TRANSPORTATION OF SCHOOL PUPILS
WITH SPECIAL REFERENCE TO BRITISH COLUMBIA

by

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I am also indebted to the Inspectors of Schools, Secretaries of School Boards and Principals who so willingly gave of their time to answer my questionnaire. Without this valuable aid, it would have been impossible to carry on this study.

I am further indebted to the various Departments of Education in the United States which so kindly forwarded such helpful information and suggestions as was available.
CHAPTER I

INTRODUCTION

Statement of the Problem

Transportation of school pupils as used in this thesis refers to the transportation of pupils to and from school in motor buses, either contracted for or owned by the district. Transportation is carried on in a few districts by horse-drawn vehicles or by boat but these two types are not dealt with in this work.

The problem of transportation has arisen as a result of an increased attempt on the part of the Education Department to provide an ever-increasing number of children with greater opportunities for secondary education. For many years the rural one- and two-roomed schools have attempted to provide educational opportunities for pupils in outlying districts. It has become increasingly evident that while these schools have served a definite need, yet through them it was impossible to give the educational, cultural and social opportunities which are being given in the larger urban areas. In many areas consolidation has been found practicable, and consolidation has meant transportation.

The problem with which this study deals may be divided into a number of parts, (1) Outlining the situation as it
exists in the United States, (2) Attempting to discover the relative merits and demerits of the district-owned bus and the contracted bus, with a view to ascertaining which is the more efficient and economical, (3) Discussing, in not too great detail, the existing conditions in British Columbia, (4) Determining the chief factors which affect the cost of transportation and suggesting methods which may be used in calculating costs, (5) Suggesting ways and means of reducing costs and also of improving the transportation service, (6) Submitting a set of cost accounting forms which may be used as a basis or a guide in the keeping of accurate and detailed records of all transportation transactions and (7) Outlining some of the features of a suitably constructed transportation unit.

Importance and Growth of Transportation

"More than three million American school children go to school by bus. They ride in all sorts of buses, from homemade contraptions with canvas covers to de luxe models. Ninety thousand buses at an annual cost of sixty million dollars, travel the highways of the country transporting children to school."

The above quotation merely illustrates to what extent transportation has become an integral part of school organizations in the United States.

In British Columbia it has also become a part of our school organization and though the total cost may be only a small fraction of that of the United States, nevertheless,

relatively speaking it is a fairly large sum. (See Table VI, page 32.)

Transportation of school pupils is definitely linked with the desire not to limit educational opportunities to those who live near them but to extend those opportunities to pupils living in more remote areas. The creation of large administrative units has made it possible to enrich the curriculum, to increase efficiency and to provide larger and better equipped schools.

There are, however, districts where the large administrative unit has not been found practicable because of the large area to be served, the poor condition of the roads and bad weather conditions. The Peace River district is an example of a district where consolidation has not been found practicable.

Table I shows the rapid extension of the transportation movement for the ten-year period 1927 to 1937 in the United States. The 1937 figure shows an increase over 1927 of 47,020 buses and over 1931 of 31,023 buses. On January 1, 1937 3,145,180 pupils were being transported at an annual cost of $55,280,496.¹

Table I

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Buses</th>
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</thead>
<tbody>
<tr>
<td>Jan. 1, 1927</td>
<td>32,778</td>
</tr>
<tr>
<td>Jan. 1, 1931</td>
<td>48,775</td>
</tr>
<tr>
<td>Jan. 1, 1937</td>
<td>79,798</td>
</tr>
</tbody>
</table>

The number of children transported and the percentage increase, the miles of bus routes and the percentage of increase in these routes for the seven-year period from January 1, 1930 to January 1, 1937 are shown in Table II.

### Table II

<table>
<thead>
<tr>
<th>Date</th>
<th>No. Children Transported</th>
<th>Percentage Increase</th>
<th>Miles Travelled</th>
<th>Percentage Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.1,1930</td>
<td>1,276,427</td>
<td></td>
<td>425,000</td>
<td></td>
</tr>
<tr>
<td>Jan.1,1937</td>
<td>3,145,180</td>
<td>146</td>
<td>989,004</td>
<td>133</td>
</tr>
</tbody>
</table>

"From 1931 to 1935 inclusive there were 23,490 new school buses put on the market in the United States."\(^2\)

From the experience gained by American education during this phenomenal increase British Columbia can profit much.

The reason for such a growth is well summed up in the words,

"Changed conceptions of educational needs due to changed conditions of living, improved highways and improved vehicles, increased state aid to schools and changes in law have directly or indirectly been the major causes of increase in demand of school pupils for transportation."\(^3\)

Another very significant statement dealing with the financial aspect of the larger administrative unit is to be found in the Report of the Governor's School Survey Commis-

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sion in New Jersey. "The net cost per pupil of both trans-
portation and tuition is materially less than per pupil cost
would be if the district maintained equal facilities at home."

The foregoing pages have dealt with conditions in the
United States. In Canada the situation is somewhat different.
From the correspondence received the writer is of the opinion
that climate greatly affects the expansion of the transporta-
tion movement in Canada. Most of the provinces in Canada rep-
ported that transportation is carried on in the summer -
from Easter to November - by motor buses and during the winter
months by horse-drawn buses or sleighs. However, it was
evident that the transportation movement is growing and that,
while progress is slower than in the United States, a more
rapid growth can be expected in the near future. Alberta
reported twenty-three consolidated areas providing transporta-
tion, Saskatchewan reported forty-one, Ontario reported
twenty-eight and New Brunswick reported eight.

1. School Costs and Economies in the State of New Jersey,
   p. 51.
CHAPTER II

SOURCES OF THE DATA

A study such as this one calls for a rather large number of facts and an interpretation of these facts in the light of current practice.

There were four possible sources of information and by using these the writer has attempted to outline the trend of the transportation movement in the United States and to point out certain facts relative to British Columbia and also to emphasize matters related to costs and accounting.

The four sources were:

(1) Personal interviews
(2) Literature
(3) Questionnaires
(4) Personal letters

Through personal interviews a great number of facts and some valuable opinions were obtained.

The literature on pupil transportation in the United States is fairly comprehensive. The movement there has grown rapidly since 1903 and thus has passed through many stages which throw some light on British Columbia conditions.

The questionnaire was valuable in the collection of information relative to British Columbia. It had, however, its limitations in that there were no systematic records or reports kept by most of the school boards. Under such circum-
stances, it is evident that a very detailed study, particularly in relation to costs, was practically impossible. Nevertheless the information received had a decided value. A detailed discussion of this information will be found in Chapter V of this thesis.

To areas outside British Columbia a personal letter was sent to educational executives. From this source came valuable suggestions.
CHAPTER III

TYPES OF AND TRENDS IN TRANSPORTATION

IN THE UNITED STATES

Types

The type of transportation used in the United States varies from state to state depending largely on two major factors, first, topography, and second, climate.

The two most important types are the motor bus and the horse-drawn vehicle. There are, however, several different methods of organization of motor vehicle transportation. These may be classified according to ownership.

(1) District owned - in which the district itself owns the vehicles used for transportation.

(2) Privately owned - in which the driver owns the vehicle and contracts with the district to transport pupils. There are instances where the owner does not drive the bus himself but contracts with someone to do the driving.

(3) Divided ownership - in which the district owns part of the bus, say, the body or the chassis, and the contractor the other part.

(4) Parent transportation - in which a parent is compensated for transporting his own and possibly one or two other children from home to school and return.

Transportation of pupils in the United States is not
restricted to rural or consolidated areas but also applies to a number of large cities in which street cars are used as a means of transportation.

Before discussing district-owned and contracted buses, the writer wishes to mention that authorities are of the opinion that the policy of reimbursing parents for transportation is inefficient and expensive and should be discontinued if at all possible.¹

**Trends**

Table III shows the practice relative to the use of district-owned and contracted buses. In these three areas transportation is carried on on a rather large scale and it is interesting to note the preponderating practice of employing district owned buses.

**Table III**

Number of Owned and Contracted Buses in Three States of the United States

<table>
<thead>
<tr>
<th>Date</th>
<th>District</th>
<th>No. Owned Buses</th>
<th>No. Contracted Buses</th>
<th>Other Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>1936-37</td>
<td>a Central Districts N.Y.</td>
<td>704</td>
<td>601</td>
<td>102</td>
</tr>
<tr>
<td>May 1, 1939</td>
<td>b Florida</td>
<td>80% of school buses</td>
<td>(500 bodies)</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(866 bodies)</td>
<td>(795 chassis)</td>
<td></td>
</tr>
<tr>
<td>1936-37</td>
<td>c North Carolina</td>
<td>3932</td>
<td>146</td>
<td>102</td>
</tr>
<tr>
<td>1937-38</td>
<td></td>
<td>4153</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


From a study of the literature the writer is of the opinion that the trend in the United States is towards the use of district-owned buses.

Since the above table is inadequate as evidence of the practice in forty-eight states, it seemed advisable to quote the opinions of some of the authorities on this matter, thus substantiating the claim that there is a definite and significant trend toward district ownership.

"To obtain further improvement in efficiency, safety and economy boards should purchase school buses and provide the transportation service by means of district-owned equipment." ¹

"The most satisfactory type of transportation appears to be the district-owned motor conveyance." ²

"The tendency in school bus ownership at the present time seems to be for the districts to own the entire equipment and operate the same. There were more than twice as many districts this year (1937-38) purchasing complete units as compared with 1936-37." ³

"I was formerly of the opinion that the school district should not own any transportation equipment. Now after five years of experience in the State Department of Education, I firmly believe that the school district should own the entire equipment." ⁴

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Another trend is towards increased efficiency and safety. This, of necessity, requires better management on the part of the boards of education. District ownership of buses makes the problem of management an easier one.

"The practice of private ownership of buses has been shown to be less economical and less easily administered than district ownership of buses." 1

Many state departments of education now exercise closer supervision over school vehicles and drivers. There have been issued various handbooks of bus standards, manuals for drivers, rules and regulations for bus drivers and small pamphlets containing the laws as related to traffic and especially to school vehicles. There also is now a clearer understanding of liability and responsibility on the part of the state, school board and parents. All these indicate a definite trend toward better management of school transportation, accompanied by increased safety and comfort for the pupils.

"While the study is by no means completed, Doctors Cyr and Noble have arrived at some conclusions.... Among other things, they feel that school ownership of school buses is not only more economical but also provides higher maintenance standards than are provided by contract method." 2

The above quotations evidence the fact that the district-owned bus is preferred to the contracted one, and that a number of districts are changing from private to district ownership.


The general trend in the United States is toward a transportation system which is (1) district-owned, (2) of high quality and comfortable, (3) efficient and economical, (4) well supervised, (5) aided by the use of a complete system of reports and records, and (6) based on an intelligently formulated policy.

A. G. Lambert, in an article "Trends in the Transportation of School Children in the United States," lays down six steps, which he considers essential to transportation.

1. Increase the proportion of district-owned vehicles.
2. Improve further the quality of the transportation vehicles, and particularly with respect to the use of crosswise seating. It is well to note in passing that in this respect British Columbia stands well to the fore, as it now requires new school buses to have crosswise seating, except a short longitudinal seat at the back over the rear wheel.
3. Impose more frequent and rigid inspections of vehicles.
4. Adopt and use a modern system of reports, records and accounts.
5. Give greater attention to accurate determination of limits for transportation service.
6. Improve methods by which state aid is given for school transportation.

With reference to Canada, there does not seem to be a clearly defined trend. The information received by the writer indicates that both district-owned and contracted buses have been found to be satisfactory. Manitoba reported that horse-drawn vehicles, which are used during the winter months, are owned by the school districts and motor buses are contracted for. Ontario reported the use of both types of buses and suggested that both are working satisfactorily. In Nova Scotia most of the districts employ horse-drawn vehicles and these are owned by the parents of the pupils who are conveyed. There were two areas using motor buses, one owned the buses and the other contracts for them. Prince Edward Island has only three motor buses in use, two of these owned by the school boards and one contracted for.

**Summary**

(1) The two main types of transportation in the United States are the motor bus and horse-drawn vehicle.

(2) Methods of organization of motor bus transportation vary and may be classified according to ownership, i.e. (a) district ownership, (b) private ownership, (c) divided ownership, and (d) parent ownership.

(3) American authorities are of the opinion that the policy of reimbursing parents for transportation is inefficient and expensive and they suggest the discontinuance if at all possible of such a policy.

