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SCHOOL BUS SAFETY IN CANADA:LEGISLATION, REGULATIONS, PROPOSALS

BY

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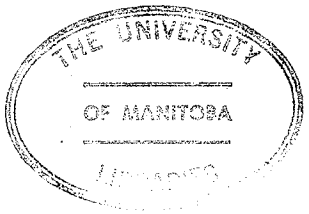

"SCHOOL BUS SAFETY IN CANADA: LEGISLATION, REGULATIONS, PROPOSALS"

by

WILLIAM ALEXANDER MACDONALD

A dissertation submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements of the degree of

MASTER OF EDUCATION

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ABSTRACT

The purpose of this study was to examine all legislation and regulations that pertained to school bus safety in each of the ten provinces in Canada. This study also included the pertinent data from the Canada Motor Vehicle Safety Act and Canadian Standards Association Standards D250-1971 and D250.1-1975. Furthermore, the author received feedback from interested individuals, groups and associations in each of the ten provinces in reference to proposals to improve school bus safety in each of their respective provinces.

In order to carry out careful research the author interviewed each of the individuals responsible for pupil transportation in each of the ten provinces in Canada. As a result of the discussions and material received during the discussions, the data was assembled on a comparative basis.

Each province was found to be unique in its approach to school bus safety. As a result the format of this thesis treated each province accordingly. The only "silver thread" for all the provinces was the Canada Motor Vehicle Safety Act which all provinces are obliged to follow.

As a result of the research, the author found that there was needed improvement or coordination in the following areas:

a) training - of school bus drivers

b) uniformity in prerequisites for a school bus driver

c) interior padding of a school bus

d) use of standees on a school bus

e) involvement by the Federal Government

f) public campaign in reference to motorist realizing procedures for a stopped school bus

In conclusion school buses are generally a safe mode of transportation. If difficulties do arise it is becoming more and more apparent that they are due to human error rather than mechanical error.

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CHAPTER 1

A STATEMENT OF THE PROBLEM

INTRODUCTION

Today there is greater importance being placed on the safe bus transportation of school children. The use of school buses for transporting school children in the urban area to inter-school activities, program enrichment and to and from school is on the increase. In the rural areas greater emphasis has been placed on school busing as a result of consolidation and rural depopulation. Consequently, over two million school children are transported daily to schools in Canada, at an annual expense of over two hundred and fifty million dollars.[1] The responsibility for the safe transportation of school children, in essence, rests solely in the hands of elected officials, Departments of Education, educational administrators, school bus drivers and interested organizations. Thus, there is great concern for safety in the busing of school children.

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[1]Estimates of the Ten Provincial Departments of Education - annual reports.

PURPOSE

The major purpose of this study is to describe the present legislation and regulations relating to school bus safety in Canada. This study includes:

1. A description of the present legislation and regulations of the Federal Government relative to school bus safety.
2. A description of the present legislation and regulations that are included under the Department of Education, the Department of Transportation or any Department that is parallel in jurisdiction to the Department of Transportation.
3. A compilation of proposals from individuals, interested groups or associations in reference to school bus safety.
4. A description of any applicable school bus safety standards that exist in Canada.
5. A submission of any relevant recommendations in reference to school bus safety in Canada.

SIGNIFICANCE

Today there is a greater number of pupils transported by school bus than in the past. As a result, there is a greater need for an examination of the present school bus safety legislation and regulations with a view to improve these in the future. The information accumulated in this work will provide a central source of pertinent information in reference to school bus safety for policy makers, administrators and concerned safety people in Canada.

This study provides a concise description of school bus safety legislation and regulations that are relevant to

the ten provinces in Canada. Further, this study of school bus safety is designed to identify the concerns of interested individuals, groups and associations.

DELIMITATIONS

The following delimitations are placed on this study:

1. This study is confined to the ten provinces in Canada.
2. It is basically concerned with school bus safety legislation and regulations.
3. Correspondents for the study include each of ten Provincial Departments of Education, the Federal Government, the ten Provincial Governments, other provincial agencies, and any interested individuals, groups and/or associations.
4. This study does not include any local or district school board regulations.

LIMITATIONS

The author attempts to insure accuracy and reliable descriptive analysis but he is mindful of the following limitations:

1. The existence of bias in the data.
2. The possible incompleteness of the requested or available data.
3. The process of revision of legislation and regulations on the part of the provinces or Federal Government is constantly occuring.

In conclusion, every effort was made not only to insure as complete a description of the present legislation and regulations, but also as thorough a compilation as possible of

relevant school bus proposals from interested individuals, groups and associations.

DEFINITION OF TERMS

School bus

A vehicle used under the authority of, or under a contract made with, a school system in transporting children or any other authorized persons to and from a school for any school related activity.

School System

Any public, separate, government or private school, or group of such schools operating in Canada.

Elements of Safety

Many aspects of school bus safety were investigated in the description of data. The following aspects of school bus safety were examined.

1. Training and expected characteristics of a school bus driver.
2. Interior features of the school bus.
3. Exterior features of the school bus.
4. Mechanical aspects of the school bus.
5. Inspection requirements and practices.
6. Education of pupils in reference to school bus safety.

S.A.E. - Society of Automotive Engineers

G.V.W.R. - Gross Vehicle Weight Rating

A.N.S.I. - American National Standards Institute

C.C.M.T.A. - Canadian Conference of Motor Transport Authorities

F.P.S.P.S. - Feet Per Second Per Second

C.G.S.B. - Canadian Government Specifications Board

M.G.V.W. - Manufacturers Gross Vehicle Weight

C.S.A. - Canadian Standards Association

Contract Buses - External hiring of a transportation firm to transport school pupils within a specific area.

ORGANIZATION OF THE STUDY

The major purposes of this study have been identified. The relevant literature was reviewed in chapter II. The description and analysis of data was presented in chapters III (Federal Government and Canadian Standards Association), IV (Legislation and Regulations of the ten Provinces in Canada), V (Proposals of interested Individuals, Groups and/or Associations). The final chapter (VI) summarized the major findings of the study, has drawn some pertinent conclusions and has presented any reasonable recommendations resulting from the study.

DATA SOURCES

The sources of data for this school bus safety study include:

1. Department of Education documents.
2. Regulations of the Highway Traffic Acts.
3. Public and/or Separate School Acts and related regulations.
4. Provincial legislation and regulations in the ten provinces of Canada.
5. Government of Canada documents.
6. Proposals from interested individuals, groups or associations such as Canadian Consumers Association, Canadian Safety Council, Ontario Home and School and Parent-Teacher Federation, Royal Canadian Mounted Police, University of Toronto Accident Research Team, School Transportation Supervisors in some or all of the ten Provinces, Parent Canadian School Bus Companies, Motor Vehicle Branches, Consumers Association of Canada, Ministries of Transportation, and Public and Private Insurance Companies.

TREATMENT AND TECHNIQUES

The legislation and regulations of the respective Provincial Governments, Federal Government, and Departments of Education will be collected and examined (tables). Further, the aforementioned individuals, groups and associations were requested to submit their remedial proposals in reference to school bus safety. Finally, the author recapitulated, delineated conclusions, and offered any recommendations.

Because of the extent of this study, the author employed the following procedures in gathering the data:

1. A preliminary letter was sent out to the respective Provincial Governments, Federal Government, Department of Education, interested individuals, groups and associations to solicit a response in reference to existing or proposed school bus safety legislation and regulations. Subsequent

reminder letters were sent to those who were tardy in their reply.

2. The author personally visited all capital cities in the collection of the data.

CHAPTER II

REVIEW OF LITERATURE

Due to the specialized nature of this study any mention regarding safety of pupils would be relevant. As a result the researcher has attempted to select a sample that is representative of the reports and articles that have been published on school bus safety. Literature which will not be referred to directly in this chapter but which is relevant to the study has been listed in the bibliography.

BLENHEIM, ONT. - The bodies of three children now lie side-by-side between the graves of their grandfather and uncle in this community ten miles south east of Chatham. The children, Linda 14, Debra 13, and David 10 - were struck down by a car Thursday morning as they were about to board their bus. The family's black labrador dog, Butch, which was seeing the children off to school, also was killed by the car in front of their home.

(Winnipeg Tribune, November 6, 1974)

WINNIPEG, MAN. - The driver of a school bus on the Waterhen Indian Reserve witnessed the death of his own son Monday, when the boy ran out from infront of the school bus and was

in collision with a half-ton truck. The driver had stopped the school bus on the road and the flashing lights were in operation, R.C.M.P. said.

(Winnipeg Free Press, June 10, 1975)

MARQUETTE, MAN. - Twenty-five people were injured - two badly - in a collision between a school bus and a truck Tuesday morning about five miles north of Marquette. Stonewall R.C.M.P. said the collision occurred at the intersection of Highways 248 and 227. The school bus and the truck were travelling in opposite directions on the same road at the time of the collision.

(Winnipeg Free Press, February 7, 1973.)

GRANDE PRAIRIE, ALTA. - A recent inquest into the death of a 3½ year old girl struck by a school bus has produced a recommendation that school buses carrying pre-school children also should carry an attendant to let the driver concentrate on driving. The accident occurred seconds after the driver opened the bus door to allow the girls older brother, a kindergarten student, to leave. The R.C.M.P. identification branch testified that tests showed a blind spot existed in a mirror at the front of the vehicle.

(Winnipeg Tribune, April 16, 1975)

MONTREAL, QUE. - About thirty children were injured today in a collision between a school bus and a truck in Laval,

just north of Montreal Island. Police said all the passengers were taken to hospital for examination and two or three suffered broken bones.

(Winnipeg Tribune, January 23, 1974)

WINNIPEG, MAN. - Two children were injured Tuesday morning when a school bus, carrying an estimated twelve handicapped children was involved in a four vehicle accident. The police officer investigating the accident said the brakes of the school bus failed. The bus burst into flames after the accident.

(Winnipeg Free Press, April 10, 1973)

ROCKMART, GA. - "Everybody started hollering then I busted out a bunch of windows and tried to help others out", said a young passenger in a school bus that was struck by a train. Seven children were killed and more than seventy were injured.

"The bus stopped, and the train was going to let us through, and then the train hit us", said a student. The superintendent of the railway said a work train was backing up at between five and eight miles an hour when the caboose struck the school bus broadside, flipped it over and dragged it upside down about three hundred feet along the tracks.

(Winnipeg Free Press, October 24, 1974)

TORONTO, ONT. - A temporary school bus drivers' licence was granted Thursday to a woman with thirteen driving offences

and two licence suspensions within a 22 month period. Beginning immediately she will be driving handicapped children to schools across metro. The thirty-three year old woman was charged with failing to stop a school bus at a railway crossing; careless driving; making an improper left turn at an intersection of two highways; disobeying a red traffic signal light twice and passing within 100 feet of a pedestrian crossing. She has also been given a variety of speeding tickets.

(Winnipeg Tribune, Friday, April 19, 1975)

MONARCH PASS, COLO. - On Sept. 11, 1971, a school bus full of happy, typically rowdy high school football players was heading for a Saturday afternoon game. After the bus crested the pass and began heading down the eastern slope, the driver used his brakes hard once, then again and again. Each time the brake was harder to push, and the stopping effect was less. Finally, after a few applications, he was virtually standing on the brake pedal with no effect at all. He then tried to shift his rear axle and transmission to a lower gear to slow the bus, but was unable to complete the shift and left the rear axle in a free-wheeling state, thus loosing any control at all over the vehicle's speed. It careened down the hill for four more long miles, the driver grimly attempting to "ride out" the situation. Finally, at a service station, the driver was forced to take evasive action to

avoid the cars on the road ahead. A wild dodge through the station ended when the bus rolled over 2½ times before coming to rest at the side of the station. Result: nine fatalities and numerous injuries suffered by the 48 occupants aboard.

(Manitoba Motorist, September, 1972)

School transportation is a complex matter. It is not a mere convenience for children who live beyond walking distance from school. In its basic philosophy and practical existence, "school transportation is an indispensable and integral part of our modern school system which has been developed in an attempt to serve the educational needs of our time. It is the beginning and the end of a daily experience for almost every farm pupil in Canada".[1] Pupil transportation is an integral part of our educational program growing out of the anxiety for the safety and welfare of the pupils and extending to the realization that time spent aboard a school bus is an opportunity for developing complimentary attitudes and habits to those which are promoted in the school itself.

---

[1]Ontario, Ministry of Education, Managing School Transportation,- Department of Education, Queens Park, Toronto Ontario, February 1973, p. 18.

The big yellow school bus has become a symbol of modern education of the North American child. Whether the pupils travel through the urban areas of Winnipeg, Edmonton, Montreal or through rural areas like Glengarry County (Ontario), Kildees (Sask.) or Milton (Nova Scotia), they put their safety in the hands of the people who build, sell, purchase, inspect and drive school buses.

"Although Alberta has one of the best accident records of any Canadian province, there are some people who say school buses just aren't safe enough. The Alberta Federation of Home and School Associations is one group that seriously questions school bus safety. In a report to the Department of Education in 1974, it called for improved safety standards for school bus drivers and machines. Other individuals, including a spokesmen for a bus manufacturer, said school buses are not as safe as commercial buses of similar size."[2] In reply, Harold Gunderson, President of the Alberta School Trustees Association said, "there is some hysteria connected to reports about school bus safety. School bus safety is a little like anti-pollution devices on new cars - they're nice to have from an intellectual point of view but they add to the cost of the school bus considerably."[3]

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[2]The Winnipeg Free Press, "Safety of School Buses Debated" June 11, 1974, p. 17.

[3]Ibid.

Finally, at this same time, Lou Hyndman, past Minister of Education of Alberta, said that school bus manufacturers could make "an absolutely safe school bus but it would be a bus that no district in the province could afford to buy."[4]

The Ottawa Citizen said that a month long survey of local school buses "has turned up mechanical problems, inadequate training for part time drivers, and shoddy construction of vehicles."[5] In reference to this, bus company officials admitted that their buses were "prone to failing clutches, leaking windows and leaking steel body joints, accelerator governors seizing, loss of brake fluid at master cylinders, loss of power brakes and clutch-control linkage breaking."[6] According to the Citizen, "the bodies of all buses surveyed are simply boxes bolted to truck frames in which body panels are intended to act as frame support."[7]

According to Allen Rouse, a trustee for a school division within Winnipeg, "school buses are our greatest

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[4]Ibid.

[5]The Winnipeg Tribune, Many Faults Found in School Buses, March 12, 1974, p. 10.

[6]Ibid.

[7]Ibid.

safety concern."[8] He feels that students and the public pay no attention to the rules of safety in the area of school bus transportation. Consequently, he said "our student safety is everybody's responsibility."[9]

A survey in the Province of Quebec, revealed that there were "mechanical defects in fifty percent of six thousand four hundred and thirty four school buses."[10] This problem is not local as might be suggested by the Quebec statistics. It is definitely national. Catherine Stauffer, past Chairperson of the Consumers Association of Canada's School Bus Safety Committee, said "what's going to happen someday is a horrible, horrible accident that will finally wake people up to the fact that their children are being driven to school in a cookie cutter on wheels. These people in turn will go for the government with blood on their minds. The government will react to public pressure by passing some hurried laws controlling the safety of these school buses. But the laws will only inflame the situation and could throw the whole industry and the school officials into a worse mess than they are in already. The government

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[8]The Herald (Winnipeg), "School Buses are Greatest Safety Concern" September 2, 1975, p. 11

[9]Ibid.

[10]John Davidson, "Is Your School Bus Really Safe" School Progress, Volume 42, Number 4, April 1973, p. 34.

can't leave compliance on safety standards up to voluntary human choice."[11]

School buses can be made safer. The local school division ultimately is responsible for acquiring (buying or contracting) the safest possible school buses. "Any school division can tender for buses built virtually any way it wants, provided it is willing to pay the price. Most school boards buy the buses that cost the least."[12] Charles D. Ward, president of one of the country's largest producer of school buses estimated that "ninety-five percent of all school buses are purchased on the basis of lowest bid - not on the quality of the bus. There is a tremendous pressure on manufacturers to keep costs down to stay in business. These financial pressures also operate to keep local school administrators or boards from insisting on stringent safety specifications that some may believe to be unnecessary or extravagant. The factors, in turn destroy the incentive for individual manufacturing companies to promote and install safety features on their own."[13]

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[11] Ibid.

[12] American School Board Journal, Any Board Can Have Safer Buses - If It Wants Them, Volume 160, Number 11, November 1973, p. 40.

[13] Ibid.

In 1973 the National Transportation Safety Board (U.S.A.) estimated that "nine out of ten school buses are in danger of falling apart in a collision or severe accident. This disintegration may include sides and roofs that collapse when the bus rolls over. One estimate is that new buses can be made structurally safe for a per - bus cost increase of about $300. The questions, then, are: Why don't school boards demand structurally safe buses and why don't manufacturers build them?"[14]

On the other hand an article in the Winnipeg Tribune newspaper of August 31, 1974 indicated in a story from Halifax that whatever the complaints against busing, safety isn't one of them. The way education officials in Nova Scotia tell it there is no safer way to travel than in the lowly school bus and apparently the rest of North America believes it. Nova Scotia school bus service was recently named recipient of the annual award for safety from the Association of State and Provincial Safety Officials (A.S.P.S.O.)"[15]

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[14] American School Board Journal, Isn't a Safe Bus Worth Another $300. Volume 160, Number 11, Nov. 1973, p.44.

[15] Transportation Bulletin Number 30, Manitoba Department of Education, October, 1974, p. 10.

It should be noted that school buses have been operating in Nova Scotia on an organized basis since 1940, with a commendable performance on the busing of school pupils. Reasons for this exemplory accomplishment was the continuing efforts of educational officials to upgrade the service and to adopt stringent safety regulations. Mr. J. E. McInnis, supervisor of pupil transportation, said "the province is currently operating a voluntary defensive driving course for all school bus drivers. School buses travel at a maximum speed of 45 miles per hour and passengers are prohibited from standing while the buses are moving. A recent innovation was the hiring of additional personnel to aid children crossing roads after they get off the bus. Furthermore, padded interiors and side rails capable of withstanding impacts still make the school bus forty times safer than the average automobile."[16]

In Manitoba, Charles Bridle, supervisor of pupil transportation for the provincial Department of Education said, "Manitoba school children are safer travelling in school buses than any alternate means of transportation."[17] Mr. Bridle reiterated that all four Manitoba school children killed in school bus mishaps since 1971, were outside the

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[16]Ibid.

[17]Winnipeg Tribune, School Buses Safest for Children; Official, Dec. 2, 1974, p. 1.

bus when hit. He emphasized that the quality of the school bus driver and the quality of school bus maintenance are major factors in school bus safety. Mr. Bridle felt that drivers not only must have five year's experience driving, but also in 1976 will have to be certified under a new licencing system introduced by the Provincial Department of Highways.

On April 1, 1975, the Canadian Standards Association announced a certification service for large school buses. Those school buses which comply with all the requirements specified in C.S.A. Standard D250 or C.S.A. Standard D250.1 would be granted certification. This service was developed in response to requests received from consumer interest and provincial authorities having jurisdiction in the field of school bus safety. The Association questions the logic behind government legislation which insures mandatory compliance to approved specifications in the manufacture of automobiles yet recognizes standards for school bus manufacturers as voluntary.

On May 6, 1972, United States Transportation Secretary, John A. Volpe signed his approval of Highway Safety Program Standard Number 17, granting jurisdiction over all public school pupil transportation to the Federal Government. The standard represented a major breakthrough in the field of school transportation because it was formerly regulated by individualized standards promulgated by each state. The

Standard is meant to strengthen and standardize the school bus safety requirements.

Some of Standard 17 requirements are:

1. Lettering - at least eight inches high with no other words on front of the bus except SCHOOL BUS.

2. Paint - glossy yellow

3. Driver - (a) Must wear seat belt.
(b) Must make daily pre-trip inspection
(c) Must have valid State school bus driving permit.
(d) Must be properly trained.

4. Maintenance - the standard requires a systematic preventive maintenance program. The standard establishes vehicle inspection and maintenance requirements.

5. Passengers - must receive some annual safety training and no standees.

6. Programs - (a) Each State must have a plan for selecting, training, and supervising student transportation personnel.

(b) Establishment of a comprehensive pupil transportation safety program in each state.

7. Uniform identification of buses by warning lights and mirrors.

8. Development of a central data collection system.

9. Assignment of primary responsibility for pupil transportation to at least one full-time professional state employee.

Any state which found that its present standards

were far below Standard 17, were guaranteed Federal Government assistance to bring the existing conditions up to standard requirements. In 1973, 80.3 million dollars had been appropriated for pupil transportation by the Federal Government in the United States. It should be noted that if local districts in individual states do not fulfil the requirements of Standard 17, the Department of Transportation has decided to provide two types of action - (1) To withhold highway safety funds, which in some States amounts to millions of dollars; (2) to withhold ten percent of highway construction funds.

At the present time the Federal Government in the United States are preparing stringent standards in the areas of (a) occupant crash protection (b) roll over protection (c) seating and crash protection (d) body joint strength (e) seat belt assemblies (f) seat belt anchorages and (g) revised emergency exit requirements.

Based on most recent data available, the following fact sheet represents the pupil transportation in the United States.[18]

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[18]School Bus Manufacturers Institute, School Bus Accident Reports, School Bus Manufacturers Institute, 5530 Wisconsin Avenue, Washington, D.C. 20015.

Total School Buses (1975)

Municipal transit buses	6,500
Private and Parochial	6,300
Contractor owned	94,586
Public School owned	179,380
Type 1 school bus (17 or more passengers)	259,036
Type 2 school bus (16 passengers or less)	27,730

Total School bus drivers (1975)

Male	240,000
Female	80,000
Total	320,000

Average age: 41 years.

Totals (1974)

Children transported	21.75 million
Annual bus miles	2.4 billion
Annual passenger miles	34.2 billion
Fatality rate per 100 million passenger miles	.08
Expense for public school bus operation	$1.537 billion

Total Accidents (1974)

Total Accidents		47,000
Total pupil injuries		4,700
Total Pupil fatalities		90
On the school bus	35	
Approaching or leaving loading zone	55	

Types of Collisions (using 5 year average) (1968-1973)

Front end	21%
Rear end	15%
Side	14%
Roll over	8%
Non-collision, struck pedestrian, not specified	42%

James Russo asks the question "how safe is safe"? "Statistics show that school buses are eight times safer than passenger cars. Injury rate for school buses in the United States is one injury per 8,000,000 passenger miles. The rate for automobile is one injury per 1,000,000 passenger miles. So, on the face of it, all appears well with school bus safety. Not so. In the school year 1973-74 saw over 4,700 pupils injured inside school buses - and 25 percent of these injuries were severe enough to require the services of an oral surgeon."[19] James Russo did commend the Federal Government for Standards 105 and 121. The two Standards specify more stringent braking performance for school buses, including stopping distance, lateral stability, fade resistance, and recovery. Warning lights are also required to indicate loss of pressure or low fluid level. An emergency braking system, that activates in the

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[19]American School and University, Changes needed in School Bus Safety, - James Russo, January, 1974, p. 36.

event of failure of the primary braking system, will be required.

In essence then there are two very divergent views on the safety of school buses. One view that they are very safe and the other view that they are unsafe for pupil transportation. Possibly we will always have diverging viewpoints on most relevant matters, especially in the area of safety.

In the proceeding chapters the author will investigate the situation in Canada. Do interested groups see a need for "safer" buses in their province? Are the present Federal and Provincial legislation and regulations adequate for the satisfaction of the responsible individuals in each province? How does the legislation and regulations differ from province to province? Are school buses safe?

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper and the people who consider price only are this man's lawful prey"

---John Ruskin.

CHAPTER III

CANADIAN FEDERAL GOVERNMENT AND CANADIAN STANDARDS ASSOCIATION

INTRODUCTION

In Canada, external from provincial legislation and regulations, there are two sets of standards that are applicable to school bus safety. These are the Federal Motor Vehicle Safety Act and the Canadian Standards Association Standards D250 and D250.1. The Federal Motor Vehicle Safety Act is mandatory for all provinces to follow whereas the Canadian Standards Association Standards (D250 and D250.1) are voluntary and become obligatory only if the Provincial Governments regulate adoption. Finally the two sets of standards refer only to school buses that carry twenty-four or more passengers. Consequently this study will only deal with the legislation and regulations that pertain to those school buses, that are authorized to carry twenty-four or more passengers.

Federal Legislation and Regulations

School bus safety, in Canada, is regulated uniformly by one set of legislation and regulations. As a result, each province must comply with the Federal Motor Vehicle

Safety Act.[1]

The Federal Motor Vehicle Safety Act[2], which became law on January 1, 1971, provides the source of data for this chapter. This Act, as well as the regulations under the Act, stipulates the type of equipment that is mandatory on large school buses in Canada. This Act does apply to twelve other classes of vehicles. In conclusion the regulations under the Act are considered necessary supplementary additions. These regulations are usually either an updating of the Act or new laws that are considered to be necessary for the safe operation of a school bus.

Canadian Standards Association Standards D250 and D250.1[3]

In Canada the Canadian Standards Association came into existence in 1919. This is a voluntary organization sustaining membership from industry, government, university, the legal profession and interested lay people. The Association consists of twenty directors and four officers (president and three vice-presidents). The revenue for the everyday operation of the Association is obtained from membership fees, sale of published standards and the testing of commodities.

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[1]See Appendix.

[2]The Motor Vehicle Safety Act, R.S.C. 1970, C.26, first supp.

[3]See Appendix.

The headquarters of the Canadian Standards Association is in Rexdale, Ontario with smaller branch offices in Vancouver, Edmonton, Winnipeg, and Montreal. It should be noted that the Canadian Standards Association is one of six standard organizations in Canada.

The Canadian Standards Association provides certification for manufacturers who, under licence from C.S.A., wish to use the appropriate registered C.S.A. Marks on certain products of their manufacture to indicate conformity with a C.S.A. Standard. C.S.A. Certification for a number of products is provided on a voluntary basis in the interests of maintaining agreed upon standards of quality, performance, interchangeability, or safety and, where appropriate, it forms the basis for acceptance by inspection authorities responsible for enforcement of regulations.

In Canada the C.S.A. Standards D250 and D250.1 are the recommended minimum standards for the construction of large school buses.

C.S.A. Standard D250 owes its origin to the work of an ad hoc committee of the Canadian Conference of Motor Transport Authorities. This committee established a working group that included representatives of the school bus chassis manufacturers and the bus body manufacturing industry.

In due course, the Council of Ministers responsible for provincial matters of transport made a decision to the effect that the preliminary standards developed by the

C.C.M.T.A. (Canadian Conference of Motor Transport Authorities) be submitted to the Canadian Standards Association for review and, whenever necessary for redraft with the objective of issuing and maintaining a standard designated as a C.S.A. Standard for large school buses. In doing this, the ultimate result was the transformation of the C.C.M.T.A. ad hoc committee into a committee of the Canadian Standards Association. Standard D250 was formally approved in February, 1974.

C.S.A. Standard D250.1 was prepared at the request of the Provincial authorities through the Canadian Conference of Motor Transport Authorities (C.C.M.T.A.). This revised Standard contains a large number of revisions based on general experience with large school buses which have been adopted since the draft of the first edition was prepared and the increased awareness by manufacturers and users to continue the quest for improvements in large school buses in the interests of safety. Several revisions were prompted by the issuance and enforcement of the Federal Motor Vehicle Safety Regulations by the Federal Ministry of Transport. This Standard was formally approved in March, 1975.

The Federal Government is mainly concerned with the minimum necessary protection for passengers in a school bus. Even with this point of view the Federal Ministry of Transport neglects to include school buses under such important sections such as hydraulic brakes, occupant protection, impact protection and fuel system. As a result the components of the Federal Motor Vehicle Act are not as inclusive as those of the Canadian Standards Association Standards D250 and D250.1.

It should be pointed out that the Standards of the Canadian Standards Association came about as the result of no inclusive regulations adopted by the Federal Government. Consequently the Canadian Standards Association prepared a comprehensive standard for large school buses in reference to the minimum requirements of the school bus body and chassis.

The author should point out that there is an overlapping between certain regulations of the Federal Motor Vehicle Act and the C.S.A. Standards (D250 and D250.1). There is duplication in content between: Section 101 - Control Location, and Instruments and Instrument Panel; Section 103 - Defrosting, and Defogging and Defrosters; Section 104 - Wiping and Washing and Windshield Wipers and Windshield Wipers and Washers; Section 108 - Lighting, and Lamp Reflectors and Signals; Section 111A - Rearview Mirrors, and Rearview Mirrors; Section 205 - Glazing Materials, and

Windshield and Windows; Section 208 - Seat Belts, and Seat Belt for the Driver; Section 217 - Window Retention and Emergency Exits, and Emergency Door and Emergency Windows. Other than the aforementioned instances, each of the remaining components of the Standards are unique.

Since the C.S.A. Standards are voluntary, there is a need for the existence of both the Federal Motor Vehicle Act and the C.S.A. Standards (D250 and D250.1).

In conclusion the Federal Motor Vehicle Safety Act and the Canadian Standards Association Standards refer to the structure and accessories on a school bus. They do not set standards for student behavior, operating procedures, school bus driver testing, or expected school bus driver characteristics. The Canadian Standards Association has had a noticeable effect on school bus safety in Canada, whereas the Federal Government has only "scratched the surface" in reference to school bus safety. The school bus could be included under many more sections of the Federal Motor Vehicle Safety Act (ie. occupant protection, impact protection, hydraulic brakes and fuel system). Finally these two sets of standards give transportation authorities a minimum set of standards for the safe operation of a school bus.

CHAPTER IV

PROVINCIAL REGULATIONS AND LEGISLATION

INTRODUCTION

In 1867 the British North America Act[1] gave control of education to the original members of Confederation. At a later time the remaining provinces were granted jurisdiction over education under other federal statutes. Consequently each of the ten provinces in Canada control pupil transportation through legislation and regulations of the Department of Education and through any Department whose responsibility is directed toward legislation and regulations governing the speed, equipment and safety of public service vehicles.

As mentioned previously the only legislation and regulations that effect pupil transportation nationally is the Federal Motor Vehicle Act. Although the Standards (D250-1971 and D250.1-1975) of the Canadian Standards Association have been generally adopted, they have not been federally legislated.

The purpose of this chapter is to examine the school bus safety legislation and regulations in each of the ten

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[1] 30 and 31 Vict. 1967, c.3, n.93.

provinces. This examination will exclude any study of the Federal Motor Vehicle Act, Canadian Standards Association Standard D250-1971 and Standard D250.1-1975.

It should be recognized that each province is unique in its approach to pupil transportation. As a result the author will attempt to accentuate these differences.

This chapter is a comprehensive study of all legislation and regulations that are provincially regulated. Finally, this chapter does not refer to or include any regulations which are unique to a school board or a school district.

Sources of Data:

The information in this chapter was gathered, principally, through discussion with responsible officials in each of the ten provinces of Canada. The discussions in each of the provinces included feedback from both the Department of Education and the respective departments which handled vehicle transportation.

British Columbia

In British Columbia there is a joint responsibility for school bus safety between the Department of Transportation and Communications, the Department of Education and the Public Utilities Commission. These departments receive their authority from the Motor Vehicle Act, Public School Act and the Motor Carrier Act respectively. It should be pointed out that

although it is a joint responsibility the emphasis on school bus safety legislation and regulations rests in the main with the Department of Transportation and Communications and the Public Utilities Commission. The Department of Education concerns itself primarily with school bus contracts, expenses and grants in respect to the conveyance of pupils. As the reader will appreciate there must be tremendous on going coordination between the three departments. If one or more departments are isolated their optimum efficiency cannot be attained within the administration or at the school board level.

Alberta

At the present time in Alberta there are three departments which involve themselves with school bus safety. These departments are: Department of Transportation, Department of Education, and the Department of the Solicitor General. Authority is given to these departments as a result of the Highway Traffic Act, School Act, and the Public Service Vehicles Act respectively. As in some other provinces the role of the Department of Education is one of consultation and funding. The Public Service Vehicles Act creates a Highway Traffic Board which in turn is given the authority to make regulations specifically applicable to school buses. The role of the Department of the Solicitor General has the responsibility for inspection of the school buses.

Once again it should be emphasized that if we are to

have maximum concern for school bus safety then there must be effective coordination between the three departments.

Saskatchewan

In the Province of Saskatchewan there are two departments that are responsible for school bus safety. They are the Department of Education and the Department of Transportation. The Department of Education is given authority through the School Act and the Department of Transportation is given control through the Vehicles Act. Provision is made within the Vehicles Act for the Highway Traffic Board to make regulations concerning pupil transportation. The Vehicles Act constitutes about ninety-five percent of the provincial legislation and regulations concerning school bus safety. The School Act for the most part generalizes in reference to the regulations concerning school bus safety but becomes more explicit in reference to grants and eligibility for pupil transportation.

At the present time, the University of Saskatchewan is carefully considering a proposal for a project to study the degree of safety inherent in all aspects of transportation of pupils on school buses.

Manitoba

The Province of Manitoba has a fairly even distribution of authority in reference to school bus safety. This authority is shared between the Department of Highways and

the Department of Education. These departments receive their authority from the Highway Traffic Act and the Public School Act respectively. The even distribution of authority in Manitoba is the result of cooperative coordination between the two provincial departments. The Department of Education is given the added responsibility for the distribution of operating and capital grants.

Ontario

In Ontario the Department of Transportation and Communications is in essence totally responsible for school bus safety legislation and regulations. This department receives its authority from two Acts - Public Motor Vehicle Act and the Highway Traffic Act. The Department of Education under the Act receives the authority for determining and distributing grants for the conveyance of pupils. Because of the high percentage of contract buses the above division of authority seems to be most appropriate.

Quebec

The division of authority in reference to school bus safety within the Province of Quebec is similar to that situation which exists in the Province of Ontario. The Department of Education has minimal authority or responsibility in the administration of school bus safety. As a matter of fact the Department of Education could be considered only as an observer. The Department of Transportation not only allocates

the grants but also is the origin of all legislation and regulations concerning school bus safety. The Department of Transportation receives its authority from the Transport Act, and from the Highway Code.

New Brunswick

The primary responsibility for school bus safety is relegated to the Department of Education. According to Mr. Ed. Hamilton, who is the Supervisor of pupil transportation for the Province of New Brunswick, the responsibility for school bus safety rests in the majority to the Department of Education with fringe responsibility given to the Department of the Provincial Secretary and the Department of Transportation. As a result the authority of these three departments is arrived at from the School Act, Motor Vehicle Act and the Highway Traffic Act respectively.

It should also be noted that there is a committee on transportation which coordinates the overlapping responsibilities of the three above mentioned departments.

Nova Scotia

In Nova Scotia the responsibility for school bus safety has been assigned to the Department of Highways and also the Board of Commissioners of Public Utilities. Each of these departments receive their power to function and manage from the Education Act, Motor Vehicle Act, and Motor Carrier Act respectively.

Under the capable coordination of Earl McInnis, the Province of Nova Scotia has displayed an enviable school bus safety record. In 1972 the province received the first place award from the Association of Provincial and State Safety Officials. This award from the Association of Provincial and State Safety Officials signifies excellence in school bus safety, and the Province of Nova Scotia had stiff competition from the United States and other provinces in Canada. It should also be noted that the Province of Nova Scotia offers for competition, within the province, the Dr. H.M. Nason School Bus Safety Award for the district judged most proficient in school bus safety.

The Province of Nova Scotia has a private Commercial Safety College located in Masstown. This college offers a comprehensive school bus driver training course of approximately three weeks in duration.

Prince Edward Island

The Province of Prince Edward Island, although small in respect to the other provinces in Canada, has divided the authority for school bus safety, although unproportionately, between the Department of Education and the Department of the Provincial Secretary. Needless to say the Department of Education is given the preponderance of authority. The Department of Education receives its power to control from the School Act. In retrospect the Department of the Provincial Secretary receives its authority from the Highway Traffic Act.

One of the objectives of the province is to eventually have each school bus driver trained by the Commercial Safety College in Masstown, Nova Scotia. In the summer of 1976 it is anticipated that the Commercial Safety College will bring its school bus drivers course to the Island.

Newfoundland

In Newfoundland the responsibility for school bus safety legislation and regulations is confined to the Department of Transportation and Communications. The authority of the Department of Transportation and Communications is the direct result of the Highway Traffic Act. The Department of Education retains authority for the allocation of grants and the general administration of school bus routes. The division of authority, once again, is acute.

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

H. - Public Service Vehicle Act

I. - Transport Act

J. - Motor Carrier Act

K. - Highway Traffic Act

L. - Highway Code

M. - Public School Act

N. - School Act

P. - Workers Compensation Act

Q. - Legislation

R. - Regulations

S. - School Bus Drivers Handbook or Manual

T. - Federal Motor Vehicle Safety Act

U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

CHART LEGEND (Continued)

Example: AQK:159

(a)

A = Department of Transportation and Communications

Q = It is a Piece of Legislation

K = Source is the Highway Traffic Act

159 = Indicates Section of the Act

(a) = Indicates Sub-Section of the Specific Section of the Act.

Example: ERN:2.21

(1)

E = Department of Education

R = It is a Regulation

N = Source is the School Act

2.21 = Indicates Section of the Act

(1) = Indicates Sub-Section of Specific Section of the Act.

Example: RS

R = It is a Regulation

S = Source is the School Bus Drivers Handbook or Manual

TABLE 1

Federal Motor Vehicle Safety Act

This Act was proclaimed in January, 1971. All Provinces are obligated to follow these minimum standards in reference to school bus safety. The Act is divided into fifty-six different sections. It should be noted that school buses, at the present time, are obligated to comply with only twenty-five of these sections.

C.S.A. Standard D250-1971

The Canadian Standards Association in 1971 published a voluntary type of standard for school buses. Since that time six of the ten provinces have adopted this specific standard. The provinces that have adopted this standard usually use it as a basis for the specification sheet when school buses are purchased.

C.S.A. Standard D250.1-1975

During the year 1974 and the beginning of 1975 the Canadian Standards Association formulated a comprehensive revision of the voluntary standard published in 1971 (D250). At the present time five of the ten provinces are complying to this standard. The Province of Saskatchewan has legislated that they will adopt C.S.A. Standard D250.1 in August 1976. The Province of Prince Edward Island has organized a committee to investigate the possible future adoption of this standard.

TABLE 1

Provincial Comparison-C.S.A. Standards,

Federal Regulations, Priority Position

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Complies to Federal Motor Vehicle Safety Act and Regulations	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Follows C.S.A. Standard D250-1971	YES	NO	YES	YES	YES	NO	NO	YES	NO	YES
Conforms to C.S.A. Standard D250.1-1975	YES	NO	NO	YES	YES	YES	YES	NO	NO	NO
School Bus Safety is Considered a Priority in the Province	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

H. - Public Service Vehicle Act

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T. - Federal Motor Vehicle Safety Act

U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

Finally it is important to realize that Provinces like British Columbia, Manitoba and Ontario have adopted both C.S.A. Standards. Usually the above provinces apply C.S.A. Standard D250-1971 to those school buses purchased prior to 1975. Likewise those buses purchased after 1975 must comply to C.S.A. Standard D250.1-1975.

School Bus Safety - A Priority

Each of the responsible officials in the ten provinces indicated that the safety aspects inherent in school busing were a priority in their province. There was a question however in some of the provinces as to whether school bus safety was a priority over automobile safety concerns.

TABLE 2

Supervisor of Pupil Transportation

Although each of the provinces have indicated that school bus safety is a priority in their province, only five provinces have considered it important enough to employ a person or persons whose sole responsibility is supervision of pupil transportation. All other provinces have an individual whose partial responsibility is pupil transportation.

