the district, it is generally recommended that the district buy "hired automobile" liability insurance. This would protect the district in the event that the contractor's insurance coverage proved inadequate. Such insurance would also protect the district for the operation of other buses, trucks, or cars that may be hired or rented by the district.

3. Nonownership liability insurance protects a school district from loss due to claims resulting from the use, by employees, parents, or others, of their own automobiles for the transportation of children on district-sponsored trips or for any other approved school activity or business. The requirement, imposed upon boards of education and trustees by Section 3023 of the Education Law, to protect employees in the event of liability suits against them would apply in the event of claims arising out of the use, by an employee, of his own automobile on approved district business. Most insurers feel that automobile nonownership liability, if written on a comprehensive form of policy, would insure this obligation imposed by law. Since this opinion is not unanimous among insurers, however, it is suggested that each district discuss the matter with its own insurer to be certain that the obligation is insured. Parents and others who are not employees are not protected by the district's insurance, and must rely on their own.

C. *Possible Savings in Automobile Insurance*

1. *Premium savings* can be achieved for buses not operated during the summer months by writing coverage for them on a ten-month basis. In this case, a summer repair and testing extension is available at nominal added expense.

2. *Fleet discounts* are allowed for six or more vehicles when insured in the same company.

3. *Dividends* are paid by some insurance companies at the end of the policy period.

4. *Premium credits* may be earned by establishing and maintaining a good accident experience record. The experience rating plan penalizes a district with a poor accident record. The effort and expense invested in a good safety program can pay for itself many times over in terms of experience credits."