(4) From a study of the literature on transportation the
writer believes that there is a definite trend in the United States toward the use of district-owned buses. Also that there is a trend towards closer supervision, better management and greater comfort.

(5) From the information at his disposal the writer has not been able to discern a trend toward either district or private ownership in Canada.
CHAPTER IV

DISTRICT-OWNED VERSUS CONTRACT BUSES

In this chapter the writer attempts to point out some of the advantages claimed for both district-owned and contracted buses.

The most common conveyance used in the transporting of school children is the motor bus. This may be owned outright by the district or contracted for, dependent to some extent on the number of children to be transported. In districts where transportation is required for only a small number of children, the writer is of the opinion that contracting outright would be preferable to district ownership because the small number of pupils would not justify the initial outlay required in purchasing a bus and the expense of upkeep and maintenance.

In areas requiring a number of buses certain facts have to be considered before a definite policy can be pursued. An attempt has been made to list a number of advantages of each in order to make the picture as clear as possible.

District Ownership of Buses

A. Flexibility in operation.

B. Better control of the transportation system.

C. Economy of cost.

D. Greater safety.
Each of these is now considered in more detail.

A. Flexibility

It is frequently necessary to transport pupils other than to and from school. Extra-curricular activities often call for teams to be transported to other districts, and school choirs to be taken to music festival centres. This is much more easily accomplished if the buses are owned by the district. No special arrangements have to be made with a contractor nor will there be any inconvenience as might arise under a contract system.

Furthermore, owing to a shift in population in certain areas it is often found, that whereas a large bus was required in September, a small one is adequate in February. Buses may also have to be re-routed for certain reasons during the term. The writer's opinion, based on a study of the literature, is that it is much easier to make such adjustments under a district-ownership transportation system. Contracts are very specific and once legally signed are very hard to change. It may be found very difficult to convince a contractor that adjustments are necessary.

B. Better Control

As transportation is an integral part of school organizations it is subject to control. The writer believes that a greater degree of control can be exercised by a board when that body owns its transportation equipment. The smooth and efficient running of any large corporation is due, to a
large degree, to the exercise of supervision and control. So it is with a school board in regard to transportation.

C. Economy of Cost

In Chapter III, page 10, of this thesis the writer quoted United States authorities whose opinions were that the district-owned bus was not only more efficient but more economical.

In relation to the situation in British Columbia, not enough data were available to prove conclusively that owning the buses is more economical than contracting for them. Chilliwack, owning seven buses, maintained that bus ownership was a more economical system. Armstrong, contracting for seven buses, while not claiming economy, felt that the difference in cost, if any, was only slight, and that this slight advantage was overcome by a decrease in the time and energy required in cost accounting, such as is necessary in a system of district ownership. A detailed study of the transportation system of these two cities is to be found on pages 45 and 49.

Evans' study of transportation costs in California indicated that the district-ownership system was more economical than the contract system, whether judged on the basis of cost per pupil per day or per year, total cost per bus-mile, or cost per pupil-mile. He says,

"The case for school ownership rather than the contract plan seems to be clear. When length of routes and average load are taken into consideration, buses owned by high schools show costs ranging from 8 to 10
percent lower than similar projects carried out under contract with private parties. This difference is further emphasized by a lower average cost per mile and per pupil when equipment is owned by the school."

Linn is of the opinion that it is more economical for the district to own its own buses. He says, "... in general it has been found that the district-ownership system is more economical and satisfactory than the contract system."

In the same chapter he mentions a study of transportation costs in ninety-two schools in twenty-eight counties in Colorado, made by Greene. This study showed,

"Forty-seven of the schools had district-owned buses and 37 contracted for the bus service. The figures reported by Greene showed that the median cost of transportation per child per day for schools in irrigated districts was 17 cents under the district-ownership system and 47 cents under the contract system. The median cost per mile also showed a lower cost for the district-ownership system. In the irrigated districts the median cost per mile was 17 cents where the schools owned their equipment and 25 cents where the transportation service had been contracted for. In the dry-land districts the costs were 15 cents and 17.5 cents per mile, the lower cost favoring the school-owned equipment plan."

D. Greater Safety

Safety is the most important consideration of any transportation system. This may be more easily controlled under district ownership, since the board employs the driver. Under contract plans the board must employ the driver who is

3. Ibid., p. 436.
able to finance a bus.

Further arguments in favor of district ownership might be suggested.

(1) Equipment such as that found in gymnasiums and cafeterias is owned, not rented. Transportation units are also a part of a school's equipment and should be owned.

(2) Since the profit motive is non-existent in a district-ownership system a better type of bus can be provided.

(3) Repairs and maintenance are also cared for on a non-profit basis where the district has its own facilities for upkeep.

(4) A number of buses can be operated and maintained at a lesser cost than can individual buses owned by several parties.

Contracted Buses

The arguments in favor of the contracted bus are fewer and less easily tenable. The advantages usually claimed are:

(a) There is less clerical work because it does not seem to be necessary under a contract system to keep a detailed system of reports, records and accounts. This claimed advantage is fallacious because it is the duty of a school board to spend the taxpayers' money as wisely and intelligently as possible. This, in the writer's opinion, can only be done, in the case of transportation costs, if the board knows from its records and reports where every cent goes and, through a study of
of these records, can make intelligent comparisons of costs for any specific period. (b) The initial outlay on the part of the board is small. It is borne by the contractor in the first place, and repaid to him, by the board, over the period of years of the contract. (c) The buses will be better cared for. It is maintained that a driver will take better care of the bus if he owns it. The motives behind this argument would be twofold, first, his interest in his own property and second, the desire for profit. (d) Transportation costs are known at the outset and the use of the bus after school hours, which tends to increase costs, is held to a minimum.

Contract Specifications

Modern business, due mainly to its complexity, demands definiteness regarding agreements, plans and costs. This is essential if any business is to be kept on a sound footing. School transportation also demands a definiteness and clarity, and while the exact contract forms to be used may vary in detail from district to district, the essentials remain constant.

From a study of the literature on transportation and of a number of contract forms the writer has made a list of features which he believes essential in bus transportation contracts. These may serve as a guide in drawing up contracts.

(1) All contracts must be specific so that there may be no ambiguities over which disagreements may arise later.
(2) The observance of all rules and regulations as contained in the British Columbia Motor-vehicle Act and of all regulations which might be made by either the Department of Education or the School Board relating to transportation should be made a condition of all contracts.

(3) Contracts should be signed in duplicate both by the secretary of the school board and the person or representative of the firm with which the contract is made.

(4) Provision should be made for the carrying of adequate insurance by the contractor. The amount of insurance carried should be stated and it should also be stated clearly who is to be responsible for the payment of the annual premiums. The policy should insure jointly the liability of the school board and the contractor and must at least include public liability and property damage.

(5) Whereas in British Columbia part of the expense of transportation is borne by the Department of Education the contracts should be approved by that Department.

(6) Provision should be made if possible for the changing of the routes of the buses should it be found necessary during the term.

(7) Provision should also be made for the terminating of the contract should the contractor fail to carry out the terms to the letter.

(8) The commencement date and date of termination should be on all contracts.

(9) The consideration for services to be rendered by the
contractor should be clearly stated. It should be clearly set forth whether such payments are to be made on the basis of actual miles travelled, of calendar months, of years or whatever plan is agreed upon.

(10) The contract should contain provision for the termination of such contract by the mutual consent of the parties concerned.

Contracts should not be let before first calling for bids, the lowest or any bidder not necessarily to be accepted.

Types of Contracts

The four main types of contracts in connection with school bus transportation may be classified as:

(1) Contracted vehicle. This contract is made between the school board and a contractor who provides, operates and maintains the school bus.

(2) Chassis only. This is between the school board and the contractor who provides, operates and maintains the chassis.

(3) Driver Contract - District-owned Bus. This contract is between the school board which owns and maintains the bus and the driver who operates it.

(4) Parent Contract. A contract between a parent who provides, operates and maintains a conveyance for the transportation of his own children, and the school board. This contract may permit the parent to transport other children living in the area.
Notice to Bidders and Contract Forms

As already stated, the form which a contract or notice may take might vary slightly from one district to another but in substance and essentials it remains the same.

After making a study of a number of contract forms used by various districts in the United States, the writer has drawn up three examples which may be of value in drawing up other contracts.

Notice to Bidders

Notice is hereby given that sealed bids will be received until ___ P.M. ______, ________, 194_, at the office of the Board of School Trustees, ________, ________, British Columbia, for pupil transportation service. Complete details and specifications regarding the routes, roads to be travelled, time schedules, pupils to be transported, days of service, term of contract and satisfactory equipment are available at the above mentioned office.

The successful bidder will be required to provide joint public liability and property damage at his own expense to the amount of $_______ in the former and $_______ in the latter. He must also be licenced to drive a school bus according to the Motor-Vehicle Act of British Columbia. A surety bond in the sum of $_______ is necessary, conditional upon the faithful performance of all requirements specified in the contract.

A certified cheque in the sum of $_______ must accompany each bid. The proceeds of said cheque to remain the property
of the above mentioned Board of School Trustees, if the successful bidder shall not, within ____ days after notice of acceptance of his bid, enter into a written contract and secure said contract by the required bond.

__________________________
Sec. of ______ School Board

The following contract form was drawn up by the writer after a study of a number of contract forms which are in use in the United States.

Contract for Transportation

This agreement entered into this ___ day of ______, 194__, by and between the Board of School Trustees of ______, B. C., hereinafter referred to as the BOARD, and ______ of ______, ______, B.C., hereinafter referred to as the CONTRACTOR,

Witnesseth:

1. The CONTRACTOR, for and in consideration of the payments to be made to the said CONTRACTOR by the BOARD as hereinafter set forth, does hereby agree to render transportation services under conditions described and provided below:

a. To furnish, operate and maintain at his own expense one school bus transporting children to and from the ______ School each day the school is in session for a period of
transporting all children designated by the BOARD at times set by the BOARD.

b. To change the route of the bus any time during the school year if deemed necessary by the BOARD.

c. To observe carefully standards of equipment and operation as required by statute or any regulations set down by the Department of Education, Victoria, B.C, or by the BOARD.

d. To insure jointly, prior to the effective date of this agreement and at his own expense, the liability of the said CONTRACTOR and that of the BOARD for injury to a person or persons to an amount of $_______ and property damage to a value of $_______, such insurance to be carried by a company agreeable to the said CONTRACTOR and the BOARD.

2. The BOARD agrees, in consideration of the services rendered by the CONTRACTOR under this agreement to pay to the said CONTRACTOR: (stroke out those not required)

a. The sum of ______ cents for each mile actually travelled by the bus owned by the CONTRACTOR in carrying out the terms and conditions of this agreement.

b. The sum of ____ per calendar month, during the life of this agreement, providing, however, that the CONTRACTOR shall not receive any compensation during the months of
c. The sum of _____ per school year during the life of this agreement payable in ____ equal monthly instalments of $_____.

3.a. It is expressly understood that in case of wilful violation of any of the terms and conditions of this agreement the BOARD shall terminate this agreement and it shall be of no force and effect whatever.

b. Moreover, it is also expressly understood that this agreement may be terminated by the mutual consent of the said BOARD and the CONTRACTOR and shall be of no force and effect whatever.

This agreement shall be subject to the approval of the Department of Education, Victoria, British Columbia. It shall terminate on the ____ day of ______, 194_.

Dated at ______, B.C. this ____ day of _____, 194_.

Witness

Board of School Trustees

per __________ Secretary

Contractor

per __________

The following driver-contract form is suggested for the purpose of aiding officials in drawing up such a contract form. It may be found necessary to make adjustments or changes in this form to make it adaptable to any particular situation.
Contract with School Bus Driver

This agreement entered into this _____ day of ____, 194_, by and between the Board of School Trustees of __________, British Columbia hereinafter referred to as the BOARD and _______ of (street), (city), British Columbia hereinafter referred to as the DRIVER.

Witnesseth:

The BOARD agrees to employ the DRIVER as a driver of a school bus for the period commencing _______ and ending _______ at a salary of $____ per hour, _______.

The DRIVER further agrees to comply with and observe all rules and regulations laid down by statute, by the Department of Education and by the BOARD.

It is expressly understood and agreed to by both hereto that upon the wilful violation of any of the terms and conditions of this agreement by the DRIVER, the BOARD may annul this contract and dismiss the DRIVER.