Provincial School Bus Transportation Conference

British Columbia, Manitoba, Quebec and Nova Scotia all hold provincial school bus transportation conferences

TABLE 2

Provincial Comparison - Transportation Conference, Supervisor of Transportation

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Province has a Person(s) Whose Title is Supervisor of Pupil Transportation.	NO	NO	NO	YES	NO	NO	YES	YES	YES	YES
The Province has an Annual Provincial School Bus Transportation Conference.	YES	NO	NO	YES	NO	YES	NO	YES	NO	NO
Local School Districts Hold Periodical School Bus Management Meetings.	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

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V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

which are attended by local transportation supervisors and/or school bus drivers. These conferences are held once a year varying in length from two days to one week. All other provinces do not hold this type of provincial conference.

Local School Bus Management Meetings

All provinces indicated that the majority of school districts within their province held periodic (this could be anywhere from one per year to one per month) meetings that dealt with the management of pupil transportation. One of the objectives of these meetings is to discuss any problems that are occurring in reference to the safe transportation of all pupils.

TABLE 3

Number of Pupils Transported

There is a tremendous disparity in the number of pupils transported daily in each of the ten provinces in Canada. The Province of Prince Edward Island transport a mere 18,000 pupils daily, whereas the Province of Quebec transport 800,000 pupils daily. Overall in Canada there are 2,100,600 pupils transported daily by school buses. This is a tremendous responsibility for those involved in the safe transportation of these pupils.

TABLE 3

Statistics-Number of Pupils, Buses,
Ratio of Board Buses to Contract Buses.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Number of School Pupils Transported Daily by School Bus.	109,500	77,100	135,000	65,000	600,000	800,000	130,000	93,000	18,000	73,000
Number of School Buses	1,103	2,800	4,000	2,058	11,500	8,500	1,290	1,107	330	900
Ratio of Board Owned Buses to Contract Buses.	66 to 34	50 to 50	50 to 50	64 to 36	10 to 90	4 to 96	76 to 24	90 to 10	99 to 1	5 to 95

CHART LEGEND

A. - Department of Transportation and Communications

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C. - Department of Highways

D. - Department of Provincial Secretary

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F. - Motor Vehicle Act

G. - Vehicle Act

H. - Public Service Vehicle Act

I. - Transport Act

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K. - Highway Traffic Act

L. - Highway Code

M. - Public School Act

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S. - School Bus Drivers Handbook or Manual

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U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

Number of School Buses

Once again there is a marked difference in the number of school buses used in each province for the transportation of pupils. The Province of Prince Edward Island has 330 school buses, whereas the Province of Ontario has 11,500 school buses. There is a total of 33,588 school buses operating in Canada. There appears to be a discrepancy in the ratio of the number of pupils transported daily to the number of school buses used when you compare Ontario to Quebec. That is, Ontario transports 600,000 pupils daily in 11,500 school buses, whereas Quebec transports 800,000 pupils daily using only 8,500 school buses. The reasons for the above differences can be related to either (a) length of route (b) size of bus (c) density of population or (d) efficiency in routing.

Ratio of Board Owned to Contract Buses

Every province is unique in its approach to determining who should transport pupils within their province. For instance the Province of Quebec has decided that it is more efficient in 96 per cent of the cases to contract out the responsibility for providing school buses. Whereas in the Province of Prince Edward Island the province has decided to not only buy but also operate the school buses under direct provincial authority. Furthermore it is interesting to note that the Provinces of Alberta and Saskatchewan share equally the responsibility for providing school buses for

routes within their province. Some provinces prefer contract operations because the province will not have to worry about placing enough buses with competent drivers on each of the routes. In addition to this trend of thought other provinces (Nova Scotia, Prince Edward Island) prefer to retain responsibility for not only the administration but also the maintenance of the majority of school buses within this province.

TABLE 4

School Bus Drivers Licence

There is no continuity in the description given to the type of licenses issued to a school bus driver in Canada. Some provinces, Manitoba and Ontario, require a special type of school bus driver licence whereas another province like Prince Edward Island only requires a chauffers licence. It should also be pointed out that the requirements to receive such a licence differs from province to province.

Minimum Age for School Bus Driver

In Canada the minimum age for any person to receive a school bus drivers licence is eighteen-years old. It should be realized that this age of eighteen is applicable in only four provinces in Canada. One province (Nova Scotia) requires an age of nineteen years old, and the remaining four provinces require a minimum age of twenty-one years old. The reason

TABLE 4

Provincial Comparison-School Bus Driver Requirements, Responsibility.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
School Bus Drivers Licence	Class 2	Regular Licence plus School Bus Endorse-ment	Class A	Class 2 Plus Additional School Bus Supplement	Chauffers Licence plus Special Endorse-ment	Type A	Class 2	Class 06	Chauffers Licence	Type 8
School Bus Drivers Minimum Age.	21 AQF:18 (12)	18 BRG:111	18 BQK:7,8	21 ERM:P250 R10 (16) (a)	21 ARK:702 (4) (a)	18 BQL:53 (1)	21 ERN:158 (2) (d)	19 RS	21 DQK:74 (1) (b)	18 AQK:51 (1) (a)
School Bus Drivers Maximum Age. (*Must Submit to Re-examination Every Year Over 65 Years)	NO* BV	NO* BQG:73A	NO* BV	65 EV	NO* RS	NO* BV	65 ERN:158 (3)	65 RS	65 ERN:20 (3)	NO AV

CHART LEGEND

A. - Department of Transportation and Communications

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C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

H. - Public Service Vehicle Act

I. - Transport Act

J. - Motor Carrier Act

K. - Highway Traffic Act

L. - Highway Code

M. - Public School Act

N. - School Act

P. - Workers Compensation Act

Q. - Legislation

R. - Regulations

S. - School Bus Drivers Handbook or Manual

T. - Federal Motor Vehicle Safety Act

U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 4 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The School Bus Driver is Responsible for the Safety of Both Bus and Pupils.	YES ARF:11.07 (e)	YES BRG:106	NO	YES ERM:P150 R10 (4)(5)	YES RS	YES BRI:11.229	YES ERN:158 (1)	YES RS	YES ERN:16 (1)	YES RS
Monitors or Patrols are Placed on Each School Bus.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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for the differences is simply that the Provincial Government has been given responsibility in reference to vehicle driver standards.

Maximum Age For School Bus Drivers

Four of the ten provinces indicate that the maximum age is sixty-five years old. At the end of the school term in which the school bus driver becomes sixty-five years old he must retire. The other six provinces, British Columbia, Alberta, Saskatchewan, Ontario, Quebec and Newfoundland indicate that there is no legislation or regulations that state that a school bus driver must cease from driving a school bus at a certain age. Therefore the only condition that is stipulated is that every year beyond the age of sixty-five the bus driver must take an annual complete medical examination. These provinces feel that this is a necessary safety precaution considering the grave responsibility of transporting pupils daily.

Safety Responsibility

Nine of the ten provinces in Canada indicate in their provincial regulations that the school bus driver is responsible for both the safety of the bus and of the pupils. In Alberta there is no legislation or regulations that state that a school bus driver is responsible for not only the safety of the bus but also of the pupils. The reply of "No" on Table 4, indicates that the province has no legislation

or regulations in respect to the responsibility of the school bus driver, but this does not infer that a school district does not have a written declaration of such a responsibility.

Monitors or Patrols

There is no province in Canada that has made it mandatory that each school bus be required to carry a responsible assistant(s) on every school bus trip. It was brought to the researchers attention that some individual school boards in the Provinces of Nova Scotia and Ontario require monitors or assistants on school buses. This however is board policy.

TABLE 5

Driver Experience

Before a school bus driver is hired some provinces like British Columbia, Alberta, Saskatchewan, Ontario, New Brunswick and Quebec require that the prospective driver have no experience in driving any type of vehicle. Please note that the indication of "No" on Table 5 indicates that the Provincial Government has no regulations requiring previous driving experience but this does not mean that an individual school district may not have different requirements. The Provinces of Nova Scotia and Newfoundland indicate that a school bus driver must have a minimum of at least one year driving experience. Moreover the Province of Prince Edward

TABLE 5

Explanation of Required Driver Experience Before Being Hired.

Every School Bus Driver Must Have At Least the Following Years of Driving Experience Before Being Hired.	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(1) One Year	NO	NO	NO	NO	NO	NO	NO	YES URJ:58 (1) (c)	NO	YES ARK:157 (12.1)(c)
(2) Two Years	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
(3) Three Years	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
(4) Five Years	NO	NO	NO	YES ERM:P250 R10(16)(a)	NO	NO	NO	NO	YES ERN:20 (2)(a)	NO

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Island and Manitoba require that a school bus driver have a minimum of five years driving experience. It is appropriate at this time to mention that as of January, 1977, the Province of Manitoba will require a school bus driver to have only two years driving experience assuming that he begins to drive a vehicle at the age of sixteen years old.

There has been no research data generated which indicates that a person who has any number of years driving experience will be a better driver than an individual who drives a bus without previous experience on any other vehicle.

TABLE 6

Driver Training Program

In Canada there is only one Province that provides a comprehensive school bus driver training program. The Province of Prince Edward Island in cooperation with the Commercial Safety College of Masstown, Nova Scotia, have prepared a comprehensive school bus driver training program. This program was introduced in 1974 with approximately 60 percent of the school bus drivers having taken the course thus far. It should be stressed that in each of the Provinces, with the exception of Prince Edward Island, not all school districts or contractors provide a comprehensive training program for school bus drivers. As a matter of fact very, very few (approximately one percent) have a comprehensive driver training program.

TABLE 6

Comprehensive School Bus Driver Training Program

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
There is a Comprehensive School Bus Driver Training Program Provided for all Drivers by:										
(1) Province	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO
(2) School Districts and/or Contractor	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

CHART LEGEND

A. - Department of Transportation and Communications

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TABLE 7

Demands Placed Upon School Bus Driver

Table 7 indicates seven different demands placed upon a school bus driver. The research in each of the subsequent paragraphs will indicate the results of this investigation.

All Provinces indicated that they have regulations or legislation that insures that all pupils have moved from the front of the bus before the driver proceeds. The Province of Saskatchewan indicated that this would be left to each individual school unit to rule upon.

The Province of British Columbia felt that it was a local school district's perrogative to determine the procedures to be followed when a school bus driver leaves his bus. The other nine provinces indicated that when a driver leaves his school bus he is required (a) stop the engine (b) remove ignition key (c) set the brakes and (d) put the transmission in its lowest gear (exception Quebec).

The Provinces of Ontario, Alberta and British Columbia denoted that they had not legislation or regulations that stipulated that a school bus driver shall not leave his school bus unattended while pupils are aboard. All other Provinces indicated that they were firm in their viewpoint that no school bus driver should leave his school bus unattended while pupils are passengers.

In respect to the procedure of a school bus backing up on school grounds, eight provinces indicated that it could

be done but only under the supervision of a responsible adult. The Provinces of Nova Scotia and British Columbia indicated that they had no provincial legislation or regulations covering such a procedure.

Further to the above six provinces indicated that no school bus driver could back up his school bus onto a highway from a driveway or turning-point. The Provinces of Alberta, British Columbia, Nova Scotia and Prince Edward Island had no provincial laws regulating the above.

The Province of New Brunswick signified that it felt that a bus must be regulated by law not to travel in excess of fifteen miles per hour on any school premises. It is interesting to note that no other Province has regulated agreement similar to the New Brunswick policy. Possibly this might be the result of very few accidents caused while a school bus is on school grounds.

Finally the Provinces of New Brunswick and British Columbia have legislated the fact that no bus driver shall operate a school bus with the gears in neutral or clutch disengaged in such a manner as to allow the school bus to coast. The reaction from the other Provinces varied from the opinion that it should be covered under local school district policy to an inclination of no need for such a provision.

TABLE 7

Provincial Differentiation of the Demands Placed Upon the School Bus Driver.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Driver of a School Bus Shall Insure that all Pupils Have Moved from the Front of the School Bus Before Proceeding.	YES ARP:11.09 (2)	NO	YES BRH:6.7.2 (a)	YES ERM:P250 R10 (14) (15)	YES AQH:16 (2)	YES BRI:11.188 (c)	YES ERN:154 (9)	YES URJ:80 (2) (y)	YES ERN:18 (3)	YES RS
The Driver Shall not Leave the School Bus Without First Stopping the Engine and Removing Ignition Key, Setting the Brakes, and Putting the Transmission in its Lowest Gear.	NO	YES BRG:105 (e)	YES BRH:6.7.8	YES ERM:P250 R10 (17) (f)	YES RS	NO	YES RS	YES URJ:66	YES DQK:196 (a)(b)(c)	YES RS
No School Bus Driver Shall Leave his School Bus Unattended While School Pupils are Passengers.	NO	YES BRG:106 (3) (a)	NO	YES ERM:P250 R10 (17) (b)	NO	YES BRI:11.228	YES ERN:159 (2) (j)	YES URJ:66	YES ERN:21 (2) (f)	YES RS

CHART LEGEND

A. - Department of Transportation and Communications

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R. - Regulations

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V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 7 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
No School Bus Driver shall Back-up a School Bus on the School Grounds Except Under Supervision of a Responsible Adult.	NO	YES BRG:105 (f)	YES BRH:6.7.9	YES ERM:P250 R10 (14) (3)	YES RS	YES BRL:40 (11)	YES ERN:154 (5)	NO	YES ERN:18 (2)	YES RS
No School Bus Driver shall Back his School Bus onto a Highway from a Driveway or Turning Point.	NO	YES BRG:106 (3) (b)	NO	YES CQK:177 115	YES RS	YES BRL:40 (11)	YES ERN:154 (6)	NO	NO	YES RS
No School Bus Driver shall Drive a School Bus on School Premises in Excess of Fifteen Miles Per Hour.	NO	NO	NO	NO	NO	NO	YES ERN:159 (2) (d)	NO	NO	NO

CHART LEGEND

A. - Department of Transportation and Communications

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W. - Gasoline Handling Act

TABLE 7 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
No School Bus Driver shall Operate a School Bus with the Gears in Neutral or Clutch Disengaged in such a Manner as to Allow the School Bus to Coast.	YES ARF:11.07 (d)	NO	NO	NO	NO	NO	YES ERN:159 (2) (e)	NO	NO	YES RS

CHART LEGEND

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TABLE 8

Restriction of Articles on a School Bus

Since the transportation of pupils can be a very emotional experience, it has become necessary to restrict certain articles from being transported on a school bus. Naturally the concern for safety of the pupils is of primary importance. The ten Provinces were unanimous in agreement that there should be no firearms, explosives or anything of a dangerous nature carried on any school bus. In addition to this only eight of the Provinces felt that animals should be prohibited from travelling on a school bus. The Province of British Columbia and Ontario indicated that they had no provincial restrictions in regards to the transportation of animals on a school bus. These provinces felt that the student had a right to transport a pet on a school bus if the occasion should present itself (science fair, show your pet day etc).

TABLE 9

Alcohol and Smoking on a School Bus

Each Province was in agreement that not only the passengers but also the driver of the school bus should be prohibited from drinking any type of alcoholic liquor, smoking or using other forms of tobacco in the school bus at any time. It was felt that the use of liquor provided

TABLE 8

Restriction of Articles on a School Bus.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The School Bus Driver Should Not Transport										
(1) Animals	NO	YES BRG:102 (4)	YES BRH:6.6.2	YES ERM:P250 R10 (5)	NO	YES BV	YES ERN:159 (2) (a)	YES URJ:75	NO	YES RS
(2) Firearms	YES URJ:6.622	YES BRG:102 (4)	YES BRH:6.6.2	YES ERM:P250 R10 (5)	YES RS	YES BV	YES ERN:159 (2) (a)	YES URJ:75	NO	YES RS
(3) Explosives	YES URJ:6.622	YES BRG:102 (4)	YES BRH:6.6.2	YES ERM:P250 R10 (5)	YES RS	YES BV	YES ERN:159 (2) (a)	YES URJ:75	YES DQK:136 (4)	YES RS
(4) Anything of a Dangerous Nature	YES URJ:6.622	YES BRG:102 (4)	YES BRH:6.6.2	YES ERM:P250 R10 (5)	YES RS	YES BV	YES ERN:159 (2) (a)	YES URJ:75	NO	YES RS

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

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E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

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an unsafe situation at any time on the school bus. Furthermore smoking by pupils provided not only a danger in that a fire might start on the bus but also act as a distraction for the school bus driver. In reference to the consumption of alcoholic liquor the Provinces of Saskatchewan, New Brunswick and Nova Scotia indicated that no bus driver may consume alcoholic liquor eight hours prior to beginning his run. These Provinces felt that no bus driver could perform his duties to the best of his ability if he was under the influence of alcohol. It should be pointed out that the other seven Provinces feel that as long as the school bus driver does not drink alcoholic liquor while on duty, this is sufficient.

TABLE 10

Activating Warning Lights When Stopped

Safety in the embarking and disembarking of pupils is of paramount concern in each of the ten Provinces. Statistics (see Table 46) suggest that fatalities to pupils generally occur outside the bus rather than inside the bus. As a result it is important that the pupil be protected against unnecessary, dangerous situations on the outside of the school bus. Consequently each Province in Canada has adopted the flashing red warning lamps on the front and rear of each school bus. The purpose of these lamps is to warn any approaching motorist from the front or the rear that the

TABLE 9

Driver and Passenger Restrictions

in Reference to Alcohol and Smoking

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
No Person Shall Drink Alcoholic Liquor, Smoke or use Tobacco in Any Form in the School Bus.	YES URJ:6.66	YES BRG:105 (c)	YES BRH:6.7.6 (a)	YES CQK:191 ERM:P250 R10 (17)(d)	YES AQH:13,14	YES BQL:66 (7) (k) Alcohol Only	YES ERN:159 (2) (k)	YES URJ:60 URJ:80 (2) (1)	YES ERN:21 (2) (k)	YES ARK:157 (21)
The Driver of a School Bus Shall Not: (1) Drink Alcoholic Liquor While He is on Duty.	YES URJ:6.66 (b)	YES BRG:105 (a)	YES BQH:44 (1)	YES CQK:191	YES AQH:13	YES BQL:66 (7) (k)	YES ERN:159 (2) (o)	YES . URJ:59	YES ERN:21 (2) (k)	YES ARK:157 (22)
Consume Any Alcoholic Beverage Between 12:01 A.M. and 6:00 P.M. on the Day He Drives.	NO	YES BRG:105 (a)	NO	NO	NO	NO	YES ERN:159 (2) (o)	YES . URJ:59	NO	NO

CHART LEGEND

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G. - Vehicle Act

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K. - Highway Traffic Act

L. - Highway Code

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N. - School Act

P. - Workers Compensation Act

Q. - Legislation

R. - Regulations

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V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 10

Driver Requirements in Relation

To Activating Warning Lights When Stopped.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Driver Shall Operate the Flashing Red Warning Lamps When the School Bus is Stopped For the Purpose of Loading or Unloading School Pupils.	YES ARV:5 (a)	YES BQG:143A (1) (a) (b) (e)	YES BRH:6.127 (b) (c)	YES CQK:128 (4)	YES AQK:120 (3)	YES BRI:11.225 (b)	YES ERN:159 (1) (t)	YES URJ:81 (5)	YES DQK:189 (2) (c)	YES AQK:157 (3)
The Driver Shall Operate the Flashing Amber Warning Lamps 500 Feet Before the School Bus Driver has Intention to Stop for the Purpose of Loading or Unloading School Pupils.	NO	NO	NO	YES CQK:35 (2)	NO	NO	NO	YES URJ:81 (6)	NO	NO

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school bus is stopped and either loading or unloading school pupils. The approaching motorist must be aware that this is a danger zone. Moreover he must realize that his vehicle must come to a complete stop. It should be pointed out that the Provinces of Manitoba and Nova Scotia not only require the flashing red warning lamps but also require the school bus driver to operate the flashing amber warning lamps at a minimum of five hundred feet before the school bus is brought to a complete stop. The purpose of the amber lamps is parallel in objective to the amber light at a controlled intersection. The flashing amber warning lamps on the school bus should indicate a visual warning to any motorist within five hundred feet of the school bus.

Finally all Provinces make it a serious traffic offense for any motorist to pass any school bus while the flashing red warning lamp system is in operation.

TABLES 11 AND 12

Railway Crossing

There are two types of railway crossings - one crossing is controlled (signal lights and/or gates), the other is uncontrolled. With the exception of the Provinces of Manitoba and Ontario the driver of a school bus must, before he drives his school bus across any railway track, bring his school bus to a complete stop at a minimum of fifteen feet previous

TABLE 11

School Bus Drivers Obligation When Approaching Any Type of Railway Crossing

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Driver of a School Bus Shall, Before Driving a School Bus Across any Railway Track, Bring the School Bus to a Full Stop, Open the Entrance Door of the School Bus, Look For and Listen For the Sound of an Approaching Train, and When Satisfied That no Train is Approaching, he Shall Close the Entrance Door and Drive the Bus in Low Gear, Across the Tracks.	YES	YES	YES	NO	NO	YES*	YES	YES	YES	YES
	AQF:174 (4) (5) (6) (7)	BQG:149 (2) (3)	BRH:6.8.1 (a) (b)			BRI:11230 (1) (2) *Must Turn His Ignition off Before Starting Over the Rails	ERN:159. (1) (k).	URJ:62	ERN:21 (1) (h)	ARK:157 (27.1)

CHART LEGEND

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TABLE 12

School Bus Drivers Obligation When Approaching Controlled Railway Crossing.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Driver of a School Bus Upon Approaching a Railway Crossing That is Controlled by Gates or Signal Lights Shall Not Have to Stop But Only Proceed With Caution.	NO	NO	NO	YES CQK:126	YES AQK:119 (1)	NO	NO	NO	NO	NO

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

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G. - Vehicle Act

H. - Public Service Vehicle Act

I. - Transport Act

J. - Motor Carrier Act

K. - Highway Traffic Act

L. - Highway Code

M. - Public School Act

N. - School Act

P. - Workers Compensation Act

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to the first rail of the track. In addition, he must open the entrance door of the school bus, look and listen for the sound of an approaching train and when he is totally satisfied that no train is approaching, he can close the entrance door and drive the school bus in low gear across the tracks. Please note that the Province of Quebec, in addition to the above, require a school bus driver to turn off his ignition before proceeding over any railway tracks.

The Provinces of Manitoba and Ontario have parallel legislation to all other provinces in reference to the school bus drivers obligation when approaching an uncontrolled railway crossing. But these two provinces differ in legislation concerning the school bus drivers' duty when approaching a controlled railway crossing. In this instance the school bus driver does not have to stop but only "proceed with caution".

TABLE 13

School Bus Following Another Vehicle

The driver of a school bus has a tremendous responsibility for the safety of not only the pupils and the bus but also for other vehicles on the highway. As a result each individual Province has a specific traffic regulation in relation to the distance that a school bus is required to follow any vehicle which is proceeding ahead of it. The

TABLE 13

Comparison of the Required Distance That A School Bus Must Follow Another Vehicle

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Driver of a School Bus Shall Not Drive Within the Following Distance of any Vehicle Proceeding Ahead of Him.										
(1) One Hundred Feet	NO	NO	NO	NO	NO	NO	YES ERN:159 (2) (f)	NO	NO	YES ARK:157 (27.2)
(2) Two Hundred Feet	NO	NO	NO	NO	NO	NO	NO	YES URJ:63	NO	NO
(3) That Distance Which is Reasonable and Prudent	YES AQK:153 (1)	YES BQG:135 (1)	YES BQK:105 (1)	YES CQK:108 (1)	YES AQK:105 (1)	YES BRL:40 (9)	NO	NO	NO	NO

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B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

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Provinces of New Brunswick and Newfoundland require that a school bus driver travel no closer than one hundred feet. The Province of Nova Scotia feels that the minimum following distance should be two hundred feet. Whereas all the remaining provinces point out that a school bus driver must follow at a distance which is "reasonable and prudent". The researcher should emphasize, that every Province pointed out, the desire for every school bus driver to be extra careful when following another vehicle especially when he is not only driving a large, heavy vehicle but also carrying a precious cargo.

TABLE 14

Vehicle Approaching Stopped School Bus

Once again it should be emphasized that the majority of school bus fatalities occur outside the school bus. It is not uncommon for a driver in another vehicle to pass a stopped school bus. All Provinces require that a driver of a vehicle, who meets or overtakes a school bus from either direction and the school bus is stopped for embarking or disembarking pupils, shall (a) stop when the visual red warning lamps are flashing (b) not proceed until the bus resumes motion. In the Provinces of Quebec and British Columbia there is legislation requiring a motorist to resume motion only when and until the stopped school bus begins to move.

TABLE 14

Procedure of an Approaching Vehicle Upon a Stopped School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
When the Driver of a Vehicle Meets or Overtakes a School Bus from Either Direction, and and School Bus is Stopped for the Purpose of Receiving or Discharging Pupils, the Driver Shall Stop.										
(1) When a Visual Signal is Operating.	YES AQF:142 (c)	YES BQG:144 (1) (a)	YES BQK:128 (1)	YES CQK:35 (8) (8.1) (12)	YES AQK:120 (2)	YES BQL:44	YES DQF:188 (1)	YES CQF:93 (2)	YES DQK:189 (1)	YES AQK:157 (1) (a)
(2) And Shall Not Proceed Until the School Bus Resumes Motion and/or	YES AQF:142	YES BQG:144 (2)	YES BQK:128 (2) (a)	YES CQK:128 (5)	YES AQK:120 (2)	YES BQL:44	YES DQF:188 (1)	YES CQF:93 (2)	YES DQK:189 (1)	YES AQK:157 (1) (b)

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TABLE 14 (CONTINUED)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(3) And Shall Not Proceed Until the Visual Signs Are no Longer Activated and/or	NO	YES BQG:144 (1) (d) (e) (f)	YES BQK:128 (2) (c)	YES CQK:128 (5)	YES AQK:120 (2)	NO	YES DQF:188 (1)	YES CQF:93 (2)	YES DQK:189 (1)	YES AQK:157 (1) (b)
(4) Shall not Proceed Until the Bus Driver of the School Bus Signals Such.	YES AQF:142	NO	YES BQK:128 (2) (b)	YES CQK:128 (5)	NO	NO	NO	NO	NO	YES AQK:157 (1) (b)

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Furthermore the Provinces of Newfoundland, Manitoba, Alberta and British Columbia will allow the driver of a vehicle to pass a stopped school bus if the driver of a school bus signals accordingly.

The law enforcement agencies are finding it increasingly more difficult to police the actions of the motorists in respect to the aforementioned legislation. There are many school buses on many highways with few enforcement officers. Usually when a school bus driver can identify the licence plate and sex of the motorist, he will require a witness to the fact that such a violation in traffic regulations has occurred.

TABLE 15

Seat Belts

The Federal Motor Vehicle Safety Act requires that every school bus be equipped with a seat belt in the drivers occupant position. The only Province, that has legislated the compulsory wearing of a seat belt by the school bus driver, is Ontario. Two other Provinces are of the opinion that it should only be a recommended practice. The remaining Provinces do not require or recommend the use of a seat belt by school bus drivers.

Finally there is no Province in Canada that requires or even has suggested that the use of seat belts be made

TABLE 15

Seat Belt-Requirements of School Bus Driver and Interior of School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
It is Compulsory for the School Bus to be Equipped with a Seat Belt.	YES QT	YES QT	YES QT	YES QT	YES QT	YES QT	YES QT	YES QT	YES QT	YES QT
It is Compulsory for the School Bus Driver to Wear a Seat Belt.	YES RS	NO	NO	NO	YES AQK:63 (a)(3)(4)	NO	NO	NO	YES EV	NO
It is Compulsory for the School Bus to be Equipped with Passenger Seat Belts.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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compulsory for all pupils being transported in a school bus. Extensive research has not conclusively indicated whether it would be a positive or a negative move to make the use of passenger seat belts in a school bus compulsory.

TABLE 16

Drivers Manual

Every school bus driver receives a general vehicle operation manual at the time he is examined for his drivers licence. These manuals usually indicate (a) type of licence program (b) health standards (c) good driving habits (d) first aid practices (e) inspection of vehicle (f) professional driving practices (g) signs and any other relevant information for the professional driver. In addition to this manual, the Provinces of Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Saskatchewan provide a specific school bus drivers manual. This manual outlines the rules, regulations and responsibilities of the school bus driver in their respective Provinces. Any feedback that the researcher received from school bus drivers indicated that this type of school bus drivers manual was an invaluable asset as it combined all pertinent school bus information in a centrally located source.

TABLE 16

Provincial Comparison of the Type of Driving Manual Received by Each School Bus Driver.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
A Handbook or Manual is Supplied to All School Bus Drivers										
(a) General Vehicle Manual	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
(b) Specific School Bus Manual	NO	YES	NO	YES	YES	NO	YES	YES	YES	YES

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TABLE 17

School Bus Driver Examination

It goes without saying that each school bus driver is required to take a written test to determine his knowledge of not only general rules of the road but also specific regulations that apply to school buses.

Each and every prospective school bus driver is required to take a practical road test. This practical test can be taken in any size of school bus in Saskatchewan and Quebec. All other Provinces insist that the practical test be taken in a school bus of the same type to be driven. Finally no Province will allow a practical test for a school bus driver in any vehicle other than a school bus.

In order to successfully be granted a school bus drivers licence in any of the ten Provinces in Canada the applicant must successfully pass a vision test, medical examination and sign recognition test. In reference to the vision test the Provinces of British Columbia and Newfoundland stipulated that a school bus driver must have visual acuity, either with or without glasses, of at least 20/40. All the other Provinces indicated that the minimum requirement was 20/30 combined vision with minimum 20/50 in one eye. Under no circumstances would a person with one eye be permitted to operate a school bus. Furthermore the Provinces of New Brunswick and Newfoundland require a minimum field of vision of at least 140 degrees. The other eight Provinces

TABLE 17

Determining the Tests that are Given to Each Prospective School Bus Driver

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Prospective School Bus Drivers are given the Following:										
(1) Written Test	YES AQF:3 (a)	YES BRG:100 (1)(a)	YES BQK:6 (1) (d)	YES CRK:61-75 (4)	YES ARK:702 (4)	YES BRL:4.3 (4) (a)	YES DQF:89 (1)	YES CQF:66 (2)	YES ERN:20 (2)(g)	YES AQK:48 (6)(c)
(2) Practical Test										
(a) In School Bus Type to be Driven.	YES AV	NO	YES BRK:9 (1) (3)	YES CRK:61-75 (4)	YES ARK:702 (4)	NO	YES DQF:89 (1)	YES CQF:66 (2)	YES ERN:20 (2) (g)	YES AQK:47 (3)
(b) In other Vehicle (Truck)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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TABLE 17 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(c) In any Size of School Bus.	NO	YES BRG:100 (1)	NO	NO	NO	YES BRL:4.3 (4) (b)	NO	NO	NO	NO
(3) Vision Test.	YES AQF:3 (a)	YES BRG:100 (1) (a)	YES BQK:11 (3)	YES CRK:61-75 (5) (1)	YES ARK:702 (4)	YES BRL:4.3 (2) (c)	YES DQF:89 (1)	YES CQF:65 (2)	YES ERN:20 (2) (g)	YES AQK:48 (6) (c)
(4) Medical Examination.	YES AQF:3 (a)	YES BRG:100 (1) (a)	YES BQK:6 (1) (a)	YES CRK:61-75 (8)(1)(2)	YES ARK:702 (4)	YES BQL:19 (3)	YES ERN:157 (1)	YES CQF:66 (8)	YES ERN:20 (2) (e)	YES AQK:48 (6) (b)

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TABLE 17 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(5) Sign Recognition Test.	YES AQF:3 (a)	YES BRG:100 (1) (a)	YES BQK:6 (1) (d)	YES CRK:61-75 (4)	YES ARK:702 (4)	YES BRL:4.3 (3)	YES DQF:89 (1)	YES CQP:60 (8)	YES ERN:20 (2) (g)	YES AQK:48 (6) (c)
(6) The Certificate Indicates that the Bus Driver has Visual Acuity, either with or without Glasses of at Least										
(a) 20/40	YES AQF:208 (a)	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (12.1)(b)
(b) 20/30 Combined Vision with Minimum 20/50 in one Eye	NO	YES BRG:100 (2)	YES BQK:11 (2) (3)	YES CRK:61-75 (5) (2)	YES ARK:702 (4)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1) (b)	YES ERN:20 (2) (e)	NO

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TABLE 17 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(7) Certificate Indicates that the Driver can Distinguish Among the Colours, Red, Green and Yellow.	YES AQF:18 (9)	NO	YES BQK:11 (2) (3)	YES CRK:61-75 (6) (1)	YES ARK:702 (4)	YES BRL:19 (2)(3)	NO	YES URJ:58 (1) (b)	YES DQK:218 (4)	YES ARK:157 12.1)(b)
(8) Certificate Indicates that the Driver has a Field of Vision of at Least:										
(a) 120 Degrees	YES AQF:18 (9)	YES BRG:100 (2)	YES BQK:11 (3)	YES CRK:61-75 (7) (1)	YES ARK:702 (4)	YES BRL:19 (2)(3)	NO	YES URJ:58 (1) (b)	YES ERN:20 (2) (e)	NO
(b) 140 Degrees	NO	NO	NO	NO	NO	NO	YES ERN:157 (1)	NO	NO	YES ARK:157 (12.1)(b)

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insist on a minimum field of vision of at least 120 degrees. In conclusion all Provinces with the exception of Saskatchewan and New Brunswick felt it imperative that a driver could distinguish among the colors red, green and yellow (color blindness).

TABLE 18

Prerequisites For School Bus Driver

One of the conditions of employment for a school bus driver in all Provinces is a thorough medical examination. As a result before the driver is given a licence to operate a school bus he must request a qualified medical practitioner to fill out and sign a comprehensive medical form. If any of the certificates filled out by the practitioner indicate loss of foot, hand or eye; inability to hear normally; mental, nervous, organic or functional disease; or any physical defect or limitation that is likely to interfere with safe driving, the prospective driver will not be granted a school bus drivers licence.

It should also be noted that only Saskatchewan, Newfoundland and Quebec require a character reference check out by the Royal Canadian Mounted Police or other law enforcement agency. This is done to give the Motor Vehicle Branch in each of these three Provinces a thorough picture of the background of the prospective driver.

TABLE 18

Provincial Requisites for Anyone Who Wishes to Become a School Bus Driver

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Owner of a School Bus shall not Drive or Permit any Other Person to Drive any School Bus Unless and Until:										
(1) Certificate of a Duly Qualified Medical Practitioner is Presented to the Registrar.	YES AQF:208	YES BRG:102 (3)	YES BQK:11 (2)	YES CRK:61-75 (8)(1)(2)	YES AQK:13 (3) (a)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1) (a)	YES DQK:218 (1)	YES ARK:157 (12.1)(a)
(2) Certificate Indicates no Loss of Foot, Hand or Eye.	YES AQF:208 (a)	YES BQG:71 (g)	YES BQK:11 (1)(2)	YES CRK:61-75 (9)(A)(j)	YES AQK:143 (1)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1)(a)(i)	YES DQK:218 (1)	YES ARK:157 (12.1)(a)(i)

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TABLE 18 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(3) Certificate Indicates that the Driver has no Physical Defect or Limitation that is Likely to Interfere with Safe Driving.	YES AQF:208 (a)	YES BQG:71 (g)	YES BQK:11 (2)	YES CRK:61-75 (9)(A)(k)	YES AQK:143 (1)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1)(a)(ii)	YES DQK:218 (1)	YES ARK:157 (12.1)(a) (ii)
(4) Certificate Indicates Ability to Hear Normally.	YES AQF:208 (a)	YES BQG:71 (m)	YES BQK:11 (2)	YES CRK:61-75 (9)(A)(a)	YES AQK:143 (1)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1)(a)(iii)	YES DQK:218 (1)	YES ARK:157 (12.1)(a) (iii)
(5) Certificate Indicates no Mental, Nervous, Organic or Functional Disease.	YES AQF:208 (a)	YES BQG:71 (g) (m)	YES BQK:11 (2)	YES CRK:61-75 (9)(A)(b) (e)(f)(g) (h)(k)	YES AQK:143 (1)	YES BRL:19 (2)(3)	YES ERN:157 (1)	YES URJ:58 (1)(a)(ii)	YES DQK:71 (6)(b)	YES ARK:157 (12.1)(a) (ii)

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TABLE 18 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(6) Character Reference Checkout by R.C.M.P. or Other Law Enforcement Agency.	NO	YES BQG:71 (e)	NO	NO	NO	YES BRL:53	NO	NO	NO	YES RS
(7) Abstract of his Driving Record is Obtained.	YES AV	NO	YES AV	NO	YES AV	NO	YES ERN:158 (4)	YES CV	YES DV	NO

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In all Provinces with the exception of Saskatchewan, Manitoba, Newfoundland and Quebec an abstract of the applicants driving record is obtained. Once his driving record is secured it becomes one of the factors taken into consideration for the granting of a school bus licence.

TABLE 19

Licence to Operate a School Bus

Every school bus requires a certificate to operate. The Provinces of Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, Saskatchewan and Quebec require this certificate signed by the registrar. The Provinces of Prince Edward Island, Nova Scotia, Newfoundland and British Columbia require their certificate to be signed by the lawful owner of the school bus. It should also be pointed out that all Provinces with the exception of Manitoba, Nova Scotia and Quebec require their certificate signed by an authorized mechanical inspector. Finally when the application is submitted, the Provinces of Alberta, New Brunswick and Newfoundland expect a list of names and addresses of those to be engaged to operate the respective school buses.

TABLE 19

Components of an Application for a Licence to Operate a School Bus.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Application for Licence to Operate a School Bus Must be Accompanied by:										
(1) Certificate Signed by Registrar.	NO	YES BRG:101 (1)	NO	NO	NO	YES BWL:53 (b)(c)	YES DQF:18 (1)	YES CQF:35 (1)	YES DQK:13 (1)	YES ARK:157 (4)(a)(i)
(2) Certificate Signed by Garage Owner and/or Other Owner of School Bus.	YES ARF:11.02	NO	NO	NO	NO	NO	NO	YES CQF:11 (1)	YES DQK:13 (2)	YES ARK:157 (4)(a)(iii)
(3) Certificate Signed by Authorized Mechanical Inspector	YES ARF:11.02	YES BRG:101 (1)	YES AQH:1.5.2	NO	YES ARK:702 (3)(1)(j)	NO	YES DQF:25 (b)	NO	YES DQK:13 (3)(c)	YES ARK:157 (4)(b)

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

G. - Vehicle Act

H. - Public Service Vehicle Act

I. - Transport Act

J. - Motor Carrier Act

K. - Highway Traffic Act

L. - Highway Code

M. - Public School Act

N. - School Act

P. - Workers Compensation Act

Q. - Legislation

R. - Regulations

S. - School Bus Drivers Handbook or Manual

T. - Federal Motor Vehicle Safety Act

U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 19 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) List of Names and Addresses of those Engaged to Operate the School Bus.	NO	NO	YES BRH:2.6.1	NO	NO	NO	YES DQF:22 (b)	NO	NO	YES ARK:157 (4) (c)

CHART LEGEND

A. - Department of Transportation and Communications

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TABLE 20

Dismissal of a School Bus Driver

It is inevitable that an owner will be given the task of dismissing a school bus driver. In the Province of Saskatchewan and Newfoundland the owner must submit to the Registrar of Motor Vehicles the name and reasons for the dismissal of the driver. In turn the reasons for such are placed on the drivers record. Consequently if another owner desires the background of a driver, who has been discharged, all information is up to date, comprehensive and readily available. This information can possibly prevent an owner from hiring a driver who is unacceptable for the responsible position of driving a school bus.