Dated at __________, British Columbia this _____ day of _____, 1941.

Board of School Trustees

Witness

per _______ Secretary

Driver

per _______
Summary

(1) The writer believes that in a district where only a small number of pupils are transported it is preferable to contract for transportation equipment.

(2) Any adjustments which may have to be made during the school year are more easily made if the buses are owned by the district.

(3) The writer is of the opinion that a greater degree of control can be exercised when the board owns its own buses and this tends towards increased efficiency.

(4) Though there was not enough data available in British Columbia to warrant the drawing of a conclusion, a study of the American authorities reveals the fact that district-owned buses are more economical to operate than contracted buses.

(5) It is important to note that district-owned buses are operated on a non-profit basis.

(6) The arguments in favor of contracted buses is based largely on three points, (a) less clerical help, (b) no initial outlay and (c) better bus care.

(7) In the opinion of the writer there a number of essential features of transportation contracts. (a) Contracts must be specific. (b) They must provide for the observance of all rules and regulations. (c) They must also provide for the carrying of insurance, the possible changing of routes and the termination of the contract by the board or by mutual consent. (d) They should be approved by the Department of
Education. (e) They should state clearly the remuneration to be received and when it is to be paid. (f) They should also contain the date of commencement and termination of the contract.
CHAPTER V

TRANSPORTATION IN BRITISH COLUMBIA

Introduction

In this chapter no attempt will be made to present a complete picture of existing conditions in British Columbia, because of lack of sufficient data. However, it is hoped that the facts presented here will prove a valuable aid in a better understanding of transportation in this province.

Had a more complete analysis been possible the costs shown here could have been based on the number and length of the routes or on the per-pupil per-day per-mile basis and thereby have had a greater significance.

Areas Having Transportation

The transportation movement has grown rapidly since its inception in 1905.

Table IV shows that in 1938-39 there were 734 school districts in British Columbia of which 120 transported pupils to and from school.

Thus in 1938-39 approximately 16.3 per cent of the school districts transported school pupils, either by motor bus, horse-drawn vehicle or some other conveyance.
### Table IV
Total Number School Districts in British Columbia and Number Having Transportation

<table>
<thead>
<tr>
<th>Classification</th>
<th>Total No. Areas</th>
<th>Number Having Transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td>District Municipalities</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Educational Administrative areas</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Rural Districts</td>
<td>675</td>
<td>90</td>
</tr>
</tbody>
</table>

**Questionnaire**

In order to collect facts pertaining to transportation in British Columbia a questionnaire was prepared and sent out. The year 1938-39 was taken because the figures for this year would be the latest available. The questionnaire sent to the cities was of a more detailed nature than that sent to the rural districts. The reason for this was that in the cities a larger number of buses was used and more complete information was available. In rural areas where only one bus was running detailed information was hardly to be expected. Copies of these questionnaires are to be found in the appendix.

In all, sixty-eight questionnaires were sent out and the response was very gratifying. Table V. shows the number sent to cities, educational administrative areas, district municipalities and rural districts, also the number of

1. Taken from: List of Schools in British Columbia with Names and Addresses of Principals and Secretaries, Mimeo. by Department of Education, Victoria, B.C.
replies received from each of these types of areas.

Table V
Number of Questionnaires Sent and Received - By Areas

<table>
<thead>
<tr>
<th>Questionnaires</th>
<th>Cities</th>
<th>Educ'1 Admin. Areas</th>
<th>Dist. Munic.</th>
<th>Rural Districts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Sent</td>
<td>9</td>
<td>1</td>
<td>19&lt;sup&gt;a&lt;/sup&gt;</td>
<td>40</td>
<td>68</td>
</tr>
<tr>
<td>Number Received</td>
<td>7</td>
<td>0</td>
<td>13</td>
<td>35</td>
<td>55</td>
</tr>
</tbody>
</table>

<sup>a</sup> One was not sent to Burnaby because transportation is not a very important item - a small number of pupils receive car or bus fare.

While the questionnaires revealed some very interesting information, generally speaking the amount of data was inadequate for the making of accurate comparisons.

Total Costs

Table VI shows the total cost of education, the total cost of transportation, the per-area average cost of transportation, the highest, lowest and average percentages of the total cost of education that were used for transportation for the year 1938-39.

Table VI
Costs of Education and Costs of Transportation
in British Columbia for 1938-39

<table>
<thead>
<tr>
<th>Item</th>
<th>Cities</th>
<th>District Munic'lities</th>
<th>Rural Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Replying</td>
<td>7</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Total Cost of Education</td>
<td>$458,628.02</td>
<td>$686,654.96</td>
<td>$361,117.13</td>
</tr>
</tbody>
</table>

<sup>1</sup> The Annual Report of the Public Schools of British Columbia, 1938-39, Department of Education, Victoria, B.C.
Table VI - continued

<table>
<thead>
<tr>
<th>Item</th>
<th>Cities</th>
<th>District Municipalities</th>
<th>Rural Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost of Transportation</td>
<td>$35,051.50</td>
<td>$54,615.96</td>
<td>$62,362.44</td>
</tr>
<tr>
<td>Average (pér area) cost of Transport'n</td>
<td>5,007.36</td>
<td>4,201.23</td>
<td>1,781.78</td>
</tr>
<tr>
<td>Highest percentage used for Transport'n</td>
<td>29.1</td>
<td>35.3</td>
<td>31.4</td>
</tr>
<tr>
<td>Lowest percentage used for Transport'n</td>
<td>.5</td>
<td>2.2</td>
<td>2.78</td>
</tr>
<tr>
<td>Average percentage used for Transport'n</td>
<td>13.6</td>
<td>11.9</td>
<td>10.1</td>
</tr>
</tbody>
</table>

As already stated (see Table IV) there were nine cities, twenty district municipalities, one educational administrative area and ninety rural districts providing transportation. Questionnaires were sent to all the cities, to the educational administrative area, to nineteen (see footnote (Table V) district municipalities and to forty rural areas.

The forty rural areas to which the questionnaires were sent were picked at random. The writer felt that forty would be a satisfactory number because he assumed that, generally speaking, each rural area would use only one or at the most two buses and there would be a great similarity among them as to policy pursued, costs and types of buses. Moreover, it was believed that records kept by rural districts school boards would not be in any great detail. This was found to be true. While the number of pupils transported in the rural areas from which replies were received ranged from
two to two hundred per district, the majority ranged from two to eight. Such a small number does not call for the keeping of detailed records.

Ownership of Buses

In all three types of areas there was a preponderance of privately-owned buses. In other words most of the areas contracted for their transportation. Table VII shows the number of districts replying to the questionnaire, the total number of buses in use, the number owned by the district and the number contracted for.

<table>
<thead>
<tr>
<th>Areas</th>
<th>No. Replying</th>
<th>Total No. Buses in Use</th>
<th>No. Owned by District</th>
<th>No. Contracted for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>7</td>
<td>26</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>District Municipal's</td>
<td>13</td>
<td>34</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Rural Districts</td>
<td>35</td>
<td>44</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>Totals</td>
<td>55</td>
<td>104</td>
<td>7</td>
<td>97</td>
</tr>
</tbody>
</table>

The ratio of contracted buses to owned buses as shown in the above table is very high. What justification is back of the preference for contracted buses is not clear. In some cases of course it may be a necessity rather than a preference. In the opinion of the writer, the contracted bus is preferable in rural districts where only one bus may be in use and where only six or eight pupils are transported. The
initial outlay for the purchase of a bus and for providing a place to keep and repair it may be too heavy a burden for many rural districts.

It would appear that contracted buses entail considerably less clerical work, and this feature possibly has a strong appeal for school boards. It is much easier to call for bids for transportation and have the problem settled for the next three or five years, depending on the length of the contract. Moreover, it is the contractor who must worry over such matters as insurance, depreciation, repairs and maintenance, and not the school board. However, the fact must not be overlooked that the board is the spender of the people's money and should value that authority as a sacred trust.

Seating Arrangement

Table VIII shows the number of buses with lengthwise and crosswise seating in the cities and district municipalities.

It should be noted that according to the regulations of the Motor-vehicle Branch, British Columbia Police, issued on July 25, 1939, lengthwise seating is not permitted, except by special permission, in new buses carrying over twelve pupils. According to advice from the Provincial Police Department the purpose of this regulation is not only to provide greater comfort for pupils but also to avoid unnecessary trouble which is more likely to arise in buses which have longitudinal seating. This is especially true in the transporting of
adolescent pupils.

Table VIII

Seating Arrangements of Buses in Seven Cities and Thirteen District Municipalities in British Columbia

<table>
<thead>
<tr>
<th>Area</th>
<th>No. Buses</th>
<th>Longitudinal Seating</th>
<th>Crosswise Seating</th>
<th>Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>26</td>
<td>14</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>District Municipalities</td>
<td>34</td>
<td>22</td>
<td>11</td>
<td>1</td>
</tr>
</tbody>
</table>

Seating Capacity

Table IX shows the number of buses by seating capacity in seven cities and thirteen district municipalities in British Columbia.

Table IX

The Number of Buses by Seating Capacity in Seven Cities and Thirteen District Municipalities in British Columbia

<table>
<thead>
<tr>
<th>Seating Capacity</th>
<th>Cities</th>
<th>District Munic.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 or less</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>11 to 15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16 to 20</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21 to 25</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>26 to 30</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>31 to 35</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>36 to 40</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>41 to 45</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>46 to 50</td>
<td>13</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Over 50</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>
**Route Lengths (One way only)**

The longest route travelled by any bus in the seven cities was fourteen miles and the shortest, two miles. The longest routes ranged from two miles to fourteen and the shortest routes from two miles to thirteen miles. From the reports received from the seven cities the writer observed that in one city the longest route was two miles. One city reported its shortest route was two miles while another reported the shortest to be thirteen miles. The reports received from the district municipalities showed that the longest routes ranged from eight miles to thirty-five and the shortest routes ranged from one mile to sixteen.

**Distance Pupils Transported (One way only)**

There was very little available information on the distance (one way only) that pupils were transported. Only one city and eight district municipalities reported on this question.

Table X shows the distances in miles (one way) and the number of pupils transported in the eight district municipalities.
Table X
Distances Pupils Transported (One Way) in Eight District Municipalities in British Columbia

<table>
<thead>
<tr>
<th>Distance Transported (in miles)</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>0</td>
</tr>
<tr>
<td>1 - 2</td>
<td>58</td>
</tr>
<tr>
<td>3 - 4</td>
<td>284</td>
</tr>
<tr>
<td>5 - 6</td>
<td>345</td>
</tr>
<tr>
<td>7 - 8</td>
<td>91</td>
</tr>
<tr>
<td>9 - 10</td>
<td>39</td>
</tr>
<tr>
<td>Over 10</td>
<td>81</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>898</strong></td>
</tr>
</tbody>
</table>

Median distance 5.6 miles

Maximum Time (One Way) Pupils were on the Bus

Here again many of the areas had no available information due mainly to the large number of buses contracted for. It was possibly felt that such information was unnecessary because the transportation of the pupils was governed by contract and as long as that contract was carried out details were unimportant. However, Table XI shows such information as was available. Here is shown the maximum time (one way) in minutes travelled by pupils in four cities and ten district municipalities in British Columbia.
Table XI

Maximum Time Pupils were in Transit in Four Cities and Ten District Municipalities in British Columbia

<table>
<thead>
<tr>
<th>Maximum Time in Minutes</th>
<th>No. of Cities Reporting</th>
<th>No. of District Municipalities Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 15</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>16 - 30</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>31 - 45</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>46 - 50</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>51 - 60</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Over 1 hour</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Length of Contract

The maximum length of contract is five years according to the School Law of British Columbia.

Table XII shows the length of contracts in seven cities, thirteen district municipalities, and thirty-two rural districts and also the modal lengths.

Table XII

Length of Contracts in Years

<table>
<thead>
<tr>
<th>Length of Contracts (Yrs.)</th>
<th>No. of Cities</th>
<th>No. of District Municipalities</th>
<th>No. of Rural Dist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Modal length 5 yrs. 3 yrs. 1 yr.

* Only thirty-two Rural Districts replied.

From a consideration of the above table it can be seen that the modal length of contract is highest in cities and lowest in rural areas. Whether the contracts are let on a basis of convenience, economy or contingency is not clear. It would seem that in rural districts where there is only a small number of children to be transported, requiring only one bus, and where there is only one person in that district owning a conveyance, a period of contract longer than one year would be unnecessary.

One area reported that costs were possibly higher than they should be due to the fact that there was only one bidder for the contract and he received it year after year. Though it would not be fair to say that costs are necessarily higher when there is only one bidder, yet it is the opinion of the writer that costs tend to vary inversely as the number of bidders.

An attempt was made to find out what relationship existed between length of contract and costs. This proved to be unsuccessful because there were not enough cases to warrant a comparison being made. However, length of contract is one of the many factors entering into a consideration of costs.

Per-Pupil Cost

In calculating per-pupil cost the number of school days, namely one hundred ninety-one was used. In a few cases, areas reported costs based on two hundred days and in these
cases calculations were made accordingly. Table XIII shows that costs were based on 1064 pupils in the cities, 2396 pupils in the district municipalities and 1022 pupils in the rural districts.

It will be seen that the range of costs was much greater in rural districts than in either the cities or district municipalities. The average annual cost per pupil in rural areas is nearly double what it is in the cities. It should be noted, however, that while this average annual cost per pupil in rural areas is based on a slightly lower number of pupils, it is based on a much greater number of areas.

**Table XIII**

The Range of Costs and the Average Costs Per Pupil Per Annum and Per Day in British Columbia, 1938-39

<table>
<thead>
<tr>
<th>Item</th>
<th>Cities</th>
<th>District Municipal</th>
<th>Rural Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Reporting</td>
<td>7</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>No. Pupils Transported</td>
<td>1064</td>
<td>2396</td>
<td>1022</td>
</tr>
<tr>
<td>Range of Per-Pupil Cost Per Annum</td>
<td>$15.56-$48.65</td>
<td>$13.19-$50.00</td>
<td>$6.54-$150.00</td>
</tr>
<tr>
<td>Average Per-Pupil Cost Per Annum</td>
<td>$32.94</td>
<td>$22.78</td>
<td>$61.02</td>
</tr>
<tr>
<td>Range of Cost Per Pupil Per Day</td>
<td>8.2¢-25.5¢</td>
<td>6.8¢-26.2¢</td>
<td>3.4¢-75¢</td>
</tr>
<tr>
<td>Average Cost Per Pupil Per Day</td>
<td>17.3¢</td>
<td>11.9¢</td>
<td>31.9¢</td>
</tr>
</tbody>
</table>
Reports

One of the difficulties in collecting data on transportation in British Columbia was that practically no reports of any kind were handed in by drivers either to the principals or the school boards. In the cities daily reports were submitted in only one case where a verbal report was given and in no case was either a per-trip report or even a weekly report handed in. Two cities replied that they received monthly reports and one received reports "when needed".

Of the thirteen replies received from district municipalities none reported receiving reports of any kind.

The rural areas were somewhat better. Eleven reported receiving monthly reports and one reported receiving reports "when necessary." The remaining twenty-three were not in receipt of reports of any nature.

The enquiry as to the use of printed forms elicited the information that only one city had any such forms. Both the district municipalities and the rural districts were unanimous in their answer "No" to this question.

Table XIV

The Number and Types of Reports Received by the Three Types of Areas

<table>
<thead>
<tr>
<th>Areas</th>
<th>Daily</th>
<th>Per Trip</th>
<th>Weekly</th>
<th>Monthly</th>
<th>None at All &quot;When needed&quot;</th>
<th>No. using Printed Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3(One - &quot;When needed&quot;)</td>
<td>1</td>
</tr>
<tr>
<td>(one verbal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Munic.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Rural Districts</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>23(One - &quot;When needed&quot;)</td>
<td>0</td>
</tr>
</tbody>
</table>
Road Conditions

Most encouraging reports came in about road conditions throughout the province. Table XV shows that of the seven cities, five reported the roads as good, and two as fair. Eight district municipalities reported the roads as good, four as fair and one as poor. The rural areas, in which one would expect bad roads, reported in twenty-two cases the roads as good, in eleven, fair, in one, poor and in one, very poor.

Table XV

Conditions of Roads in British Columbia Over Which School Buses Travel - According to Area

<table>
<thead>
<tr>
<th>Area</th>
<th>No. Reporting</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>District Munic.</td>
<td>13</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Rural Districts</td>
<td>35</td>
<td>22</td>
<td>11</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Summary

(1) The data from which the analysis was built up were taken from the Sixty-Eighth Annual Report of the Public Schools of British Columbia, 1938-39," and from replies to questionnaires.

(2) The total amount spent by the seven cities for education was $458,626.02, by the thirteen district municipalities $686,634.96 and by the thirty-five rural districts $381,117.13. The total cost of transportation in these areas
was $35,051.50, $54,615.96 and $62,362.44 respectively. The percentage of the total school expenditure used for transportation ranged in the cities from .5 to 29.1, in the district municipalities from 2.2 to 35.3 and in the rural districts from 2.78 to 31.4. The average percentage was, cities 13.6, district municipalities 11.9 and rural districts 10.1.

(3) The combined total of buses reported was one hundred four, of which ninety-seven were privately owned and seven district-owned. In the cities 1064 pupils were transported, in the district municipalities 2396 and in the rural districts 1022.

(4) The majority of buses in the cities and district municipalities had longitudinal seating.

(5) The longest bus routes were in the district municipalities.

(6) Contracts ran for the longest period in the cities. The majority of contracts in the rural districts were for one year.

(7) The average annual cost per pupil for transportation was: Cities $32.94, district municipalities $22.78 and rural districts $61.02.

(8) The average per pupil per day cost was: Cities 17.3¢, district municipalities 11.9¢ and rural districts 31.9¢.

(9) The majority of school boards received no reports of any kind from bus drivers.

(10) Only one of the combined total of fifty-five areas reported the use of printed report forms.
(11) The majority of the areas reported road conditions as good.

**Chilliwack**

Chilliwack is one of the areas in British Columbia which has a fairly large transportation system and the writer felt that a detailed study of this system would be valuable. It has had experience with both contracted and district-owned buses. However, all transportation equipment is now owned by the district.

The following summary shows the pertinent information regarding pupil transportation in this area.

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Gross cost of transportation for the year 1939-40</td>
<td>$9,644.82</td>
</tr>
<tr>
<td>Total net cost of transportation</td>
<td>$6,192.27</td>
</tr>
<tr>
<td>Number of buses owned by the district</td>
<td>7</td>
</tr>
<tr>
<td>Total number of pupils carried in 1939-40</td>
<td>61,471</td>
</tr>
<tr>
<td>Gross annual cost per pupil</td>
<td>$10.97</td>
</tr>
<tr>
<td>Net annual cost per pupil</td>
<td>$7.13</td>
</tr>
<tr>
<td>Gross cost per pupil per day</td>
<td>$0.059</td>
</tr>
<tr>
<td>Net cost per pupil per day</td>
<td>$0.038</td>
</tr>
<tr>
<td>Number of drivers</td>
<td>7</td>
</tr>
<tr>
<td>Total bus mileage</td>
<td>60,402 miles</td>
</tr>
</tbody>
</table>

1. The writer is indebted to Mr. Carson McGuire, Supervising Principal of Chilliwack schools, for the above information. He willingly gave of his time, and his assistance was much appreciated.
Longest route (one way) any bus travels 15.8 miles
Shortest route (one way) any bus travels 8.8 miles
Net cost per bus mile $ .102

a Includes: Upkeep, Supplies, July-August expense, Tires, Depreciation & Interest charges.

b Includes: General upkeep, supplies, Salaries, July-August expense & Tires.

The buses are kept in a bus depot which has a repair shop. The depot and repair shop are in charge of a superintendent who is paid an annual salary (twelve months).

The salary of the drivers is based on ten months and is not dependent on the number of days the buses run. This prevents any difficulties arising if an extra trip has to be taken. Drivers are paid from forty dollars to fifty dollars per month and work approximately three to four hours per day.

Gas, Oil and Repairs
Gas and oil are contracted for from local dealers.
Repairs are made by the superintendent. If there are any repairs he is unable to make or any garage supplies he requires, he receives an order for such supplies or repair work. This does not generally run over eleven or twelve dollars per month.

Bus Routes
The bus routes are laid out at the beginning of the term and in the case of the shorter routes buses may make two or three trips. Waiting periods, when pupils must wait for the bus, are minimized. The average bus travels about forty-six
miles per day.

Pupils must arrive at the school five minutes before nine o'clock in the morning. They leave ten minutes after school closes in the afternoon.

Costs

Costs have been divided into two classes:

1. Net Operating Costs
   a. Cost of gasoline
   b. Cost of oil
   c. Cost of grease
   d. Cost of replacements and repairs
   e. Shop supplies and equipment
   f. Drivers' salaries
   g. Cost of supervision
   h. July-August expense

2. Fixed Costs
   a. Payments on buses
   b. Interest on bus costs
   c. Insurance on buses
   d. Depreciation on buses and shops, etc.

Depreciation

The life of a bus is taken as 100,000 miles. On the average each bus runs 10,000 miles or one-tenth of its life-mileage every year. Therefore on this basis depreciation is calculated as one-tenth or ten percent.
The chief costs upon which comparisons or estimates are made are the:

1. Net Cost
   a. Per bus-mile
   b. Per pupil

2. Gross Cost: (Net + Fixed Costs)
   a. Per bus-mile
   b. Per pupil

**Supervision**

The bus driver has the authority of a teacher in the matter of discipline while the pupils are passengers of his bus.

**Reports**

Each driver receives a monthly bus chart. On this he fills in such things as:

a. Number of miles travelled
b. Total number of pupils carried
c. Number of gallons of gasoline used
d. Number of quarts of oil used
e. Other less important details

These charts are handed to the superintendent who in turn makes out a complete report which he sends to the school board.

From these charts are calculated the cost of gasoline per mile, drivers' wages per mile and the cost per pupil per mile.

**Owner versus Contracted Buses**

The owned buses have been found to be more satisfactory.
This is attributed to two factors:

1. They are less expensive to operate.
2. They permit of a greater degree of control.

Armstrong

For purposes of comparison the writer submits the following information relative to transportation in Armstrong.

Armstrong contracts for its transportation, the contracts being made for a period of five years.

The following summary shows the pertinent information relative to transportation of pupils in Armstrong.

Total cost of transportation for the year 1939-40 $11,700.31
Total number of buses contracted for 7
Total number of pupils carried in 1939-40 72,198
Number of drivers 7
Total annual cost per pupil $32.00
Total cost per pupil per day 16 - 17¢
Longest route (one way) any bus travels 13 miles
Shortest route (one way) any bus travels 7 miles

A unique situation arose at the end of 1937 when the contracts then in existence terminated. New tenders were

1.

For the above information the writer is indebted to Mr. C.E. Clay, Principal Armstrong Consolidated Elementary School. He willingly gave of his time to discuss the points of interest as he knows them relative to Armstrong. Later information through correspondence was also appreciated.
called for next year. The bus drivers held a meeting and agreed that each one should bid on only one route, so that for each route there was only one bidder. These bids were considered altogether too high.

The official trustee then called a meeting of the bus owners to find out why the bids were so high. The reason advanced was that there was no guarantee that at the end of the five-year contract period the Provincial Police Department would not take the bus off the road. In other words there was no guarantee that the bus would pass the inspection required by the Provincial Police before a new contract was entered into. Hence it was necessary to receive, in addition to salary, the full investment on the bus plus the full carrying charge in the five-year contract period. Thus the cost of transportation by the owner of any bus might be shown as

\[
\text{Cost per year} = \frac{\text{Investment} + \text{Carrying Charge} - \text{Salary}}{5}
\]

As a result of this meeting new contracts were drawn up.

The contractor’s daily remuneration is provided for in two parts, viz., a basic sum to cover the capital investment and fixed charges, including licences, insurance, repairs and replacements, and a mileage rate to cover the driver’s wages, gas, oil, and chains. Also the amount of variation in remuneration, occasioned by changes in the length of the route, is definitely provided for and does not become a matter of negotiation each time a change becomes necessary.

Mileage rates apply to the one-way distance from the
school to the furthest point on the route. They vary from forty to forty-seven cents according to the difficulty of the route. Snow conditions, road surfaces and gradients are considered when mileage rates are being determined.