TABLE 21

Passengers on School Bus

Naturally every Province permits school children on a school bus and indicates so in their regulations. The legislation and regulations in Ontario and British Columbia and Quebec do not refer to the inclusion of school teachers and/or members of the school board for travel on school buses. All other Provinces indicate that school teachers and members of the school board may ride on any school bus. Further the Provinces of Ontario, Manitoba, Alberta, British Columbia and Quebec do not infer in their regulations that other

TABLE 20

Dismissal of School Bus Driver.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Owner of a School Bus Must Report to the Registrar.										
(1) The Name and Reasons for Dismissal of a Driver When the Owner has Dismissed the Driver.	NO	YES BQG:86	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (5) (b)

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W. - Gasoline Handling Act

TABLE 21

Provincial Differentiation of Those Passengers Allowed to Travel on a School Bus.

Passengers that are Permitted on a School Bus.	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(1) School Children	YES ARF:11.01	YES BRG:13a (1) (a)	YES BRH:6.5.5 (a)	YES ERM:P250 R10 (1)(c)	YES ARK:702 (1) (2)	YES BV	YES RS	YES URJ:80 (2) (h)	YES ERN:14	YES ARK:157 (17.6)
(2) School Teachers	NO	YES BRG:13a (1) (c)	YES BRH:6.5.5 (b)	YES ERM:P250 R10 (12)(b)	NO	NO	YES RS	YES URJ:80 (2) (h)	YES EV	YES ARK:157 (17.6)(a)
(3) Members of School Board.	NO	YES BRG:13a (1) (c)	YES BRH:6.5.5 (b)	YES ERM:P150 R10 (12) (b)	NO	YES BV	YES RS	YES URJ:80 (2) (h)	YES EV	YES ARK:157 (17.6)(c)

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W. - Gasoline Handling Act

TABLE 21 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Employees of School (Other than Teacher)	NO	YES	NO	NO	NO	NO	YES	YES	YES	YES
		BRG:13a (1) (c)					RS	URJ:80 (2) (h)	EV	ARK:157 (17.6)(b)

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employees of the school may be transported by a school bus.

TABLE 22

Number of Passengers

When an individual purchases a school bus one of the components of the tender is a statement of the size of bus which is determined by the number of passengers that can be seated on that bus. The Provinces of British Columbia, Nova Scotia, Newfoundland and Quebec require to be conspicuously displayed inside the school bus a statement of the number of passengers for which the school bus is registered. The remaining Provinces have no regulations to this effect.

Standees

The topic of standees in a school bus is a controversial discussion item in each of the ten Provinces. As noted on the table, six of the ten Provinces permit no standees at any time on any school bus. Whereas the Provinces of Saskatchewan and Manitoba permit unlimited standees on a school bus. The Province of New Brunswick permits up to thirty-three percent standees on a school bus, and the Province of Newfoundland allows fifteen percent standees.

The definition of a standee is any pupil in a bus which is considered above the stated number of passengers for which that school bus is registered. The Provinces that allow standees feel that they can justify their stand on

TABLE 22

Comparison of Regulations Concerning Standees and Maximum Passenger Load.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
There Shall be Conspicuously Displayed in the School Bus a Statement of the Number of Passengers for which the School Bus is Registered.	YES URJ:6.409 (d)(e)	NO	NO	NO	NO	YES RV	NO	YES URJ:80 (2)(o)	NO	YES ARK:157 (14)
Standees Permitted	NONE ARF:11.09 (e)	UNLIMITED BV	NONE BRH:6.7.4 (a)	UNLIMITED CV	NONE RS	NONE BQL:53 (2)(b)	33% RS	NONE URJ:80 (2)(h)	NONE RS	15% ARK:157 (17.4)

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extra passengers by the reason of (a) short routes (b) extra passenger(s) boards school bus at pick up point closest to a school (c) economic reasons (d) the public has not exercised any pressure to alleviate the present situation.

TABLE 23

Insurance Requirements

When an owner registers a school bus in any of the ten Provinces in Canada he must produce evidence that he has acquired a policy of insurance which includes coverage for public liability, property damage and passenger hazard.

Highway speed limit

Each province, as is evident in Table 23, is unique in its traffic regulations concerning the maximum speed limit that a school bus may travel on the highways. On the table the researcher attempted to distinguish between a primary highway and a secondary highway. A secondary highway can be defined as a road of second grade used for auxiliary travel. With the exception of the Provinces of Alberta, Quebec and New Brunswick there is one general maximum speed limit for school buses ranging from forty-five miles per hour in Nova Scotia to sixty miles per hour in British Columbia and Manitoba unless it is posted otherwise on the highway. The rationale for the speed limit of forty-five miles per hour in Nova Scotia is that the slower the speed the less the impact

TABLE 23

Insurance Requirements and

Maximum Speed of School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
No School Bus, Used for the Conveyance of School Children Shall Operate Without a Policy of Insurance, Which Includes, Public Liability, Property Damage, and Passenger Hazard.	YES AQF:18 (2a) (a) (b)	YES BQG:31	YES BRH:6.3.1 (a) (b)	YES CQK:268 (1) (a)	YES AQH:20	YES BRI:11.2 33 (b) (c) (d)	YES ERN:164 (1) (2) (3)	YES URJ:48 (b) (c) (d)	YES ERN:29 (2) (3)	YES AQK:157 (81) (2) (a)
The Maximum Speed Limit That the School Bus Can Travel on the Highway.*	60 M.P.H.	50 M.P.H.	** 50 M.P.H. *** 40 M.P.H.	60 M.P.H.	50 M.P.H.	** 50 M.P.H. *** 40 M.P.H.	** 60 M.P.H. *** 50 M.P.H.	45 M.P.H.	55 M.P.H.	** 60 M.P.H. *** 40 M.P.H.

* Unless Otherwise Posted ** Primary Highway ***-Secondary Highway

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in collision and usually the more observant is the driver when he is operating at a lower speed.

TABLE 24

Frequency of Mechanical Examination

In reference to the safety of school buses it is important that such a vehicle be examined thoroughly by a qualified mechanic as often as is practicably possible. The researcher submits that the more frequent a thorough mechanical examination is performed the less chance of mechanical breakdown of a school bus. The Province of Quebec has required school bus owners to have a school bus mechanical examination every two months. In the Provinces of Nova Scotia and Newfoundland such an examination is required every three months. All the other Provinces, with the exception of Saskatchewan and Prince Edward Island, require a competent mechanic to examine each school bus two times yearly on the school calendar. A thorough mechanical inspection is required once per school calendar year in Saskatchewan and Prince Edward Island.

TABLE 25

Mechanical Fitness Certificate

Once a mechanical inspection has occurred a mechanical fitness certificate must be submitted. Here again each

TABLE 24

Frequency of Required School Bus Mechanical Examintaion

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
A Competent Mechanic Shall Examine Each School Bus										
(1) Every Two Months	NO	NO	NO	NO	NO	YES BRI:11.214	NO	NO	NO	NO
(2) Every Three Months	NO	NO	NO	NO	NO	NO	NO	YES URJ:80 (t)	NO	YES ARK:157 (26.2)
(3) Every Six Months	YES ARF:11.07 (f)	NO	YES BRH:6.5.6 (b)	YES ARM:P250 R10 (7)	YES ARK:3 (1) (j)	NO	YES ERN:161 (3)	NO	NO	NO

CHART LEGEND

A. - Department of Transportation and Communications

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TABLE 24 (Continued)

(4) Every Twelve Months	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
	NO	YES BRG:101 (1) (3)	NO	NO	NO	NO	NO	NO	YES ERN:26 (4)	NO

CHART LEGEND

A. - Department of Transportation and Communications

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D. - Department of Provincial Secretary

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TABLE 25

Requirements Requesting the Submission of Mechanical Fitness Certificate

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Certificate of Mechanical Examination must be Submitted to: (1) Registrar/Director of Motor Vehicles	YES ARF:11.02	NO	YES BQK:236 (2) (3)	NO	YES ARK:702 (1) (j)	YES BRI:11.216	YES DQF:247 (3)	NO	YES DQK:298 (m.1)	YES ARK:157 (26.4)
(2) School Board and/or Contract Operator	NO	YES BRG:101 (2) (c)	YES BRH:6.5.6	YES ERM:P250 R10 (7) (b)	NO	YES BRI:11.216	YES DQF:247 (2)	NO	YES DQK:298 (m.1)	YES ARK:157 (26.2)
(3) Board of Commissioners of Public Utilities	NO	NO	NO	NO	NO	NO	NO	YES URJ:80 (t)	NO	NO

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TABLE 25 (Continued)

(4) Highway Traffic Board	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO
		BQG:23 (o)	BRH:6.5.6							

CHART LEGEND

A. - Department of Transportation and Communications

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Province differs in its approach to this requirement. All Provinces with the exception of Nova Scotia, (who submits the certificate of mechanical examination to the Board of Commissioners of Public Utilities) Manitoba and Saskatchewan must submit the certificate to the Registrar or Director of Motor Vehicles in their respective Province. A copy of the examination certificate must be submitted to the school board or contract operator in all Provinces with the exception of Nova Scotia, Ontario and British Columbia. Furthermore the Highway Traffic Board in Alberta and Saskatchewan must receive a certificate of mechanical inspection.

TABLE 26

Components of Mechanical Fitness Certificate

Every Province requires that the certificate of mechanical fitness indicate not only the identity of the school bus but also the date on which the school bus was inspected. Only the Province of Newfoundland requests that the certificate specify the date at which the next inspection will take place. In addition to the above, all provinces, with the exception of Ontario, Nova Scotia and Quebec insist that this certificate or sticker be prominently exhibited in the school bus at all times. If a law enforcement officer were to randomly inspect the school bus, he would usually peruse for evidence of certificate.

TABLE 26

Components of the Certificate of Mechanical Fitness.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
A Certificate of Mechanical Fitness Shall be Issued and Shall										
(1) Indicate Identity of School Bus.	YES 25.06 (b)	YES BRG:101 (1)	YES BRH:6.5.6	YES CQK:299 (1)(4)(9)	YES AQK:58 (c)(2)	YES BRI:11.238	YES DQF:249 (k)	YES URJ:80 (t)	YES DQK:298 (m.1)	YES ARK:157 (26.4)(a)
(2) Indicate Date on Which the School Bus was Inspected.	YES ARF:25.05	YES BRG:101 (1)	YES BRH:6.5.6	YES CQK:299 (1)(4)(9)	YES AQK:58 (c)(2)	YES BRI:11.238	YES DQF:249 (k)	YES URJ:80 (t)	YES DQK:298 (m.1)	YES ARK:157 (26.4)(b)
(3) Specify Date at Which the Next Inspection Should take Place.	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (26.4)(c)

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TABLE 26 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Be Prominently Exhibited in the School Bus by the Owners.	YES ARF:25.02 (11)	YES BRG:101	YES BRH:6.5.6	YES ERM:P250 R10 (9)	NO	NO	YES DQF:249 (o)	NO	YES DQK:298 (m.6)	YES ARK:157 (26.6)

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TABLE 27

Extra Equipment Required on a School Bus

The Canadian Standards Association outlines the minimum requirements for additional equipment to be placed in a school bus. In addition to these voluntary requirements several other pieces of safety equipment are required by individual Provinces.

School buses in Newfoundland, Alberta and British Columbia are required by provincial regulation to carry at least one spare tire. A hand axe must be transported in every school bus in every Province with the exception of Saskatchewan and Manitoba. Opinion in each of the Provinces varies in reference to the need for a school bus to have available at all times a tool kit that is adequate for normal wayside repairs. Several owners and bus drivers feel it is not the school bus drivers responsibility to make any repairs to the school bus. Consequently the Provinces of Alberta, Saskatchewan, Manitoba and New Brunswick do not require the school bus to carry a tool kit adequate for normal wayside repairs. In addition to the above only the Provinces of Ontario, New Brunswick, Nova Scotia and Newfoundland stipulate that a school bus must have a minimum of two non-skid tire chains suitable in size for the respective school bus that it is carried in. Finally, in the area of equipment, the Provinces of Alberta and Ontario require that a small pry bar

TABLE 27

Provincial Comparison of the Additional Equipment Required in a School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Every School Bus Shall be Equipped with the Following:										
(1) At Least One Spare Tire	YES URJ:6.68	NO	YES BRH:6.12.6	NO	NO	NO	NO	NO	NO	YES ARK:157 (9.1)(b)
(2) A Hand Axe.	YES URJ:6.68 (b)	NO	YES BRH:6.11.1	NO	YES ARK:3 (1)(g)	YES BRI:11.19 (f)	YES RS	YES URJ:53 (1)(a)	NO	YES ARK:157 (9.1)(g)
(3) A Tool Kit Adequate for Normal Wayside Repairs.	YES URJ:6.68	NO	NO	NO	YES ARH:762 (26)(a)	YES BRI:11.19 (d)	NO	YES URJ:80 (2)(b)(iii)	YES EV	YES ARK:157 (9.1)(i)

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TABLE 27 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) An Instructional Sign Which Shall bear Instructions To School Children on Conduct to be Observed on the School Bus.	NO	NO	NO	NO	NO	NO	YES RS	YES URJ:80 (2)(j)	YES EV	YES ARK:157 (9.1)(o)
(5) At Least Two Non-Skid Tire Chains, Suitable in Size for the Tires.	NO	NO	NO	NO	YES ARK:3 (1)(b)	NO	YES RS	YES URJ:80 (2)(b)(1)	NO	YES ARK:157 (9.1)(c)
(6) Small Pry Bar	NO	NO	YES BRH:6.11.1 (a)	NO	YES ARH:762 (26)(a)	NO	NO	NO	NO	NO

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TABLE 27 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(7) Two Safety Red Triangles.	NO	YES BRG:103 (b)	YES BRH:6.114 (a)	NO	NO	NO	NO	NO	NO	YES AQK:186 (2)(a)
(8) Two Flares or Red Lanterns.	YES AQF:197 (1)	YES BRG:103 (b)	YES BRH:6.114	YES CQK:38 (3)	YES AQK:116 (8)	NO	YES RS	YES URJ:53 (1)(b)	YES DQK:214 (1)	YES AQK:186 (2)(e)
(9) Two Red Flags	YES AQF:197 (1)	YES BRG:103 (b)	YES BRH:6.114	YES CQK:38 (3)	YES AQK:116 (8)	NO	YES RS	NO	YES DQK:214 (1)	YES AQK:186 (2)(b)
(10) 3 Red Cloth Flags and 3 Lanterns.	NO	NO	NO	NO	NO	YES BRI:11.194 (a) (b)	NO	NO	NO	NO

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be included in every bus in case of emergency repairs.

All Provinces in the Maritimes require that an instructional sign, which bears instructions to pupils on conduct to be observed on the school bus, be placed in a conspicuous location observable to all passengers.

There is a safety consciousness on the part of all Provinces toward the carrying of red flags, flares, lanterns, or safety triangles on every school bus without exception. Any one of the above mentioned can be carried in case of an accident or breakdown of the school bus. Please refer to Table 27 for the specifics of the aforementioned safety elements.

TABLE 28

First Aid Kit

The Canadian Standards Association Standards D250 and D250.1 require that all school buses contain a first aid kit with specific contents that is outlined in the Standards. In addition to the kit required by D250 the Province of Newfoundland requires six additional components. These components are outlined in Table 28. The Province of Nova Scotia also requires three additions, absorbent cotton, band-aids and cellulose tape, to their required first aid kit. The Provinces of British Columbia, Ontario and Manitoba require either different first aid kits or additions to the

TABLE 28

Additional Contents Required in the First Aid Kit in a School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Every School Bus Shall Contain a First Aid Kit that has the Following Contents: (1) Antiseptic Tincture of Metaphen	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (9.1) (f)
(2) Ointment for Burns	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (9.1) (f)
(3) One Tourniquet	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (9.1) (f)

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TABLE 28 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Absorbent Cotton	NO	NO	NO	NO	NO	NO	NO	YES URJ:52 (1) (k)	NO	YES ARK:157 (9.1) (f)
(5) Band-Aids	NO	NO	NO	NO	NO	NO	NO	YES URJ:52 (1) (k)	NO	YES ARK:157 (9.1) (f)
(6) Aromatic Spirits of Ammonia	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (9.1) (f)

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TABLE 28 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(7) Cellulose Tape	NO	NO	NO	NO	NO	NO	NO	YES URJ:52 (1) (k)	NO	NO
(8) Workers Compensation Board First Aid Kit Number 2 or the W.C.B. 36 Unit First Aid Kit.	YES RS AV	NO	NO	NO	NO	NO	NO	NO	NO	NO
(9) St. Johns Ambulance First Aid Manual.	NO	NO	NO	NO	YES RS	NO	NO	NO	NO	NO

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TABLE 28 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(10) First Aid Kit Recommended by Manitoba Medical Committee.	NO	NO	NO	YES RS	NO	NO	NO	NO	NO	NO

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first aid kit required by C.S.A. Please refer to Table 28 for specifics.

TABLE 29

Maintenance Requirements

There are no provincial mandatory maintenance standards required by legislation in Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Newfoundland and Nova Scotia. However the Province of New Brunswick requires a specified maintenance check every one thousand miles and five thousand miles. It should be noted that the Provinces of Prince Edward Island and Quebec requires a specific maintenance check to be carried out every five hundred miles, one thousand miles, five thousand miles and ten thousand miles. The reader should refer to Table 29 for the specific maintenance checks that are carried out at the intervals stated.

TABLE 30

Signs

A warning sign is evident on the rear of each school bus indicating, to the driver of another vehicle, his obligation when approaching a stopped school bus. The majority of the Provinces, Prince Edward Island, Nova Scotia, New Brunswick, Ontario and Saskatchewan make it mandatory that each school bus bear the words "Do Not Pass When Red Lights Flashing".

TABLE 29

Frequency and Requirements Concerning the Maintenance of a School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Maintenance of a School Bus Shall Include the Following:										
(1) Every Five Hundred Miles,	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	NO	NO	YES ERN:28 (1)	NO
(a) Oil and Lubrication.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	NO	NO	YES ERN:28 (1)(a)	NO
(b) Inspect Steering, Springs, Shocks, Universal Joints, Tie Rod Ends, and Brakes.	NO	NO	NO	NO	NO	NO	NO	NO	YES ERN:28 (1)(b)	NO
(2) Every One Thousand Miles,	NO	NO	NO	NO	NO	YES	YES	NO	YES	NO
(a) Oil and Lubrication.						BRI:C-3 (2)	ERN:161 (4)(a)(i)		ERN:28 (1)(a)	

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TABLE 29 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(b) Inspect Steering, Springs, Shocks, Universal Joints, Tie Rod Ends & Brakes.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	YES ERN:161 (4)(a)(ii)	NO	YES ERN:28 (1)(b)	NO
(3) Every Five Thousand Miles										
(a) Rotate Tires	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	YES ERN:161 (4)(b)	NO	NO	NO
(b) Check Distributor and Carburetor.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	YES ERN:161 (4)(b)	NO	YES ERN:28 (3)	NO
(c) Check Wheel Alignment.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	YES ERN:161 (4)(b)	NO	YES ERN:28 (3)	NO

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TABLE 29 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(d) Replace Oil Filter and Air Cleaner	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	YES ERN:161 (4)(b)	NO	YES ERN:28 (3)	NO
(4) Every Ten Thousand Miles:										
(a) Generator, Radiator, Brake Lining, Master Cylinder.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	NO	NO	YES ERN:28 (4)	NO
(b) Tire Rotation, Spark Plugs, Heater.	NO	NO	NO	NO	NO	YES BRI:C-3 (2)	NO	NO	YES ERN:28 (4)	NO

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TABLE 30

Provincial Disparities Concerning the Additional Signs Required on a School Bus.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Each School Bus Shall Bear the Words: (1) "This Bus Stops at Railway Crossings" On the Rear of the School Bus.	NO	NO	NO	NO	NO	NO	NO	YES URJ:80 2)(a)(iv)	YES ERN:76 (4)	NO
(2) The School Bus Shall Bear the Words "Stop When Red Lights Flashing.	YES RA	NO	NO	YES RE	NO	NO	NO	NO	NO	YES ARK:157 (1)(b)
(3) The School Bus Shall Bear the Words "Do Not Pass When Red Lights Flashing"	NO	YES BRG:103 (2)(b)	NO	NO	YES AQK:120 (1)(a)	NO	YES DQF:188 (1)(2)	YES URJ:80 (2)(a)(iii)	YES ERN:76 (3)	NO
(4) The School Bus Shall Bear the Words "Stop on Signal"	NO	NO	YES BRH:6.17. 19	NO	NO	YES BRI:11.201 (2)	NO	NO	NO	NO

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The Province of Alberta requires the words "Stop On Signal", and the school buses in the Provinces of Manitoba, British Columbia, Newfoundland and Quebec bear the words "Stop When Red Lights Flashing". In addition to the above, Nova Scotia and Prince Edward Island require that the school bus bear the words "This Bus Stops At Railway Crossing".

TABLE 31

Safety Precautions

When you are in the business of transporting a valuable cargo such as school pupils there are necessary safety precautions that have to be taken for the safe operation of the school bus. The school bus driver must be cognizant at all times of the following safety precautions.

It was felt by all ten Provinces that not only should the doors of the school bus be tightly closed whenever the school bus is in motion but also the entrance, exit and passageway of the school bus must be kept clear of all obstructions. The interior and exterior of all school buses must be kept clear of all unnecessary projections that could provide a safety hazard to the passengers. Furthermore all the Provinces with the exception of Quebec agree that a school bus must not be fueled while passengers are aboard and there must be no person or article carried in such a manner as to likely obstruct the movement or vision of the school bus driver in

TABLE 31

Safety Precaution Necessary for the Safe Operation of a School Bus.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
All Doors Should be Tightly Closed Whenever the School Bus is in Motion.	YES ARF:11.09 (a)	YES RV	YES RS	YES CQK:187	YES RS	YES BRI:11.227 (a)	YES ERN:159 (1)(d)	YES RV	YES DQK:213 (b)	YES RS
The Entrance, Exit and Passageway of a School Bus Shall be Kept Clear of Obstructions.	YES URJ:6.62	YES BRG:105	YES BRH:2.17.3	YES CQK:186 (1)(g)	YES RS	YES BRI:11.212 (d)	YES ERN:159 (1)(j)	YES URJ:75	YES ERN:21 (2)(h)	YES ARK:157 (16)
During the Loading and Unloading of a School Bus on School Grounds or Adjacent Highway the Door or Doors used for such Purpose shall be Facing the School.	NO	YES BRG:104 (b)(c)	YES BRH:6.7.9	YES ERM:P250 R10(15)(2)	NO	NO	YES ERN:154 (3)	YES URJ:80 (2)(u)(v)	NO	NO

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TABLE 31 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Interior and Exterior of Every School Bus Shall be Free of all Unnecessary Projections Which are Likely to Injure Passengers.	YES ARF:25.06 (d)	YES BRG:103 (1)(i)(1)	NO	YES RS	YES AQK:57	YES BRI:11.212 (d)	YES ERN:159 (2)(1)	YES URJ:75	YES ERN:21 (1)(e)	YES ARK:157 (15.3)
No School Bus Shall be Operated with any Glass that is Broken, Cracked or Otherwise Damaged to the Extent that:										
(1) Vision of the Driver is Interfered with.	YES ARF:11.07 (e)	YES BQG:122 (1)	YES BRH:6.17.22	YES CQK:170 (4)(a)	YES AQK:57	YES BRI:11.213 (d)	YES RS	YES URJ:57	YES ERN:21 (1) (e)	YES ARK:157 (10)
(2) Discomfort is Caused or Likely to be Caused to any Passengers.	YES ARF:11.07 (e)	NO	YES BRH:6.17.22	YES CQK:186 (1)(f)	YES AQK:57	YES BRI:11.212 (d)	YES RS	YES URJ:57	YES ERN:21 (1)(c)	YES ARK:157 (10)

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TABLE 31 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
A School Bus Shall not be Fueled While Passengers are Aboard.	YES ARF:11.07 (c)	YES BRG:105 (d)	YES BRH:6.7.7	YES ERM:P250 R10(17)(e)	YES RW	NO	YES ERN:159 (2)(h)	YES URJ:67	YES EV	YES ARK:157 (24)
No School Bus in Which there are Passengers Shall be Towed by any Other Vehicle.	YES ARF:11.07 (e)	NO	NO	YES ERM:P250 R10)17)(e)	NO	NO	YES RS	YES URJ:73 (2)	YES ERN:21 (2)(b)	YES RS
No Person or Article Shall be Carried in a School Bus in such a Position as to be Likely to Obstruct the Driver.	YES URJ:6.6.1	YES BRG:105	YES BRH:2.17.3 (d)	YES CQK:52 (3)	YES RS	YES BQL:56 (1)	YES RS	YES URJ:80 (2)(n)	YES ERN:21 (2)(h)	YES ARK:157 (15.2)

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any manner. In conjunction with this the school bus driver must consider it his responsibility to decline operating any school bus in which the glass is damaged to the extent that the vision of the driver is interferred with. Further to this point all the Provinces agree, with the exception of Saskatchewan, that if discomfort is likely to be caused to any passenger as the result of damaged glass the school bus must not be operated.

It should be further pointed out that the Provinces of Alberta, Saskatchewan, Ontario and Quebec have no legislation or regulations concerning a school bus that is towed with passengers aboard.

Finally all of the Provinces, with the exception of British Columbia, Ontario, Prince Edward Island, Newfoundland and Quebec have provided legislation stating that during the embarking and disembarking of pupils on a school bus on school grounds or on adjacent highway the door used for such a purpose shall be facing the school.

TABLE 32

Extra Curricular Activities

Extra curricular is defined as those activities that are carried on beyond the boundaries of the basic curriculum. A practical example is the transportation of a school football team to and from a game. British Columbia and Alberta do not

TABLE 32

Contrast of Ten Provinces Use of School Bus for Extra Curricular Activities

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Extra Curricular use of School Buses can be Authorized According to the Respective Provincial Regulations.	NO	YES BRG:13a (1)(c)(d)	NO	YES ERM:P250 R10(12)(a)	YES AV	YES BV	YES ERN:168 (1)(a)(b) (c)	YES EV	YES EV	NO

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have provincial legislation or regulations covering the transportation of these pupils, although it should be pointed out that this could very well be a local school district policy.

TABLE 33

Public Sale of a School Bus

It is not an uncommon occurrence for a contract operator or a school district to sell a school bus to the public, usually a community or church group, when such a bus is not fit for daily use of the owner. As a result each province has provided legislation that requires any individual or group to obliterate all signs that indicate that it is a school bus. This is a safety precaution to insure that all motorists are able to distinguish between a school bus and a bus used for other purposes within a community. It is important that the motorist never be confused in trying to identify a school bus used for the transportation of pupils on any road. Further to the above the Provinces of Manitoba, Saskatchewan, Alberta, British Columbia, Prince Edward Island and Newfoundland have provided regulations concerning the flashing lamps on a school bus that is sold to the public. These Provinces emphatically insist that all alternate flashing warning lamps on a school bus be totally inoperative when sold to the public. Once again this is a safety precaution hopefully

TABLE 33

Comparison of the Regulations

Concerning the Sale of School Buses to the Public

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Any School Bus Which is Sold to the Public Must:										
(a) Have all Signs Indicating That it is a School Bus Removed.	YES ARF:11.01	YES BRG:109 (3)(a)(b)	YES BRH:6.5.7 (a)	YES ERM:P250 R10 (11)	YES ARK:702 (2)	YES BQL:44	YES RV	YES URJ:80 (2)(a)	YES ERW:96 (2)	YES AQK:157 (4)
(b) Remove Cover or Render Totally Inoperative the Alternate Flashing Lamps on the School Bus	YES ARF:11.01	YES BRG:109 (3) (c)	YES BRH:6.5.7 (b)	YES ERM:P250 R10(11)	NO	NO	NO	NO	YES ERW:96 (2)	YES AQK:157 (4)

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decreasing any confusion to the motorist.

TABLE 34

Who May Inspect a School Bus?

Although there are mandatory inspections in each of the ten Provinces, may anyone enter a school bus to inspect it? At the present time uniform regulations or legislation across Canada provide for any authorized inspector or law enforcement officer to enter a school bus and inspect it mechanically in addition to a check for safety hazards.

In most Provinces inspectors or local or regional law enforcement officers provide spot checks of school buses on a regular basis. This is a very important procedure to insure that the owner of the school bus operates with safe equipment at all times.

TABLE 35

Pupil Safety

The operator of a school bus should always be cognizant of the fact that pupil safety is his greatest concern. In line with this thinking certain Provinces have provided regulated guidelines for the safe and efficient transportation of pupils. With the exception of the Provinces of Alberta, Saskatchewan and Quebec regulations stipulate that all pupils must embark or disembark by the front door of the school bus

TABLE 34

Rights of an Inspector or Law Enforcement Officer

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
An Inspector or Law Enforcement Officer May at Any Time Enter a School Bus to Inspect it.	YES ARF:11.04	YES BRG: 102 (5)	YES BRH:6.5.1	YES ERM:P250 R10 (6)(1)	YES AQK:55 (1)	YES BRI:11. 217	YES DQF:247 (1)	YES RS	YES DQK:234	YES RS

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I. - Transport Act

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L. - Highway Code

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P. - Workers Compensation Act

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TABLE 35

Comparison of Provincial Regulations Concerning Pupil Safety.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Pupils Must be Loaded or Unloaded by the Front Door of the School Bus Except in Emergencies.	YES ARF:11.09 (b)(c)	NO	NO	YES ERM:P250 R10(15)(5)	YES ARK:702 (3)(1)(1)	NO	YES ERN:159 (1)(s)	YES RS	YES ERN:21 (1) (o)	YES ARK:157 (19.1)
Pupils Should Not be Received or Discharged While the Bus is in Motion.	YES ARF:11.09 (b)(c)	YES BRG:106 (1) (c)	YES BRH:6.7.4 (b)	NO	YES RS	YES BRI:11.225 (a)	YES DQF:192 (2)	YES URJ:65	YES DQK:213 (c)	YES RS
Pupils Should Not be Received or Discharged on a Steep Grade, a Blind Curve, or the Brow of a Hill.	YES ARF:11.09 (a) (i)	YES BRG:106 (1) (c)	YES BRH:6.7.2 (a)	YES CQK:113 (1)(o)(n)	YES RS	NO	NO	NO	NO	YES RS
A Pupil May be Suspended From Riding a School Bus Because of his Endangering the Safety of Other Pupils or Damaging the School Bus.	NO	YES ERN:XIX (3)	NO	YES ERM:P250 R10(14)(2)	NO	YES BRL:11 (g)	YES ERN:152 (2)	YES URJ:74 (2)	YES ERN:16 (2)	NO

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except in emergencies. Furthermore, with the exception of the Province of Manitoba, legislation or regulations do not permit any pupil to be received or discharged while the school bus is in motion. In reference to the foregoing point all Provinces, with the exception of New Brunswick, Nova Scotia, Prince Edward Island and Quebec indicate that no pupil can be received or discharged on a steep grade, blind curve or brow of a hill.

Finally the Provinces of Saskatchewan, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island and Quebec have indicated in their legislation that a pupil can be suspended from riding a school bus if he is in anyway endangering the safety of other passengers or causing any damage to the school bus. Although the remaining Provinces do not have legislation covering this point, they more than likely make this a local school district responsibility.

TABLE 36

Responsibility of the School Administrator

Generally the responsibilities of the School Administrator, in reference to school bus safety, are delineated by the local school district. But once again there are exceptions to this point. The Provinces of New Brunswick, Nova Scotia, Prince Edward Island and Manitoba have provincial regulations making it mandatory for the school administrator, in the month

TABLE 36

Responsibility of the School Principal in Reference to School Bus Safety.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
At the Beginning of Each School Term, the School Administrator Shall Instruct all Pupils on Loading and Unloading Practices and Emergency Evacuation.	NO	NO	NO	YES ERM:P250 R10(9)(19)	NO	NO	YES ERN:154 (7)	YES URJ:80 (2)(w)	YES ERN:18 (1)	NO
The Loading or Unloading of a School Bus at a School Shall be Under the Personal Supervision of the Principal or of Staff Members Designated by him to Act on his Behalf.	NO	NO	NO	YES ERM:P250 R10(15)(1)(e)	NO	NO	YES ERN:154 (1)	NO	NO	NO

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of September of each year, to instruct all pupils on embarking and disembarking practices in addition to emergency evacuation procedures. Moreover Manitoba and New Brunswick require the loading and unloading of a school bus to be under the personal supervision of the school administrator or staff member designated by him to act on his behalf.

TABLE 37

Written Communication - Parent

Whose responsibility is it to see that parents are given guidance through written communication in reference to their obligation in the education of their son or daughter in relation to school bus safety? Is it the responsibility of the school district, the school or the Province? The prevailing feedback from the Provinces indicates that it is a joint responsibility of all of the foregoing. Although all of the Provinces indicated that the Provincial Government had a responsibility only fifty percent made communication with the parents through written literature.

There is no doubt that the time has come when the parent must assume greater responsibility for the behaviour of their son or daughter while travelling on a school bus. Naturally one of the first steps to re-educate the parents is to provide them with written guidelines for parental expectations.

TABLE 37

Parental Guidance Through Written Communication.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Communication, Through Written Literature, is Made With the Parent(s) in Reference to Their Responsibility in School Bus Safety.*	NO	NO	NO	NO	YES	NO	YES	YES	YES	YES

* Does Not Include Any Written Communication That is Made Through Each Individual School Board.

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TABLE 38

Stall or Breakdown Procedure

Very few Provinces have legislated a mandatory stall or breakdown procedure for a school bus driver. By far, with the exception of two Provinces, the procedure for a stall or breakdown is outlined in the school bus drivers handbook or manual, or as an unwritten recognized procedure.

Naturally all Provinces agree that the school bus must be brought to a complete stop off the roadway. In the event that the school bus cannot be removed from the highway, only the Provinces of Saskatchewan, Prince Edward Island and Quebec indicate that they have no regulations stipulating that all passengers should be evacuated from the school bus to a place of safety. If the school bus driver is unable to determine or correct the trouble, the Provinces of Alberta, Manitoba, Ontario, Nova Scotia and Newfoundland have indicated that the driver should remain on the bus and request a responsible person to seek aid.

In conclusion if a school bus were to stall or breakdown on a highway all Provinces with the exception of Manitoba require that flares or lanterns be set out at a distance of one hundred feet in advance and in the rear of the school bus. Manitoba requires that the distance be two hundred feet. The flares or lanterns indicate to an approaching motorist that he should slow down and proceed with caution.

TABLE 38

Stall or Breakdown

Procedure for School Bus Driver.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Stall or Breakdown Procedure of a School Bus:										
(1) School Bus Should be Brought to a Complete Stop, Preferably off the Roadway.	YES ARF:11.07 (g)	YES RV	YES RS	YES RS	YES RS	YES BV	YES RS	YES RS	YES DQK:217 (1)	YES RS
(2) If the School Bus Cannot be Removed from the Highway, all Passengers Should be Evacuated to a Place of Safety.	YES ARF:11.07 (g)	NO	YES RS	YES RS	YES RS	NO	YES RS	YES RS	NO	YES RS
(3) If the Driver is Unable to Determine or Correct the Trouble, He Should Remain in the Bus and Request a Responsible Person to Seek Aid.	NO	NO	YES RS	YES RS	YES RS	NO	NO	YES RS	NO	YES RS

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TABLE 38 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Flares or Lanterns Should be Set Out at a Distance Approximately One Hundred Feet in Advance and in the Rear of the School Bus.	YES AQF:197 (2)	YES BRG:103 (1) (b)	YES BRH:6.11.4 (b) (c)	NO	YES RS	YES BRI:G-142 (29) (14)	YES DQF:244 (1)	YES URJ:53 (2)	YES ERN:21 (1) (j)	YES RS
(a) Two Hundred Feet	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO

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TABLE 39

Accident Procedure

When an accident occurs on the highway involving a school bus the highway traffic regulations supplemented by additional provincial regulations provides the basis for any accident procedure. The school bus driver should stop the bus immediately, set out warning flags or flares, investigate, and collect all information necessary for a complete and detailed report (with the exception of Quebec). The school bus driver is required to notify the police in all Provinces except for Alberta. In addition to this the driver must notify the school district in the Provinces of British Columbia, Saskatchewan, Manitoba, New Brunswick and Prince Edward Island. It should be remembered that the remaining Provinces might have local school district regulations concerning the reporting of accidents.

Finally with the exception of the Provinces of New Brunswick, Prince Edward Island, Nova Scotia and Quebec the school bus driver is required by provincial regulation to turn off the school bus ignition after an accident occurs. He is also required in Alberta, New Brunswick, Newfoundland and British Columbia to remove all passengers from a school bus in the event of an accident.

TABLE 39

Accident Procedure for the School Bus Driver.

Accident Procedure:	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(1) School Bus Driver Should Stop Immediately and Investigate.	YES ARF:11.07 (g)	YES BQG:163 (1)	YES BQK:82 (1) (a)	YES RS	YES RS	YES BV	YES ERN:159 (1)(n)(p)	YES CQP:87 (1)(a)	YES DQK:217 (1)	YES RS
(2) Turn Off Ignition.	YES ARF:11.07 (g)	YES BRG:105 (e)	YES BQK:82 (2)	YES RS	YES RS	NO	NO	NO	NO	YES RS
(3) Set Out Warning Flags or Flares.	YES AQF:197 (2)	YES BQG:119 (11)	YES BRH:1.10 .2 1.10.3 (a)(b)	YES RS	YES RS	YES BRI:C-142 (29) (14)	YES DQF:244 (1)	YES URJ:53 (2)	YES ERN:21 (1) (j)	YES RS

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TABLE 39 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Driver Should Collect all Information Necessary for a Complete and Detailed Report.	YES AQF:54 (1)(a)(b)(c)	YES BQG:163 (1)(a)(b)(e)(d)	YES BQK:82 (1)(e)	YES RS	YES RS	NO	YES ERN:159 (1) (n)	YES CQF:87 (2)	YES ERN:21 (1) (m)	YES RS
(5) Notify Police	YES AQF:54 (1)	YES BQG:163 (1)	NO	YES RS	YES RS	YES BQL:86 (a)	YES ERN:159 (1) (m)	YES CQF:88 (1)	YES DQK:217 (3)	YES RS
(6) Notify School District	YES EV	YES BQG:163 (1)	NO	YES ERM:P250 R10(16)(1)	NO	NO	YES ERN:159 (1)(m)	NO	YES ERN:21 (1)(k)	NO
(7) Remove Passengers from School Bus.	YES ARF:11.07 (g)	NO	YES RS	NO	NO	NO	YES ERN:159 (1)(p)	NO	NO	YES RS

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TABLE 40

Sanitary Maintenance

There seems to be a diversity of opinion as to whether the cleaning of a school bus should be left to the discretion of the school bus driver or whether he should be required to perform cleaning duties everyday. The Provinces of Alberta, Saskatchewan and Quebec feel that there is no need to provincially regulate mandatory daily or weekly cleaning procedures. Once again it should be pointed out that it is very probable the local school districts have their own standards in reference to maintaining the school bus in a sanitary condition.

Please refer to Table 40 for not only the breakdown of daily and weekly cleaning procedures but also the Provinces that conform to these procedures.