The basic sum is paid for every prescribed school day regardless of whether or not school is in session. Mileage rates, however, are paid only for actual operation of the bus. The purpose of the basic sum is to safeguard the contractor's investment in case the schools are closed for one or more of the prescribed school days. This is important where the school is closed for a considerable period due to an epidemic.

The contracts do not provide for cash profits on the capital investment during the first five-year period of the life of the vehicle. During that time the vehicle is paid for and the profit arises from the fact that the bus has been both paid for and maintained in good condition and is suitable for a second five-year contract or for some other use.

The security of the basic sum clause and the knowledge that, provided the contractor has proved trustworthy, his contract will be renewed, has made contractors willing to operate at figures lower than they otherwise would consider satisfactory.

The basic sum was arrived at as follows:

The cash price of a new bus (1938), fully equipped, was $2775.00. The contractor made a cash payment of $800 and the balance was financed over a period of 3½ years at bank interest.
The basic daily sum was computed for a five-year contract period as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor’s original investment</td>
<td>$800.00</td>
</tr>
<tr>
<td>Interest on $800 for 5 years at 6%</td>
<td>240.00</td>
</tr>
<tr>
<td>Amount involved in financing and retiring unpaid balance on bus</td>
<td>2221.20</td>
</tr>
<tr>
<td>Contractor’s portion of insurance (5x$30)</td>
<td>150.00</td>
</tr>
<tr>
<td>Licences fees portion of (5x$90)</td>
<td>450.00</td>
</tr>
<tr>
<td>Upkeep and replacements (5 years)</td>
<td>400.00</td>
</tr>
<tr>
<td></td>
<td><strong>$4261.20</strong></td>
</tr>
</tbody>
</table>

Approximately 950 school days in five years.
1/950 of $4261.20 is approximately $4.50

In computing mileage costs drum prices for gas and oil were used.

The drivers’ wages were based on the mileage of the route. Wages ranged from forty to forty-three cents per mile depending on road conditions.

In drawing up the contracts each year, no comparisons are made with costs of other years. However, all contracts are approved by the Department of Education before being signed.

**Contract versus District Ownership**

The chief difficulties to be encountered when a district owns its own buses were suggested as follows:

(1) Financing the initial outlay. Mr. Clay believed that the extra taxation required to pay for buses would be too heavy a burden on the ratepayers.
(2) Obtaining drivers. He felt that it would be difficult to obtain drivers because of the odd hours.

(3) No saving. It was believed that after taking into consideration such items as storage costs, repairs and supervision there would be no saving.

Size of Buses

It was found that the cost of transportation decreased as the size of the bus increased. This applies only where a large bus is practicable.

Supervision

The bus driver has full authority over the pupils while they are passengers of his bus. The monitor system was tried and found not to be successful.

Reports

No reports were handed in by the drivers to the principal or school board.

Summary

In comparing the transportation systems of two cities such as Chilliwack and Armstrong it is necessary to take into consideration weather conditions and terrain.

An examination of the transportation systems of these two cities bears out the opinion of the writer that where conditions are favorable, owning is cheaper than contracting, but it necessitates a greater amount of work on the part of the school boards. The ownership of buses requires the keeping of detailed records.
In an earlier part of this thesis it was pointed out that most of the American authorities, with whom the writer had contact, were of the opinion that it is cheaper to own the transportation equipment.
CHAPTER VI

COST OF TRANSPORTATION

Supervision

In the consideration of any problem relative to costs in transportation there are four important factors which must be kept in mind. Any school transport system must:

(1) Be adequate.
(2) Be safe.
(3) Be comfortable.
(4) Be economical.

The first three are very important and should not be sacrificed in the interests of number four.

To ensure provision of the above four factors adequate and intelligent supervision is necessary. School boards require counsel and specific guidance along these lines. Here is a case for the Department of Education having in its employ specialists in this field to whom school boards might turn for advice. These specialists must be educationists as well as transport managers. Thus all districts could be certain of having an adequate transportation system if the advice given was carried out.

In the matter of safety, school buses must meet the requirements of the British Columbia Motor-vehicle Act. However, safety of pupils can best be guarded by cooperation of
school board, bus driver, school principal and the pupils themselves. Much valuable work can be done by the school principal and his teachers through the instruction of the pupils along safety lines and the allocating to a few chosen pupils some authority over other pupils while in the bus.

The comfort of the pupils is also looked after by the regulations of the British Columbia Motor-vehicle Act and other cooperative agencies. There are many agencies contributing to the safety or comfort of the pupils either directly or indirectly.

Supervisors should provide report forms and see that these are constantly in use.

Features of a school bus which contribute greatly to the safety of its occupants will be dealt with in a later chapter.

**Measuring the Cost**

Authorities differ as to the methods to be used in measuring the cost of an adequate, efficient and economical system of transportation.

Friswold, in speaking of adequacy says,

"Adequate pupil-transportation service requires that provision shall be made to transport at public expense all children whose educational opportunities are adversely affected by the distance they reside from school. ... Bus transportation in a given school district is adequate only when it is made available to every pupil whose need for transportation service to and from school can best be met by motor buses."  

The same authority defined efficiency as, "Bus transportation is efficient when every pupil to be transported is conveyed to and from school with safety, comfort, dispatch and economy at all times." Such efficiency is only attained when the factors of personnel, equipment, operation and maintenance and management are given sustained and competent attention.

In measuring costs of a bus transportation system there are two sets of factors to consider, namely (1) business factors and (2) natural factors.

By business factors are meant such items as the kind of equipment used, the methods of purchasing the equipment and of providing service and repairs, provision for supervision and the system of accounting which is used. These lie within the control of the school board.

The second class of factors, those termed "natural", refer to such items as the number of children who require transportation, the distance they must travel, the terrain over which they must be transported, the size of the school area in which they reside and the type of roads and weather conditions with which they must contend. These do not come within the control of the school board. Other factors not coming under the control of the board might be the current prices of new buses, parts, gasoline, oil and tires. These charges may be classed as variable. Thus we have two types of costs which do not come under the control of the school board, viz., fixed and variable. Under the first class may

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included such items as insurance, licence fees, number of
children to be transported, distance to be travelled, road and
weather conditions, depreciation, administrative costs and
garage rents. The last two may well be considered as fixed
when considered over a period of at least one year. Included
in the second class are the cost of gasoline, oil, lubricants,
tires, repairs and supplies.

Whatever factors are in operation it must be noted that
they all work concurrently. It is very difficult to single
them out and state definitely the effect of each on the sum
total of expense.

Depreciation

There is a difference of opinion among authorities as to
how depreciation should be calculated.

To quote Winfrey, "There seems to be no widely used method
of calculating depreciation charges for motor trucks, but
perhaps the fairest way would involve a combination of time and
mileage."¹ "The United States Bureau of Internal Revenue
allows trucks to be depreciated at 25% a year.... Such a basis
does not take into consideration the mileage driven, which is
an important item to the owner, even though it is not given
much weight in the final sale or trade in."²

Another authority, speaking of the calculation of
depreciation says,

¹ Statistics of Motor Truck Operation in Iowa. Iowa Engineer-
ing Experiment Station, Iowa State College, Ames, Iowa,
² Ibid., p.30.
"Whereas, 20 to 25% is commonly recommended as a suitable depreciation rate on automotive equipment such rates are, of course, usually arbitrary and subjective. As I see it, the most desirable basis for depreciation is mileage...; that mileage, which is directly related to wear and tear, is more significant than weeks, months, years or other units of time which cannot include consideration of the extent to which equipment is used within a given period of time." 1

The opinion of the writer, based on the study of a number of authorities, is that calculation of depreciation must be based on two factors, namely time and mileage.

Cost Factors

An attempt has here been made to lay down in somewhat summary fashion, factors which have a direct bearing on the measurement of costs. No special order of importance is claimed.

1. The length of the route. This, of course, depends on:
   a. The number of buses in operation.
   b. The size of the school area. The size of this area will be dependent on:
      (1) The size of the school.
      (2) The determination of the maximum walking distance of the pupils.
      (3) The pattern of the route - rectangular or circular.
      (4) The distance it is practicable to transport pupils of a given age.

2. The number of pupils to be transported. This also depends on:
a. The size of the school area.
b. The size of the school.
c. The decentralization of the homes over the area.
d. Determination of a maximum walking distance.

3. The road conditions. Routes could be longer in an area of good roads with few hills and mountains.

4. The type of equipment in use. As in all things, good quality pays good dividends in the end.

5. Weather conditions.

6. Location of the bus drivers' homes. Bus drivers should live near the starting point of their route.

7. Prevalent level of bus drivers' wages and of cost of living. Often it is necessary to pay higher wages than the standard level because it is only a part time job.

8. The current price level of supplies, e.g., gasoline, oil and lubricants.

9. The use of a good cost accounting system.

10. The current price level of new equipment.

11. Depreciation.

12. The current rates of insurance.

13. The number of bidders - in the case of contracted buses.

14. The length of the contract.

15. Bus ownership. The writer has tried to point out in an earlier part of this work that the policy of contracting for buses tends to increase costs.

16. The methods employed when laying out routes.
17. A knowledge of fundamental principles underlying the problem of costs.

**Methods of Determining Costs**

Each of the foregoing factors must be considered in determining costs, some to a greater degree, others to a lesser degree. But whatever the method used, an essential feature is objectivity, thus allowing for important comparisons to be made.

In a matter of such great importance it is necessary to have adequate information. This has been very difficult to get in British Columbia. In many cases no accurate records are kept. Not only are concise records essential, but before true comparisons can be made, there must be uniformity in the records and in the interpretations placed on them.

Although pertinent facts, such as have been collected for British Columbia are of value, they do not alone furnish a basis for the estimating of costs of transportation in new areas to be formed, nor do they necessarily tell us much of the efficiency of the existing systems.

In such items as average costs and range of costs there are so many variable factors and too many variable causes to predict with any degree of accuracy the cost of any new transportation system.
Methods of Providing Transportation

While there are several methods of transporting children to and from school by far the most important in British Columbia is by motor bus and this is the one the writer is chiefly interested in. Other methods used are horse-drawn vehicles, boats, taxis and private cars owned by parents. Some of these are only auxiliary to the motor bus.

Cost Relationships

There are bound to be certain variations in cost due to the size of the bus, the purchasing policy of the board and the system of cost accounting in use.

These variations, however, may be greatly accentuated, depending on the units by which comparisons are to be made. Reduction of dissimilar units to some form of uniformity is necessary.

The Mile as a Basis

The use of the mile as a unit upon which to base costs is not satisfactory. A mile is not constant, that is, every mile does not represent an equal amount of difficulty. Topography is one feature which of necessity must be considered. Also, the second mile does not involve the same amount of expense as the first. Each additional mile reduces the per-mile cost because much of the expense remains the same whether the bus travels one mile or seven miles. The per-mile cost varies with the number of miles travelled per day.

The cost per mile could only be used as a basis for comparisons of efficiency when buses run over routes of the
same length.

Evans, in his study "Factors Affecting the Cost of School Transportation in California" suggests the cost per seat-mile as a more satisfactory basis. He finds the number of seat-miles by multiplying the distance travelled by the conveyance each day by the seating capacity of the bus. Such a unit, he maintains, takes into considerations two major factors in expense of furnishing transportation, namely, the size of the conveyance which must be provided and the distance it travels each day. It is more closely related to actual expense than cost per pupil-mile which is based on the actual distance each child rides. The expense of a bus is approximately the same whether all the children ride to the end of the route or get off all along the way. In fact it might be cheaper to carry all the pupils the whole distance because stops would be eliminated.

However, the objections to the use of the mile as a unit also hold true for the seat-mile. One must be very careful in basing costs on the seat-mile. Such a basis could only be used where the buses were of equal seating capacity. Evans found that the seat-mile basis had limitations in that it favored the larger buses.

It is almost impossible to determine average costs on a


2. Ibid., p. 17.
basis of per pupil-mile or even on a per seat-mile because of their variability.

**Total Costs**

Turning now to total costs as a basis of comparison, we see that total costs may be taken as the total for a year or for a day. Since there might be a slight variation in the number of school days in various areas, total costs per day are preferable.

The chief items included in total daily cost would be such fixed costs as insurance, licence, depreciation, administrative costs and garage rents plus such variable costs as gasoline, oil, lubricants, repairs and supplies.

The use of total costs as a basis for comparisons necessitates the keeping of accurate and detailed records.

**Drivers' Wages**

There does not seem to be any relation between the wage paid to a driver and the capacity of the bus which he drives. Wages based on time appear to be a logical basis. However, there is the difficulty of part-time drivers. The driver is somewhat restricted in obtaining other work and thus it becomes an individual matter.

In the opinion of the writer, the best method for comparison is that based on the number of miles travelled, the unit for such comparison being the average wage paid per mile travelled.

**Net Operating Costs**

It has already been pointed out that comparisons of costs
based on mileage are unsatisfactory. However, unspite of that it must be recognized that net costs of operation are dependent on mileage. That is, fuel consumption, lubrication and tire wear are definitely, though not wholly, dependent on the number of miles the bus travels.

Because of the great variations it is difficult to reduce some of these costs to the basis of a mile for the purpose of comparison.

**Business Methods**

Turning now from comparisons based on such items as distance travelled and number of pupils carried let us look at the effect of business methods on costs.

It is almost a platitude to say that the policy of an executive largely determines the success or failure of a project. So it is with school boards in relation to transportation.

There are two types of policies which may be pursued: first, the policy of spending money freely, providing high grade equipment and transportation for students living near the school; second, the policy of providing transportation for the least possible number of pupils at the least possible cost. The first policy is only possible, however, in areas where there is little or no difficulty in collecting taxes.

As has been previously shown certain costs can be controlled by the school board. Business methods are controllable and it behooves school boards to make use of up-to-date business methods.
Selection of Buses

The choice of buses seems to be a fairly reliable index of the business policy to be pursued. Such a choice must be based on technical considerations and a board contemplating the purchase of equipment should seek the advice of a competent engineer or technician and from him receive a complete analysis of the types of buses under consideration. Purchases must be considered in terms of usefulness and service.

Effects of Roads on Costs

It would be extremely difficult to measure the effect of costs because of road conditions. The effect would not be very noticeable where the buses are small and the routes short. Large buses travelling long distances over poor roads and steep grades would show an increase in the per-annum cost of operation due to such factors as slower speed, increased fuel consumption and general wear and tear on the buses, over buses of similar sizes and travelling similar distances but over good roads. The Iowa Engineering Experiment Station in several of its recent bulletins points out that road conditions greatly affect bus costs but such detailed information is necessary in a study of this nature that it has not been possible to date to calculate the exact effect of roads on the wear and tear of buses.
Summary

(1) Adequacy, safety, comfort and economy are factors which must be considered in any study of school transportation costs.

(2) Adequate and intelligent supervision are essential to any school transportation system.

(3) Two methods of calculating depreciation are suggested, the one is based on a combination of time and mileage, the other is based on mileage only.

(4) Consideration must be given to the large degree of variation in the many determining factors.

(5) The motor bus is the chief method of pupil conveyance in British Columbia.

(6) Because every mile does not represent an equal amount of difficulty and because the second mile does not involve the same amount of expense as the first, the use of the mile-unit as a basis of costs is not satisfactory.

(7) It is very difficult to determine the exact effect which each of the contributing factors has on the total costs.

(8) Business methods are an important factor in costs and are controllable.

(9) The type of bus purchased is a fairly reliable index of the business policy being pursued.

(10) Inadequate records are kept by the majority of school boards in British Columbia.
CHAPTER VII

SUGGESTED REPORT AND COST ACCOUNTING FORMS

Modern business requires the continual use of written records. Without the definiteness regarding agreements, plans, costs and other business phenomena made possible by records, business practice on a large scale would be impossible. Similarly, an adequate control of the business of transporting pupils necessitates the preparation and use of records. Complete and accurate information concerning costs will not be available unless a system of record keeping is developed. Without such recorded data school boards can only guess when formulating their policies.

The reports and accounting forms hereunder suggested are those which the writer believes necessary for a complete cost accounting system. A large system of transportation requires detailed records. According to the individual needs of the various districts, the reports and forms which appear most essential should be selected.

In drawing up these forms, cognizance has been taken of the fact that the lack of clerical help greatly hinders the application of a system of record keeping. A definite attempt has been made to simplify these forms in order to facilitate their use and yet retain their value as an accounting system. The name of the city shown on these forms is fictitious.
1 Reports

(1) Daily bus inspection card
(2) Daily bus attendance report
(3) Daily behaviour report
(4) Accident report

Accounting forms

A. Owned buses

(1) Bus driver's daily report
(2) Purchase and repair order
(3) Monthly bus report - Operation and Maintenance
(4) Individual bus data
(5) Expense ledger
(6) Monthly transportation expense and operation report
(7) Yearly summary - expense and operation
(8) Record of insurance - buses
(9) Request for special use of school buses
(10) Tire record

B. Contracted Buses

(1) Monthly contract report
(2) Yearly contract record

1. The writer wishes to acknowledge gratefully the valuable assistance given to him by the Department of Education for the States of Maryland, Louisiana, Utah, California, Ohio, Massachusetts and by the Rural Education Department of the University of the State of New York, in the drawing up of the following forms. Certain suggested forms were received accompanied by encouraging letters. The writer is deeply indebted to the above for their kindly offers and assistance.
Daily Bus Inspection Card

This card is to be filled in by the mechanic or supervisor or, in the case of a driver-mechanic, by the driver. The mechanic doing the necessary repairs must initial in the column "Repaired by."

The supervisor or driver must make sure that any repairs necessary have been done before taking the bus out on the road, and sign the card. This card is to be given to the supervisor or man in charge who will hand it in to the school board office.

The main purpose of this report is to ensure the safety of the pupils as far as it is possible. Should the school board be sued after an accident proof of the regular inspection and repair of a bus is very valuable.

<table>
<thead>
<tr>
<th>BOARD OF SCHOOL TRUSTEES - OAKER, B.C.</th>
<th>Form A</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAILY BUS INSPECTION CARD</td>
<td></td>
</tr>
</tbody>
</table>

Date .......... Speed Reading .......... Bus No. ......

<table>
<thead>
<tr>
<th>Items Inspected</th>
<th>Check if OK</th>
<th>Repairs Needed</th>
<th>Repaired by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Signals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Lights</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Tires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Steering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Horn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Springs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Radiator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Breaks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Windshield Wipers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Bus Cleanliness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Remarks</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inspected by ............
Daily Bus Attendance Report

The driver must check the pupils who travel on his bus and report those missing to the principal of the school. This serves as a check for absentees. The case of a pupil who comes to school on the bus and does not appear in the classroom can be investigated almost immediately after school opens. It also is an aid in calculating the exact number of pupils carried daily.

Form B.

BOARD OF SCHOOL TRUSTEES
OAKER, B.C.

BUS ATTENDANCE REPORT

The following pupils were absent from bus

No ...... on ........ 194...

Bus Driver ..........................

To Be Handed to Principal Each Day
Bus Behavior Report

Each day the principal of the school receives from the bus driver a report on any pupil or pupils who misbehave while passengers on the bus. Such a report greatly aids the principal in preventing disciplinary problems from arising.

The Attendance and Behavior Reports might be combined if desired.

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

BUS BEHAVIOR REPORT

Route No......

<table>
<thead>
<tr>
<th>Name of Pupil</th>
<th>Date</th>
<th>Remarks on Misdemeanor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bus driver .................
(Signature)

School Bus Accident Report

Legal cases arising out of an accident often do not materialize for some time subsequent to the accident. In such cases it is essential to have a detailed report of the accident on file. This report should be filled in by the driver of the bus immediately after the accident or as soon after as it is possible.

The suggested form also acts as a record of the settlement of a claim resulting from an accident in which the school bus is involved.
# SCHOOL BUS ACCIDENT REPORT

<table>
<thead>
<tr>
<th>Form D.</th>
</tr>
</thead>
</table>

## Description of Accident

<table>
<thead>
<tr>
<th>Date of Accident</th>
<th>Hour</th>
<th>Location of Accident</th>
<th>Speed of Bus (M.P.H.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>If collision, estimated speed of other vehicle (M.P.H.)</th>
<th>Name &amp; Address of Driver of other vehicle</th>
<th>Speed of Bus (M.P.H.)</th>
<th>Owner</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>What signals were given?</th>
<th>Were any laws violated? If so, in what way?</th>
<th>Condition of weather</th>
<th>Licence No. of other vehicle (if any)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Whom do you think was to blame? Why?</th>
<th>No. students in bus when accident occurred</th>
<th>Name and addresses of other witnesses</th>
<th>State in detail how accident occurred</th>
</tr>
</thead>
</table>

## Personal Injuries

<table>
<thead>
<tr>
<th>Name of Injured</th>
<th>Address</th>
<th>Nature of Injury</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name of Injured</th>
<th>Address</th>
<th>Nature of Injury</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Was First Aid Necessary?</th>
<th>Was First Aid Rendered?</th>
<th>By Whom?</th>
</tr>
</thead>
</table>

## Property Damage

<table>
<thead>
<tr>
<th>Damage to property of others</th>
<th>Damage to School Bus</th>
<th>Driver’s Signature</th>
</tr>
</thead>
</table>

Details of Settlement:
Bus Driver's Daily Report

This report is to be filled in by the driver at the end of each day. From this report, kept on file by the school board, can be ascertained the number of students carried each day and the number of miles travelled by the bus on each trip. This report is essential in calculating the total and average number of students carried and the total and average mileage the bus travels in any stated period whether it be a week, month or year. Furthermore the number of gallons of gasoline and the number of quarts of oil used are also given. From these data can be found the average quantity of gasoline and oil used per mile.

The cost of any emergency repairs is also recorded on this form. This aids in the making of an accurate calculation of total costs.

BOARD OF SCHOOL TRUSTEES --- OAKER, B.C.
Bus Driver's Daily Report

Route No:...... Bus No:......... Seating Capacity..... Date....

<table>
<thead>
<tr>
<th>Trips</th>
<th>No. students</th>
<th>Mileage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st morning trip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd morning trip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st afternoon trip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd afternoon trip</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra trip</td>
<td></td>
<td></td>
<td>From: To:</td>
</tr>
</tbody>
</table>

No. gallons put into tank _______ No. of quarts of oil put in crankcase _______

Give reason if late

Emergency repairs: Nature _________ Cost _________

Is bus O.K.? _________

Signature of driver _________
**Purchase and Repair Order**

In a transportation system it is essential to know how each dollar is spent. Two large items of expenditure are those for fuel and lubricants and for repairs. In order to budget for the next year or to make accurate cost comparisons a detailed account must be kept of prices paid for fuel, lubricants, repairs and materials.

From the report hereunder suggested can be obtained detailed information regarding not only the amount spent but also each item of expense.

Form lb

**BOARD OF SCHOOL TRUSTEES — OAKER, B. C.**

**PURCHASE AND REPAIR ORDER**

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline (kind)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-Freeze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chassis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total for this order**

Cost of material used $ 

Parts or material used:

<table>
<thead>
<tr>
<th>No. Used</th>
<th>Description of Parts</th>
<th>Price Each</th>
<th>Total Cost</th>
</tr>
</thead>
</table>

Cost of Labor _____ hours at _____ per hr. $ 

Total amount ______

Signature
Monthly Bus Report - Operation and Maintenance

This report is a consolidated record of the operation and maintenance costs of the buses and is of value in making monthly comparisons of costs of operation and maintenance.

The information recorded herein can be obtained from the Bus Driver's Daily Report - form la, the Purchase and Repair Order - form lb, and in the case of garage and shop supplies and expense, from the bus superintendent.

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Bus No.</th>
<th>Bus Mileage</th>
<th>Students</th>
<th>Gas</th>
<th>Gas Cost</th>
<th>Oil</th>
<th>Oil Cost</th>
<th>Grease Lbs.</th>
<th>Grease Cost</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPERATION

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Chassis Material</th>
<th>Painting Labor</th>
<th>Body Labor</th>
<th>Chassis Material</th>
<th>Painting Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Garage & Shop Supplies & Expense

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Month Ending

Remarks:

Form 10

BOYD OF SCHOOL BOARD OF SCHOOL TRUSTEES - OAKR, B.C.