TABLE 41

Safety Checks

Each Province is unique in its approach to the mundane safety checks that might be required to be carried out on a daily or monthly basis. A safety check is that which is performed by the school bus driver and includes not only a visual but also a manual inspection of a prescribed number of components of a school bus. The Provinces of Alberta, Saskatchewan and Quebec do not require any provincially mandatory

TABLE 40

Sanitary Maintenance of a School Bus

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
A School Bus Shall at All Times be Maintained in a Clean and Sanitary Condition										
(1) To Be at the Discretion of the Driver.	NO	YES BRG:108	YES BRH:6.14.1 (a) (b)	NO	NO	YES BRI:11.212 (a) (b) (d)	NO	NO	NO	NO
(2) Cleaned Everyday.	YES ARF: 11.07 (b)	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:26 (2)	YES RS
Daily Cleaning Procedure (1) Floor Swept.	YES ARF:11.07 (b)	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (i)	YES RS	YES ERN:26 (2)	YES RS

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TABLE 40 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(2) Seats Dusted and Inspected.	YES ARF:11.07 (b)	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (1)	YES RS	YES ERN:26 (2)	YES RS
(3) Windows, Windshield and Mirrors Cleaned	YES ARF:11.07 (b)	NO	NO	NO	YES RS	NO	YES ERN:159 (1) (1)	YES RS	YES ERN:26 (2)	YES RS
(4) Lenses of Lamps Cleaned	YES ARF:11.07 (b)	NO	NO	YES RS	YES RS	NO	NO	YES RS	YES ERN:26 (2)	YES RS

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TABLE 40 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Weekly Cleaning Procedure										
(1) Exterior of School Bus Washed	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (1)	NO	YES ERN:26 (2)	YES RS
(2) Door Hinges and Operating Mechanisms Oiled and Checked	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS
(3) Exhaust and Heating Apparatus Inspected	NO	NO	NO	YES RS	YES RS	NO	NO	NO	NO	YES RS

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TABLE 40 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Seats Washed	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (1)	YES RS	YES ERN:26 (2)	YES RS
(5) Interior of Bus Cleaned	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	YES ERN:26 (2)	NO

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TABLE 41

Provincial Comparison of the

Procedures for the Daily Safety Check

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Daily Safety Check Must Include										
(1) Tires - Inflation, Tread.	YES RS	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(2) Foot Brakes - Response, Floor Clearance	YES ARF: 11.07 (a)	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(3) Parking Brake	YES ARF:11.07 (a)	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS

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TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(4) Clutch, Condition, Response.	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS
(5) Steering Mechanism, Linkage, Alignment, Shimmy.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	NO	YES RS
(6) Battery-Water, Terminals.	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS

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TABLE 41 (Continued

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(7) Lights-Clean, Spare, Fuse Carried.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(8) Signs-Clean, Working.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(9) Windshield Wipers - Condition, Working Properly.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS

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P. - Workers Compensation Act

Q. - Legislation

R. - Regulations

S. - School Bus Drivers Handbook or Manual

T. - Federal Motor Vehicle Safety Act

U. - Board of Commissioners of Public Utilities

V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(10) Horn - Audible.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(11) Heater and Defrosters - Controls and Water Connections Checked.	NO	NO	NO	YES RS	YES RS	NO	NO.	YES RS	NO	YES RS
(12) Windows	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS

CHART LEGEND

A. - Department of Transportation and Communications

B. - Department of Transportation

C. - Department of Highways

D. - Department of Provincial Secretary

E. - Department of Education

F. - Motor Vehicle Act

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V. - Recommended Procedure and/or Procedure

W. - Gasoline Handling Act

TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(13) Mirrors - Clean, Adjusted.	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	YES ERN:27 (a)	YES RS
(14) Emergency Door or Exit Operating Properly.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (a)	YES RS
(15) First Aid Kit - Check Contents.	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS

CHART LEGEND

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TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(16) Fire Extinguisher - Working Condition	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS
(17) Flares - Clean	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS
(18) Exhaust System - Check for Leaks	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	NO	YES RS

CHART LEGEND

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W. - Gasoline Handling Act

TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(19) Oil and Water - Proper Level.	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (b)	YES RS
(20) Fuel Adequate	NO	NO	NO	YES RS	YES RS	NO	YES ERN:159 (1) (g)	YES RS	YES ERN:27 (b)	YES RS
(21) Instrument Panel - Gauges Checked.	NO	NO	NO	YES RS	YES RS	NO	NO	YES RS	NO	YES RS

CHART LEGEND

A. - Department of Transportation and Communications

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E. - Department of Education

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G. - Vehicle Act

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W. - Gasoline Handling Act

TABLE 41 (Continued)

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(22) Air Tanks - Should be Drained if School Bus is so Equipped	NO	NO	NO	NO	NO	NO	NO	YES RS	NO	NO
The Province makes a Monthly Safety Check of the Previous Components With the Exception of - Air Tanks, Hoses, Oil and Water, Fuel, First Aid Kit, Fire Extinguisher, Battery, Signs and Clutch.	NO	NO	NO	NO	NO	YES BRI:11.2 213 (a-j)	NO	NO	NO	NO

CHART LEGEND

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daily or monthly safety checks of a school bus. The Province of British Columbia requires only a daily safety check of tires, foot brakes and parking brake. It does not require a monthly safety check. It should be noted that the Provinces of Manitoba, Ontario, Nova Scotia and Newfoundland require safety checks in all of the areas mentioned on Table 41 with the exception of air tanks. (Note: the Province of Nova Scotia does require air tanks to be drained if the school bus is so equipped).

The monthly safety check is required only in the Province of Quebec. Once again the reader should realize that if a Province does not require a specific safety check possibly the school district will have regulations regarding such. As an aside, the researcher wonders how diligently the school bus driver performs the daily safety checks in the Provinces of Manitoba, Ontario, Nova Scotia and Newfoundland?

TABLE 42

Safety Courses

It is necessary to prepare the school bus driver as adequately as possible to handle the day to day situations that occur while driving a school bus. The driver must not only be concerned for the safety of his passengers but also for the safety of others driving a vehicle on the highway. Therefore it seems only reasonable that each school bus driver

TABLE 42

Provincial Priority in Respect to Defensive Driving, First Aid Course.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The Province Considers the Following Courses to be Compulsory.										
(1) Defensive Driving	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
(2) First Aid Course	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

CHART LEGEND

A. - Department of Transportation and Communications

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should be exposed to a defensive driving and first aid course. Each of the officials that the researcher communicated with in the ten Provinces indicated that it would be preferrable that each school bus driver be required to participate in a defensive driving and first aid course. Some officials even indicated that this should be a condition of employment. Why then has no Province made it compulsory for a school bus driver to take a defensive driving and first aid course? The reasons are - (a) if such a course is taken in the evening or on the weekend the union usually demands that the driver be payed accordingly (b) difficult for full time drivers to get time off (c) difficult to arrive at a satisfactory time for part time drivers (d) the cost is prohibitive. Taking into consideration the above, the reader should note that ninety-percent of the school bus drivers in Nova Scotia have taken the defensive driving course. In New Brunswick and Prince Edward Island approximately fifty percent of the school bus drivers have taken the defensive driving course. Very few school bus drivers in Canada have taken a formal first aid course.

TABLE 43

Exterior Lighting

All school buses are required to have sufficient candle power to light the exterior of the bus at any time when it becomes necessary. A difference exists at the time when

TABLE 43

Standard for Safe Lighting-Exterior

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The School Bus Must Have Sufficient Candle Power to Light the Exterior of the Bus Between the Hours of Sunset and Sunrise.	NO	YES BQG:119 (1)	YES BQK:134	YES CQK:33 (11)	NO	YES BQI:11.258	YES DQF:207	YES URJ:56 (1)	NO	NO
(1) One Half Hour Before Sunrise and One Half Hour After Sunset.	YES ARF:4.01 (a)	NO	NO	NO	YES AQK:37 (1)	NO	NO	NO	YES DQK:95	YES ARK:157 (9.1)(n)

CHART LEGEND

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these lights are required to be in operation on a school bus. The Provinces of British Columbia, Newfoundland, Prince Edward Island and Ontario require that the exterior headlights of the bus be in operation one half hour after sunset and one half hour before sunrise. The remaining six Provinces insist that the exterior of the bus be lighted between the hours of sunset and sunrise.

TABLE 44

Interior Lighting

It is interesting to note that with the exception of Saskatchewan and Manitoba, all other Provinces have legislated a requirement stipulating that every school bus must have sufficient candle power to light the interior of any bus between the hours of sunset and sunrise. If a school bus is to be used in the evening for any school oriented purpose it seems only safety conscious that the school bus be provided with adequate interior lighting.

TABLE 45

Miscellaneous

The Provinces of Saskatchewan, Nova Scotia and Newfoundland require that each school bus be provided with an internal communication system. This internal communication system not only provides a medium of information for the

TABLE 44

Standard for Safe Lighting

Interior

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
The School Bus Must Have Sufficient Candle Power to Light the Interior of the Bus Between the Hours of Sunset and Sunrise.	YES URJ:6.671	NO	YES BRH:6.12.2 (b)	NO	YES ARK:3 (1) (f)	YES BQL:37 (2) (c)	YES RS	YES URJ:56 (1)	YES DQK:91	YES ARK:157 (9.1) (n)

CHART LEGEND

A. - Department of Transportation and Communications

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TABLE 45

Internal Communication System and Intake Ventilation.

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
Every School Bus Shall be Provided with an Internal Communication System.	NO	YES BRG:109	NO	NO	NO	NO	NO	YES URJ:54 (b)	NO	YES ARK:157 (25)
Intake Ventilators Shall not be Installed at the Front of the Bus Below the Top of the Engine Line.	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES ARK:157 (20.1)

CHART LEGEND

A. - Department of Transportation and Communications

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students but also enables the driver to communicate with the passengers in reference to discipline problems without stopping the bus.

The Province of Newfoundland is the only Province in Canada which has legislated that the intake ventilators must not be installed at the front of the school bus below the top of the engine line.

TABLE 46

Statistics

Without question the researcher found the collecting of statistics the most difficult task in data gathering. The Provinces generally seem to be very possessive in the distribution of school bus statistics. A Province like Prince Edward Island replied that they did not keep any statistical records of school bus accidents.

The reader should pay careful attention to the ratio of the number of fatalities occurring inside a school bus to the number occurring outside the school bus. (2 to 7)

TABLE 46

School Bus Accident Statistics-1974*

	BRITISH COLUMBIA	SASKATCHEWAN	ALBERTA	MANITOBA	ONTARIO	QUEBEC	NEW BRUNSWICK	NOVA SCOTIA	PRINCE EDWARD ISLAND	NEWFOUNDLAND
(A) School Bus Accidents	51	59	184	69	487	NA	77	36	B	NA
(B) Number of Fatalities										
1. In School Bus	0	0	0	0	0	NA	0	1	B	1
2. Outside School Bus	2	1	3	0	1	NA	1	0	B	0
3. In the Other Vehicle	0	0	2	1	0	NA	0	0	B	0
(C) Number of Injuries										
1. In a School Bus	3	20	19	B	333	NA	9	1	B	13
2. Outside School Bus	0	0	2	B	0	NA	NA	0	B	0
3. In Other Vehicle	15	13	24	B	13	NA	NA	0	B	0

* School Year B-Do Not Keep Statistics NA-Not Available.

SUMMARY

Each of the ten Provinces are unique in their approach to school bus safety. There is very little if any coordination between the efforts of the Provinces. Once an individual crosses the border to enter into another Province he probably could be faced with a totally different set of standards relevant not only to expected characteristics of a school bus driver but also school bus safety standards. Each Province is unique in its terrain and the demands placed upon the provincial authorities in reference to pupil transportation. Consequently each Province works in isolation with the exception of legislation enacted by the Federal Government.

A parallel can be drawn between the educational curriculum in each of the ten Provinces and the safety regulations in reference to school buses. There is usually continuity within a Province but disparity between Provinces. As a result the researcher has attempted to treat each Province individually yet enable the reader to visually compare each Provinces' similarities and differences.

CHAPTER V

SCHOOL BUS SAFETY PROPOSALS FROM INTERESTED INDIVIDUALS GROUPS AND ASSOCIATIONS

INTRODUCTION

The school bus, as a mode of transportation, has the responsibility to transport many pupils[1] up to two, three or even four times per day. The below letter indicates the emotion that is involved when transporting pupils in a school bus.

Dear Mr. Bus Driver:[2]

Today my little girl, who is six years old, rode your bus for the first time. She started to school today and I'm mighty proud of her. I watched her this morning as she walked away from me and became your responsibility. I thought she was the prettiest thing I ever saw as she started for your bus. Did you notice that she didn't even know how to hold her notebooks? She was almost ready to turn and run back to me when she saw you open the bus door....and then you

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[1]School buses are built to seat either 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84 or 90 students respectively.

[2]Tennessee State Department of Education, Drive Safely and Arrive Safely, State Department of Education, Cordell Hull Building, Nashville, Tennessee, 37219, 1966, p.5.

smiled and spoke to her. Then everything was all right. We had told her that you would take care of her just the same as we would, and when she saw your smile, I am sure she remembered what we had said. You will be careful with her, won't you?

Tonight she told us about school.....how much she liked her teacher....and then she told us how nice you were to all the children. She said each one who rides your bus is made to feel that he is helping every other one to be safe and happy. And then she said that she was "on your team" now.

My wife and I just wanted you to know that we are happy because our little girl is on your team, and we want to be on your team, too. You will be extra careful with each one of them, won't you?

A DADDY

Can this responsibility be treated lightly? Do the interested individuals, groups and associations believe that the conditions for safe pupil transportation on school buses are acceptable? Is there any individual or group aspiring to improve the condition of school bus safety in Canada? Furthermore are the majority of interested individuals, groups and associations satisfied with the present safety performance of school buses?

The purpose of this chapter is to summarize the replies to a letter, that was sent out by the researcher in

December, 1975. This letter was forwarded to either individuals or groups in Canada which the researcher considered interested and involved in school bus safety.

As a result of the replies there was a number of individuals, groups and/or associations that did not reply or did reply and offered no recommendations or proposals. Although various responses were well thought out and researched they seemed to be the exception. In essence the question is-- If there had been a recent major school bus accident in Canada would the quantity and quality of replies have been different?

RESULTS OF RESPONSE

A short letter[3] was developed to gather proposals in reference to school bus safety from interested individuals, groups and/or associations. The initial letter was sent out on December 3, 1975. Two subsequent reminder letters followed in the months of January and February 1976.[4] There were 77 replies received. Out of the 77 replies there were 43 that proposed improvements in school bus safety. Finally 34 replies indicated no desire to make any comments. There were 16 non-responses. People seem to only become involved, concerned and sensitive to school bus safety when

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[3]See Appendix A.

[4]See Appendix B and C.

an emotional or traumatic mishap occurs in reference to school buses. The above statement is borne out by the tremendous quantity of written literature and concern that was generated in 1973 as a result of so many serious school bus accidents[5] that occurred in Canada in that year.

ONTARIO

Introduction

The overall response from Ontario was gratifying. In the past the province of Ontario has had several serious school bus accidents. As a result the replies indicate a consciousness for school bus safety.

Mrs. C. Stauffer - Past President of the Consumers' Association of Ontario School Bus Safety Committee.[6]

Mrs. Stauffer is more than adequately experienced and informed in reference to school bus safety in Ontario. She has thoroughly investigated approximately twenty-five to thirty school bus accidents within Ontario. Further, she has referenced documentation on many more accidents both within Ontario and the rest of Canada. Her reply indicates that:

(A) The Ontario Department of Transportation and Communications upgrade their Mechanical Fitness Certificate

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[5]Transport Canada, Accident Investigation Reports - 1973, Ministry of Transport, Ottawa, Ontario, 1973.

[6]Address - R.R. #1, Bright, Ontario.

to a similar level as the Mechanical Fitness Certificate required for the sale of used vehicles in Ontario.

(B) Provincial Government require that all mechanical work done to school buses be accompanied by a work order signed by the Class "A" mechanic either doing the work or supervising it.

She felt the above to be important because of the feedback which she was receiving from the field. As a matter of interest one documented letter[7] that she received intimated that a certain school bus had its rear signal lights inoperative for seven months. Another letter[8] indicated that mechanically unsafe school buses in desperate need of repair were not repaired because the mechanic was not available during evening hours.

(C) Before a school bus operators licence is granted the Ontario Department of Transportation and Communications should require that an applicant be investigated in his own community, and character references be supplied by responsible people from that community. Furthermore the applicants' police and driving records be obtained and considered.

(D) After a school bus operator's licence is granted the school bus driver should be required to take a compulsory, yearly, practical defensive driving course. In addition to

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[7]Available from Mrs. Cathy Stauffer, R.R. #1, Bright, Ontario.

[8]Ibid.

the foregoing, the school bus driver should be required to receive compulsory emergency first aid training.

(E) The Ontario Department of Transportation and Communications and Department of Education make the School Bus Patrol Program mandatory, and enforce it in every area where children travel to and from school by a school bus. Moreover the Federal Department of Transport should make the use of school bus patrols mandatory throughout all provinces in Canada.

(F) The Ontario Department of Education not only urge but strongly consider making it mandatory for each school in Ontario, where severe winter weather might be experienced, to draw up an emergency measures plan similar to the Plattsville Emergency Plan, (can be obtained from the Plattsville Home and District, Home and School Association, Plattsville, Ontario) but adopted to that school's particular need and location.

(G) The inclusion of school buses in the Canada Motor Vehicle Safety Act from which they are exempt in many sections (ie hydraulic brakes, occupant protection, impact protection etc.).

(H) The mandatory compliance to either of the C.S.A. D250 Standards.

Mrs. Stauffer emphasizes that the publication "Managing School Bus Transportation" published by the Ontario Ministry of Education in 1973 contains excellent procedural

suggestions for school bus safety. However, the Ministry of Education will not enforce these proposals leaving school bus transportation policies up to individual Boards of Education. This in her opinion, is where the system fails.

Ontario Home and School and Parent-Teacher Federation[9]

The Federation has passed many resolutions concerning school bus safety. These resolutions have been formulated either provincially or locally. As mentioned by Mrs. T. St. Lawrence, the executive secretary of the Federation, the resolutions came about as a result of feedback from either the provincial organizations or school bus accident information. Consequently the Ontario Home and School and Parent-Teacher Federation recommends the following:

(A) That the Federal Department of Transportation and/or the Canadian Conference of Motor Transport Authorities (C.C.M.T.A.) require all new school buses operating in Canada meet the revised C.S.A. Standard D250.1-1975. Further they recommend that all school buses be included under the sections of the Canada Motor Vehicle Safety Act from which they are now exempt (ie. hydraulic brakes).

(B) That school buses presently in use be provided with adequate seat top and back padding of energy-absorbing,

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[9]Address - 204-240 Eglinton Avenue East, Toronto, Ontario, M4P 1K8.

closed-cell, slow-memory foam or of an equally competent material. The reason for the foregoing statement is that pupils occur injuries within a school bus usually as the result of hitting a non energy absorbing object.

(C) Finally the Federation is promoting the idea that the Department of Consumers and Corporate Affairs seek the cooperation of Provincial Departments of Transportation and of Education in the development and enforcement of uniform safety regulations for school bus operations across Canada and to set up a system for collection and dissemination of information pertaining to school bus safety. In short there should be more Federal centralization in reference to all aspects of school bus safety.

University of Toronto Accident Research Team[10]

A reply was received from the Multidisciplinary Accident Investigation Team of the University of Toronto. Their recommendations were submitted on the basis of several school bus crashes that had been investigated (Ontario, October, 1973, June 1974, October 1974, January 1975). They suggested a number of critically important recommendations.

(A) Interior of School Bus: There should be padding of all stanchions and seat structure metal. In addition there should be elimination of seatback construction involving inner-outer tubing joints which create a sharp failure

[10]Address - University of Toronto, Department of Civil Engineering, Toronto, Ontario M5S 1A4

point rather than ductile bending. Finally there must be improved anchorage in not only seat cushions but also seat legs.

(B) Mechanical Standards: There should be a standardize on power steering and brakes.

(C) School Bus Driver: The accident research team felt very strongly in the necessity for better trained drivers. The team strongly recommended that there be set up special comprehensive provincial school bus driver training courses with an unique provincial licencing procedure to compliment the course. It was also felt very important that each school bus driver should receive an annual physical and mental check-up. Finally each school bus driver should have at least basic first aid training.

(D) Inspection Requirements: Each school board or contract operator should schedule regular preventative maintenance and inspections. There must be consistency and frequency in scheduling the above. The operator of a school bus must also give careful consideration to regular operation and lubrication of the emergency exit door. The team strongly recommends that there be a compulsory daily inspection for cleanliness of lights and emergency flashers.

(E) Other Recommendations: Trained monitors should be placed on the bus to improve discipline and eliminate any unnecessary distractions by the bus driver. Furthermore it is recommended that these trained monitors should have at

least a basic first aid training.

It should be noted that the Accident Research Team did not suggest the installation of seat belts for pupils because they believe that this can legitimately be considered only in conjunction with strengthened floor, strengthened seat anchorage and other major structural modifications at a very high cost. Further, the school buses, because of their size and mass do not often suffer the severe accelerations of small vehicles in crashes, consequently seat belts are not as badly needed. In addition there is the problem of monitoring the correct application of the device. All in all the team is not convinced that seat belt installation is an effective device for school buses. The team does recommend the use of a seat belt by the school bus driver for additional stability in emergency manouvers and because the driver is in the most vulnerable position for a large percentage of crashes.

Mr. A. Cloutier - Transportation Officer[11]

Mr. Cloutier is the Transportation Officer for the Timmins Board of Education. After discussing methods to improve school bus safety with the bus operators in his district and feedback from accidents within the Province of Ontario he proposes the following recommendations.

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[11]Address - P.O. Box 1020, Timmins, Ontario, P4N 7H7

(A) The key to school bus safety is the driver. He must be mature, preferrably thirty years of age or over and a parent. The driver must be experienced under hazardous driving conditions, patient and understanding and trained enough to understand, judge and guide pupils.

(B) The school bus driver must be taught to know when and how to discipline on the school bus.

(C) The Province of Ontario should not only plan but also implement guidelines or a code for discipline.

(D) Every school bus which transports young children (four to seven years old) should have an older pupil or attendant to assist the driver on all trips.

Association of Professional Engineers - Province of Ontario.[12]

Metropolitan Toronto Police Force.[13]

Metropolitan Citizens Safety Council.[14]

Northwestern Ontario Motor League.[15]

Ontario Safety League.[16]

Ontario School Trustees Council.[17]

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[12]Address - 1027 Yonge Street, Toronto, Ontario M4W3E5.

[13]Address - 590 Jarvis Street, Toronto, Ontario M4Y2J5.

[14]Address - 205-701 Evans Avenue, Toronto, Ontario M9C1A3.

[15]Address - 585 Memorial Avenue, Thunder Bay, Ontario

[16]Address - 409 King Street West, Toronto, Ontario M5V1K1.

[17]Address - 500-2 Bloor Street West, Toronto, Ontario M4W3E2.

Royal Canadian Mounted Police.[18]

State Farm Insurance.[19]

Hartford Insurance Company.[20]

The replies from the above indicated no recommendations or proposals for school bus safety in Ontario.

Ontario Provincial Police.[21]

Hamilton Automobile Club.[22]

Canadian Institute of Traffic and Transportation.[23]

Motor Vehicle Manufacturers Association.[24]

Transportation Fire and Casualty Insurance Company.[25]

The foregoing submitted no reply to the three letters sent out.

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[18]Address - Box 519, Adelaide, P.O. Toronto, Ontario M5C2M3.

[19]Address - 1801 Brimby Road, Scarborough, Ontario M1P3H3.

[20]Address - 900-401 Bay Street, Toronto, Ontario M5H2Y7.

[21]Address - 90 Harbour Street, Toronto, Ontario.

[22]Address - 393 Main Street, East, Hamilton, Ontario.

[23]Address - 44 Victoria Street, Toronto, Ontario.

[24]Address - 25 Adelaide East, Toronto, Ontario.

[25]Address - 7699 Yonge Street, Thornhill, Ontario.

ALBERTA

Introduction

The responsesfrom the Province of Alberta were very good. The replies indicated that there has been, since the year 1973, a definite attempt to upgrade school bus safety in the province.

Alberta Consumers' Association[26]

The Consumers Association of Alberta recommended many improvements for school bus safety in Alberta. They reiterated that the Association recommendations came about as a result of two major areas of information. The first area was the investigation of school bus accidents in Alberta or other parts of Canada, and the second was the feedback that the Consumers' Association received from local transportation supervisors, parents and pupils. The recommendations of the Consumers' Association of Alberta are:

(A) That all school bus drivers be required to take mandatory training on driving a school bus.

(B) That all school bus drivers have a thorough medical examination at least once a year while driving a school bus.

(C) School Bus drivers should be required to take a practical and written drivers test specially designed for

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[26]Address - 141 Laurier Drive, Edmonton, Alberta.

school bus drivers at a minimum of every three years.

(D) Each bus driver that is hired should be of good character and have a good personal driving record.

(E) All school buses should be equipped with padded bars around the seat area.

(F) The back of all bus seats must have greater padding. The Association stresses that children are inclined to hit the back of the seat infront during emergency stops. Many of the seat backs are metal.

(G) School buses must be thoroughly inspected more than twice a year.

(H) Inspection must include such things as the condition of the under part of the body of the school bus (rust conditions, wheel chasis attachment to the frame of the bus).

(I) Daily inspection to make sure that the seats are firmly attached to the floor, and that the floor is not rusted to any great extent. Daily inspection should also include condition of tires, exhaust system, and emergency door exit.

(J) There is an expressed need for a monitor patrol on each school bus to take care of discipline problems.

(K) A minimum of at least two older pupils on each school bus should know how to use the first aid kit and how to assist, under emergencies to evacuate the school bus.

(L) Finally the Consumers Association of Alberta feels that parents do not make any effort to investigate

what kind of shape the school bus that carries their children is in. Moreover the parents should find out whether the school bus driver has ever been inspected or whether the driver has had any formal training, first aid experience, etc.

The Association fails to wonder "how people can be so careless of such a precious thing as a childs life."

Alberta Department of Transportation[27]

In 1975 an inter-department task force was instituted to make recommendations in regards to vehicle safety in Alberta. It must be emphasized at this point that these are only recommendations and have not been adopted, as yet, as government policy:

(A) A carefully planned driver education and instruction programme should be prepared by the Department of Transportation. The driver education programme should be a mandatory requirement for every applicant for any type of licence in the Province of Alberta.

(B) The age limit for mandatory annual physical re-examination and re-testing should be reduced from 70 to 65 for school bus drivers.

(C) Government legislation should be enacted to make it mandatory for a school bus driver to wear a seat belt.

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[27]Address - Highways Building, Edmonton, Alberta.

(D) The Province of Alberta should enact legislation requiring annual inspection of brakes, steering, lights and tires of all school buses in the province.

According to a representative of the Department of Transportation in Alberta the Provincial Government is undergoing major reorganization in relation to transportation in Alberta.

Alberta Safety Council[28]

A reply was received from Mr. Doug Prowse, who is not only a school bus transportation supervisor, but also an active member of the Motor Fleet Safety Committee of the Alberta Safety Council. The recommendations were submitted on the foundation of past experience, accident reports and feedback from the public sector.

(A) The first recommendation is with regard to the small thirteen inch rump space usually allocated to each pupil on the school bus. This is not a realistic figure and causes serious crowding problems if strictly adhered to. Pupils act aggressively in a crowded situation and are soon pushing and fighting with each other. This is especially noticeable in the winter months when heavy clothing takes up seating space. He suggests a rump space allocation of anywhere from fifteen inches to twenty inches.

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[28]Address - 10526 Jasper Avenue, Edmonton, Alberta T5J 1Z7.

(B) There has been a tendency for the thermal windows that have been installed in newer buses to fog up, blocking the school bus drivers vision.

(C) Mechanically the very new school buses are proving satisfactory. It is in maintaining these standards that most school boards have problems. Some drivers and owners are careless in the maintenance of brakes, lights, steering etc.

(D) The Council feels that school bus driver training in the Province of Alberta has been seriously neglected. This is one area of great concern. There is no formal school bus driver training material available in Alberta at this time. The council pointed out that the majority of school bus drivers at present are hired on a part time basis and therefore creating a difficulty to set high standards and keep fully qualified personnel.

(E) Although school buses are inspected annually by the Patrol Division of the Alberta Government, this inspection would be more satisfactory if carried out by individuals trained specifically in this field.

In conclusion the Alberta Safety Council feels that pupils are not educated to any extent in the importance of good manners and discipline within the school bus. The Alberta Safety Council is at the present time contemplating the preparation of a programme to be used in the class room.

Dr. E. F. Bardock.[29]

Dr. Bardock and Associates produced a report on pupil transportation in Alberta at the end of 1973.[30] His report recommended the following:

(A) All school buses of less than twenty four passenger capacity rating used for pupil conveyance conform to high standards of construction, design, quality of materials and equipment to reduce safety hazards to a minimum.

(B) It was recommended that the Public Service Vehicles Act be amended to provide that where a school bus, whether new or used, is to be used for personal purposes, it be the responsibility of the purchaser to remove the identification lettering and change the color of the school bus to other than yellow.

(C) He recommended that there be no less than two formal inspections of school buses each year by a qualified mechanic.

(D) It was recommended that the Public Service Vehicles Act require a statutory declaration by the mechanic on the inspection certificate.

(E) Provincial mandatory guidelines be established for the inspection of school buses by drivers, supervisors and/or contractors. further the guidelines regarding

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[29]Address - 236 Administration Building, Lethbridge Community College, Lethbridge, Alberta.

[30]Bardock, E.F. and Matthews, L.W., Pupil Transportation, Alberta Education, Edmonton, Alberta - 1973.

the inspections and maintenance be not only carried out on a daily, weekly or monthly basis but also be published in a manual format.

(F) He recommended that a special licence for school bus drivers be established requiring a written qualification examination designed to test the special knowledge required to operate a school bus in addition to any written examination given to ordinary drivers.

(G) Each school bus driver should qualify in a road test in a school bus and that where the road is taken in a school bus of less than twenty four passengers the licence restrict the school bus driver to a school bus of the size or smaller than the school bus in which the road test was taken.

(H) The reactivation of the Safety Division in the Department of Transportation, with a view to promoting school bus safety programs in the schools and being responsible for preservice and inservice training programs for school bus drivers.

(I) The Public Service Vehicles Act be amended to require that all school bus accidents, regardless of degree, be reported to the Enforcement Division of the Department of Transportation, and that a consolidated cumulative report of these accidents be provided to the Department of Education at least twice a year.

(J) Strongly recommend that extensive further study be given to the question of making seat belts for passengers on school buses mandatory.

It should be pointed out that at the present time the Province of Alberta is investigating the above recommendations.

Mr. L.W. Matthews[31]

Mr. Matthews agrees with the recommendations made by Dr. E.F. Bardock. In an interview with Mr. Matthews he indicated that school bus safety could be improved in the following ways:

(A) No standees permitted in urban city transportation.

(B) Rump seat size be increased to a minimum of fifteen inches.

(C) No seat belts be permitted within the school bus with the exception of the school bus driver's seat. The reason for the foregoing statement is that he feels seat belts are not only a dangerous weapon in the hands of pupils but also it is difficult to monitor the keeping closed of each individual seat belt on the pupil.

(D) He strongly advocates that school bus drivers training be standardized in the Province of Alberta.

(E) More padding be placed on the back of each seat.

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[31]Address - 10105-109 Street, Edmonton, Alberta T5J 2V2.

In conclusion Mr. Matthews emphasized that in Alberta there is a flexible autonomous situation in reference to school bus safety.

Superior School Bus Manufacturers.[32]

Alberta Motor Association.[33]

There was no reply received.

City of Edmonton Police Force.[34]

Royal Canadian Mounted Police.[35]

Their reply indicated no recommendations or proposals in reference to school bus safety in Alberta.

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[32]Address - 8539 Coronet Road, Edmonton, Alberta.

[33]Address - 8925-82 Avenue, Edmonton, Alberta.

[34]Address - 4 Sir Winston Churchill Square, Edmonton, Alberta, T5J 2C2.

[35]Address - Box 1320, Edmonton, Alberta T5J 2N1.

BRITISH COLUMBIA

Introduction

The responsibility for pupil transportation in British Columbia is very decentralized. As a result the replies indicate a very good response from a cross-section of those individuals and/or associations involved in school bus safety.

British Columbia Automobile Association[36]

The British Columbia Automobile Association indicated that "there is definite room for improvement within the area of school bus safety in the Province of British Columbia." Consequently the Association recommended the following:

(A) That there be a greater amount of padding on the seats to improve the interior safety for passengers.

(B) All drivers of school buses should be examined annually not only for driver ability but also as to their temperament. The Association indicated that a comprehensive driver training program is possibly the most important factor in school bus safety in British Columbia.

(C) Seat belts should not only be mandatory for the school bus driver but also the pupils. The Association indicated that the Association is applying the same philosophy as used in desiring mandatory use of seat belts in

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[36] Address - 999-West Broadway, Vancouver, British Columbia, V5Z 1K5.

passenger cars. The philosophy indicates that if seat belts were used in school buses the number of injuries within the school bus would diminish as a result of the pupil being secured by a seat belt to the seat. In other words the pupil would not be thrown from the seat into the aisle or against the back of the seat in front of him.

(D) The Association indicates that it would be desirable nationally to have a uniform identification (lettering, lights-number and color, color) of all school buses.

The above proposals were submitted as a result of accident investigations by not only the British Columbia Automobile Association but also the Safety Advisory Committee of the Canadian Automobile Association (150 Gloucester Street, Ottawa, Ontario). There was also input from the membership in relation to experiences which were relevant.

British Columbia Safety Council[37]

The British Columbia Safety Council based its submission of proposals on the results of the investigation of selected accidents within British Columbia, membership feedback, and finally and most important the studies done by the Insurance Institute for Highway Safety in Washington, D.C. and the United States Department of Transport also in

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[37]Address - 205-96 East Broadway, Vancouver, British Columbia V5T 1V6.

Washington, D.C. As a result the Council proposed the following:

(A) That there be a province wide mandatory comprehensive school bus driver training program, not only at the initial stage, for the beginning driver, but also refresher and retraining course on a regular basis for all school bus drivers as long as they engage in this vocation.

(B) In the lengthy and unsettled debate about safety belts for school buses, the Council sides with those who deem them worthwhile in terms of their helping to prevent or lessen crash injuries. The Council indicates that the pupil, if tied down by a safety belt, would undoubtedly receive less physical injuries due to the fact that he would not be ejected into the seat infront of him, the window beside him or the aisle.

(C) The Council proposes that mandatory mechanical inspection occur not less than three times per year and preferably four times per year. In addition the Council indicated that this is not only a valuable safety factor but also all provinces should pass legislation accordingly.

(D) The selection and recruitment of good, or potentially good, operators is difficult owing to the economic and time circumstances (split shift) imposed by this vocation. Since these are difficult to change, or will change (with respect to the wage factor which is poor) only quite slowly, the majority of school bus drivers in the

Province of British Columbia are not going to be people of unusual driving talent but, rather, pretty average - very much a cross-section of the rest of the driving population. If this assumption is correct, we believe these ordinary drivers should be systematically upgraded and trained to be skilled, experienced, safe drivers. This upgrading potential is perhaps the greatest single factor open to the Council in British Columbia as a practical means of improving overall school bus accident experience.

The British Columbia Safety Council realizes that the school fleet supervisor has to sell the policy of systematic driver training to his school board. However these cost conscious citizens do not always agree that systematic school bus driver training is a good value for the taxpayer's dollar. This is a real impediment to improving school bus accident experience in the Province of British Columbia.

Finally the school bus accidents in June 1974 and January 1975 in rural Ontario give evidence to the foregoing proposals.

Capital Region Safety Council[38]

The Safety Council, although very small, submitted the following proposal:

(A) Through their communications with the school districts on the Island they have come to realize a critical

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[38]Address - 6-671 Fort Street, Victoria, British Columbia V8W 1G7.

need for the necessity of control and discipline on school buses. They feel that taking into consideration the school bus accident in January, 1975 in rural Ontario there definitely needs to be a systematic teaching or re-educating on the part of the pupil and driver for the necessity for control and discipline on school buses.

At the present time the Council is lecturing and assisting school districts with talks to pupils and school bus drivers. However they feel that there should be a comprehensive mandatory provincial program set up for all regions of British Columbia.

Mr. F. J. Lahola - Supervisor of Transportation[39]

Mr. Lahola feels that the safety of school bus pupils has always been side stepped until an accident occurs. The school buses of today, along with the many options available, are well built. However he feels that one of the problems is that buses are purchased on price alone in most areas of the province. School buses do not have specifications set out to accomodate the specifics of the area and terrain they will be serving. As an example, certain school districts will spec out a school bus (66 seater) costing $16,000, and the neighboring district will spec their needs out costing $22,000, the latter of course will probably have a heavier chassis, air brakes, and many other safety features within the passenger

[39]Address - Kamloops School District No. 24, 1383-9th. Ave. Kamloops, British Columbia.

compartment of the school bus, therefore, making this unit a much safer bus to be in should an accident occur. Mr. Lahola also submitted the following proposals:

(A) The setting up of a province wide all embracing screening and preparatory program for driver training. He believes, through his experience within the school district, that the province should place driver training for school bus drivers on the priority list if safer school busing is desired.

(B) His experience in British Columbia has indicated without doubt that district owned operations with transportation supervisors and servicing facilities have had fewer problems than the non-supervised systems usually handled by the Secretary-Treasurer or Carpenter Department with repairs and servicing handled through local service stations.

In conclusion, Mr. F. J. Lahola feels that the safety of school bus pupils hinges on the quality of the following: (a) the driver (b) type of bus (c) frequency of service and repair (d) regular and mandatory school bus inspections by inspection stations and/or R.C.M.P. inspections.

Mr. J. Maurault-Administrative Officer[40]

Mr. Maurault submitted the following proposals developed as the result of his administrative experience in

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[40]Address - 835 Humbolt Street, Victoria, British Columbia.

dealing with pupil transportation.

(A) The Department of Education of the Province of British Columbia should prepare and make mandatory a school bus monitor program. This program would be set up to insure safety within and outside the school bus.

(B) Mr. Maurault feels that in British Columbia the districts have too much autonomous authority. It is very difficult to standardize any proposal provincially. As a result there should be more centralized provincial authority and control.

(C) There must be a mandatory provincial comprehensive school bus driver training program.

(D) He feels that the government should purchase all school buses. The reason for this is that there can be a standardization of all specifications on the purchase of school buses.

(E) All school buses that are sold must obliterate all signs that indicates it is a school bus. The bus that is sold should be painted another color.

Association of Professional Engineers of British Columbia[41]
British Columbia School Trustees Association[42]
Consumers Association of British Columbia[43]

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[41]Address - 2210-12 Street, Vancouver, British Columbia

[42]Address - 1095 Howe Street, Vancouver, British Columbia, V6Z 1P9.

[43]Address - 103-163 West Hastings Street, Vancouver, British Columbia.

Royal Canadian Mounted Police.[44]

Vancouver Police Force.[45]

There were no recommendations or proposals submitted by the above groups in reference to school bus safety in British Columbia.

SASKATCHEWAN

Introduction

The overall response from Saskatchewan was good. Their safety record in reference to school bus safety in Saskatchewan as noted in the statistics can be improved. The cross-section of replies will indicate a desire for improvement within the province.

Consumers' Association of Saskatchewan[46]

The School Bus Safety Committee of the Association submitted the following proposals:

(A) All new buses operating in Saskatchewan meet the revised C.S.A. Standard D250.1 - 1975.

(B) School buses should be included under the sections of the Canada Motor Vehicle Safety Act from which they are

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[44]Address - 4949 Heather Street, Vancouver, British Columbia, V5Z 1K6.

[45]Address - 312 Main Street, Vancouver, British Columbia, V6A 2T2.

[46]Address - 831-8th. Avenue North, Saskatoon, Saskatchewan, S7K 2Y3.

now exempt (ie hydraulic brakes, tires, head restraints, impact protection etc.).

(C) That all school buses presently in use be provided with adequate seat top and back padding of energy absorbing, closed-cell, slow-memory foam or an equally competent material.

(D) That the Highway Traffic Board, Department of Education and Saskatchewan School Trustees Association institute and make mandatory a program of training pupils for school bus patrols. These patrols would be pupils who help to discipline other pupils in the school bus and assist with safe boarding and road crossing of pupils. In reference to this the Association feels that a pupil who was killed at Langenburg, Saskatchewan in December of 1973 while crossing the road to board a school bus would not have died if a school bus patroller had been on duty.

(E) That the Highway Traffic Board, Department of Education and the Saskatchewan School Trustees Association institute a program of mandatory defensive driving courses every three years for school bus drivers and a course in first aid for school bus drivers as a condition of employment. The Association feels that a school bus driver who has received a defensive driving course and a first aid course is more safety conscious than those drivers who have not been exposed to these safety training courses.

(F) The Association suggests that the compulsory

medical report from a physician be on an annual basis rather than once every three years. The reason for the above is that school bus drivers have special hazards and the increasing use of drugs and alcohol are temptations for this occupation.

(G) Each school bus should be equipped with two-way radios and auxiliary heaters for the use in case of emergencies. These are quite a necessity due to the severity of the winters.

(H) The Association submits that it should be compulsory for the driver of the school bus to wear a seat belt. This is to promote complete control under all driving conditions. A school bus driver can be thrown into the stairwell if a front wheel is severely jolted.

(I) The Committee feels that warning signs to the effect that "School Bus Stop Ahead" be posted especially on main highways. Winter visibility problems make this a necessity.

(J) Information signs should be posted educating the general public as to the rule that they must not drive past a school bus that is stopped and has its signals flashing. Accident statistics point out that parents in private vehicles are a major offender in this area.

It should be pointed out that the above proposals were presented as part of a brief to the Minister of Consumer Affairs in the Province of Saskatchewan. The above

proposals were referenced from not only discussions with school bus drivers, proprietors, and parents of children who ride the buses, but also from school bus accident reports.

Regina Police Force[47]

The chief inspector recommended as the result of their experience with school bus accidents that there be a more comprehensive education or re-education towards attitude development of both driver and students in achieving uniform loading and unloading practices. This should not only be the responsibility of the Department of Education but also the responsibility of the Department of Transportation.

Mr. R. Wigmore, Supervisor of School Administration[48]

Mr. Wigmore submitted the following proposals:

(A) It is imperative that a campaign be instituted by government or interested organizations such as the Saskatchewan Safety Council to make the public aware of the proper procedures when approaching a stopped school bus with red lamps flashing.

(B) If a school bus is sold it should be painted a color other than yellow. The onus for this must be on the buyer. The reason for the above is that any driver of a

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[47]Address - P.O. Box 196, Regina, Saskatchewan S4P2Z8.

[48]Address - Department of Education, Avord Towers, Regina, Saskatchewan S4P0R7.

vehicle can distinguish between a school bus and a bus owned and operated for community use.

(C) Every school bus should be required to have a thorough (internal, external) inspection at a minimum of every fifteen thousand miles.

(D) There should be province wide mandatory adoption of C.S.A. Standard D250.1-1975. The reason that it is not adopted at the present time is that it would put a hardship on some of the school units.

Saskatchewan Motor Club[49]

The Safety Secretary on behalf of the Saskatchewan Motor Club presented the following proposals.

(A) Nation wide adoption of national standards for the identification (color, signs, lights-color, number) of school buses.

(B) There must be more compulsory inspection of all school buses. It is suggested a minimum of two inspections with a possibility of three per year.

(C) All school bus drivers should be examined yearly for physical and mental fitness, knowledge of the rules of the road and ability to operate a school bus intended for the use in transporting pupils.

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[49]Address - 200 Albert Street, North, Regina, Saskatchewan.

The above proposals were submitted as the result of information gathered from members of the Motor Club, feedback from the Canadian Automobile Association and accident information in Saskatchewan.

Saskatchewan Safety Council[50]

The Traffic Division of the Saskatchewan Safety Council recommended that a public information campaign on school bus safety be not only prepared and implemented but also that the campaign be ongoing. This campaign would be presented to as many groups and/or associations or individuals through the newspaper, television or radio as possible. The public information campaign should include the following: (a) use of flashing red lamps when stopped (b) school bus stop warning signs (c) school bus lettering (d) procedures for loading or unloading pupils (e) minimum distance acceptable for stopping car under winter conditions.

The Council suggests the following proposals for improvement of school bus safety.

(A) Airfoils be placed on each bus to prevent dirt on the back of the bus. If this was instituted then an approaching car driver could better identify the school bus.

(B) Upon sale of a school bus the bus must be repainted a color other than yellow. This is so any vehicle driver

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[50]Address - 2149 Albert Street, Regina, Saskatchewan.

realizes the difference between a school bus and a bus purchased for community use.

(C) The province should set up standard procedures for loading and unloading pupils.

(D) Generally school bus maintenance is lacking. Inspections should occur more frequently (three to four times per year).

(E) All school buses must contain at least one fire extinguisher and a medical kit.

The above recommendations were the result of not only feedback from the members of Safety Council but also reports from the Royal Canadian Mounted Police and Saskatchewan Government Insurance Office.

University of Saskatchewan Accident Research Team[51]

The Transportation Centre has recently been awarded a contract by the Saskatchewan Highway Traffic Board to investigate the degree of safety inherent in all aspects of transportation of pupils in school buses. This project will not be completed until the end of 1976. However, on the basis of preliminary investigations, the following proposals were made.

(A) Upon reviewing eleven reports on school bus

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[51]Address - University of Saskatchewan, Transportation Centre, Saskatoon, Saskatchewan S7N 0W0.

accidents prepared by Multidisciplinary Accident Investigation Teams across Canada, it was noted that, in even moderately serious collisions, the injuries of the school bus occupants tend to be relatively minor. This is due, primarily to the weight advantages that the buses have over most other vehicles on the roads. Of the minor injuries, however, injuries to the face, head, mouth and throat were found to be common in frontal collisions. This is apparently a direct result of contact with the unpadded upper edge of the seat back frame. Observations similar to these led researchers from the Institute of Transportation and Traffic Engineering at the University of California at Los Angeles to conclude that "seats are the most important single contribution to collision safety second to none". However, the cost of retro-fitting padding on to the seats of current school buses maybe difficult to justify. While the risk of being injured by an unpadded seatback is very, very high in any given collision, the probability of having an accident with any given bus is extremely low. If all school buses in the province were fitted with adequate padding it would cost approximately $30,000 per year ($300,000 over ten years). If all of the injured persons (77 in past two years) could have had their injuries reduced by this padding, the cost per injury reduced would be approximately $880.

(B) In the past year, there have been two children killed while crossing highways to or from school buses. In

both cases the children were struck by other vehicles on the highway who did not or could not stop in time. Therefore the province must make it clear, through publicity to road users, their responsibility when encountering school buses loading or unloading. Furthermore, the children themselves must be made aware of their responsibilities when crossing highways and impress upon them the inherent dangers of an "apparently" safe situation. Finally the school bus driver must be given clear instructions as to his responsibility in dealing with other road users as well as providing guidance to the students.

Areas such as the need for vehicle inspection, disciplinary requirements, driver training and testing are all things which the team intend to investigate but are unable to form any sort of comments at this time.

Royal Canadian Mounted Police.[52]

Saskatchewan Government Insurance Office.[53]

Saskatchewan School Trustees Association.[54]

The above indicated that they could submit no recommendations in reference to school bus safety in Saskatchewan.

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[52]Address - P.O. Box 2500, Regina, Saskatchewan, S4P 3K7.

[53]Address - 2215-11th. Avenue, Regina, Saskatchewan S4P 0J9.

[54]Address - 570 Avord Tower, Regina, Saskatchewan S4P 0R7.

MANITOBA

Introduction

The responsibility for pupil transportation in Manitoba is very centralized. Although the overall response was fairly good, the replies indicated the beginning of an awakening towards an improvement in school bus safety.

Manitoba Motor League[55]

The Manitoba Motor League submitted the following proposals.

(A) There must be the development of uniform standards throughout Canada for the examination and licencing of school bus drivers. The Motor League said that in Manitoba there are regulations which specify the type of vehicle a driver may operate but the Motor League feels that there must be a stepped-up program for both technical and psychological training of school bus drivers together with an annual re-examination. He is careful to point out that the recent accident (December 22, 1975) which occured on Lagimodiere Boulevard was totally unnecessary, regardless of the fact that there were no traffic lights at the intersection in question. The League feels that it was obviously a case of human error on the part of the school bus driver (this fact has been backed up by evidence produced by the Accident

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[55]Address - 870 Empress Street, Winnipeg, Manitoba R3C 2Z3.

Research Investigation Team in Manitoba). As a result he realizes that there should be greater attention payed to not only the selection of school bus drivers but also the technical and psychological training of school bus drivers.

(B) They are suggesting that school bus patrols be placed on each and every school bus route to not only assist the driver but also monitor the loading and unloading procedures.

(C) National standards should be adopted for the identification (lights - number, color, signs, color) of school buses.

(D) All school bus drivers should be required to wear seat belts. This is to avoid the driver from being displaced from the drivers seat unnecessarily.

(E) All school bus drivers should be re-examined yearly. The tests for school bus drivers should determine their physical and mental fitness, knowledge of the rules of the road and proven ability to operate a school bus.

(F) Once a school bus is sold all identification should be removed. Furthermore they feel that a driver of a vehicle must be able to distinguish between a school bus and a bus used for community or other purposes.

Manitoba Safety Council[56]

The Executive Director of the Manitoba Safety Council indicated that they were not sufficiently familar with the subject to offer any specific recommendations. However he did suggest that all school bus drivers should be required to take a defensive driving course. With the school bus drivers supplement included in the course, the school bus drivers of Manitoba could not help but benefit from such a course.

University of Manitoba Accident Research Team[57]

The team submitted the following proposals.

(A) Lap belts in every seat position. The protective capacity in a school bus is not as great as in the family automobile. But the effect is far from insignificant and they feel that since belt usage is very much a habit, the educational effect is very important.

(B) Re-inforced Structure: Since todays school buses are built on a truck chassis with a very narrow frame there is very little resistance to side impacts. Increased structural rigidity by means of longitudinal beams in the side structure would be an improvement. Increased structural support of the pillars is not as important for Manitoba as for many other provinces.

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[56]Address - 911-213 Notre Dame Avenue, Winnipeg, Manitoba, R3B 1N3.

[57]Address - University of Manitoba, Faculty of Engineering, Winnipeg, Manitoba R3T 2N2.

(C) Laminated glass has for many years been used for windscreens in cars. The major reason for not putting laminated glass in side windows is the public wish to be able to open them. This argument is not very valid in present generation school buses. Laminated glass would greatly decrease the probability of ejection if the pupils are not restrained as well as mitigating injuries from broken glass.

(D) A major hazard for school bus pupils is in the process of entering and exiting from the school bus. The situations when a pupil has fallen under or slid under the school bus are numerous. In the other provinces a construction very like that of a snow plough attached to the unsuspended part of the bus, thereby giving it a minimal road clearance, might be a partial solution. Solutions are also possible along the lines of an electric sensor, sensoring anything in front of the wheels combined with automatic brake lock-up. A similar system exists on some school buses if the doors are not closed or if anybody is standing on the stepwell. Improved rear view mirrors might also be considered in connection with this problem.

(E) The school bus driver should be required to wear a safety belt at all times.

Consumers Association of Manitoba[58]

No reply.

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[58]Address 21-1373 Portage Avenue, Winnipeg, Manitoba.

Manitoba Public Insurance Corporation.[59]

Motor Coach Industries.[60]

Sheller-Globe Manitoba,[61]

The above replies indicated no recommendations or proposals in reference to school bus safety in Manitoba.

QUEBEC

Introduction

Although a cross-section of replies was desireable the overall response from the Province of Quebec was poor.

Consumers Association of Quebec[62]

The Chairperson of the Automobile Committee, of the Consumers' Association of Quebec recommended the following proposals:

(A) That all school bus drivers be required to take special training courses not only at the point of being hired but also frequently (every two years) thereafter.

(B) All school bus drivers should be required to wear a seat belt. The reason for this is that the school

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[59]Address - 6th. floor - 330 Portage Ave, Winnipeg, Manitoba, R3C 3E9.

[60]Address - 1149 St. Matthews Ave., Winnipeg, Manitoba.

[61]Address - Morris, Manitoba ROG 1KO.

[62]Address - 45 Jarry Street East, Montreal, Quebec.

bus driver should be firmly implanted in his seat if a sudden jolt were to occur.

(C) That headlights be used at all times of the day or night.

(D) That all school buses be equipped with flashing red lamps that shall be used when loading or unloading pupils.

(E) All school buses should have more padding on the seats with a higher back.

(F) That a school bus no longer registered as a school bus be required to be repainted a color other than yellow.

(G) That the Province of Quebec upgrade and enforce more frequent school bus maintenance standards.

The Association feels that the transportation of many pupils in one school bus is a high risk situation. It is essential that school bus drivers be of a high quality and be in a position to cope with emergency situations. The preceding proposals were not only the result of membership feedback but also investigation of accidents in Quebec that were brought to their attention.

Quebec Automobile Club[63]

This is a non-profit organization particularly

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[63]Address - 871 Chemin St. Louis, Quebec City, Quebec.

interested in safety for the benefit of its members. Below are some of their recommendations.

(A) There must be no standees in a school bus under any circumstances.

(B) That the standards of inspection of the Ministry of Transport of Quebec should be reinforced and the inspections be made on a more regular basis (three to four times per year).

(C) That all passenger seats should be provided with a seat belt. If the school bus were to come to an abrupt stop the chance of injury due to the pupil being thrown into the seat infront or into the aisle would be minimized.

(D) That all passenger seats be better padded and have a higher back to protect the pupils against whiplash.

(E) That a well trained safety patrol should be on board every school bus to help the driver maintain discipline along the route, and be available in case of an emergency.

(F) Each school bus driver should be required to attend not only a driving school but also a defensive driving course.

(G) That a well planned educational program be made available and publicized to all sectors of the public on all school bus traffic regulations.

The above recommendations were submitted as the result of feedback from the membership and mishap information received on school bus accidents which occurred in December

1973 and May 1974 in Quebec.

Montreal Urban Community Police.[64]

The Chief Inspector of the Montreal Urban Community Police Force forwarded the following comments:

(A) The Highway Code should be amended in order that the flashing lamps at the front of the school buses be uniformly red.

(B) The Force suggests that the Highway Code be amended concerning a front mirror. There should be compulsory installation of a reflecting mirror at the front of the school bus in order that the driver may prevent accidents since he will be able to see what is going on very near the front of his bus since some buses are now built with flat noses.

(C) School bus drivers must also be aware of the discipline instructions given to the pupils who ride the bus. The school bus driver must be assured that he has the full support of parents and school authorities in handling discipline problems on the school bus.

(D) Finally the Force suggests trained school bus patrols be required on each bus to not only help minimize discipline problems but also maximize safety outside the bus.

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[64]Address Chief Inspector, City of Montreal Police, Urban Community Police, Montreal, Quebec.

Association Pour La Protection Automobiliste.[65]

Security League of the Province of Quebec.[66]

Ecole Polytechnique Accident Research Team.[67]

There were no replies received.

Quebec Police Force.[68]

Royal Canadian Mounted Police.[69]

The above indicated that they were unable to submit any recommendations or proposals for school bus safety in the Province of Quebec.

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[65]Address - 292 St. Joseph Avenue, Montreal, Quebec.

[66]Address - 5576 Upper Avenue, Lachine, Quebec.

[67]Address - 2500 Marie-Guyard Avenue, Montreal, Quebec.

[68]Address - P.O. Box 1400, Station C, Montreal, Quebec.

[69]Address - 1550 De Maisonneuve West, Montreal, Quebec.

NEW BRUNSWICK

Introduction

Although the province is small in size there seems to be a certain amount of interest in upgrading school bus safety within the province. The replies have indicated that all the interested individuals and groups have had a positive working relationship with Mr. E. Hamilton, Supervisor of Transportation, for the Province of New Brunswick.

Consumers Association of New Brunswick[70]

The Chairperson of the School Bus Committee of the Consumers Association proposes the following:

(A) No Standees be permitted on any school bus in New Brunswick. Under accident conditions, even one standee is too many as is graphically illustrated in the film "The Broken Bus".[71]

(B) It should be mandatory for each school bus driver to wear a seat belt. If worn, at least the driver has a chance of retaining control of his school bus in the event of a sudden movement or accident.

(C) Each seat should have a back of a minimum of twenty eight inches with the top portion of the frame of each

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[70]Address - Site 4, Box 18, R.R.3, Fredricton, New Brunswick, E3B 4X4.

[71]Information about this film can be obtained from, Institute of Transportation and Traffic Engineering University of California, Los Angeles.

seat covered with an energy absorbing, close-cell, slow-memory foam of adequate thickness or an equally competent material.

(D) It should be mandatory for all school bus drivers to take annual refresher courses in driver education, first aid and discipline training.

(E) Each school bus should be required to carry trained safety patrols (mature students or volunteer parents) to decrease discipline problems, reduce noise, and therefore increase the drivers attentiveness to the job of driving the school bus.

(F) She suggests that the province adopt the eight lamp warning systems for all new buses purchased. This gives other drivers additional warning that the school bus is about to stop.

(G) There must be stricter enforcement of the "no passing" laws pertaining to stopped school buses.

(H) Although buses are inspected and road tested twice a year, the problem arises with the lack of inspectors to follow up inspections to guarantee that any necessary repairs are carried out.

(I) Finally, greater consideration of safety as a factor in the design of school bus routes and choice of school bus stops must be given.

The above recommendations were submitted as a result of the school bus accident of December 1972 in New Brunswick

and membership input.

Mr. N. Gange - Transportation Supervisor[72]

Mr. Gange because of his past experience submitted the following proposals:

(A) The majority of school bus drivers need additional training possibly on an annual basis. This could include defensive driving and/or refresher courses.

(B) School bus driver medicals and testing procedures are now unsatisfactory. The medical examination should be more frequent and school bus drivers should be re-tested more frequently, (every two years).

(C) There is a problem with vehicles passing stopped buses with lights flashing. He recommends that the Provincial Government prepare and present to the public a driver information program. This program would hopefully educate or re-educate the public. in addition, Mr. Gange feels that one of the realistic alternatives is to provide stiff penalties for those who fail to stop.

Mr. A. Thompson-Supervisor of Transportation[73]

Mr. Thompson indicated the following required attention in the Province of New Brunswick.

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[72]Address - School District #26, Fredricton, New Brunswick.

[73]Address - School District #20, St. John, New Brunswick.

(A) Vehicles consistantly pass stopped buses with their red lamps flashing. This can only be improved if more police officers were available to patrol school bus routes and if an advertising campaign were instituted by the province to educate the public.

(B) The majority of school bus drivers require additional mandatory training. This training should not only occur at frequent periods but also include a defensive driver training program.

The above was submitted on the basis of his experience as a supervisor of transportation in New Brunswick.

New Brunswick Safety Council[74]

The Safety Council was grateful to have the opportunity to not only meet with the author but also offer a few suggestions.

(A) All standees on school buses must be eliminated. Any pupil, who is standing when an accident occurs or even when a sudden jolt occurs, has very little protection from injury.

(B) Greater padding must be placed on the backs of seats for greater protection in an emergency. There should be no metal of any type placed on the exterior of the back or the top of the seat.

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[74]Address - 364 York Street, Fredricton, New Brunswick, E3V 3P7.

(C) School bus drivers and transportation supervisors must be better trained. The defensive driving course with the additional supplement for school bus drivers should be made mandatory in the Province of New Brunswick.

(D) More discipline must be emphasized on the school bus. Possibly monitors on each school bus might reduce the discipline problems for the school bus driver.

The council feels that the foregoing proposals are justified because of the involvement the council has had in school bus accidents in New Brunswick and the feedback the council has received from parents, students and supervisors of transportation.

Canadian Manufacturers Association.[75]

Fredricton Police Force.[76]

Royal Canadian Mounted Police.[77]

University of New Brunswick Accident Research Team.[78]

The above indicated no proposals or recommendations

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[75]Address - 236 St. George Street, Moncton, New Brunswick, E1C 1W1.

[76]Address - 520 York Street, Fredricton, New Brunswick, E3B 3R2.

[77]Address - "J" Division, Fredricton, New Brunswick.

[78]Address - University of New Brunswick, Department of Civil Engineering, Fredricton, New Brunswick.

in reference to school bus safety in the Province of New Brunswick.

Maritime Automobile Association.[79]

New Brunswick School Trustees Association.[80]

No reply.

NOVA SCOTIA

Introduction

The individuals and associations that are interested in school bus safety in the Province of Nova Scotia are very proud of their safety record. Consequently the replies indicate satisfaction in the present situation.

Consumers Association of Nova Scotia.[81]

The Association gave no specific recommendations or proposals but they did indicate in their letter that they did confer with the recommendations put forth by the Consumers' Association of Canada's National Committee on school bus safety.

(A) Each school bus that is presently in use be provided with adequate seat top and back padding of an energy

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[79]Address - Lower St. Mary Street, Fredricton, New Brunswick.

[80]Address - 701 Churchill Row, Fredricton, New Brunswick.

[81]Address - 5257 Morris Street, Halifax, Nova Scotia.

absorbing, closed-cell, slow-memory foam or of an equally competent material.

(B) School buses should be included under the sections of the Canada Motor Vehicle Safety Act from which they are now exempt (ie. hydraulic brakes, tires, impact protection, windshield mounting, etc.).

(C) Each school bus should have school bus patrols. Hopefully this would ease the number of discipline problems which the school bus driver encounters.

(D) Each school district should have an emergency transportation measures plan.

The above proposals were arrived at as a result of the documentary film "The Broken Bus" which was researched by the Institute of Transportation and Traffic Engineering, University of California, Los Angeles. The American Society of Oral Surgeons conducted a survey to determine the types and extent of facial and dental injuries sustained as a result of school bus accidents. The Society found that more than 1,300 pupils suffer severe facial and dental injuries each year in accidents and panic stops.

The Nova Scotia Safety Council.[82]

The Nova Scotia Safety Council forwarded the following proposals in regards to the operation of school buses in the Province of Nova Scotia.

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[82]Address-401-5212 Sackville Street, Halifax, Nova Scotia, B3J 2R7.

(A) The use of seat belts be not made mandatory for passengers within the school bus. Past performance has shown that seat belts are not only abused but there use is almost impossible to enforce even when used by older students.

(B) According to reports from school bus drivers, motorists at times fail to stop upon approaching a stopped school bus with red signal lights flashing. It has been the Councils experience that unless there is another witness, other than the driver convictions for the above offences are difficult to obtain. Possibly the law enforcement agencies need to take a second look at the aforementioned problem.

(C) The Council feels that all existing drivers should be evaluated on a regular basis as to skills, attitude, and aptitude. Furthermore they suggest that all new school bus drivers should, as a condition of employment, be required to attend a comprehensive school bus driver training course. The course should include highway safety theory, child motivation and control and a basic first aid course. Skill training (proper procedures for stopping and starting, highway driving, use of signal lights and the loading and unloading of passengers) should also be included.

(D) Competent qualified female drivers should be encouraged to enter the school bus driver field. They exercise a "natural control over children, are more attentive in the care of the child and tend to be more inclined to

operate the school bus within the defined limits".

(E) There has been in recent years an increase in the lack of respect on the part of pupils on the school bus. As a result every board should adopt stringent measures to stabilize discipline on all school buses.

The above proposals were submitted as a result of not only feedback from the membership but also investigation into the school bus accidents that have occurred in Nova Scotia.

James L. Perry - Transportation Administrative Officer.[83]

Mr. Perry indicated that safety practices in Nova Scotia are quite good and do not leave very much to be desired. However he feels that the pupils and the public could be made more aware of the necessity for practicing caution at all times when pupils are being loaded and unloaded from school buses. He sees a great deal of evidence of carelessness on the part of the pupils. Consequently he recommends that pupils receive more comprehensive instruction in relation to their expected behavior when embarking or disembarking from a school bus. He submits the above comments as a result of his own experiences.

City of Halifax Police Force.[84]

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[83]Address - Barrington Municipal School Board, Barrington, Nova Scotia, B0W 1E0.

[84]Address - City of Halifax Police Force, Halifax, Nova Scotia.

Nova Scotia Technical College Accident Research Team.[85]

Royal Canadian Mounted Police.[86]

The above were unable to submit any recommendations or proposals in reference to school bus safety in Nova Scotia.

Maritime Automobile Associations[87]

No reply received.

PRINCE EDWARD ISLAND

Introduction

There has been no pupil fatality in relation to school buses in Prince Edward Island since 1960. As a result the replies indicate an interest to further school bus safety in Prince Edward Island.

Mr. H. Landry - Supervisor of Transportation[88]

Mr. Landry indicated that he would like to see the following improved within the Province of Prince Edward Island.

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[85]Address - P.O. Box 1000, Halifax, Nova Scotia, B3J 2X4.

[86]Address - P.O. Box 2286 Halifax, Nova Scotia, B3J 3E1.

[87]Address - 1872 Brunswick Street, Halifax, Nova Scotia.

[88]Address - 1736 Scarth Street, Charlottetown, Prince Edward Island.

(A) Preventative Maintenance - He would like to have each individual school board set up a specific time period for each school bus to be brought in for a thorough mechanical inspection. Everything should be inspected (taken apart) starter, transmission, exhaust, electrical system, brakes etc.

(B) He would like to see the back of the seats raised to twenty-eight to thirty inches high. Additional padding must be placed on the back of the seats in the school bus. If these two measures were taken then the backlash effect produced by a sudden jolt or accident would be minimized.

(C) At the present time careful deliberate discussion is occurring in reference to the adopting of C.S.A. Standard D250.1 - 1975. He feels that the Standard should be adopted but possibly revised and tailored to the needs of Prince Edward Island.

(D) Through feedback from the field there is a strong indication that there is sheering on the hood of some of the school buses. As a result the province is not only asking the manufacturers to take a good look at this problem but also requesting that different type of screws be used in the making of the hood.

(E) There should be no seat belts used by any pupils in the school bus. He felt seat belts were not only a dangerous weapon in the hands of passengers, but also there

was no practical way to be sure that all seat belts at all times were being worn by the passengers.

Mr. Landry indicated that he felt strong toward the above proposals because of the total involvement he has had with school bus transportation in Prince Edward Island. His comments are also based on feedback from school bus accidents that have occurred in New Brunswick (1972) and Ontario (1974).

Mr. K. Mollison - Director of Driver Licencing.[89]

Mr. Mollison suggested that the lowering of the speed limit for school buses from 55 m.p.h. to 45 m.p.h. would decrease the number of accidents involving school buses. He cites the action by the Province of Nova Scotia to decrease the speed limit as a positive step towards decreasing the number of school bus accidents. His philosophy indicates that a bus travelling at 45 m.p.h. would usually provide less impact than if it was travelling at a speed of 55 m.p.h.

Although there is no compulsory defensive driving course, Mr. Mollison would like to see such a course made mandatory within the Province of Prince Edward Island.

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[89]Address - 193 Grafton, Charlottetown, Prince Edward Island.

Royal Canadian Mounted Police.[90]

It has been noticed by the enforcement officers that several school bus drivers devise their own methods of stopping, activating red lamps and disembarking pupils. It has been their experience that for every complaint by a school bus driver of a violating motorist, there is a corresponding complaint about the actions of a school bus driver by a motorist. These complaints vary from red lamps being activated when the bus is in motion, lamps being activated when cars are too close to stop and overcrowding of buses. As a result the following should receive careful consideration.

(A) There should be a mandatory uniform method of embarking and disembarking pupils from a school bus. This should be strictly adhered to. Doors should not be opened for disembarking until all nearby vehicles are stopped. The school bus should stop in the centre of his own lane.

(B) When a school bus is empty of pupils, lamps should not be used when the bus is turning or stopping at railway crossings.

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[90]Address - "L" Division, Charlottetown, Prince Edward Island.

Consumers Services Division Province of Prince Edward Island.[91]

Mr. B. Jardine - Supervisor of Transportation.[92]

The above indicated that they were unable to submit any recommendations or proposals in reference to school bus safety in Prince Edward Island.

Prince Edward Island Safety Council.[93]

No reply received.

NEWFOUNDLAND

Introduction

There seems to be a conscious effort within Newfoundland to look at school bus safety subjectively. Although the province is small and the terrain is rough there is a cognizant effort to improve school bus safety in the Province of Newfoundland.

Federation of School Boards of Newfoundland.[94]

A reply was received from the Federation of School Boards of Newfoundland. They proposed the following:

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[91]Address - P.O. Box 2000, Charlottetown, Prince Edward Island, C1A 7N8.

[92]Address - Unit No. 2, Transportation Supervisor Summerside, Prince Edward Island.

[93]Prince Edward Island Safety Council, Prince Edward Island.

[94]Address - P.O. Box 5516, St. John's, Newfoundland, A1C 5W4.

(A) Each school bus should be required to have adequate padding without any hard metal tubing or sheets on the top back and/or side of the seat. The tubing presently seems to constitute a degree of hazard in the event that pupils strike it with their heads should the school bus be required to stop suddenly or is struck by another vehicle.

(B) Consideration should be given to having larger windows installed at the front of the bus. This is particularly important to the immediate left of the school bus driver. If the above was adopted naturally the school bus driver would enlarge his field of vision both to the front and sides.

(C) It should be obvious that no one should be licenced as a school bus driver who has not had careful and extensive training. Any individual hired as a school bus driver should have a minimum of at least one year experience in driving large vehicle's. In addition the initial testing of a bus driver should include some type of psychological testing along with a thorough investigation of background. He believes that a school bus driver should be a person of maturity and blessed with a high amount of patience and good nature.

(D) Regular province wide campaigns should be instituted to inform motorists to exercise extreme caution when not only in the vicinity of school buses but also when the school bus is stopped to embark or disembark pupils.

(E) There must be stricter enforcement of all laws requiring vehicles to stop to allow pupils to embark and disembark from school buses.

(F) Each pupil who rides a bus must be carefully instructed periodically as to good safety habits in and around school buses. Discipline within the bus must be stressed. This education should not only be the responsibility of the school and the home but also it must be an ongoing reinforced program.

In conclusion, the Reverend Bellamy submitted the above proposals based on the fact of feedback from the membership, personal experience and accident reports.

Mr. H. Thorne - Motor Vehicle Registration[95]

Mr. H. Thorne is the Assistant Director for Motor Vehicle Registration in the Province of Newfoundland. He recommends the following:

(A) Permit no seat belts for passengers on a school bus. Who will see that the seat belts are kept on? Will the pupils use the seat belts as a weapon?

(B) The hand brake of a school bus is totally unacceptable. The hand brake will not stop a school bus in emergencies. This fact was borne out by direct experience with not only school buses that he inspected but also

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[95]Address - 1st. Floor, Viking Building, St. John's, Newfoundland.

commercial trucks.

(C) School children are poorly educated on expected behavior on a school bus. The province should make it mandatory for all school districts to review with the passengers as often as possible, the "expected" behavior of a pupil on a school bus.

(D) School bus drivers, owners and supervisors must be given annual safe driving instruction.

(E) He feels that the present legislation and regulations within the province is not policed to any great extent. School boards, contract owners, R.C.M.P. and local police must endeavour to better enforce the present legislation and regulations of school bus safety in the Province of Newfoundland.

Mr. H. Thorne suggested the above proposals as the result of his direct involvement with school bus accidents and licencing.

Mr. A. Feltham - Supervisor of Transportation [96]

Mr. Feltham indicated that there were three main areas of concern:

(A) Monitors should be placed on all school buses. The reason for this is that these responsible people can alleviate discipline problems for the bus driver and

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[96] Address - 2nd. Floor, Confederation Building, St. John's, Newfoundland.

consequently enable the bus driver to pay careful attention to driving the school bus.

(B) There should be more padding on not only the back of the seats of the school bus but also on the top of the seats. There should be no steel on the outside of the seat that could cause injury to any passenger.

(C) He was not in favor of placing seat belts in the school bus for passengers. The problems encountered with seat belts included keeping them attached at all times, and keeping them clean.

Mr. Feltham submitted his proposals on the basis of his experience while travelling throughout the province, talking to experienced safety conscious individuals and investigating school bus mishaps.

Newfoundland Safety Council[97]

The Safety Council submitted the following proposals:

(A) That the Provincial Government require all school bus drivers, as a condition of their employment, to have completed a defensive driving course.

(B) All school buses be required by legislation to have a minimum of two school bus safety patrols per school bus to help or assist in discipline.

(C) All school buses should not only be equipped with

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[97]Address - P.O. Box 5123, St. John's, Newfoundland.

a drivers seat belt but also seat belts for the passengers. This suggestion would enable pupils to be stopped in their seat in case of a violent jolt or stop.

(D) There should be intensive media promotion undertaken to educate the motoring public as to the specific hazards of school bus transportation.

The Council submitted the above recommendations as the result of information supplied by the membership and accidents that were investigated in the vicinity of St. John's Newfoundland.

Maritime Automobile Association.[98]

Received no reply.

Royal Canadian Mounted Police.[99]

The above had no recommendations or proposals in reference to school bus safety in Newfoundland.

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[98]Address - 333 Duckworth Street, St. John's Newfoundland.

[99]Address "B" Division, St. John's, Newfoundland.

CANADA SAFETY COUNCIL[100]

The Canada Safety Council is a national organization involved in all aspects of safety. As the result of discussions with individuals, who are fully engaged in the pupil transportation business, and an investigation into accidents (such as October 1973 and January 1975 in Ontario, April and November 1974 in Quebec) the following recommendations were submitted.

(A) Every province should make it compulsory for the school bus driver to wear the seat belt provided.

(B) The school bus must be equipped with a two-way radio in case of emergency situations.

(C) Each seat back top must be more adequately padded. If there are hand rails or posts within the bus they must be padded.

(D) There should be placed in the front door and the first two side windows thermopane glass.

(E) Convex mirror placed over the door. This is placed to not only see the pupils entering the school bus but also those students in the front seats.

(F) Each school bus should be required to have a non-slip rubber aisle mat. Hopefully this would prevent passengers from slipping.

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[100]Address - 1765 St. Laurent Boulevard, Ottawa, Ontario K1G 3V4.

(G) Larger front windshield. Since school buses are being built with flater noses the driver must be able to see to the immediate front and immediate left of him. Please note that a larger unobstructed windshield should be placed to the immediate left of the driver.

(H) It should be mandatory that all school buses be equipped with mud flaps on the front and the rear, thus preventing an unobstructed view of the signs and lamps on a bus.

(I) Any school bus which has push-out windows should likewise have a warning or alarm system for the driver to indicate when such windows are very loose or pushed out.

(J) It should be mandatory on each bus that has a dual breaking system that a warning light appear if one set of brakes is not functioning.

(K) It is most important that the Federal Government develop a standardized, comprehensive, mandatory driver training course for all school bus drivers. The council feels that many accidents are caused through human error.

(L) There should be a mandatory, twice yearly, inspection of all school buses by provincial authorities.

(M) Each province should develop and make mandatory a course of instruction (discipline, manners, procedures, etc) for all pupils that ride the school bus.

CONSUMERS' ASSOCIATION OF CANADA[101]

The Consumers' Association of Canada becomes directly involved in school bus safety as the result of their School Bus Safety Committee. This is a national committee which submitted their recommendations for overall improvements. These recommendations were submitted as the result of accident investigations of the provincial associations or the parent association in Ottawa. Each association has not only brought in knowledgeable individuals (ie. R. Cohen) but also have carried out surveys and interviews in reference to school bus safety.

The School Bus Safety Committee was especially active in 1973-74. Members of the association include professional engineers who have offered liason assistance when a school bus accident occurs.

(A) Compliance by all provinces to C.S.A. Standard D250-1971 or D250.1-1975. Either of these must be adopted by all provinces to insure safe uniformity of all school bus standards.

(B) Revision of C.S.A. D250 Standards to include interior occupant protection so that the exposed rigid metal surfaces, seat tops and backs will be padded with an energy absorbing foam similar to that used in automobile dash board

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[101]Address - 100 Gloucester Street, Ottawa, Ontario K2P 2E5.

padding.

(C) Each seat back should be twenty-eight to thirty inches high. Anything less than twenty-eight inches usually assures whiplash type injuries in many accident situations. The higher back also helps to containerize the student in his seating area. One problem with the higher back seat is that the school bus driver cannot see his pupils in his interior mirror unless the owner has purchased a mirror which is ten inches by thirty inches.

(D) All school buses whether board owned or contracted must have a specified schedule set up for preventative maintenance, services and repairs. School bus drivers should be trained to recognize potential troubles so repairs can be made to prevent major breakdown of equipment.

(E) Each school bus driver in Canada should be required to take defensive driving techniques and a first aid course. This should be a condition of employment.

(F) Possibly the introduction of driver award programs in each school district in Canada might not only build the morale of school bus drivers but also encourage him to be more safety conscious.

(G) The character, driving and police records should be taken into consideration before the decision is made to hire a driver.

(H) Basic practical instruction should be given on a regular basis on how to effectively maintain pupil discipline.

It is pointed out that this problem is becoming more critical everyday.

(I) It should be mandatory for each school bus to carry school bus patrols. The patrols should be trained to help the driver maintain discipline and aid in an emergency situation. They should be trained in first aid, how to stop the bus if the driver is incapacitated and how to evacuate the bus quickly and safely in the event of an accident.

(J) The school bus driver must consider it a mandatory requirement to wear his seat belt. If the school bus were to become involved in an accident or suddenly severely jolted, there is a real possibility that the driver could be thrown out of his seat into the stepwell, aisle, or through the window.

(K) It should be nationally regulated, that because of the severe winter conditions in Canada, each operator (owner) of a school bus must have explicit emergency plans. Furthermore these emergency plans must be related to the passengers on a regular basis.

(L) The inclusion of school buses in the Canada Motor Vehicle Safety Act from which they are now exempt in many sections (tires, hydraulic brakes, impact protection, windshield mounting, roof intrusion).

(M) Past performance has indicated that the standee is in an even more vulnerable position in a accident than a seated passenger. If we are concerned about school bus safety

then there must be no standees allowed on a school bus.

It should be pointed out that the Consumers' Association of Canada has a deep and vested interest in school bus safety in Canada. As a result a tremendous amount of time and effort is devoted to not only investigate school bus complaints but also document their investigations.

FEDERAL DEPARTMENT OF TRANSPORTATION[102]

As noted previously the only national set of legislation and regulations is the result of action employed by the Federal Department of Transportation. There is no other set of standards that is applicable and mandatory to all provinces in Canada. According to Mr. R. Meyers, Standards Research Director for the Department of Transport, Federal legislation and regulations are usually the result of public pressure and public sensitivity. Consequently he submits the following proposals.

(A) Joint Strength - Although there has been no reported accidents in Canada in reference to the sheet metal joints separating, there was one such accident in 1974 in the United States. As a result the new proposal is that the strength of joints be not less than sixty percent of the

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[102]Address - Place de Ville, Ottawa, Ontario K1A ON5.

weakest half. In other words the manufacturer will be required to place more rivets at the point where the sheet metal is joined together.

(B) Emergency Exit - Each emergency exit will be required to have a billingual sign indicating that it is an emergency door or exit. Furthermore if the emergency exit is open then the bus driver will not be able to start his engine. The minimum emergency exit area will be an opening large enough to permit unobstructed passage of a rectangle twenty-four inches wide, forty-eight inches high and twenty-four inches deep.