MONTHLY BUS REPORT - OPERATION & MAINTENANCE

School

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Bus No.</th>
<th>Bus Mileage</th>
<th>Students</th>
<th>Gas</th>
<th>Gas Cost</th>
<th>Oil</th>
<th>Oil Cost</th>
<th>Grease Lbs.</th>
<th>Grease Cost</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPERATION

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Chassis Material</th>
<th>Painting Labor</th>
<th>Body Labor</th>
<th>Chassis Material</th>
<th>Painting Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Garage & Shop Supplies & Expense

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Month Ending

Remarks:


**Individual Bus Data**

A complete record of each bus is necessary for inventory purposes. Such details are also required when insuring a bus.

Using information recorded on Form If and on the Individual Bus Data form the average cost per mile travelled can be calculated, over the period of the life of the bus, for each conveyance.

This report should be filled in and filed as soon as a new bus has been purchased.

---

**Form If**

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

INDIVIDUAL BUS DATA

<table>
<thead>
<tr>
<th>School</th>
<th>Bus Number</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**CHASSIS**

<table>
<thead>
<tr>
<th>Make</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model and Tonnage</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor No.</th>
<th>Serial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wheel Base (in inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tire Size:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Front
- Rear
- Spare

<table>
<thead>
<tr>
<th>Capacity of Gas Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Brakes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

| BODY |

- Make (name) | Year |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Underline - Wood, Steel, Wood & Steel

<table>
<thead>
<tr>
<th>Overall length</th>
<th>Overall width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type Seating Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kind of Upholstering</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position Emergency Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seating Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Gross Vehicle Weight (Weight of chassis plus weight of body plus weight of driver at 175 lbs. plus weight of pupils at 100 lbs. each)

---

**PURCHASE DATA**

<table>
<thead>
<tr>
<th>Date Purchased</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost of Chassis</th>
<th>Cost of Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost of Equipment</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>
The Expense Ledger

The expense ledger records the transactions related to the school bus for the complete year. It is a summary of all transactions.

Form 1e

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

EXPENSE LEDGER

Name of Account ____________ Year Ending ____________

School ____________________ Bus Number ________

<table>
<thead>
<tr>
<th>Date</th>
<th>Reference</th>
<th>Amount</th>
<th>Date</th>
<th>Reference</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Monthly Transportation Expense and Operation Report

This report is a consolidated record of the total expense and operation costs for each bus per month.

At a glance it can be seen which buses are most costly to operate and where the extra cost occurs. This record will be of great value to a school board when it is considering the purchase of new buses.
<table>
<thead>
<tr>
<th>Name of Account</th>
<th>Bus Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline Cost</td>
<td></td>
</tr>
<tr>
<td>Oil Cost</td>
<td></td>
</tr>
<tr>
<td>Grease Cost</td>
<td></td>
</tr>
<tr>
<td>Tires and Tubes</td>
<td></td>
</tr>
<tr>
<td>Repairs to Buses</td>
<td></td>
</tr>
<tr>
<td>Driver's Salary</td>
<td></td>
</tr>
<tr>
<td>Repairs to Bldgs, Machinery, etc.</td>
<td></td>
</tr>
<tr>
<td>Shop Expense - supplies, etc.</td>
<td></td>
</tr>
<tr>
<td>Depreciation Buses</td>
<td></td>
</tr>
<tr>
<td>Depreciation Buildings</td>
<td></td>
</tr>
<tr>
<td>Depreciation Shop Equip't</td>
<td></td>
</tr>
<tr>
<td>Insurance Buses, Bldg., Machy. Liability</td>
<td></td>
</tr>
<tr>
<td>Interest on Investment</td>
<td></td>
</tr>
<tr>
<td>General Overhead</td>
<td></td>
</tr>
<tr>
<td>Total Expense</td>
<td></td>
</tr>
</tbody>
</table>

### Statistical Data

<table>
<thead>
<tr>
<th>Statistical Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Mileage</td>
<td></td>
</tr>
<tr>
<td>Number pupils carried</td>
<td></td>
</tr>
<tr>
<td>Gallons Gasoline Used</td>
<td></td>
</tr>
<tr>
<td>Quarts Oil Used</td>
<td></td>
</tr>
<tr>
<td>Miles per Gallon Gas</td>
<td></td>
</tr>
<tr>
<td>Tires - Cost per Bus Mile</td>
<td></td>
</tr>
<tr>
<td>Depreciation of Bus per Bus Mile</td>
<td></td>
</tr>
<tr>
<td>Total Average Cost per Pupil</td>
<td></td>
</tr>
<tr>
<td>Total Average Cost per Bus Mile</td>
<td></td>
</tr>
</tbody>
</table>
Transportation Expenses

This is a consolidated monthly account of transportation expenses for each school for the year.

A record such as this would be of value in comparing the transportation costs of various school areas. It would also be necessary to take into consideration the number of pupils transported and road conditions.

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

TRANSPORTATION EXPENSES

<table>
<thead>
<tr>
<th>School __________</th>
<th>For the Fiscal Year Ending__________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts</td>
<td>Jan</td>
</tr>
<tr>
<td>Gasoline</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td></td>
</tr>
<tr>
<td>Grease</td>
<td></td>
</tr>
<tr>
<td>Tires and Tubes</td>
<td></td>
</tr>
<tr>
<td>Bus Repairs</td>
<td></td>
</tr>
<tr>
<td>Shop Mcgy.</td>
<td></td>
</tr>
<tr>
<td>Eqpt. Repairs</td>
<td></td>
</tr>
<tr>
<td>Driver's Salary</td>
<td></td>
</tr>
<tr>
<td>Storage Expse.</td>
<td></td>
</tr>
<tr>
<td>Shop Supplies, etc.</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td></td>
</tr>
<tr>
<td>Bldg.</td>
<td></td>
</tr>
<tr>
<td>Eqquipt.</td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td>Interest on Invest.</td>
<td></td>
</tr>
<tr>
<td>General Overhead</td>
<td></td>
</tr>
<tr>
<td>Total Expense</td>
<td></td>
</tr>
</tbody>
</table>
Record of Insurance - Buses

In calculating the total cost of a transportation system the cost of insurance is a factor. Furthermore this suggested form shows the company writing the insurance and its premiums. Thus it is possible to compare rates of various companies.

Form 1h

BOARD OF SCHOOL TRUSTEES - Oaker, B.C.

RECORD OF INSURANCE - BUSES

YEAR __________

<table>
<thead>
<tr>
<th>School</th>
<th>No. of Insurance Carried</th>
<th>Ann. Cost Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Comp. Writ. Insur.</td>
</tr>
</tbody>
</table>

Application for Use of School Bus

In order to make certain that the total costs for the year are for the transportation of pupils to and from school a suggested form is here given. This form is also necessary in calculating the per-pupil per-mile cost. The extra cost and mileage as shown must be deducted from the total cost for the year before the cost per-pupil per mile can be calculated.
BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

Application for Use of School Bus

Date ____________

I hereby make application for the use of one (or state number) School Bus(es) according to the terms hereunder set forth.

Organization applying ____________________________________________

Date required _______ Leave____P.M. Return____P.M.

Purpose of Trip __________________________________________________

To be transported to ___________________________ and return

________________________ Signature of Applicant

TO BE FILLED IN BY DRIVER

Speedometer at start ____ At finish ____ Total Miles____

Total hours on trip _________ Total driving time _________

Bus Number _____ Number passengers carried (each way) ____

No. Gallons Gas Used _______ ____________________________ Driver

TO BE FILLED IN BY BOARD

Total Cost

______ miles at ______ cents per mile $______ plus

$________ extra expense. Total $______

Amount Received $______ Date _________

Amount Paid to Driver $______ Date ________
Tire Record

To know which make of tire gives the best service and is therefore the most economical, a record such as suggested here is necessary. From this record can be obtained the total cost of each tire, including repairs, and the cost per mile. Assuming that the same make of tire is used, an idea of the effect of road conditions on tires can be obtained. One record form should be used for each bus.

Some identification mark should be placed on the inside of the tire so that it will be an easy matter to look up the date of purchase. The spare tire could be kept as a spare and marked with the same identification marks plus "spare".

<table>
<thead>
<tr>
<th>Make</th>
<th>Size</th>
<th>Date Purchased</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Form 1j

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

TIRE RECORD

<table>
<thead>
<tr>
<th>Date Put On</th>
<th>Bus No.</th>
<th>Speedometer On</th>
<th>Speedometer Removed</th>
<th>Total Mileage</th>
<th>Kind Repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Original Cost __________
Cost of Repairs ________
Cost per Mile __________
Monthly Report - Contract Buses

Before letting a contract for transportation it is necessary to have some detailed knowledge of costs. From this report can be obtained the net cost per month for each bus, the cost per pupil per day and the average cost per mile. This information would be of very great value to a school board which contracts for some buses and owns the others. To school boards which contract for all the buses such a report forms the basis of an intelligent consideration of bids.

Form 2a

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

MONTHLY REPORT - CONTRACT BUSES

<table>
<thead>
<tr>
<th>School</th>
<th>Bus No.</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>Month Ending</td>
<td>194</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weeks</th>
<th>No. Pupils</th>
<th>Bus Mileage</th>
<th>No. Trips</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.M.</td>
<td>P.M.</td>
<td>A.M.</td>
<td>P.M.</td>
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<td>1.</td>
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<td>2.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
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<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amount paid to Contractor $ __________
Amount Paid by Dept. Education $ __________
Net Cost $ __________
Cost per pupil per day $ __________
Cost per Mile $ __________
Yearly Report - Contract Buses

This report gives the net cost, cost per mile per day and the cost per pupil per day over a period of one year. This is essential in making up the estimates at the beginning of each year. It also serves as a basis for cost comparisons.

Form 2b

BOARD OF SCHOOL TRUSTEES - OAKER, B.C.

YEARLY REPORT - CONTRACT BUSES

<table>
<thead>
<tr>
<th>School</th>
<th>Contractor</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td></td>
<td></td>
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<tr>
<td>Feb.</td>
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<td>Mar.</td>
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<tr>
<td>Apr.</td>
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<tr>
<td>May</td>
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<td>June</td>
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<td>July</td>
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<td>Aug.</td>
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<td>Sept.</td>
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<tr>
<td>Oct.</td>
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<tr>
<td>Nov.</td>
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<tr>
<td>Dec.</td>
<td></td>
<td></td>
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<tr>
<td>Totals</td>
<td></td>
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</tbody>
</table>

Average Cost per Bus Mile $  
Average Cost per Pupil $
CHAPTER VIII

A. SOME METHODS OF REDUCING COSTS

As has already been shown the policy of management greatly affects costs. School boards, in general, are greatly interested in reducing costs. However, it must be borne in mind that any policy which favors reducing costs must make sure that the resulting organization will not suffer in regard to (1) efficiency and (2) safety.

This does not necessarily mean that the more money expended the more efficient and safe is the program. Costs may rise not because of an increase in efficiency but because a school board fails to pursue a definite and well-coordinated policy in the matter of transportation.

Some of the suggestions given below do not vitally affect the many districts in British Columbia which operate only one or two buses but do affect areas which operate several buses.

It would be well to point out here that insufficient data prevent me from proving my statements from programs in British Columbia, but evidence given in the literature on this subject, much of which is listed in the bibliography, and based on programs in the United States, should be sufficient to warrant the making of such statements.
1. Routes

The routes should be so arranged that the bus will serve as many pupils as possible. Less buses will be required and costs will thus be reduced.

2. Trips

Have buses make more than one trip if possible, thus spreading the overhead cost over two or more loads of children.

3. Bus Capacity

If possible increase the size of the bus. If the settlement of the area permits the use of a large bus it will be found more economical to use one large bus than two small ones.

4. Empty Mileage

Costs increase rapidly with empty miles. It will be found more economical to have circular routes where practicable instead of straight line routes. Also buses should be kept near the start of the route.

5. Empty Space

Buses should be so routed that they have capacity loads. In contracting for buses make certain that the bus in not larger than necessary. This is one advantage of district-owned buses. If number of pupils change during the year on certain routes, the buses can be switched to suit. In contracting for buses it is well to stagger the contracts, that is have one contract expiring each year. This allows for necessary adjustments to be made.

6. New Buses

It may be found more economical to trade in the bus on
a new one rather than continue to make extensive repairs.

7. Per-Pupil Investment

The amount of investment per pupil should be reduced if possible.

8. Owned Buses

For improvement in efficiency, safety and economy, transportation should be provided by buses owned by the district.

9. Bids

In awarding contracts, as many bids as possible should be obtained. Carefully specified details in the call for bids will ensure more easily comparable bids.