(C) Fuel System - At the present time only automobiles are required to comply with Section 301 of the Canada Motor Vehicles Safety Act. Hopefully this section along with additions will be adopted for school buses. The objective would be to make the fuel system more rugged. Each school bus fuel tank should be impacted with a contour barrier. The fuel tank is the most exposed element of the fuel system. The fuel tank must be impacted so that there shall be no fuel leakage following an impact by any vehicle at any point or any angle.

The above recommendations were made as a result of investigations by the Multidisciplinary Accident Research Teams[103] who suggested that there is no protection offered

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[103]See Bibliography for a Complete Listing.

for the fuel tank of a school bus in the event of an accident. (As an example this was displayed in the school bus accident in Winnipeg in December 1975).

In conclusion the recommendation if adopted should prevent any loss of fuel from the fuel tank.

(D) Occupant Protection - Each school bus should be equipped with seats composed of an energy absorbing material. This padding would be for all areas of the seat - front, top and back. As a result this would offer head, knee and other vulnerable parts of the body protection on impact. Furthermore there should be rigid specifications for minimum seat back strength. Finally there must be mandatory minimum strength standards for seat anchorage within a school bus.

(E) Roll Over Protection - Each school bus must be tested for roof strength. He recommends that the following test occur on all new school buses. It is a static test in which the roof of the school bus should be able to sustain, allowing for settling one and one-half times the empty weight of the school bus.

(F) Symbol Identification - Each school bus should be required to have all controls in the front panel identified by symbols. This will eliminate the problem in Canada in which everything has to be indicated bilingually.

(G) Hydraulic Brakes - Section 105 of the Canada Motor Vehicle Safety Act should be modified and made more stringent. This revised section must then apply to school

buses.

(H) Mirrors - Each school bus in Canada should be required to install a right hand side mirror on the school bus. This would enable the school bus driver to gain a better view of the area along the ground on the right hand side of the school bus.

(I) Yellow Turn Signals - All school buses should be required to have installed yellow turn signals. This will avoid confusion with the yellow lamps on the rear of the school bus.

When these foregoing proposals were submitted by Mr. R. Meyers, Director of Standards for the Department of Transport, he emphasized that they would hopefully be adopted by the Federal Government in the near future.

GENERAL SUMMARY SHEET - PROPOSALS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mrs. C. Stauffer	Y**	Y	Y	Y	Y	-	-	Y	-	-	-	-	Y	-	Y	Y	-	-	-
Ontario Home and School Federation	-***	-	-	-	-	-	-	-	-	Y	-	-	-	-	Y	Y	-	-	-
University of Toronto Accident Team	Y	Y	-	Y	Y	Y	-	Y	-	Y	-	-	-	-	-	-	-	-	-
Mr. A. Cloutier	Y	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alberta Consumers Association	Y	Y	Y	Y	Y	-	-	Y	-	Y	-	-	-	-	-	-	-	-	-
Alberta Department of Transportation	Y	Y	-	-	-	Y	-	Y	-	-	-	-	-	-	-	-	-	-	-
Alberta Safety Council	Y	-	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	Y	-	-
Dr. E.P. Bardock	Y	-	-	-	-	-	Y	Y	Y	-	-	-	-	-	-	-	-	Y	Y
Mr. L.W. Matthews	Y	-	-	-	-	Y	Y	-	Y	Y	Y	-	-	-	-	-	-	-	-
British Columbia Automobile Association	Y	Y	-	-	-	Y	Y	-	-	Y	-	-	-	-	-	Y	-	-	-
British Columbia Safety Council	Y	Y	-	-	-	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-
Capital Region Safety Council	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mr. F.J. Lahola	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mr. J. Maurault	Y	-	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	Y
Consumers Association of Saskatchewan	-	Y	Y	Y	Y	Y	-	-	Y	Y	-	-	-	Y	Y	Y	-	Y	-
Regina Police Force	-	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-	-	-
Mr. R. Wigmore	-	-	-	-	-	-	-	Y	-	-	-	-	-	Y	Y	-	-	Y	Y
Saskatchewan Motor Club	Y	-	-	-	-	-	-	Y	-	-	-	-	-	-	-	Y	-	-	-
Saskatchewan Safety Council	-	-	-	-	-	-	-	Y	Y	-	-	Y	-	Y	-	-	-	Y	Y
University of Saskatchewan	-	-	-	-	-	-	-	-	-	Y	-	-	-	Y	-	-	Y	Y	-
Manitoba Motor League	Y	Y	-	-	Y	Y	-	-	-	-	-	-	-	-	-	Y	-	-	Y
Manitoba Safety Council	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
University of Manitoba	-	-	-	-	-	Y	Y	-	Y	-	-	Y	-	-	-	-	-	-	-

GENERAL SUMMARY SHEET - PROPOSALS (Continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16*	17	18	19
Consumers Association of Quebec	Y	-	-	-	-	Y	Y	Y	-	Y	-	Y	-	Y	-	-	-	-	Y
Quebec Automobile Club	Y	Y	Y	-	Y	-	-	Y	-	Y	Y	-	-	Y	-	-	-	Y	-
Montreal Urban Community Police	Y	Y	-	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	Y	-
Consumers Association of New Brunswick	Y	Y	-	Y	Y	Y	-	Y	-	Y	Y	-	-	Y	-	-	-	-	-
Mr. N. Gange	Y	-	Y	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	Y	-
Mr. A. Thompson	Y	-	Y	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	Y	-
New Brunswick Safety Council	Y	Y	Y	-	Y	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-
Consumers Association of Nova Scotia	-	Y	-	-	Y	-	-	-	-	Y	-	-	Y	-	Y	Y	-	-	-
Nova Scotia Safety Council	-	Y	Y	Y	Y	-	Y	-	-	-	-	-	-	Y	-	-	-	Y	-
Mr. J.L. Perry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	Y	-
Mrs. H. Landry	-	-	-	-	-	-	Y	Y	-	Y	-	-	-	-	-	-	-	-	-
Mr. K. Mollison	-	-	Y	-	-	-	-	-	-	-	-	-	-	Y	-	-	-	-	-
Royal Canadian Mounted Police	Y	-	-	-	-	-	-	-	-	-	-	Y	-	Y	-	-	-	-	-
Mr. H. Thorne	Y	-	-	-	-	-	Y	-	-	-	-	-	-	Y	-	-	Y	Y	-
Mr. A. Feltham	-	Y	-	-	Y	-	Y	-	-	Y	-	-	-	-	-	-	-	-	-
Federation of School Boards, Newfoundland	Y	-	-	-	-	-	-	-	Y	Y	-	Y	-	-	-	-	Y	Y	-
Newfoundland Safety Council	-	Y	Y	-	Y	Y	-	-	-	-	-	-	-	-	-	-	-	Y	-
Canada Safety Council	Y	-	-	-	-	Y	-	Y	Y	Y	-	-	-	-	-	-	Y	-	-
Consumers Association of Canada	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	Y	-	Y	Y	-	-	-
Federal Department of Transportation	-	-	-	-	-	-	-	-	Y	Y	-	-	-	-	-	-	-	-	-

* Canadian Motor Vehicle Safety Act.

** YES

*** NO

SUMMARY CHART LEGEND

1. - Driver Training
2. - Driver Testing
3. - Defensive Driving Course
4. - First Aid
5. - School Bus Assistants
6. - Seat Belt Driver
7. - Seat Belt Passengers
8. - Inspection Practice
9. - Interior Requirements
10. - Seat Padding
11. - Standees
12. - Loading and Unloading Procedures
13. - Emergency Measures Plan
14. - Traffic Regulations
15. - C.S.A. Standards
16. - C.M.V.S.A.*
17. - Pupil Education
18. - Public Education
19. - Selling School Buses.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

With the exclusion of the Canada Motor Vehicle Safety Act each province is uniquely responsible for school bus safety legislation and regulations within its boundaries. As a result there is a need for a central source of school bus safety information related to legislation and regulations in each of the ten provinces of Canada.

The Task

The general purpose of this study was to examine school bus safety legislation and regulations inter-provincially across Canada. The inter-provincial comparisons include:

(A) A description of all present legislation and regulations that relate to school bus safety in each of the ten provinces. This study did not include any local school board regulations or policies.

(B) A compilation of suggested proposals by interested individuals, groups and/or associations.

Furthermore the study examined not only all Federal legislation and regulations (Canada Motor Vehicle Safety Act)

but also Canadian Standards Association Standard D250-1971 and D250.1 - 1975.

Design of the Study

The author visited each of the ten provinces to interview those Provincial Government officials that were directly involved and concerned with school bus safety. The discussions evolved around present legislation and regulations within each of their respective provinces. It should be noted that during the discussions both written and verbal data were collected. In addition to the above there were 93 letters sent to interested individuals, groups and/or associations requesting their proposals or recommendations in reference to upgrading school bus safety legislation or regulations within their province.

The study was organized to enable the reader to immediately compare the similarities and dissimilarities in relation to school bus safety legislation and regulations in each of the ten Provinces in Canada. Furthermore, proposals from interested individuals, groups and/or associations were solicited to make an inherent comparison of the legislation and regulations presently in effect with recommendations and proposals submitted for the upgrading and improvement of school bus safety.

MAJOR FINDINGS

The researcher will now highlight those findings which he considers important and relevant. Each province is unique in the following:

(A) Provincial highway traffic regulations. Further, an out of province traveller finds this situation to be very confusing especially in reference to procedures to follow when approaching a stopped school bus which may have red lamps or red and amber lamps flashing. The number of red and/or amber lamps on a school bus also vary from province to province.

(B) Procedure for examination of prospective school bus driver.

(C) Policy in reference to board owned buses versus contract buses. In addition each province varies in its delegation of authority to make decisions in reference to pupil transportation.

(D) Policy in relation to the minimum or maximum age for which an individual may drive a school bus in Canada.

In addition to the above, the researcher found the following:

(A) The only existing legislation and regulations that all the provinces have been obliged to adopt is the Federal Motor Vehicle Safety Act.

(B) All but two provinces at the present time, have adopted Canadian Standards Association Standard D250-1971 or D250.1-1975.

(C) No province has made it compulsory or a condition of employment for a school bus driver to take a defensive driving course or receive first aid training.

(D) There is only one comprehensive school bus driver training course in Canada.

(E) No province requires seat belts for passengers in a school bus. Further, only three of the ten provinces require a school bus driver to wear a seat belt. Federal law does require each school bus to be equipped with a seat belt in the drivers occupant position.

(F) There is no national inter-provincial conference held for pupil transportation officials (supervisors).

(G) Those provinces that are highly organized have not only a provincial supervisor of transportation but also hold an annual province wide conference on pupil transportation.

(H) Not all provinces prohibit pupil standees in a school bus.

(I) There is no recognizable uniformity in province to province mechanical inspection or cleaning procedures of a school bus.

CONCLUSIONS

A number of observations can be made by the researcher as a result of this study.

(A) School buses generally are a very safe mode of transportation. Nevertheless when an accident occurs it is a very "emotional" period of time not only for parents and pupils but also the public who usually are motivated by written accounts of the mishap. Unfortunately people at this time appear to be generally apathetic toward school bus safety until a serious mishap occurs.

(B) There is a noticeable trend toward either centralization (ie. Manitoba, New Brunswick) or decentralization (ie. British Columbia, Saskatchewan) of responsibility for school safety in each of the ten provinces.

(C) There is minimum coordination between the efforts of the two levels of government (Federal and Provincial) which are involved in school bus safety in each of the ten provinces.

(D) At the present time there is a decreasing number of mechanical failures in school buses.

(E) The Multidisciplinary Accident Team investigations of school bus accidents indicate a trend towards school bus accidents caused by human error or weather elements rather than mechanical failure.

(F) Not all provinces keep comprehensive school bus accident statistics. The term comprehensive indicates (a) number of fatalities occuring inside and outside the school bus (b) number of accidents (c) number of injuries occuring inside or outside the school bus (d) determination whether it is human or mechanical error.

(G) Generally, injuries to pupils within a school bus are caused by inadequate energy - absorbing padding.

(H) Normally injuries to pupils outside a school bus are caused by another vehicle, usually a car.

(I) School bus drivers are generally not sufficiently prepared to handle discipline problems within a school bus.

(J) Overall there is little assistance given to school bus drivers in the form of responsible school patrols or monitors.

(K) Generally pupils are not adequately prepared to travel as responsible passengers on a school bus.

(L) The advantage to board owned buses is that usually better control can be exercised in reference to safety standards. The advantage of contract owned school buses is that the school board is relieved of the responsibility to replace an inoperative school bus on any given school day.

(M) The Federal Government must exercise greater involvement in the area of overall mandatory standards for school buses.

(N) There is a need for either voluntary or mandatory standards in relation to small school buses (6-20 passengers).

(O) If one province had to be cited for an overall satisfactory and exemplary effort in relation to all aspects of school bus safety it would be the Province of Nova Scotia.

RECOMMENDATIONS

Introduction

The researcher has outlined the provincial legislation and regulations that pertain to school bus safety in Canada. As with most other business operations there is always a need for evaluation and improvement. As a result the researcher will outline a number of pertinent recommendations in reference to the improvement of school bus safety in Canada. These recommendations will be generalized for all provinces in Canada. Consequently only the major findings will be offered for consideration.

School Bus Driver Training

The success of a safe pupil transportation program is perhaps more dependent upon the school bus driver than any other factor involved in providing pupil transportation service. Every minute the school bus is in operation, the welfare of every pupil and of the school bus itself, depends upon the skill, the attitude, and decisions of the driver. This fact alone substantiates the important role of the school bus driver and further emphasizes the care that must

be exercised in the selection and training of the driver. If the school bus driver is properly trained, a gentleman at all times, courteous, helpful, and firm toward his passengers there should be less likelihood that a driver will become engaged in a mishap.[1] On the other hand if he is careless or reckless at any time, discourteous and disagreeable to his passengers, or to passing motorists, it is quite possible that this school bus sooner or later will become involved in an accident.[2]

Documentation - For the period 1972-1975 the ten Multidisciplinary Accident Investigation Teams have investigated and subsequently provided written, documented data in reference to a number of school bus accidents in Canada. The results of these investigations were submitted to the Director of Road and Motor Vehicle Traffic Safety of the Department of Transport in Ottawa. Their investigations have revealed that the school bus driver was negligent in the following accidents - (a) December, 1972, Rural Quebec[3] (b) December,

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[1]Tennessee State Department of Education, Drive Safely and Arrive Safely, Tennessee State Department of Education, Cordell Hull Building, Nashville Tennessee, 37219, 1966.

[2]Ibid.

[3]Ecole Polytechnique Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM035/036-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

1973, Rural Quebec[4] (c) May, 1974, Rural Quebec[5] (d) November, 1974, Rural Quebec[6] (e) September, 1972, Saskatoon, Saskatchewan[7] (f) February, 1972, Rural Ontario[8] (g) three in October, 1973, Rural Ontario[9-10-11] (h) June, 1974, Rural

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[4]Ecole Polytechnique Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM051-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[5]McGill University Multidisciplinary Accident Investigation Team, Accident Investigation Report - MGU071-74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[6]Ecole Polytechnique Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM059-74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[7]University of Saskatchewan Multidisciplinary Accident Investigation Team, Accident Investigation Report - UOS010-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[8]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS054-72,Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[9]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS098-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[10]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS096-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[11]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS095-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

Ontario[12] (i) January, 1975, Rural Ontario[13] (j) June 1975, Rural Ontario[14] (k) December, 1975, Winnipeg, Manitoba (preliminary report only)[15] (l) December, 1972, Rural New Brunswick.[16]

Recommendations - The best techniques for driver selection, training and supervision must be employed. When a prospective driver applies for the position of a school bus driver the school board or contract operator must incorporate the following into his or her screening process.

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[12]University of Toronto Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR055-74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[13]University of Toronto Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR059-75, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1975.

[14]University of Toronto Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR062-75, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1975.

[15]University of Manitoba Multidisciplinary Accident Investigation Team, Accident Investigation Report - (preliminary report) Faculty of Engineering, University of Manitoba, 1975.

[16]University of New Brunswick Multidisciplinary Accident Investigation Team, Accident Investigation Report- UNB027 - 72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

(A) Backbround Characteristics - The applicants age, sex, experience, education, family characteristics, outside employment, work record, court or police record and driving record should be examined for clues as to the qualifications of the applicant. This examination should point out possible problem areas into which the transportation supervisor can conduct further investigation.

(B) Psychological Characteristics - Attitudes are extremely important to school bus operations and to other aspects of the school bus drivers job. It is important to identify work related attitudes through interviews with the candidate, conversation with others such as previous employers, and through observation of his performance while in training. Personality characteristics, like attitudes, are extremely important in determining the candidates suitability for the job, and should be assessed through interviews, references and observation.

(C) Physical Characteristics - A mandatory comprehensive examination should be required of every new driver when he is hired with periodic re-examination given every two years. The physical examination must include tests of vision and hearing, as well as tests for communicable diseases and physical conditions that could affect the ability to drive safely, including diabetes, epilepsy, cardiovascular disorders, Miniere's Syndrome, severe arthritis, hyperthyroidism and acute hyper or hypo - parathyroidism.

Although the major responsibility for motor vehicle regulations is relegated to the provinces the researcher advocates that the Federal Government formulate comprehensive minimum requirements for the above elements of the screening process. Hopefully with the intervention of the Federal Government there can come about standardization and uniformity. This can be the first step to upgrading the elements that contribute to the hiring of a school bus driver.[17]

Finally it would be preferable to have a uniform, standardized comprehensive training program for all school bus drivers in Canada, (Commercial Safety College of Masstown, Nova Scotia, and the National Highway Traffic Safety Administration of the United States Department of Transportation in Washington D.C., both have a commendable school bus driver training program) but unrealistic considering the tremendous lack of coordination between the provinces. It is recommended that each driver be required, in each individual province to take a compulsory, extensive and comprehensive training program. Each employed driver should receive a program of instruction devoted to the following topics: driver duties, school bus operating procedures, general traffic and school bus laws and regulations, responsibility to pupils, preventive maintenance, administrative requirements, emergency and accident related procedures and finally an

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[17]The Human Resources Research Organization, Selection and Training of School Bus Drivers, National Highway Traffic Safety Administration, Washington, D.C. - 1971.

overview of the pupil transportation system. Furthermore instruction should be given on public relations, defensive driving, handling of emergencies, pupil evacuation, first aid, fire control and special assignments such as field trips or procedures dealing with handicapped students. In conclusion the driver should not only observe but also participate in an internship program for practical driving.

The above process (that could range from one week to four weeks) must be complimented by an annual or bi-annual in-service re-educational program for all school bus drivers.

School Bus Seats

There are many injuries to passengers that are caused while on the school bus. When a school bus becomes involved in an accident, the passengers, if the impact is severe enough, are rolled around like apples in a box. Naturally if the school bus is suddenly brought to a stop the passengers are going to be thrust forward and backwards. What can be done to minimize injuries when the school bus is jolted or comes to a sudden stop?

Documentation - The Multidisciplinary Accident Investigation Teams have investigated and subsequently provided written documented data that reiterates that the majority of injuries to pupils within a school bus are the result of inadequately padded seats and frames. The following accident investigations were indicative of the foregoing -

(a) December, 1973, Rural New Brunswick[18] (b) December, 1972, Rural Quebec[19] (c) December, 1973, Rural Quebec[20] (d) April 1974, Rural Quebec[21] (e) May, 1974, Rural Quebec[22] (f) September, 1972, Saskatoon, Saskatchewan[23] (g) February 1972, Rural Ontario[24] (h) October, 1973, Rural Ontario[25-26-27]

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[18]University of New Brunswick, Multidisciplinary Accident Investigation Team, Accident Investigation Report - U.N.B. 027-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[19]Ecole Polytechnique, Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM035/036-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[20]Ecole Polytechnique, Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM051-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[21]Ecole Polytechnique, Multidisciplinary Accident Investigation Team, Accident Investigation Report - EPM052-053, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[22]McGill University, Multidisciplinary Accident Investigation Team, Accident Investigation Report - MGU071-74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[23]University of Saskatchewan, Multidisciplinary Accident Investigation Team, Accident Investigation Report U0S010-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[24]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS054-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

[25]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS098-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[26]Ministry of Transport, Accident and defect

(i) September, 1973, Rural Ontario[28] (j) November, 1973, Rural Ontario[29] (k) March 1973, Rural Ontario[30] (l) June, 1974, Rural Ontario[31] (m) October 1974, Rural Ontario[32]

Furthermore, extensive research was carried out at the Institute of Transportation and Traffic Engineering, University of California, Los Angeles by Derwin Severy, Harrison Brink and Jack Baird. They produced the paper "School Bus Passenger Protection" which indicates a critical

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Investigation Department, Accident Investigation Report DTS096-73, Ministry of Transport, Roads and Motor Vehicle Traffic Safety, Ottawa, 1973.

[27]Ministry of Transport, Accident and Defect Investigation Department, Accident Investigation Report - DTS095-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[28]Ministry of Transport, Accident and Defects Investigation Department, Accident Investigation Report - DTS094-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[29]University of Toronto, Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR - 048-73, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[30]Ministry of Transport, Accident and Defects Investigations Department, Accident Investigation Report - DTS082-73,Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1973.

[31]University of Toronto, Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR 055 - 74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

[32]University of Toronto, Multidisciplinary Accident Investigation Team, Accident Investigation Report - TOR 056-74, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1974.

need for not only well padded seats but also seat backs 28 inches high.

Just recently the Trauma Research Team of the University of California, Los Angeles conducted a thorough study of approximately 1500 school bus collisions. Their conclusions indicated that the "interior design of a school bus must eliminate all unpadded seats and stanchions."

The American Society of Oral Surgeons[33] conducted a survey of its membership to determine the scope of facial and dental trauma to pupils as a result of school bus accidents. There were 1186 membership returns (63 per cent of membership). The results indicated that over 1350 pupils received severe facial and/or dental injuries requiring treatment by an oral surgeon as a direct result of school bus accidents. Please note that in 98 per cent of these cases the oral surgeon indicated that injuries could have been less severe or avoided entirely if the school bus seats had been thoroughly and adequately padded.

Finally, Michael Appleby and Reynaldo Navarre conducted extensive research and produced the document "School Bus Seat Back Pads - The California Experience".[34] One of

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[33]American Society of Oral Surgeons, Announcement on Results of Survey on the Results of Vehicular Accidents American Society of Oral Surgeons, 211 East Chicago Avenue, Chicago, Illinois, 60611, 1971.

[34]Appleby, Michael, and Navarre, Reynaldo, School Bus Seat Back Pads - The California Experience, Automobile Club of Southern California, Los Angeles, California, 1975.

the important conclusions arrived at was that all new school buses must have fully padded seats and all older buses should have retrofitted pads.

Recommendations - Provincial regulations should require that each school bus have a fully padded seat with energy - absorbing material. There must be no steel or related hard material on the back of or top of the seat. Moreover each seat should be at least 28 inches in height to lessen back-lash to the pupil. It is further recommended that all school buses already in use should be equipped with the above mentioned.

School Bus Safety Assistants

The school bus driver is always fully responsible for the safety of both bus and passengers. But it is very difficult for the bus driver to not only maintain discipline but also operate the school bus.

Documentation - In January, 1976, the United States Department of Transportation, National Highway Traffic Safety Administration, published the following statistics.[35] There were 90 pupil fatalities in 1974. Of the 90 fatalities 35 occured on the school bus and 55 occured when the pupil was approaching or leaving the loading zone. In other words approximately 62 percent of the fatalities occured outside

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[35]National Highway Traffic Safety Administration, Fact Sheet on Pupil Transportation in the United States, United States Department of Transportation, Washington, D.C. 20590, 1976.

the school bus. Moreover in Canada the researcher found, through discussions with each one of the provincial authorities responsible for pupil transportation, that approximately 95 percent of the fatalities in Canada occur outside the bus. Although this is a fact it can only be substantiated by verbal information extended to the researcher (no province keeps detailed statistics).

At an inquest, in Grande Prairie, Alberta, at the beginning of 1975, into the death of a four-year old girl who was struck by a school bus, the jury of five men and one woman produced a recommendation encouraging mandatory attendants be carried on all school buses with young children.[36] Evidence indicated that an attendant should not only be present on a school bus to maintain discipline but also to assist embarking and disembarking pupils.

The Accident Prevention Branch of the Ontario Provincial Police indicated in a letter to the Canadian Consumers' Association that school patrols are not only necessary but effective. Sergeant D.J. Robson indicated that during his twenty years as a police officer "I have personally heard of many reported instances where school bus patrollers through quick and decisive actions on their part have prevented youngsters from being involved in mishaps".

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[36]Winnipeg Tribune, School Bus Death - Extra Attendant Recommended, April, 16, 1975.

In October, 1975, the Maryland State Department of Education indicated that seven out of the ten school bus fatalities in the past five years have involved pupils who alighted from the school bus shortly before the tragedy occured.[37] Consequently, the department indicated that there was a real need for an effective safety education program for the pupils and a need for assistance for pupils crossing the road.

The National Safety Council in the United States have been a constant proponent of school bus safety and in particular school bus safety patrols. They feel that school bus patrols should help pupils to embark and disembark from a school bus. Furthermore they feel that the pupils have a responsibility for their own safety to.

The Ontario Department of Transportation and Communications has indicated that "many Ontario communities have found that school bus safety patrols make an important contribution to the safety of passengers and the efficient operation of the pupil transportation program. One reason they are so effective is that the pupils themselves become involved in accident prevention activities."[38]

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[37]Rommell, Edwin, A., Protecting the Pupil at the School Bus Stop, Traffic Safety, 425 North Michigan Avenue, Chicago, Illinois, October, 1975, p. 18, 19, 32, 33.

[38]Ontario Department of Transportation and Communications, School Bus Safety is Everybody's Responsibility, Ontario Department of Transportation and Communications, 1201 Wilson Avenue, Toronto, Ontario.

Recommendations - Each school bus that has young pupils (four to fourteen years) aboard should be required to carry at least one school bus assistant. This assistant can be a senior student or an adult. The assistant should receive the following training: (a) maintenance of school bus discipline (b) thorough knowledge of emergency exit procedures (c) general first aid knowledge (d) instruction on how to stop bus in emergency procedures (e) how to cross pupils on a highway (f) to generally assist the school bus driver in any other effective safety measures.

Standees

Certain provinces in Canada permit up to 33 percent of maximum capacity to be standees on a school bus. On the other hand most provinces are very firm that there must be no standees on any school bus.

Documentation - The Multidisciplinary Accident Investigation Team from the University of New Brunswick investigated a serious accident between a truck and a fully loaded school bus.[39] One of their firm recommendations was that "all provinces or school boards should have legislation or regulations specifying that only one passenger can occupy one seat position." Furthermore they indicated that "overloading of seats would definitely effect the structural

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[39]University of New Brunswick, Multidisciplinary Accident Investigation Team, Accident Investigation Report-UNB 027-72, Ministry of Transport, Road and Motor Vehicle Traffic Safety, Ottawa, 1972.

adequacy of the seats during impact."

The aspect of "common sense" also plays an important part in determining the dangerous privilege of standees. If a school bus were to come to a sudden stop, be hit by another vehicle from the rear, or be in collision with another vehicle, what would happen to those standing in the bus? Those standing passengers would fall on the floor, fall into or on other pupils, fall into the driver or if the school bus were to turn over fall or be thrown into the side windows or roof. If the school bus is properly padded usually there are no rails to hold on to, to maintain one's balance while standing.

Finally, the Institute of Traffic and Transportation Engineering, University of California, Los Angeles, California, research project has produced indisputable evidence to what must surely have been too obvious all along: in the event of a sudden stop standees are in the danger of being flung the full length of the aisle or hurled against one another or on the top of seated pupils. Standees are therefore not only more likely to be injured themselves, but also endanger seated passengers. Any seat affords a passenger some protection, while standees have none. But allowing passengers to stand in the aisle, thereby crowding the bus, is dangerous for another reason: the risk of fire is always present and we seriously question whether youngsters, packed into the bus, possibly hurt or dazed in an accident, could get

out quickly enough through the two available doors.[40]

Recommendation - That all provinces legislate that there be no standees permitted on any school bus at any time.

Seat Belts

There has been a raging controversy over the use of passenger seat belts within a school bus.

Documentation - Innumerable studies have shown the use of seat belts in passenger cars to be the single most effective means of reducing the severity of injury in automobile accidents.[41] While the principles of passenger protection are the same regardless of the size of the vehicle, the standard full size school bus has one important advantage over a passenger car: the possibility of ejection, a major cause of death in automobile accidents, is greatly reduced.

There remains, however, the second aspect, that of preventing passengers from striking hard or protruding objects. Here the Institute of Traffic and Transportation Engineering, University of California, Los Angeles, show that using seat belts in school buses currently in operation would not help because passengers' heads, faces, necks and

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[40]Severy, D.M., Brink, H.M., Baird, J.D., School Bus Passenger Protection, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa., 15096.

[41]Seymour, Charles, Shelners Annemarie, How Safe is Pupil Transportation, Journal of the American Academy of Pediatrics, Evanston, Illinois, 60204, January, 1970, p.175.

even chests are within striking distance of the hard seats and sometimes exposed horizontal rails on the top of the seats facing them. Furthermore their research findings indicate that seats must be more firmly bolted when installed in order that if the seat belt were installed the leverage would be adequate.

In a study conducted in 1974, by the Carleton Board of Education, Transportation Committee, there was total rejection for the use of seat belts by passengers in a school bus.[42] It was their researched opinion that "seat belts would present an added hazard rather than a safety measure". The committee had documented several years of serious accidents involving school buses, and had seat belts been worn by the passengers, the driver would have been incapable of freeing each pupil from his seat belt in time.

It is the researched opinion of Mr. R. Meyers, Chief, Road and Motor Vehicle Safety Division of the Department of Transport (Ottawa, Ontario) that "seat belt anchorage is not adequate in present buses". Furthermore he feels that the cost would be prohibitive to bring all school buses up to acceptable anchorage standards.

Once again the researcher feels that "common sense" plays an important aspect in the use of seat belts in a school bus. Is there any practical way that a school bus

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[42] Ottawa Citizen, School Bus Safety, January 24, 1974, p. 12.

driver can be sure that all students, at all times are wearing their seat belt? How does he prevent the pupils from using the belt buckle as a weapon on the bus? How can he make sure that all belts are clean before every run? Children, like adults object to using a soiled seat belt. How often would the seat belts need to be replaced? (The National Bureau of Standards in the United States indicates every three years). What about the problems that occur in a roll over type accident? Children would not be thrown around but when the bus ends up on its side or top, belted children would be left hanging 4-6 feet from the floor. Most small children would probably have to be taken down one at a time. Should they be able to release the belt on their own, a head first drop would occur. Would the driver face possible liability if an accident occurs and a child is injured by a seat belt or is injured because he did not have it fastened?

Recommendations - The researcher submits that at the present time seat belts should not be required for passengers within the school bus. But it should be emphasized that each school bus driver must be required to wear a seat belt. This is to prevent ejection from the drivers seat because of a sudden stop, or accident.

First Aid

Safety awareness on the part of a worker has always been one of the essential factors in any safety program.

Individual training in administering first aid to the injured should be the outstanding effort of everyone responsible for promoting safety. Through their training, especially with St. John Ambulance, the bus drivers horizon concerning accidents has quite naturally become widened. Toronto's York University Research Team indicated that after St. John Ambulance trained over 25 percent of the general population of Orillia, Ontario, industrial injuries experienced a 33 percent drop. As a result it could be said that trained first-aiders are more safety conscious than untrained.

Consequently the researcher recommends that all school bus drivers be required to participate in a mandatory provincial first aid course. There should not only be a nil cost to the bus driver but also be compensated for his time while taking the course. In the case of an accident it is of inestimable value if the driver is able to render immediate first aid.

Defensive Driving

There is very little training preparation for the school bus driver. Today in the pupil transportation field the emphasis is on preventive maintenance. Likewise the emphasis as far as the school bus driver is concerned should be on the word "prevent".

Documentation - Each of the provincial officials responsible for pupil transportation indicated to the researcher that it would be preferable to have a mandatory defensive

driving course, especially prepared for the needs of all school bus drivers.

In 1971, the M. W. Menzies Group Limited, conducted a research project in reference to the impact of a defensive driving course on drivers.[43] On the basis of the firm indication established by the analysis of data it was concluded that a defensive driving course has not only a desirable impact but also a substantial positive impact on drivers. The research indicated that the defensive driving program be continued and even intensified in an effort to widen enrollments.

Recommendation - The researcher proposes that a defensive driving course be a condition of employment for each school bus driver in Canada. The onus should be on each Provincial Government to make such a program mandatory.

C.S.A. Standards

The Canadian Standards Association has issued two sets of standards in reference to school buses. The first Standard D250 was published in 1971, the second Standard D250.1 was published subsequently in 1975. It is recommended that the Federal Government adopt C.S.A. Standard D250.1 as a minimum requirement for any school bus operator in Canada. At the present time only 80 percent of the provinces

[43]The M.W. Menzies Group Limited, "Impact of the Defensive Driving Course", Manitoba Safety Council, 911-213 Notre Dame Avenue, Winnipeg, Manitoba, 1971.

in Canada have adopted either of the C.S.A. Standards. If the Federal Government were to adopt C.S.A. Standard D250.1 there would be uniformity and a maintenance of quality and performance in all school buses in Canada.

Emergency Crisis Plan

In Canada severe winter storms are not uncommon. It is unreasonable in this day and age to not take every safety precaution for the well being of pupils. An emergency crisis plan should be adopted by every school district to alleviate problems encountered with busing when severe winter storms are encountered. This plan will delineate the respective duties of the school, parents, pupils and school bus driver. A recommended established emergency crisis plan has been in existence in the Oxford County, Board of Education in Woodstock, Ontario since 1972.

National Inter-Provincial Conference

There has never been a meeting of all provincial transportation supervisors for each of the ten provinces in Canada. Each province is unique and usually operates as an entity within itself. Although there has been occasion for two or three provinces to get together and discuss school bus transportation problems, the ten provinces as a whole have not been able to share positive or negative aspects of their school bus transportation operations. The onus should be on the Federal Department of Transport to organize an

annual conference, that would include all ten provinces, to discuss improvement in school bus transportation operations. The onus for organizing such a conference would seem to be placed on the Federal Department of Transport because it is the only common link in school bus transportation between the provinces.

AREAS FOR FURTHER STUDY

Introduction

This study has attempted to give a comprehensive overview of federal and provincial legislation and regulations in reference to school bus safety. During the course of the study the researcher has become aware of a number of areas which he feels would benefit from further study. A number of these are outlined below.

Small School Buses

The present study has dealt with those large school buses that seat 24 or more passengers. It is becoming more frequent to see van type school buses that seat 4 to 20 passengers. At the present time there are no standards for such school buses. There is very little research done in this area thus far. Do they require the same type of standard as is required in most large school buses? Have any small school bus accidents been researched?

School Bus Assistant Training Program

At the present time there is a critical need for the development of a comprehensive driver assistant training program. There are very, very few programs that train an adult or senior student in handling discipline problems within the school bus or assisting in embarking or disembarking from the school bus.

School Bus Driver Training Program

Research leading to driver training curricula and improved methods of training and testing would prove most beneficial to pupil transportation in Canada. A well researched instructional program biased to Canadian needs does not exist in Canada.

Safety Training Program for Pupils

Pupils are generally not given frequent instruction in safe riding practices. The behavior of pupils while on the school bus naturally has some effect on the effectiveness of the school bus driver. As a result it would seem appropriate that a study in the area of embarking and disembarking procedures, and riding practices would be of an immediate value. So much so that a well thought out motivational program for pupils might conceiveably result in the saving of young lives.

Board Owned Bus Versus Contract Owned Bus

There has been no Canada wide study done in the area of advantages or disadvantages in board owned buses versus contract buses. Is there any difference in maintenance standards? Is there a cost difference? Can there be a difference in the type of driver hired to operate a school bus? Is there a difference in the training given to the above types of drivers?

School District-School Bus Regulations

The researcher has investigated federal and province-wide legislation and regulations. As a result the researcher did not do any research in the area of school district policies in reference to the administration of pupil transportation. It would be interesting to compare school district involvement in each of the ten provinces.

Influence of American School Bus Standards and Policy.

Does the American legislation and regulations have any effect on school bus policy in Canada? How is school bus research carried out in the United States? In Canada? What is the division of responsibility for pupil transportation in the United States? Does this division of responsibility have any effect in Canada?

APPENDIX A

PRELIMINARY LETTER

Suite 304-34 Arden Avenue
Winnipeg, Manitoba R2M 2J9
December 3, 1975

Dear Sir:

School Bus Safety in Canada

Thesis Task - To gather comprehensive school bus safety proposals from interested groups and associations.

Reason - To compare the present regulations and legislation in the ten Provinces of Canada with any proposed improvements by interested groups and/or associations.

Information Requested - Any substantiated proposals in regard to school bus safety. It should be mentioned that you may include any recommendations that you have had adopted in the past. Your proposals may encompass:

A. Interior features of the school bus.
B. Exterior features.
C. Mechanical Standards.
D. Training and expected characteristics of the school bus driver.
E. Inspection requirements.

May I ask for your cooperation in a speedy return of your proposals. Would it be possible to receive your proposals by January 9, 1976? If you have any questions, please do not hesitate to contact me at 256-4013 (204).

Your cooperation in this matter will be very much appreciated.

Yours sincerely,

W.A. MacDonald
Department of Educational Administration
University of Manitoba

APPENDIX B

SUBSEQUENT LETTER (1)

Suite 304-34 Arden Avenue
Winnipeg, Manitoba R2M 2J9
January 19, 1976

Dear Sir or Madam:

Enclosed please find a copy of the letter sent to you on December 3, 1975. I realize that it was a very busy time of year and consequently you have overlooked sending a reply.

It is very important that I receive a reply to my letter as I feel the information requested is an integral part of my thesis.

I do feel that school bus safety in each of the ten provinces in Canada is far from the perfect state. As a result, I am appealing to you for any information, however small, on how school buses can be improved in your province. May I make it very clear that I am not interested in present regulations or legislation within the province, only suggestions to improve such.

May I ask for your cooperation in a speedy return of your very important viewpoint of how school buses can be improved within your province.

Would it be possible to receive your valued opinion by January 30, 1976? If you have any questions, please do not hesitate to contact me at 1-204-256-4013.

Your cooperation in this matter will be very much appreciated.

Yours sincerely,

W.A. MacDonald
Department of Educational Administration
University of Manitoba

APPENDIX C

SUBSEQUENT LETTER (2)

#304-34 Arden Ave.,
Winnipeg, Manitoba R2M 2J9
February

Dear Sir,

At the present time I am investigating the area of "school bus safety" in the ten provinces of Canada. I am looking at all aspects of school bus safety (driver, mechanical, interior, exterior, present regulations and legislation).

The data gathered thus far indicates that no province is perfect in reference to school bus safety. As a result I am asking for your proposals in reference to improvement of school bus safety in your province. How can the present situation be improved? What suggestions do you have to revise or update your provincial regulations or the federal Motor Vehicle Safety Act? What about the interior of the school bus?

I would appreciate your suggestions as soon as possible. Would it be possible to receive these by February 16, 1976?

Please accept my thanks in advance, as the information that you send me will be an integral aspect of my research.

Yours truly

W.A. MacDonald

Department of Educational Administration
University of Manitoba

APPENDIX D

FEDERAL MOTOR VEHICLE SAFETY ACT

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MOTOR VEHICLE SAFETY ACT[2]

Section 101 - Control Location

(1) Control of the; (effective July, 1972)

(a) Choke, if manual;
(b) Driver's sun visor;
(c) Headlamps;
(d) Horn;
(e) Ignition;
(f) Illumination intensity;
(g) Steering;
(h) Transmission, except the transfer case;
(i) Turn signal;
(j) Windshield washing system;
(k) Windshield wiping system,

shall be provided within operation reach of the driver of a school bus.[3]

(2) Identification that permits recognition by the driver under daylight lighting conditions shall be provided in respect of the manual controls for the following: (effective September, 1974)

(a) Air conditioning and heating system;
(b) Automatic speed;
(c) Choke;
(d) Clearance lamps, if separate from the headlamp;
(e) Engine start, if separate from the key locking system;
(f) Engine stop, if separate from the key locking system;
(g) Hand throttle;
(h) Headlamps;
(i) Identification lamps, if separate from the headlamp switch;
(j) Vehicular hazard warning signal;
(k) Windshield defrosting and defogging system;

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[2]Ibid.

[3]Motor Vehicle Safety Regulations, S.O.R./72-96.

(l) Windshield washing system; and
(m) Windshield wiping system.[4]

(3) The identification of the controls for the systems and components set out in paragraphs (2) (a), (b), (d), (f), (i), (j), (k), (l) and (m) shall be illuminated whenever the headlamps are activated except in the case of; (effective March, 1973)

(i) foot-operated controls;

(ii) manually operated controls mounted on the steering wheel or steering column, and

(iii) controls for an air-conditioning and heating system, if such system does not direct air directly upon the windshield;

when the headlamps are being flashed.[5]

(4) Where illumination is required in subsection (3), a control shall be provided to adjust the intensity of control illumination so that it is continuously variable from a position providing; (effective September, 1974)

(a) no illumination, or

(b) illumination that is barely discernible to a school bus operator whose eyes have adapted to dark ambient roadway conditions,

to a position providing illumination sufficient for the school bus operator to readily identify the control under the conditions of reduced visibility.[6]

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[4] Motor Vehicle Safety Regulation, S.O.R./74-446

[5] Motor Vehicle Safety Regulation, S.O.R./72-248

[6] Motor Vehicle Safety Regulation, S.O.R./74-284

Section 102 - Shift Sequence

(1) With respect to school buses equipped with an automatic transmission;

(a) One forward drive position shall provide a greater degree of engine breaking than the highest speed transmission ratio at school bus speeds below 25 miles per hour in school buses having more than one forward transmission gear ratio; and

(b) The engine starter shall be inoperative when the transmission control is in a forward or reverse drive position.

(2) Identification of automatic transmission control positions and of the shift lever pattern of manual transmissions, except manual transmissions having three forward speeds and the standard "H" pattern, shall be permanently displayed in view of the driver of the school bus.

Section 103 - Windshield Defrosting and Defogging

(1) Every school bus shall be equipped with a windshield defrosting (to melt frost or ice on the inside or outside surface of the glass), and defogging (to remove moisture from the inside surface of the glass) system.

Section 104 - Windshield Wiping and Washing System

(1) Every school bus shall have a power driven windshield wiping system that has it least two frequencies or speeds and that has, irrespective of engine speed and engine load; (effective April, 1971)

(a) One frequency or speed of at least 45 cycles per minute;

(b) A difference of at least 15 cycles per minute between the highest and the one lower frequency or speed; and

(c) The lower frequency or speed referred to in paragraph (b) equal to at least 20 cycles per minute.[7]

(2) Compliance with the above subsection (1) shall be demonstrated by testing under the conditions specified in sections 4.1.1 and 4.1.2 of S.A.E. (Society Automotive Engineers) Recommended Practice J 903a, (May, 1966).[8]

(3) Every school bus shall have a windshield washing system that meets the requirements of S.A.E. Recommended Practice J 942 Passenger Car Windshield Washer Systems, (November, 1965),[9] except that the words "the effective white pattern defined in S.A.E. J903, paragraph 3.1.2", in paragraph 3.1 of S.A.E. Recommended Practice J 942[10] shall be deleted and,

(a) In the case of a school bus, the words "the pattern designed by the manufacturer for the windshield wiping system on the exterior surface of the windshield glazing",

shall be substituted therefore, (effective April, 1971) .[11]

Section 107 - Reflecting Surfaces

(1) Within the school bus drivers field of view, the specular glass of the surface of the bright metal materials

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[7] Motor Vehicle Safety Regulation, S.O.R./71-138.

[8] Society of Automotive Engineers Incorporated, S.A.E. Handbook, Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

[9] Ibid.

[10] Ibid.

[11] Motor Vehicle Safety Regulation S.O.R./71-138.

used on any vehicle for the;

(a) windshield wiper arms and blades;
(b) inside windshield mouldings;
(c) horn ring and hub of steering wheel assembly, and
(d) inside rearview mirror frame and mounting bracket,

shall not exceed 40 units when measured by the 20 degree method of A.S.T.M. (American Society for Testing and Materials) D 523-62T, (June, 1962).[12]

Section 108 - Lighting

(1) Every school bus shall be equipped with not less than the number of lamps and reflective devices and the items of associated equipment specified for that bus in Tables 1 and 11 to this section and such lamps, reflective devices and items of associated equipment shall be designed to meet the requirements of the standards referred to therein except that, as an alternative to the headlamps required by Tables 1 and 11, school buses may be equipped with headlamps that comply with subsection (25), as per the regulations of the Motor Vehicle Safety Act, (effective October, 1974).[13]

(2) Notwithstanding subsection (1),

(a) Intermediate side marker devices are not required on school buses of less than

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[12]American Society for Testing and Materials, A.S.T.M. Standards, American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103, 1964.

[13]Motor Vehicle Safety Regulation, S.O.R./74-573.

30 feet in overall length;

(b) Reflective material conforming to the requirements of Canadian Government Specifications Board Standard CGSB 62-GP-11p[14] may be used for side reflex reflectors if that material, as used on the school bus meets the performance standards of S.A.E. Standard J 594e, "Reflex Reflectors", (March, 1970);[15]

(c) Every turn signal operating unit on a school bus of less than 80 inches overall width shall be self cancelling;

(d) Subject to subsection (3), every stop lamp on a school bus shall meet the photometric minimum candlepower requirements for Class A red turn signal lamps specified in S.A.E. Standard J 575d, "Test for Motor Vehicle Lighting Devices and Components", (August, 1967);

(e) Every stop lamp and turn signal on a school bus of less than 80 inches in overall width shall have an effective projected illuminated area of not less than the effective area of Class B turn signal lamps as specified in S.A.E. Standard J 588d, "Turn Signal Lamps", (June, 1966),

(f) For every school bus of less than 80 inches in overall width the photometric minimum candlepower requirements for side marker lamps specified in S.A.E. Standard J 592c, "Clearance, Side Marker, Identification, and Parking Lamps", (November, 1968)[16]

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[14]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario K1A 0S5, 1964.

[15]Society of Automotive Engineers Incorporated, S.A.E. Handbook Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

[16]Ibid.

maybe be met for all inboard test points at a distance of 15 feet from the school bus and on a vertical plane that is perpendicular to the longitudinal axis of the school bus and located midway between the front and rear side marker lamps;

(g) Every school bus of less than 80 inches overall width shall be equipped with turn signal operating units designed to complete a durability test of 100,000 cycles;

(h) Every plastic material used for a lens, reflector or other optical part shall conform to S.A.E. Standard J 576B, "Plastic Materials for Use in Optical Parts, Such as Lenses and Reflectors, of Motor Vehicle Lighting Devices", (August, 1966)[17];

(i) Every school bus shall be equipped with four red signal lamps designed to conform to S.A.E. Standard J 887, "School Bus Red Signal Lamps", (July, 1964)[18] and that are installed in accordance with that Standard, except that the aiming pads on the lens face and the black area surrounding the signal lamp need not be present;

(j) The color of all lighting equipment shall meet the requirements of S.A.E. Standard J 578a, "Color Specification for Electric Signal Lighting Devices", (April, 1965)[19];

(k) Every combination turn signal and hazard warning signal flasher shall meet the requirements of both S.A.E. Standard J590b, "Automotive Turn Signal Flasher", (October 1965),[20] and S.A.E. Standard J 945, "Vehicular Hazard Warning Signal Flasher", (February, 1966),[21] when tested consecutively (effective July, 1974).[22]

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[17] Ibid.

[18] Ibid.

[19] Ibid.

[20] Ibid.

[21] Ibid.

[22] Motor Vehicle Safety Regulation, S.O.R./74-420.

(3) Every lamp, reflective device and item of associated equipment shall be securely mounted on a rigid part of the school bus other than glazing that is not designed to be removed except for repair.

(4) Every lamp and reflective device shall be located so that it meets the visibility requirements specified in any applicable S.A.E. Standard.

(5) Where rear identification lamps are mounted at the extreme height of a school bus, rear clearance lamps need not meet the requirement of Table 111 that they be located as close as practicable to the top of the school bus.

(6) Every school bus shall have a means of switching between lower and upper head lamp beams.

(7) Every school bus shall be equipped with tail lamps that shall be activated when the headlamps are activated in a steady - burning state.

(8) Every school bus of less than 80 inches overall width shall be equipped with, (effective July, 1974);[23]

(a) Tail lamps, licence plate lamps and side marker lamps that shall be activated when the parking lamps are activated, and

(b) Tail lamps, licence plate lamps, side marker lamps and parking lamps that shall be activated when the headlamps are activated in a steady burning state.

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[23] Motor Vehicle Safety Regulation, S.O.R./74-420.

(9) When activated;

(a) Turn signal lamps, hazard warning signal lamps and school bus warning lamps shall flash, and

(b) All other lamps shall be steady - burning, except that for signalling purposes means may be provided to flash headlamps and side marker lamps.

(10) Stop lamps on every school bus shall be activated upon application of the service brakes.

(11) The vehicular hazard warning signal operating unit on every school bus shall;

(a) Operate independently of the ignition or equivalent switch, and

(b) When activated, cause to flash simultaneously sufficient turn signal lamps to meet the turn signal lamp photometric requirements as specified in S.A.E. Standard J 588d, "Turn Signal Lamps", (June, 1966).[24]

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[24]Society of Automotive Engineers Incorporated, S.A.E. Handbook Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

TABLE I

EQUIPMENT

School Bus of 80 inches or More Overall Width (effective April, 1972).[25]

Item	Number Required on School Bus
Headlamps	2 white, 7 inch, Type 2 headlamp units; or 2 white, 5.75 inch Type 1 headlamp units and 2 white, 5.75 inch Type 2 headlamp units.
Tail lamps	2 red
Stop lamps	2 red
Licence plate lamp	1 white

[25]Motor Vehicle Safety Regulation, S.O.R./72-96.

TABLE II

EQUIPMENT

School Buses of Less Than 80 inches Overall Width (effective April, 1972).[26]

Item	Number Required on School Bus
Headlamps	2 white, 7 inch, type 2 headlamp units; or 2 white 5.75 inch, type 1 headlamp units and 2 white, 5.75 inch type 2 headlamp units (effective July, 1974).[27]
Tail lamps	2 red
Stop lamps	2 red
Licence plate lamp	1 white
Parking lamps	2 white or amber
Reflex reflectors	4 Class A red; 2 Class A amber.
Intermediate side marker lamps	2 amber
Intermediate side reflex reflectors	2 Class A amber
Side marker lamps	2 red; 2 amber
Back up lamp	1 white
Turn signal lamps	2 Class A red or amber; 2 Class A amber.
Turn signal operating unit	1
Vehicular hazard warning signal operating unit	1
Vehicular hazard warning signal flasher	1

[26] Ibid.

[27] Motor Vehicle Safety Regulation, S.O.R./74-420.

TABLE III

LOCATION OF EQUIPMENT

School Buses of 80 inches or more Overall Width (effective April, 1972).[28]

Item	Location on School Bus
Headlamps	Headlamps at the same height, one on each side of the vertical centre line, (Type 1 and Type 2).
Tail lamps	On the rear; one on each side of the vertical centre line, at the same height and as far apart as practicable.
Stop lamps	On the rear; one on each side of the vertical centre line, at the same height and as far apart as practicable.
Licence plate lamps	At rear licence plate.
Back up lamp	On the rear.
Turn signal lamps	At or near the front; one amber on each side of the vertical centre line at the same height and as far apart as is practicable. On the rear; one red or amber on each side of the vertical centre line at the same height, and as far apart as practicable.
Identification lamps	On the front and rear; 3 lamps, amber in the front, red in the rear, grouped in a horizontal row, with lamp centres spaced not less than 6 inches, or more than 12 inches, apart and mounted as close as practicable to the vertical centerline.

[28] Motor Vehicle Safety Regulation, S.O.R./72-96.

TABLE III Cont.

Item	Location on School Bus
Clearance lamps	On front and rear; 2 lamps, amber on the front, red on the rear, to indicate the overall width of the school bus, at the same height, one on each side of vertical centerline and as close as practicable to the top of the school bus.
Intermediate side marker lamps	On each side; one amber located at or near the midpoint between the forward and rear side marker lamps.
Intermediate side reflex reflectors	On each side; one amber lamp located at or near the midpoint between the forward and rear side reflex reflectors.
Reflex reflectors	On the rear; one red on each side of the vertical centerline, at the same height and as far apart as practicable.
	On the sides; one red as far to the rear as practicable and one amber as far forward as practicable.
Side marker lamps	On each side; one red as far to the rear as practicable, and one amber as far forward as practicable.

TABLE IV

LOCATION OF EQUIPMENT

School Buses of less than 80 inches Overall Width (effective April, 1972).[29]

Item	Location on School Bus
Headlamps	Type 1 headlamps at the same height, one on each side of the vertical centreline and as far apart as practicable; Type 2 headlamps at the same height, one on each side of the vertical centreline as far apart as practicable.
Tail lamps	On the rear; one on each side of the vertical centreline, at the same height and as far apart as practicable.
Stop lamps	On the rear; one on each side of the vertical centreline, at the same height and as far apart as practicable.
Licence plate lamp	At the rear licence plate to illuminate the plate from above or from either side.
Parking lamps	On front; one on each side of the vertical centreline at the same height and as far apart as practicable.
Reflex reflectors	On the rear; one red on each side of the vertical centreline, at the same height, and as far apart as practicable. On each side; one red as far to the rear as practicable and one amber as far forward as practicable.

[29] Ibid.

TABLE IV Cont.

Item	Location on School Bus
Back-up lamps	On the rear.
Turn signal lamps	At or near the front; one amber on each side of the vertical centreline, at the same height, and as far apart as practicable.
	On the rear; one red or amber on each side of the vertical centreline, at the same height, and as far apart as practicable.
Side marker lamps	On each side; one red lamp as far to the rear as practicable and one amber lamp as far forward as practicable.
Intermediate side marker lamps	On each side; one red lamp as far to the rear as practicable and one amber lamp as far forforward as practicable.
Intermediate side reflex reflectors	On each side; one amber located at or near the mid-point between the forward and rear side reflex reflectors.

Section IIIA - Rearview Mirrors

(1) A school bus of a design having the engine mounted forward of the cowl shall be fitted with an exterior convex mirror of not less than $7\frac{1}{4}$ inches in diameter, located on the left side of the extreme front of the school bus in such a manner, as to make visable to the seated driver a child of school age standing immediately in front of the school bus.

Section 112 - Headlamp Concealment Devices

(1) In the case of a school bus equipped with a headlamp concealment device, that device shall open to its fully opened position when the headlamp is illuminated and shall remain fully opened during;

(a) Any loss of power to or within the headlamps concealment device; and

(b) Any disconnection, restrictions, short-circuit, circuit time delay; or other similar malfunctions in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device.

(2) Whenever any malfunction occurs in a component that controls or conducts power for the actuation of the headlamp concealment device, each closed headlamp concealment device shall be capable of being fully opened;

(a) By automatic means;

(b) By actuation of a switch, lever or other similar mechanism, or

(c) By other means not requiring the use of any tools,

and thereafter shall remain fully opened until intentionally closed.

(3) During normal functioning of a headlamp concealment device, it shall be capable of being fully opened and the headlamps illuminated by actuation of a single switch, lever or similar mechanism including a mechanism that is automatically actuated by a change in ambient light conditions.

(4) Each headlamp concealment device shall be installed on the school bus in such a manner that the headlamp may be mounted, aimed, and adjusted without removing any component of the device other than components of the headlamp assembly.

(5) During the opening or closing of any headlamp concealment device, the beam of the headlamps shall not project to the left of or above the position of the beam when the device is fully opened.

(6) During normal functioning each headlamp concealment device shall be capable of being fully opened in not more than 3 seconds after actuation of the control within an ambient temperature range of minus 20 degrees Fahrenheit to plus 120 degrees Fahrenheit.

Section 113 - Hood Latch System

(1) Each hood with which a school bus is equipped shall be provided with a hood latch system.

(2) A front opening hood that in any open position partially or completely obstructs a drivers forward view through the windshield of the school bus, shall be provided with a second latching position on the hood latch system or

with a second hood latch system.

Section 116 - Hydraulic Brake Fluid

(1) Every hydraulic brake system of a school bus shall contain;

(a) Grade DOT 3 or Grade DOT 4 brake fluid;

(b) A petroleum - based fluid; or

(c) A silicone - based fluid; (these are effective September, 1973).[30]

Section 121 - Air Brake Systems

(1) Every school bus equipped with an air brake system shall have the following;

(a) An air compressor capable of increasing the air pressure in the supply and service reservoirs from 85 to 100 p.s.i. when the engine is operating at the maximum revolutions per minute recommended by the manufacturer, within time, expressed in seconds, determined by the quotient;

$$\frac{\text{actual reservoir capacity X 25}}{\text{required reservoir capacity}}$$

(b) One or more service reservoirs from which air is delivered to the brake chambers that have;

(i) an automatic condensate drain valve for each service reservoir; or

(ii) a supply reservoir between each service reservoir and source of air pressure.

(c) A pressure gauge in each service brake system, readily visible to a person seated in the normal driving position;

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[30] Motor Vehicle Safety Regulation, S.O.R./73-538

(d) A signal other than the pressure gauge, that gives a continuous warning to the driver, when the ignition switch is in the "on" or "run" position and the air pressure in the service reservoir system is below 60 p.s.i.;

(e) A system that lights the stop lamps when the service brake control is statically depressed to a point that produces a pressure of 6 p.s.i. or less in the service brake chambers.

(2) All reservoirs referred to in paragraph 1(b) shall have the following;

(a) Have a combined volume of at least 12 times the combined volume of all service chambers at maximum travel of the pistons or diaphragms;

(b) Be capable of withstanding for 10 minutes an internal hydrostatic pressure of five times the air compressor cut-out pressure or 500 p.s.i., whichever is greater;

(c) Have a manually operated condensate drain valve;

(d) Be protected against loss of air pressure due to failure or leakage in the brake system between the service reservoir and the source of air pressure by check valves or equivalent devices whose proper functioning can be checked without disconnecting any air line or fitting.

(3) A school bus shall have a parking brake system acting on each axle, except on steerable front axles, that;

(a) When the air pressure in all service reservoirs is less than the automatic application pressure level of between 20 to 45 p.s.i.;

(i) applies the parking brakes automatically, and

(ii) vents to the atmosphere the supply line to any towed vehicle.

(b) with the parking brake automatically applied has a static retardation force quotient not greater than .40 for any axle when determined accordingly;

(c) After automatic application, can be released at least once by means of the parking brake control, except that the parking brakes shall be capable of release only if they can be automatically reapplied and exert the force required by subparagraph (5) immediately after release; and

(d) Is capable of manual operation and release when the air pressure in the service reservoir system is sufficient to keep the parking brakes from applying automatically.

(4) Every school bus that does not have a parking brake system referred to in the preceeding subsection shall have;

(a) A parking brake system that conforms to subsection (3) and is capable of manual application at any reservoir system air pressure level;

(b) An emergency brake system that;

(i) is controlled by the service brake control or the parking brake control;

(ii) controls the brakes of the school bus and the brakes on any towed vehicle equipped with air brakes;

(iii) in the event of a failure of a valve, manifold, brake fluid housing, or brake chamber housing that is common to the service brake and emergency brake system, will not render the parking brake inoperable due to loss of air.

(5) Every school bus shall have a parking brake system that has;

(a) Parking brakes that are applied by an energy source that is not affected by loss of air pressure or brake fluid pressure in the

service brake system and when applied are held in position by mechanical means;

(b) A parking brake control that;

(i) Is separate from the service brake control;

(ii) Is operable by a person seated in the normal driving position;

(iii) Can be identified in a manner that specifies the method of control operation.

(c) At the manufacturers option;

(i) With all other brakes rendered inoperative, a static retardation force produced by the application of the parking brakes on an axle other than a steerable front axle during a static drawbar pull in a forward or rearward direction such that the quotient,

$$\frac{\text{Static Retardation Force}}{\text{G A W R}}$$

is not less than .28;

(ii) With all parking brakes applied, the capabilities of causing the school bus to remain stationary facing uphill or facing downhill on a smooth dry portland cement concrete roadway that has a 20 per cent grade when;

(A) loaded to its gross vehicle weight rating,

(B) at its unloaded vehicle weight plus 500 pounds, including the driver and instrumentation.

Section 124 - Accelerator Control Systems[31]

(1) Every school bus shall meet the requirements set out in subsections (2) and (4);

(a) When the engine is running under any load condition; and

(b) At any ambient temperature between minus 40° Fahrenheit and plus 125° Fahrenheit after 12 hours of conditioning at any temperature within the range. (effective November, 1973).

(2) Every school bus shall be equipped with at least two sources of energy capable of returning the throttle to the idle position, within the applicable time limit specified in subsection (4), from any accelerator position or speed upon release of the driver operated control or in any event of failure of one source of energy by a single disconnection or severance of any one component of the accelerator control system. (Effective November, 1973)

(3) The throttle of every school bus shall return to the idle position from any accelerator position;

(a) Whenever one component of the accelerator control system becomes disconnected or severed at a single point or the driver operated control is released; and

(b) Within the applicable time limit specified in subsection (4) measured from

(i) the time of disconnection or severance, or

(ii) the time of first removal of the opposing actuating force by the driver. (effective November, 1973).

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[31]Motor Vehicle Safety Regulation, S.O.R./73-693.

(4) The maximum time for the return of the throttle of the school bus to the idle position is;

(a) One second for school buses of 10,000 pounds or less GVWR (gross vehicle weight rating)

(b) Two seconds for school buses of more than 10,000 pounds GVWR; and

(c) Three seconds for any school bus that is exposed to ambient temperature of 0 degrees to minus 40 degrees Fahrenheit during the test or any portion of the 12 - hour conditioning period. (effective November, 1973).

Section 205 - Glazing Materials

(1) Glazing materials used in windshields, windows and interior partitions of all school buses shall conform to A.N.S.I. (American National Standards Institute) Safety Code Z26.1 - 1966, "Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways" (July 15, 1966).[32]

(2) Glazing materials installed in school buses shall have the exposed edges bonded.

(3) Each individual piece of glazing installed in the school bus shall bear thereon an approved code mark in letters and numbers not less than .070 inch in height.

Section 208 - Seat Belts

(1) Every school bus shall be equipped, at the drivers designated seating position, with a Type 1 or Type 2 seat belt

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[32]American National Standards Institute Inc., A.N.S.I. Standards, American National Standards Institute Inc., 1430 Broadway, New York, New York 10018, 1966.

assembly that meets the requirements of Section 209, or

(2) Every school bus shall provide passive occupant protection (protection of an occupant of a school bus against injury due solely to a crash impact by means of equipment that does not require any direct action by an occupant of the school bus upon the equipment itself), in the drivers designated seating position.

(3) A seat belt assembly installed at;

(a) the drivers designated seating position shall be capable of adjustment to let persons whose dimensions range from those of the 5th percentile adult female to those of a 9th percentile adult male.

Section 209 - Seat Belt Assemblies

(1) Every seat belt assembly with which a school bus is equipped shall meet the applicable requirements of S.A.E. Standard J 4c, "Motor Vehicle Seat Belt Assembly" (July, 1965)[33] and in addition thereto, (effective October, 1971);[34]

(a) A buckle with a release mechanism in the latched position shall have only one spring at the end of the buckle designed to receive and latch the tongue into which the tongue can be inserted;

(b) Instructions for a non-locking retractor shall include a caution that the webbing must be fully extended from the retractor during use of the seat belt assembly unless

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[33]Society of Automotive Engineers Incorporated, S.A.E. Handbook, Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale Pa. 15086, 1975.

[34]Motor Vehicle Safety Regulation, S.O.R./71-484.

the retractor is attached to the free end of webbing that is not subjected to any tension during restraint of an occupant by the assembly.

(c) Attachment hardware at or near the floor may alternatively be protected against corrosion by a coating that is at least as effective as a Type KS electro-deposited coating of nickel, or copper and nickel, and other attachment hardware shall be protected against corrosion by a Type QS electro-deposited coating of nickel, or copper and nickel, in accordance with ASTM Tentitive Specifications A166-61T, "Electro-deposited Coatings of Nickel and Chromium on Steel",[35] but such hardware shall not be racked for electro-plating in locations subject to maximum stresses;

(d) Eye-bolts, shoulder-bolts or other bolts used to secure a pelvic restraint to a school bus shall withstand a force of 9,000 pounds, except that such bolts need not withstand a force of more than 5,000 pounds if they are installed on a school bus in such a manner that only one end of a seat belt assembly can be attached thereto, and all other attachment hardware designed to receive the ends of two seat belt assemblies shall withstand a tensile force of at least 6,000 pounds without fracture of any section;

(e) A buckle actuated by:

(i) a push-button shall have a minimum area of .7 square inch with a minimum linear dimension of .4 inch for application of the release force;

(ii) a lever shall permit the diametral insertion of a cylinder .4 inch in diameter and 1.5 inches in length along the cylinders entire length in the actuation portion of the buckle release; and

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[35] American Society for Testing and Materials, A.S.T.M. Standards, American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103, 1968.

(iii) other means shall have adequate access for two or more fingers to actuate release;

(f) A buckle of Type 1 or Type 2 seat belt assembly shall not release under a compressive force of 400 pounds and shall be operable and meet the requirements for assembly performance upon removal of the compressive force;

(g) A non-locking retractor on the upper torso restraint shall be attached to the non-adjustable end of the assembly, the reel of the retractor shall be easily visible to an occupant while wearing the assembly, and the maximum retraction force shall not exceed 1.1 pounds in any strap or webbing that contacts the shoulder of an occupant, unless the retractor is attached to the free end of webbing that is not subjected to any tension during restraint of an occupant by the assembly;

(h) The webbing retraction force of an automatic locking retractor shall be measured when attached to a pelvic restraint, and shall be not less than .45 pound or more than 1.1 pounds in any strap or webbing that contracts the shoulder of an occupant when the retractor is attached to the upper torso restraint;

(i) An automatic-locking retractor attached to an upper torso restraint shall not increase the restraint on the occupant of the seat belt assembly during use in a school bus travelling over tough roads;

(j) The webbing retraction force of an emergency locking retractor shall be measured when attached to a pelvic restraint, and shall be not less than .45 pound or more than 1.1 pounds in any strap or webbing that contracts the shoulder of an occupant when the retractor is attached to an upper torso restraint;

(k) Complete fracture through any solid section of metal attachment hardware shall not occur during any test of a seat belt assembly or component thereof;

(l) The requirements for assembly performance of a type 2 seat belt assembly shall apply to attachment hardware;

(m) The anchorage in a school bus shall be designed to receive 7/16 - 20 UNF-2A, $\frac{1}{2}$ - 13 UNC - 2A or equivalent hardware; (effective October, 1971).[36]

(n) A type 1 and Type 2 seat belt assembly shall;

(i) be capable of adjustment to fit occupants whose dimensions and weight range from those of a 5th percentile adult female to those of a 95th percentile adult male, and

(ii) have

(A) an automatic locking retractor
(B) an emergency locking retractor
(C) an adjusting device that is within the reach of the occupant,

irrespective of seat adjustment position and with the seat back in the manufacturer's nominal design driving position, and (effective October, 1971)[37]

(o) An emergency locking retractor of a Type 1 or Type 2 seat belt assembly shall;

(i) lock before the webbing extends 1 inch when the retractor is subjected to an acceleration of .7g, and

(ii) not lock when the retractor is subjected to an acceleration of .3g or less. (effective October, 1971).[38]

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[36] Motor Vehicle Safety Regulation, S.O.R./71-484.

[37] Ibid.

[38] Ibid.

Section 210 - Seat Belt Assembly Anchorages

(1) A Type 1 seat belt assembly shall be provided for side facing seats, outboard and inboard rearward - facing seats and inboard forward - facing seats.

(2) A Type 2 seat belt assembly shall be provided for outboard forward - facing seats.

(3) The anchorages for a pelvic restraint shall be separated by a lateral distance as near as practicable to 15 inches.

(4) Subject to subsection (5), where the material seat is in its rearmost position, every seat belt anchorage shall support its position of;

(a) A 5,000 pound load applied at an angle of at least 5 degrees but less than 15 degrees above the horizontal to an approved body block restrained by a Type 1 or the pelvic position of a Type 2 seat belt assembly as applicable,

(b) Loads that applied simultaneously, to the pelvic and upper torso areas of an approved body block, at an angle of at least 5 degrees but less than 15 degrees above the horizontal and that are equal to 3,000 pounds on each of the pelvic and upper torso areas of the body block.

(5) Compliance with Section (4) may be demonstrated by using a dynamic test method equivalent to the test methods referred to in paragraphs (a) and (b), in subsection (4).

(6) Belt assemblies having a common anchorage, other than a common anchorage for a forward - facing seating position and a rearward facing seating position, shall be tested simultaneously.

Section 217 - Bus Window Retention, Release and Emergency Exits.[39]

(1) This section does not apply to a windshield or window the minimum surface dimension of which, when measured through the centre of the window area, is less than 8 inches, (effective September, 1974).

(2) Every piece of window glazing, and every surrounding window frame in a bus shall be retained by its surrounding structure in a manner that prevents the formation of any opening large enough to admit the passage of a 4 inch diameter sphere under a force of 5 pounds; including the weight of the sphere, when a force is applied to the window glazing through an approved headform, travelling at a speed of 2 inches per minute outward and perpendicular to the undisturbed inner surface at the centre of the area of each sheet of window glazing until;

(a) a force of 1,200 pounds is reached;

(b) at least 80 percent of the glazing thickness has developed cracks running from the load contact region to the periphery at two or more points;

(c) the glazing shatters; or

(d) the inner surface of the glazing at the centre of the force application has moved in relation to the window frame, along a line perpendicular to the undisturbed inner surface, a distance equal to one-half of the square root of the minimum surface dimension measured through the centre of the area of the entire sheet of window glazing. (effective September, 1974).

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[39] Motor Vehicle Safety Regulation, S.O.R./74-437.

(3) In determining the combined areas of unobstructed openings provided in a school bus, no emergency exit, regardless of its area, shall be deemed to measure more than 536 square inches (effective September, 1974).

(4) Every bus with a GVWR of more than 10,000 pounds shall be provided with;

(a) At least one side door for each three passenger seating positions in the school bus; or

(b) Side exits and at least one rear emergency exit that meet the respective requirements;

(i) when the bus is upright; and

(ii) when the bus is overturned on its side and any occupant is standing facing the rear emergency exit (effective September, 1974).

(5) When the configuration of a bus precludes the installation of an accessible rear emergency exit, the bus may be equipped in its rear half with a roof emergency exit. (effective September, 1974).

(6) Every school bus with a GVWR of 10,000 pounds or less shall be provided with;

(a) Devices that meet the requirements of subsections (8) to (15) and do not use;

(i) remote controls

(ii) central power systems;

(b) Windows that can be opened manually to a position providing an opening large enough to admit unobstructed passage of an ellipsoid, with its major axis horizontal, that is generated by the rotation about its minor axis of an ellipse having a major axis of 20 inches and minor axis of 13 inches; or

(c) doors (effective September, 1974).

(7) If a school bus is fitted with push-out windows or other emergency exits, those windows or exits shall meet the requirements of subsections (8) to (15), (effective September, 1974).

(8) Every push-out window or other emergency exit shall have a release mechanism located within the access regions shown in Figure 1, Figure 2, or Figure 3. (effective September, 1974).

(9) The lower edge of the low-force access region and the lower edge of region B of the high-force access region shall be located;

(a) 5 inches above the adjacent seat, or

(b) if an arm rest is fitted 2 inches above the arm rest,

whichever is higher (effective September, 1974).

(10) When tested in accordance with subsections (16) and (17), both before and after the window retention test set out in subsection (2), each emerging exit shall allow manual release of the exit by an occupant using, at the option of the manufacturer;

(a) A low-force application of not more than 20 pounds in a rotary or straight motion when the release mechanism is located as shown in Figure 1 or Figure 3 of this section; or

(b) A high-force application of not more than 60 pounds in a straight motion perpendicular to the undisturbed exit surface when the release mechanism is located as shown in Figure 2 or Figure 3 of this section. (effective September, 1974).

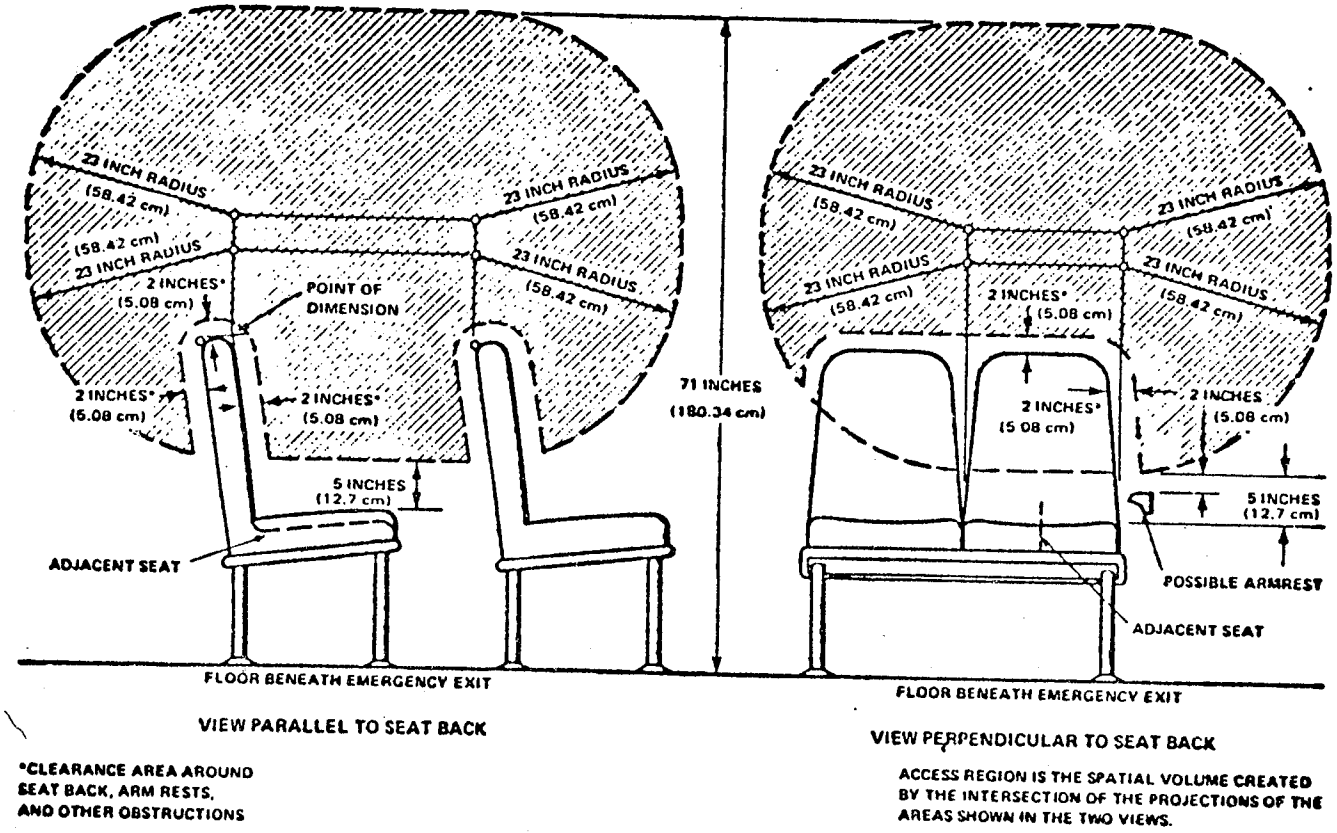


FIGURE 1 LOW-FORCE ACCESS REGION FOR EMERGENCY EXITS HAVING ADJACENT SEATS

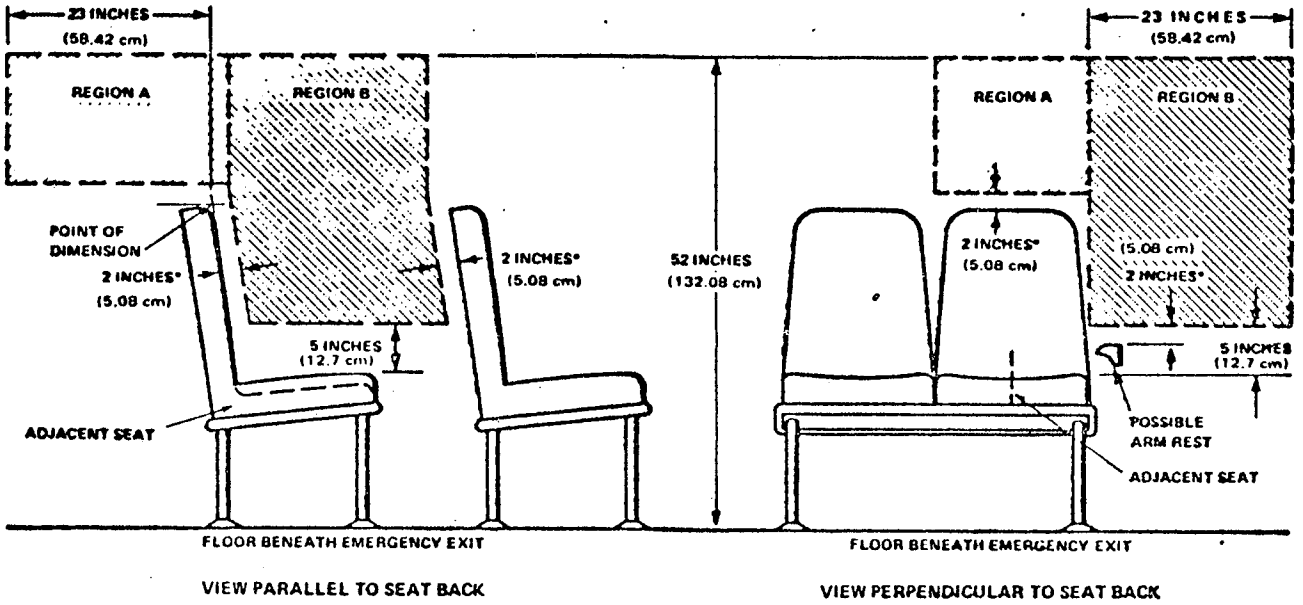
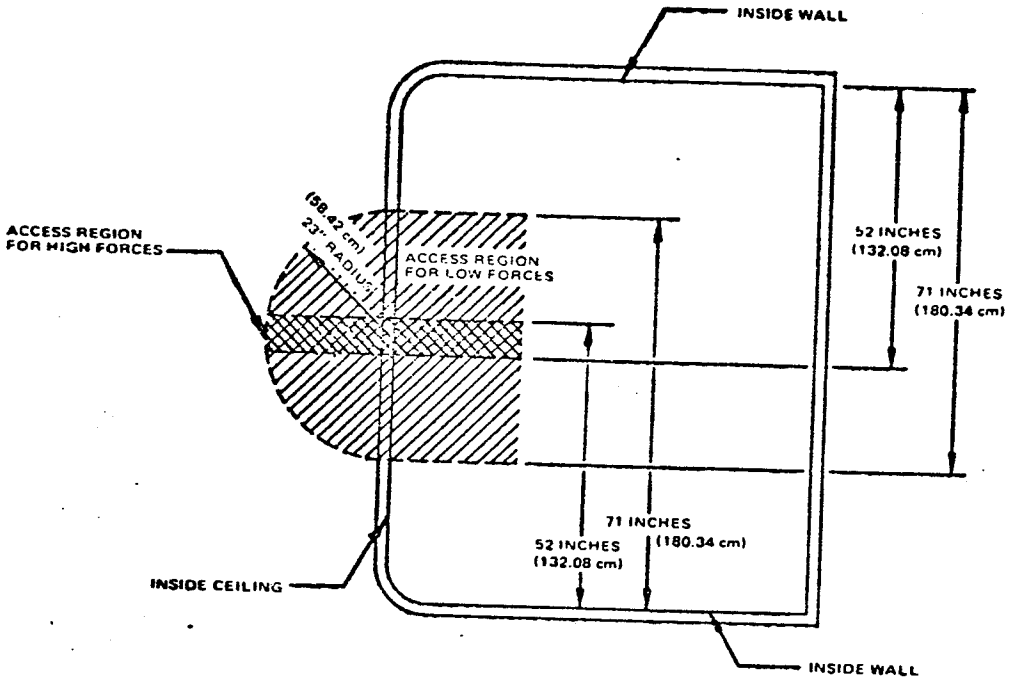
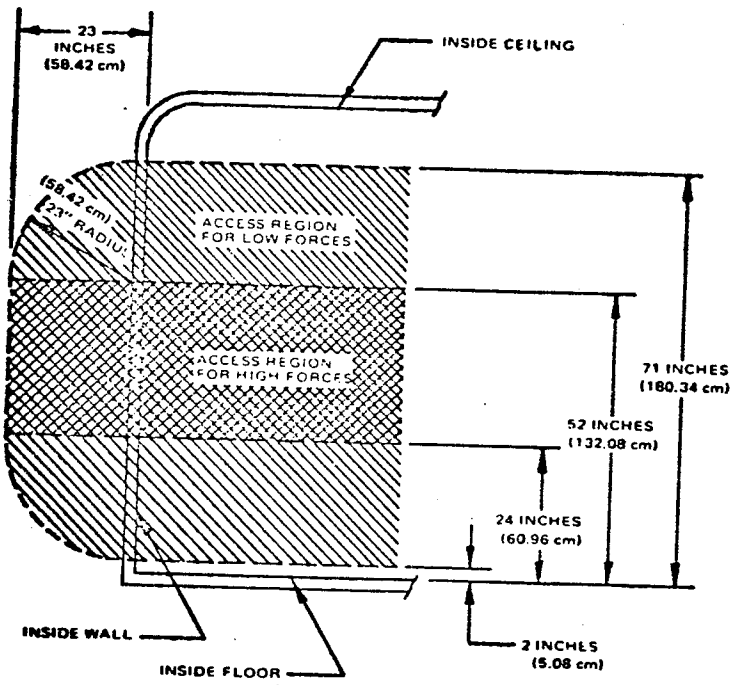