10. Drivers

It will be more economical to employ drivers, where possible, whose other work will not be greatly disturbed by the hours required for transporting pupils. Chilliwack employs drivers who work in garages.

11. Length of Contracts

Contracts should be awarded for a five-year period in preference to a one- or two-year period. Costs tend to increase as the length of contract decreases because the bus owner is more certain of getting his investment back if he has a five-year contract than he would if he had to rely on yearly contracts.

12. Policy

A change in policy of the school board may reduce costs. A board which uses a definite cost accounting system will have a lower per-pupil cost than a board - other factors being equal - which has no system of record keeping. Further-
more, costs tend to decrease if the board plans its transportation program intelligently. This may require the obtaining of advice from an authority in this field.

B. SUGGESTIONS FOR IMPROVEMENT OF THE TRANSPORTATION PROGRAM

However school boards may feel toward reducing costs, they are, the writer believes, unanimously interested in providing a transportation service of the best possible type.

The reader may find that some of the following suggestions somewhat overlap what has been stated in the previous chapters but the interest shown by school boards along this line warrants the grouping of these suggestions under a separate heading.

In the following suggestions an attempt has been made to pay due regard to safety and efficiency as well as economy.

1. The bus must be of adequate size, safe and comfortable.

2. The driver should be a person capable of carrying a heavy responsibility. He must be trustworthy, careful and faithful.

3. Pupil monitors, who will aid the driver in maintaining order in the bus, should be appointed. Other duties may also be assigned to them such as (a) the reporting to the driver any bicycle riders, roller skaters or others who hang on to the bus and (b) the keeping of the aisles free from books and suitcases.

4. Definite instruction regarding safety, cooperation and behavior should be given to the pupils by the principal and teachers.
5. Bus routes should be so planned as to minimize the time spent by any pupil in travelling.

6. Improve still further the quality of the equipment used, taking into consideration efficiency, safety and economy.

7. Make certain of having frequent inspection of buses.

8. Adopt and use a modern system of reports, records and accounts.

9. Give greater attention to the accurate determination of limits for transportation service.
CHAPTER IX

ESSENTIAL FEATURES OF A SCHOOL TRANSPORTATION UNIT

The main purpose of laying down what is termed essential features is safety. Children must be carried to and from school in a bus fully equipped to ensure the utmost safety.

By "features" is meant not only the bus but also the driver who is charged with the responsibility of getting the pupils to and from school safely. The literature on school transportation, in practically every case, is replete with driver recommendations and emphasizes to a very high degree the importance of first, choosing a suitable driver, second, making certain that he knows clearly the rules and regulations as laid down in the "Motor-vehicle Act", and by the Department of Education and school board, and third, delegating to him disciplinary powers while the pupils are in his care.

No attempt has been made here to list the specifications for bus construction as given in the "Motor-vehicle Act". Certain minimum essentials have, however, been laid down with the view of guidance. A further study of the Act will reveal the details called for by statute. A few of the features here listed are not contained in the Act but are considered essential by the writer. A study of the literature on school bus standards and specifications has convinced the writer of the value of the suggestions which follow.
The School Bus

(1) **Body:**

The body of any school bus should be of substantial wooden or metal frames and side, all permanently and securely fastened to the chassis. (In the United States most of the State regulations call for an all steel construction. Local difficulties prevent such regulations being applied in British Columbia.)

(2) **Length of Body:**

The body length must be in proper proportion to the length of the wheel base and chassis as laid down by the engineering department of the manufacturer.

(3) **School Bus:**

A sign consisting of the words "School Bus" in black letters not less than five inches high on a yellow background should be carried in a conspicuous place on the outside of the front and rear of the bus.

(4) **Brakes:**

Every bus should have four wheel brakes.

(5) **Stop Light:**

Every bus should be equipped with a stop signal light.

(6) **Windshield Wipers:**

There should be two windshield wipers worked independently of each other.

(7) **Lighting:**

There should be adequate lighting inside and out.
(8) Exhaust:
The exhaust pipe should be so placed that there is no possibility of fumes entering the bus body.

(9) Fire-extinguisher:
At least one fire-extinguisher should be carried on each bus.

(10) Emergency Exit Door:
There should be at least one emergency exit door marked conspicuously.

(11) Exit Doors:
Exit doors other than the emergency door should be controlled from the driver's seat.

(12) Glass:
All glass in the bus should be safety glass and all windows should be so constructed as to prevent children from putting their arms or head out.

(13) Color:
School buses should be painted a distinctive color, preferably "school-bus" yellow.

(14) Chains:
Chains should be standard equipment.

(15) First-Aid:
A first-aid kit should be carried by every bus.

(16) Seats:
Seats should be forward facing.

(17) Ventilation:
There should be provision for adequate ventilation.
The Driver

(1) Physical Fitness:
He should be able-bodied, alert, intelligent and capable of making ordinary repairs.

(2) Conduct:
He should be one who will be respected by the pupils and who will conduct himself in such a manner as to exercise a good influence over the pupils.

(3) Experience:
He should have had experience in handling large motor vehicles.

(4) Bonded:
He should be bonded to ensure fulfilment of his contract.

(5) Knowledge of Regulations:
He should be well-versed in the rules and regulations as laid down by the "Motor-vehicle Act," the Department of Education and the school board.

(6) Habits:
He should be clean and neat in appearance and tactful in his dealings. He should not be a habitual addict of alcohol nor should he use tobacco while in charge of the bus.

(7) First-Aid:
He should have some knowledge of First-Aid.
CHAPTER X

SUMMARY

The following are a number of important observations to be gleaned from the preceding chapters of this study.

1. In the United States the transportation movement is making rapid strides forward and even today over three million American children go to and from school by bus at an annual cost of over sixty million dollars.

2. The two most important types of school transportation in the United States are motor buses and horse-drawn vehicles.

3. The consensus of United States authorities from which the writer has been able to collect data is that district-owned transportation systems are more economical, safer and more efficient than contract systems.

4. Authorities advise strongly the use by school boards of adequate report and record cards.

5. The four main factors favoring district ownership of buses are flexibility, control, economy and safety.

6. Those favoring a contract system generally stress such advantages as less clerical help required, no initial outlay and better bus care. They emphasize also that the yearly cost for transportation is known as soon as the contract has been awarded.
7. All contracts must be clear and specific thus avoiding any misunderstanding.

8. In British Columbia (1938-39) pupils were transported in nine cities, twenty district municipalities, one educational administrative area and ninety rural districts.

9. The great majority of school buses in the seven cities, thirteen district municipalities and thirty-five rural districts from which replies were received were contracted for.

10. Though the majority of buses in 1938-39 had longitudinal seating the "Motor-vehicle Act" now calls for crosswise seating for all new buses.

11. Inadequate reports and records were kept by the majority of the school boards in 1938-39.

12. Generally speaking road conditions in British Columbia were reported as good.

13. Intelligent supervision is necessary to ensure an adequate, safe, comfortable and economical transportation system.

14. There appears to be no universally accepted method of calculating depreciation. The two most common ways of calculation are: (a) based on mileage and time and (b) based on mileage only.

15. There are a large number of contributing factors in any cost study. Factors such as the following are contributing factors: length of route, number of pupils to be transported, road conditions, type of equipment, weather conditions,
location of bus drivers' homes, prevalent level of wages and cost of living, current price level of supplies and new equipment, depreciation, current rates of insurance, number of bidders, length of contract, bus ownership, laying out of routes and a knowledge of fundamental principles of transportation.

16. Methods of determining costs vary. Some authorities express costs in terms of pupil-mile, some in terms of seat-mile and others base them on total costs.

17. Cost comparisons based on total costs seem to be fairly reliable.

18. Business methods affect costs considerably.

19. Cost accounting forms must be simple but adequate if complete records are to be kept.

20. Costs may be reduced in a number of ways such as, employing larger buses where practicable, preventing empty mileage, intelligent routing of buses, careful and intelligent planning of the transportation program and using district-owned buses.

21. The selection of the bus drivers is a very important feature of any transportation program.
APPENDIX

QUESTIONNAIRE
(City and District Municipalities)

NOTE:
The following questionnaire refers to the school year 1938-39.
If there are any questions which do not affect your district please leave them blank.

1. What was the total cost of transporting pupils to and from school in the school year 1938-39? $

2. What amount (if any) of this did the government pay? $

3. How many vehicles (of all types) were used for transporting pupils?

4. Motor buses:
   a. How many were owned by the district?
   b. How many were owned by the contractor?

5. Horse-drawn vehicles used the year round:
   a. How many were owned by the district?
   b. How many were owned by the contractor?

6. How many cars (of parents or others) were in use?
   This refers only to those which the district helped to pay for operation.

7. How many pupils (High and Elementary) were transported to and from school?

8. What was the total mileage per day (one way only) travelled by all the transportation vehicles?

9. What was the total number of pupils carried by:
   a. District-owned vehicles?
   b. Contracted vehicles?

10. Approximately what area in your district is served by your transportation system? sq.mi.

11. What area is not so served? sq.mi.

12. How many of the buses you own have chassis which were built in the year: 1938 ____, 1937 ____, 1936 ____, 1935 ____, 1934 ____, 1933 ____, 1932 ____, 1931 ____, 1930 ____, 1929 ____, older than 1929 ____.
QUESTIONNAIRE (continued)

13. How many of the school buses in your district (owned and contracted) have:
   a. longitudinal seating? _____
   b. crosswise seating? _____
   c. combination of both? _____

14. What is the longest route (one way only) that any school transportation vehicle travels? _____ mi.

15. What is the shortest route (one way only) that any school transportation vehicle travels? _____ mi.

16. How many pupils are transported (one way only) from less than one mile ___, 1-2 miles ___, 3-4 miles ___, 5-6 miles ___, 7-8 miles ___, 9-10 miles ___, over 10 miles? ?

17. How many school buses have you in your district (both owned and contracted) with a seating capacity of: 10 or less ___, 11-15 ___, 16-20 ___, 21-25 ___, 26-30 ___, 31-35 ___, 36-40 ___, 41-45 ___, 46-50 ___, over 50 __?

18. What is the maximum time (one way only) any child is transported? 0-15 min. ___, 16-30 min. ___, 31-45 min. ___, 46-50 min. ___, 51-60 min. ___, over one hour__?

19. If you contract for school transportation, for how long do your contracts run? _____ yrs.

20. Do you pay the driver of a district-owned bus by the:
   (please place a cross in the correct space)

21. How much do you pay your drivers? (answer only one)
   per hour? ____ , per day? ____ , per trip? ____ , per week? ____ , per month? ____ , per school year? ____.

22. If you owned some or all of the school buses used in 1938-39, please answer the following:
   a. Number of buses owned? _____
   b. Total cost of operating these buses (if not the same as in item ONE) _____
   c. Total salaries paid to drivers? _____
   d. Total cost of gas and oil? _____
   e. Total cost of repairs? _____
   f. Total cost of maintenance? _____
   g. Total cost of storage (if any)? _____
QUESTIONNAIRE (Rural Areas)

NOTE: The following questionnaire refers to the school year 1938-39.

1. What was the total cost of transporting pupils to and from school in 1938-39? $____

2. What amount (if any) of this did the government pay? $____

3. How many vehicles (of all types) were used in transporting pupils? ______

4. Motor Buses:
   a. How many were owned by the district? ______
   b. How many were owned by the contractor? ______

5. Horse-drawn vehicles used the year round:
   a. How many were owned by the district? ______
   b. How many were owned by the contractor? ______

6. How many pupils (High and Elementary) were transported to and from school? ______

7. What was the total number of pupils carried by:
   a. District-owned vehicles? ______
   b. Contracted vehicles? ______

8. If you contract for school transportation for how long do your contracts run? ______

9. Are all the buses (owned and contracted) insured? __yes__ __no__.

10. Do you employ a: 1. full time mechanic? ______
    (ONLY owned buses) 2. part time mechanic? ______
    3. driver mechanic? ______

11. Do you employ (only owned buses):
    1. full time drivers? ______
    2. part time drivers? ______
    3. student drivers? ______

12. Do your drivers, either employed by you or on contracted buses, make a: 1. Daily report? ______
    2. Report on each trip? ______
    3. Weekly report? ______
    4. Monthly report? ______
    5. No report at all? ______

13. Have you printed forms for the drivers to fill in? ______

14. Do you consider on the average, the roads used by the buses in your area were: good?_____ fair? ____ poor? _____
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