FIGURE 2 HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS HAVING ADJACENT SEATS

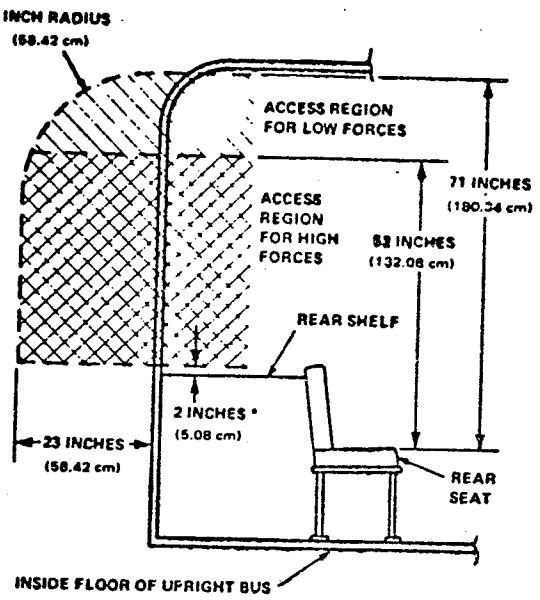


3A. ROOF EMERGENCY EXIT



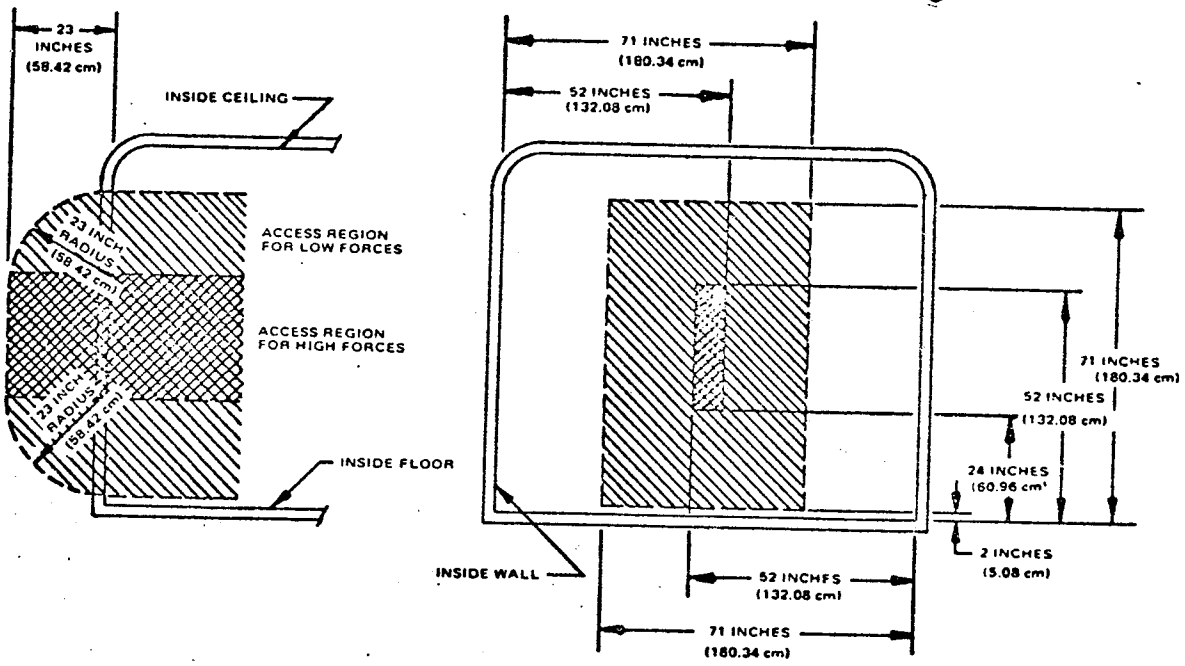
3B. SIDE EMERGENCY EXIT

FIGURE 3. LOW AND HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS WITHOUT ADJACENT SEATS



*TYPICAL CLEARANCE AROUND OBSTRUCTIONS

3C. REAR EMERGENCY EXIT WITH REAR OBSTRUCTION



3D. REAR EMERGENCY EXIT WITHOUT REAR OBSTRUCTION

FIGURE 3 – CONTINUED

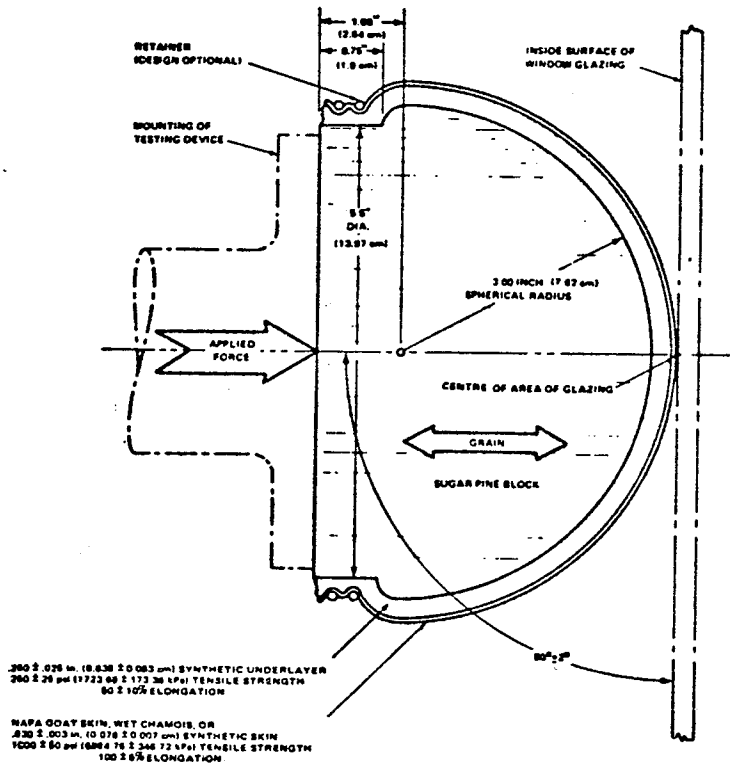


FIGURE 4 HEAD FORM

(11) The release mechanism for push-out windows or other emergency exits shall require for release not more than two applications of force, one of which must differ by 90 to 180 degrees from the direction of the initial push-out motion of the emergency exit. (effective September, 1974).

(12) Every push-out window or other emergency exit shall, after the release mechanism has been operated, be manually extendible by an occupant to a position providing an opening large enough to admit unobstructed passage of an ellipsoid, with its major axis horizontal, this is generated by the rotation about its minor axis of an ellipse having a major axis of 20 inches and a minor axis of 13 inches (effective September, 1974).

(13) A label bearing an approved symbol to identify an emergency exit or a label bearing the words, "Emergency Exit", and "Issue de Secours", and concise operating instructions in both official languages shall be located within 6 inches of the release mechanism for every push out window or other emergency exit. (effective September, 1974).

(14) When a release mechanism is not located within an occupant space of an adjacent seat, a label indicating the location of the nearest release mechanism in both official languages and meeting the requirement of subsection (15) shall be placed within the occupant space (effective September, 1974).

(15) The marking on every label referred to in subsection (13) and (14) shall be legible to an occupant having corrected visual acuity of 20/40 (Snellen ratio) at each location set out;

(a) In paragraph (c), (d) or (e) when the other two locations set out in those paragraphs are occupied, and

(b) In paragraph (f) or (g) in any event,

when the only source of light is the normal night time illumination of the bus interior and the occupant is;

(c) Seated in the adjacent seat;

(d) Seated in the seat directly adjoining the adjacent seat;

(e) Standing in aisle location that is closest to the adjacent seat;

(f) Standing in the aisle location nearest to the emergency exit when the exit has no adjacent seat, or

(g) Lying with his back against the floor opposite the roof emergency exit, in the case of a roof emergency exit. (effective September, 1974).

(16) For purposes of subsections (2), (10) and (12);

(a) The school bus shall be on a flat horizontal surface;

(b) The temperature inside and outside the school bus shall be maintained between 70 and 85 degrees Fahreheit for a four hour period immediately preceeding the tests and during the tests (effective September, 1974).

(17) For the purposes of subsections (10) and (12) all seats, armrests and interior objects near the windows of the school bus shall be adjusted for normal use with the seats

in the upright position (effective September, 1974).

Section 302 - Flammability[40]

(1) Material described in subsection (2) shall not, when subjected to approved test materials, burn from the beginning of the test;

(a) In excess of;

(i) 60 seconds in duration; or

(ii) 2 inches in length; or

(b) at a rate in excess of 4 inches per minute (effective July, 1972).

(2) The material described in this subsection is any material that forms part of a school bus component and that is;

(a) Surface material, if it is not bonded, sewed or mechanically attached to underlying material;

(b) A composite consisting of surface material bonded; sewed or mechanically attached to underlying material;

(c) Padding or cushioning material if it is not bonded, sewed or mechanically attached to surface material (effective July, 1972).

Section 1101 - Emission Device

(1) A system or device;

(a) Shall not cause emission into the atmosphere of any air pollutant that would not be emitted into the atmosphere during the

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[40]Motor Vehicle Safety Regulation, S.O.R./72-248

operation of the school bus or school bus engine if it were not equipped with the system or device;

(b) Shall not result in any unsafe condition endangering persons or property.

(2) Compliance with the requirements of this schedule shall be demonstrated by approved test methods or such requirements as shall be those applicable at the time of manufacturer of the engine.

(3) A system or device shall be deemed to meet the requirements of this schedule if it is of the same construction and material in all respects, to comply with this schedule, as a system or device that meets such requirements when tested in accordance with subsection (2)

(4) Every school bus provided with an emission control device the performance of which will be impaired by the use of leaded gasoline shall have;

(a) A warning to the effect that is visible to the operator of the school bus;

(b) A warning to that effect that is;

(i) immediately adjacent to the gasoline tank filler inlet, and

(ii) in both official languages, and

(c) A gasoline tank filler inlet that;

(i) allows the insertion of a nozzle spout terminal end that has an outside diameter not greater than .84 inches;

(ii) has a resriction preventing the insertion of a nozzle spout terminal end

that has an outside diameter greater than .93 inches, and

(iii) is designed to pass not more than 700 c.c. of gasoline into the tank when introduction of gasoline is attempted from a nozzle referred to in subparagraph (ii) (effective January, 1975).[41]

Section 1102 - Crankcase Emissions[42]

(1) The crankcase of a gasoline powered school bus engine shall be constructed in such a manner and be capable of being maintained in such condition that crankcase emissions are not discharged into the atmosphere.

Section 1103 - Exhaust Emissions

(1) The hydrocarbon, carbon monoxide and oxides of nitrogen content of the exhaust emissions from gasoline powered or diesel powered school bus engines, when subjected to approved test methods, shall;

(a) In the case of a school bus, not exceed per brake horsepower - hour;

(i) 16 grams of hydrocarbons combined with oxides of nitrogen, and

(ii) 40 grams of carbon monoxide (effective January, 1975).

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[41] Motor Vehicle Safety Regulation, S.O.R./74-407.

[42] Ibid.

Section 1104 - Opacity[43]

(1) The opacity of the exhaust emissions from a diesel-powered school bus engine shall not exceed;

(a) 20 per cent during engine acceleration;

(b) 15 per cent during engine lugging; and

(c) 50 per cent during peak conditions of engine acceleration and engine lugging (effective January, 1975).

Section 1106 - Noise[44]

(1) Every school bus shall be so constructed that;

(a) It complies with Section 6 Specifications of ECE (United Nations Economic Commission for Europe, Inland Transport Committee) Regulation No. 9, "Uniform Provisions Concerning the Approval of Vehicles with Regard to Noise" (October, 1968); or

(b) The noise emitted by it is;

(i) In the case of a school bus, not in excess of 88 dbA when measured in accordance with SAE Recommended Practice J 366, "Exterior Sound Level for Heavy Trucks and Buses," (July, 1969).[45]

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[43]Ibid.

[44]Motor Vehicle Safety Regulation, S.O.R./72-248, effective July, 1972.

[45]Society of Automotive Engineers Incorporated, S.A.E. Handbook Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

APPENDIX E

C.S.A. STANDARD D250

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CSA STANDARD D250[1]

BUS CHASSIS

Air Cleaner

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

Axles

(1) The front axle or other type of suspension assembly shall be of sufficient capacity at ground to support such loads on the front axle as would be imposed by the actual average gross vehicle weight plus 10 percent.

(2) The rear axle shall be a full-floating type. The rear axle or other type of suspension assembly shall have a gross weight rating at ground equal to or exceeding that portion of the total load which is supported by the rear suspension assembly.

(Note) The axles or other types of suspension assembly shall have a gross weight rating at ground equal to or exceeding that portion of the total load which is supported by them and shall be identified in accordance with the

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[1]Canadian Standards Association, CSA Standard D250-1971 School Buses. (Rexdale, Ontario: Canadian Standards Association, 1971).

Canadian Motor Vehicle Safety Regulations, (D250.1).[2]

Battery

(1) The storage battery, as established by the manufacturer's rating, shall have sufficient capacity to care for starting and operating electrical equipment.

(2) No bus shall be equipped with a battery of less than 70 ampere hours at 12 volts, measured at the 20 hour rate.

(3) The battery shall be mounted in the following manner;

(a) The battery is to be mounted under the hood when feasible;

(b) If under - hood mounting is not feasible, the battery may be temporarily mounted outside the engine compartment;

(c) When the battery is mounted outside the engine compartment by the chassis manufacturer, the body manufacturer shall securely attach the battery on a slide - out tray in a closed, ventilated compartment in the body skirt whereby the battery may be exposed to the outside for convenient servicing. The battery compartment door or cover shall be secured by an adequate and conveniently operated latch or other type of fastener;

(d) The body company will permanently mount the battery on a sliding tray located so that the centre line of the battery is 52 inches back of the cowl. One-piece battery cables

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[2]Canadian Standards Association, CSA Standard D250.1-1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

shall be provided by the chasis manufacturer, such cables to be at least 36 inches longer than normally required, to accomodate the battery when located 52 inches to the rear of the cowl.

Service Brakes

(1) The service brake system shall be designed and constructed so that by application of a single control unit the vehicle can be stopped within distances specified in (a) and (b), below. Stopping distance requirement tests shall be conducted in accordance with SAE Recommended Practice J658, "Service Brake Performance",[3] and with the vehicle loaded.

(a) Brakes shall be designed to have the capability of developing a deceleration of 14 f p s p s (feet per second per second) from a speed of 20 miles per hour at a pedal effort of not more than 75 pounds;

(b) A stopping distance test with brakes cold shall be conducted after proper conditioning, according to SAE Recommended Practice J880, "Brake Rating System Test Code",[4] and the vehicle shall stop, from a speed of 20 miles per hour, within the following distances at a pedal effort of not more than 200 pounds;

(i) 10,000 pounds GVW and under - 25 feet;

(ii) over 10,000 pounds GVW - 35 feet.

(c) Brake balance shall be such that, when tested at a speed of 20 miles per hour under any normal condition of loading with MGVW,

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[3]Society of Automotive Engineers Incorporated, S.A.E. Handbook, Vol. I, II, Society of Automotive Engineer, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

[4]Ibid.

deceleration of 12 f p s p s can be achieved without locking the wheels on any axle.

(2) The energy absorption capability of brakes, when tested in accordance with the procedure established by SAE Recommended Practice J880, "Brake Rating System Test Code"[5] or equivalent shall be not less than $12 + \frac{1.4GVW}{1000}$.

(3) Brake actuator travel, when measured statically at the actuating force required for compliance with clause 1 (b) of this section, shall be not more than 60 percent of available travel.

(4) Every brake system which employs air or vacuum shall include the following reservoir capacity:

(a) The air brake system shall have a reservoir capacity which is equal to or greater than 12 times the total volume of all brake actuators at full travel but in no case may the volume be less than required to permit one full stroke application without depleting the pressure by more than 20 percent;

(b) The vacuum brake system shall have a reservoir used exclusively for brakes, with a capacity of not less than 1000 cubic inches, and shall be adequate to insure loss in pressure at full stroke application of not more than 30 percent;

(c) The brake system shall include a suitable and convenient connection for installation of a separate vacuum reservoir with a capacity of not less than 1000 cubic inches, furnished and installed by the body manufacturer and protected by a check valve, for actuation of other vacuum powered accessories. The engine shall be protected by proper filters.

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[5] Ibid.

(5) The brake system reservoir shall be so safeguarded by a check valve or equivalent device that in the event of failure or leakage in its connection to the source of compressed air or vacuum, the stored air or vacuum shall not be depleted by the leak or failure. Means shall be provided to establish the air check valve to be in working order.

(6) A vehicle using air or vacuum, in the operation of the brake system, shall be equipped with an illuminated gauge accurate to within 10 percent of actual reservoir pressure which will indicate to the driver;

(a) In the case of air brakes; pressure in p.s.i., which is available for operation of the brakes.

(b) In the case of vacuum brakes; vacuum in inches of mercury, which is available for operation of the brakes.

(7) In addition to gauges required in the foregoing section, the vehicle shall be equipped with a warning signal, readily audible or visible to the driver, which will give continuous warning to the driver when;

(a) In the case of air brakes, air pressure in the system available for braking is 60 p.s.i. and less; or

(b) In the case of vacuum brakes, vacuum in the system available for braking is 8 inches of mercury and less.

Emergency Stopping System

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

(2) Subject to provincial standards established by legislation, the following performance shall be obtained under road and test conditions outlined in the foregoing section:

(a) The vehicle, when loaded to manufacturers GVW capacity, shall be brought to a stop from a speed of 20 miles per hour in a measured distance of 85 feet;

(b) Deceleration of not less than 60 f p s p s shall be maintained throughout a stop from 20 miles per hour.

(3) Control of the emergency stopping system shall be designed and constructed to;

(a) Permit modulated control by the driver of brake application and release; and

(b) Prevent release of brakes by the driver unless energy is available for re-application.

(4) The parking brake system shall be designed and constructed to meet the following requirements;

(a) The parking brake shall hold the vehicle stationary, or to the limit of traction of braked wheels, on a 20 per cent grade under any condition of legal loading and on a surface free from snow, ice, and loose material;

(b) When applied, the parking brake shall remain in the applied position, with the appropriate capability, despite exhaustion of the source of energy used for application or despite leakage of any kind.

(Note) - Each brake drum or rotor shall be permanently marked in legible cast or stamp legend to clearly indicate the maximum safe diameter of the drum, or the minimum safe thickness of the rotor beyond which it shall not be used. (this has been added to D250.1)[6]

Front Bumper

(1) The bumper shall extend to the outer edge of fender at the bumper top line (to assure maximum fender protection) and be of sufficient strength to permit flush bumper contact with a vehicle of equal gross weight without incurring permanent distortion to the bumper, chassis, or body.

Rear Bumper

(1) The bumper shall be of pressed steel channel of

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[6]Canadian Standards Association, CSA Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

at least 3/16 inch thick and 8 inches high.

(2) The bumper shall be wrapped around the back corners of the bus. It shall extend forward at least 12 inches, measured from the rearmost point of the body at the floor line.

(3) The bumper shall be attached to the chassis frame in such a manner that it may be easily removed. It shall be so braced as to develop full strength of bumper section from rear or side impact and shall be so attached as to prevent hitching of riders.

Clutch

(1) All chassis of 48 through 66 pupil capacity having a mechanical type transmission shall be equipped with a clutch of 12 inch minimum diameter. Chassis of 66 and greater pupil capacity, having a mechanical type transmission, shall be equipped with a clutch of 13 inch minimum diameter or a clutch of equivalent performance.

Color

(1) The chassis, including wheels and front bumper, shall be black in accordance with Color Number 512-101 of CGSB Specification 1-GP-12-c, Standard Paint Colors.[7] Hood, cowl, and fenders shall be yellow in accordance with Color

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[7]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario K1A 0S5, 1965.

Number 505-111 of C.G.S.B. Specification 1-GP-12c, Standard Paint Colors,[8] or the National Education Association Standard color number 595-13432.[9]

(Note) - The chassis, including wheels and front bumper, shall be black in accordance with Color Number 512-101 of C.G.S.B. Specification 1-GP-12c, Standard Paint Colors,[10] or Color Number 17033 of U.S.A. Federal Standard, 595a.[11] In addition the hood, cowl, and fenders shall be yellow in accordance with Color Number 505-111 of C.G.S.B. Specification 1-GP-12c, Standard Paint Colors[12] or Color Number 13432 of U.S.A. Federal Standard, 595a[13]. Finally, the hood and outside sheet metal surfaces, which are in the driver's field of view, shall be painted lustreless black as

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[8]Ibid.

[9]National Education Association, National Education Association Standards, National Commission on Safety Education, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

[10]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalf Street, Ottawa, Ontario K1A 0S5, 1965.

[11]General Services Administration, Federal Supply Service, U.S. Federal Standard 595A, Superintendent of Documents, U.S. Printing Office, Washington, D.C. 20402, 1966.

[12]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario K1A 0S5, 1965.

[13]General Services Administration, Federal Supply Service, U.S. Federal Standard 595A, Superintendent of Documents, U.S. Printing Office, Washington, D.C. 20402. 1966

received from the chassis manufacturer, in accordance with Paint Number 20 Degree Gloss or Color Number 37038 of U.S.A. Federal Standard, 595a.[14] (D250.1).[15]

Drive Shaft

(1) The drive shaft shall be protected by a metal guard or guards to prevent it from whipping through the floor or dropping to the ground, if broken. Please note that this standard does not apply to school buses with a torque - tube drive shaft.

Electrical System

(1) The chassis manufacturer shall install readily accessible, electrical terminal, so that the body and chassis electrical load can be recorded through a chassis ammeter without dismantling or disassembling chassis components. The chassis wiring system to the terminal shall have a minimum 100-ampere capacity, and the ammeter shall be capable of recording a continuous draw of 100 amperes.

Exhaust System

(1) The exhaust pipe, muffler, and tailpipe shall be outside the bus body and attached to the chassis.

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[14] Ibid.

[15] Canadian Standards Association, C.S.A. Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

(2) The tailpipe shall be constructed of seamless or electrically welded tubing of 16-gauge steel or equivalent and shall extend at least 5 inches beyond the chassis frame.

(3) The size of the tailpipe shall not be reduced after it leaves the muffler.

(4) The exhaust system shall be properly insulated from the fuel tank and the tank connections by a securely attached metal shield at any point where it is 12 inches or less from the tank or tank connections.

(5) The total noise level shall not exceed 125 sones as measured by the Beranek Armour - ATA Equivalent Tone Method.

(6) The muffler shall be constructed of corrosion - resistant material.

Front Fender

(1) The total spread of the outer edges of front fenders, measured at the fender line, shall exceed the total spread of front tires when the front wheels are in the straight - ahead position.

(2) Front fenders shall be properly braced and free from any body attachment.

(3) Chassis sheet metal shall not extend beyond the rear face of the cowl.

Frame

(1) The frame or equivalent shall be of such design as to correspond at least to standard practice for trucks

of the same general load characteristics which are used for severe service.

(2) When frame side members are used they shall be of one-piece construction. If frame side members are extended, such extension shall be designed and furnished by the chassis or body manufacturer with his guarantee, and installation shall be made by either the chassis or body manufacturer and guaranteed by the company making the installation. Extensions of frame lengths are permissible only when such alterations are behind the rear hanger of the rear spring and shall not be for the purpose of extending the wheelbase.

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

Fuel Tank

(1) The fuel tank shall have a minimum capacity of 25 imperial gallons, be made of 16-gauge template or equivalent, and be mounted directly on the right side of the chassis frame entirely outside the body.

(Note) On school buses of less than 54 passenger capacity, intended for transporting handicapped children, and which have a hydraulic lift installed on the right hand side, the fuel tank may be located on the left side of the

chassis frame. It shall not be located at the rear of the school bus. (D250.1)[16]

(2) A flexible gasoline and oil-proof connection shall be provided at the engine end of the fuel feed line.

(3) The engine supply line shall be taken from the top of the tank.

(4) A drain plug of at least $\frac{1}{4}$ inch diameter shall be located at the bottom of the tank.

(5) The fill-pipe cap shall be of such design as to minimize spillage of fuel when the bus turns corners in either direction. If venting of the fuel tank is done other than through the fill-pipe cap, the cap shall be of the non-vented type.

(6) The fuel filter with replaceable element shall be installed between the fuel tank and carburetor.

(7) If tank sizes larger than 25 imperial gallons are supplied, the location of the front of the tank and filler spout must remain as specified below. The tank must be mounted directly on the right side of the chassis frame entirely outside the body.

(a) The tank shall not extend in height above the side member of the chassis;

(b) The distance from the centre line of the chassis to the outside of the tank shall not be more than 39 inches;

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[16]Ibid.

(c) The bottom of the tank shall be not more than 14 inches below the top of the frame;

(d) The distance from the cowl to the centre of the fill-pipe cap shall be 57 inches;

(e) The distance from the cowl to the front of the tank shall be 42 inches minimum;

(f) The distance from the centre line of the chassis to the centre of the fill-pipe cap shall be 44 inches with a plus or minus tolerance of $\frac{1}{2}$ inch permitted;

(g) The centre of the fill-pipe cap shall be 1 inch below the top of the frame with a plus or minus tolerance of $\frac{1}{4}$ inch permitted.

(Note) The fuel tank shall have a minimum capacity of; (D250.1)[17]

(a) 25 imperial gallons on school buses of less than 54 passenger capacity;

(b) 40 imperial gallons on school buses of 54 or more passenger capacity.

Generator or Alternator

(1) The generator or alternator with rectifier shall have a maximum output of at least 60 amperes with a minimum charging of 15 amperes at the manufacturers recommended engine idle speed (12-volt system), and shall be ventilated and voltage-controlled and, if necessary, current controlled. Dual belt drive shall be used with the generator or alternator.

(Note) The generator or alternator with rectifier shall have the following minimum output; (D250.1)[18]

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[17] Ibid.

[18] Ibid.

(a) 60 amperes on school buses of less than 54 passenger capacity;

(b) 80 amperes on school buses of more than 54 passenger capacity.

Governor

(1) An engine governor is permissible and where used, it shall be set at the manufacturer's recommended maximum engine speed. When it is desired to limit road speed, a road-speed governor should be installed.

Gross School Bus Weight

(Note) The gross school bus weight of the loaded school bus shall not exceed the chassis manufacturer's maximum gross school bus weight rating. (D250.1)[19]

(Note) In determining the payload weight of the body, the total seated pupil weight shall be based on 120 pounds per pupil and 150 pounds shall be used as the weight of the driver. (D250.1)[20]

Horn

(1) The school bus shall be equipped with a horn or horns of standard make, each horn capable of producing a complex sound in the band of audio frequencies between approximately 250 and 2,000 cycles per second and having a total sound level of 110 decibels, within these frequency

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[19]Ibid.

[20]Ibid.

limits, when measured at a point on the axis of the horn 3 feet from the exit of the horn.

(2) If a louder horn is desired it shall be capable of producing a sound level of 120 decibels.

Ignition Lock

(Note) A lock, key or other device to prevent the engine from being started by unauthorized persons, shall be provided. (D250.1)[21]

Instruments and Instrument Panel

(1) The chassis shall be equipped with the following instruments and gauges;

(a) Speedometer

(b) Odometer which will give accrued mileage including tenths of miles;

(c) Ammeter with graduated charge and discharge. Both ammeter and its wiring to be compatible with generating capacities and capable of recording a continuous current draw of 100 amperes;

(d) Voltmeter with graduated scale;

(e) Water-temperature gauge;

(f) Upper-beam headlamp indicator;

(g) Air-pressure and vacuum gauge, where air vacuum brakes are used, and audible or visible low-pressure indicator to warn the driver if air pressure in the air-brake system falls below 60 pound per square inch;

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[21] Ibid.

(h) Oil-pressure gauge;

(i) Fuel gauge.

(2) All instruments shall be easily accessible for maintenance and repair.

(3) The above mentioned instruments and gauges shall be mounted on the instrument panel in such a manner that each is clearly visible to the driver in the normal seated position.

(4) The instrument panel shall have lamps of sufficient candle power to illuminate all instruments and gauges.

Openings

(1) All openings in the floorboard or firewall between the chassis and passenger carrying compartment, such as for gearshift lever and auxiliary brake lever, shall be sealed unless altered by the body manufacturer.

Shock Absorbers

(1) The school bus shall be equipped with front and rear double-acting shock absorbers compatible with the manufacturer's rated axle capacity.

Springs

(1) Springs or suspension assemblies shall be of ample resiliency under all load conditions and of adequate strength to sustain the loaded school bus without evidence of overload.

(2) Spring or suspension assemblies shall be designed to carry their proportional share of the gross school bus weight in accordance with the requirement for weight distribution.

(Note) Springs shall be capable of supporting their designed share of the school bus gross weight, with provision to permit continued school bus operation in the event of spring failure. (D250.1)[22]

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

(3) If leaf-type front springs are used, stationary eyes shall be protected by a full wrapper leaf in addition to the main leaf.

Steering Gear

(1) The steering gear shall be approved by the chassis manufacturer and designed to assure safe and accurate performance when the school bus is operated with a maximum load and at maximum speed.

(2) The steering mechanism shall provide for easy adjustment for lost motion.

(3) There shall be a clearance of at least 2 inches between the steering wheel and cowl instrument panel, windshield, or any other surface.

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[22]Ibid.

(4) Power steering is permissible if approved by the chassis manufacturer.

Tire and Rims

(1) Minimum tire sizes are shown in Table V. Rim sizes and tire load per inflation pressure shall be based upon current standards of the Tire and Rim Association.

(2) Dual rear wheels shall be provided on all school buses.

(3) All tires on a given school bus shall be the same size and ply.

(4) The spare tire, if required, shall be suitably mounted in an accessible location outside the passenger compartment.

Transmission

(1) Mechanical type transmissions shall be synchromesh except that the first and reverse gears need not be. The transmission design shall provide not less than four forward and one reverse speeds.

Weight Destribution

(1) Weight distribution of the fully loaded school bus on a level surface shall be such that not more than 75 per cent of the gross school bus weight is on the rear tires and not more than 35 per cent is on the front tires.

TABLE V

TIRE AND RIM SIZES

Item	Chassis Size/Capacity					
	36	42	48	54	60	66
Recommended Manufacturer's Rated GVW (pounds)	14,000	16,000	17,000	18,000	20,000	22,000
Actual Average GVW (calculated) (pounds)	13,200	14,700	16,100	17,500	18,800	20,100
Recommended Tire (withtube) Minimum Size	7.00-20	7.50-20	7.50-20	8.25-20	8.25-20	9.00-20
Load Range/Ply Rating	E/10	D/8	E/10	E/10	E/10	E/10
Rim Size (with tube)						
Preferred	5.5	6.0	6.0	6.5	6.5	7.0
Alternate	5.0	5.5	5.5	6.0	6.0	6.5
Recommended Tubeless Tire Minimum Size	8-22.5	8-22.5	8-22.5	9-22.5	9-22.5	10-22.5
Load Range/Ply Rating	D/8	D/8	E/10	E/10	E/10	E/10
Rim Size for Tubeless						
Preferred	6.0	6.00	6.00	6.75	6.75	7.50
Alternate	5.25	5.25	5.25	6.00	6.00	6.75

BUS BODY

Aisle

(1) The minimum clearance of all aisles, including the aisle leading to the emergency door, shall be 12 inches

(2) Aisle supports of seat backs shall be slanted away from the aisle sufficiently to give an aisle clearance of 15 inches at the tops of seat backs.

Body Sizes

(1) Bodies for conventional body-on-chassis type school buses shall be limited to lengths shown in Table VI. Sizes are based on 27 inch centre-to-centre spacing between rows of forward - facing seats, an overall width of 96 inches, a centre aisle width of 12 inches, and average rump width of 13 inches for 3-3 seating plan and 15 inches for a 3-2 seating plan. Body lengths are measured from the back of the cowl to the rear of the body at floor level.

Color

(1) The school bus body including hood, cowl, and fenders shall be painted yellow in accordance with Color Number 505-111 of CGSB Specification 1-GP-12c,[24] Standard Paint Colors or the National Education Association Standard

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[24]Canadian Government Specification Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario K1A 0S5, 1965.

TABLE VI

SPECIFICATIONS

Number of Rows of Seats	Pupil Capacity		Maximum Body Length in Inches	Minimum Measurement, Cowl to Centre Line to Rear Axle in Inches	Minimum Measurement, Cowl to End of Frame in Inches
	3-3 Plan Rump Width of 13 inches	3-2 Plan Rump Width of 15 Inches			
4	24	20	178	102	173
5	30	25	196	123	187
6	36	30	222	125	210
7	42	35	250	142	241
8	48	40	277	160	268
9	54	45	304	192	295
10	60	50	332	211	323
11	66	55	355	229	349
*12	72	60	388	250	380

* Note - regulation under D250.1[23]

[23] Ibid.

Color Number 505-13432.[25]

(Note) Instead of National Education Association Standard Color Number 505-13432,[26] D250.1 refers to Color Number 13432 of U.S.A. Federal Standard 595a[27] (D250.1)[28]

(2) The rear bumper and lettering shall be black in accordance with Color Number 512-101 of C.G.S.B. Specification 1-GP-12c, Standard Paint Colors.[29]

(Note) The rear bumper and lettering can conform to the above or Color Number 17033 of U.S.A. Federal Standard 595a.[30]

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[25]National Education Association, National Education Association Standards, National Commission on Safety Education, 1201 Sixteenth Street, N.W. Washington, D.C. 20036, 1970.

[26]Ibid

[27]General Services Administration, Federal Supply Service, U.S. Federal Standard 595A, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

[28]Canadian Standards Association, C.S.A. Standard D250.1-1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975.

[29]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario, K1A 0S5, 1965.

[30]General Services Administration, Federal Supply Service, U.S. Federal Standard 595A, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, 1966.

(3) Body trim, if used, shall be black in uniformity with the foregoing clause.

General Body Construction

(1) Construction shall be of prime commercial quality steel or other metal, or other material with strength at least equivalent to all - steel as certified by the school bus body manufacturer. All such construction materials shall be fire-resistant.

(2) Construction shall provide a reasonably dustproof and watertight unit.

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

(4) The school bus body shall meet the requirements of the Static Hood Test Code for school bus body structure, of the School Bus Manufacturers' Institute.[31] Deflections of the body structure must not exceed the following measurements;

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[31]School Bus Manufacturer's Institute, School Bus Manufacturers Institute Test Code, School Bus Manufacturers Institute, 5530 Wisconsin Avenue, Washington, D.C. 20015, 1954.

(a) Deflection at the centre of roof bow - 3.00 inches;

(b) Deflection of each side pillar at the window sill level - 1.00 inches;

(c) Deflection at centre of the floor - .40 inches.

Floor Construction

(1) The floor shall be of prime - commercial quality steel of at least 14 gauge with an overlay of at least ½ inch covering of 5-ply plywood which equals or exceeds the properties of Select Sheeting C Improved for Underlay of CSA Standard 0121, Douglas Fir Plywood.[32] Other forms of durable hardwood covering of commensurate strength may be used. Chipboard and loose composite board shall not be permitted. The floor shall be level from front to back and from side to side except in wheel housings, toeboard, and the driver's seat platform areas.

Roof Strainers

(1) Two or more roof strainers or longitudinal members shall be provided to connect the roof bows, to reinforce the flattest portion of the roof skin and to space the roof bows. These strainers may be installed between roof bows or applied externally. They shall extend from the

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[32]Canadian Standards Association, C.S.A. Standard 0121 - Douglas Fir Plywood, (Rexdale, Ontario: Canadian Standards Association, 1961).

windshield header and, when combined with the rear emergency door post, are to function as longitudinal members extending from the windshield header to the rear floor body cross member. At all points of contact between strainers or longitudinal members and other structural material, attachement shall be made by means of welding, riviting and bolting.

(2) After the load, as called for in the Static Load Test Code,[33] has been removed, none of the following defects shall be evident;

(a) Failure or separation of joints where strainers are fastened to the roof bows;

(b) Appreciable difference in deflection between adjacent strainers and roof bows;

(c) Twisting, buckling, or deformation of the strainer cross section.

Side Strainer

(1) There shall be one or more side strainers or longitudinal members to connect vertical structural members and to provide impact and penetration resistance in event of contact with other vehicles or objects. Such strainer(s) shall be formed from metal of at least 16-gauge and 3 inches wide.

(2) Side strainer(s) or equivalent longitudinal members shall be installed in the area between the bottom

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[33]School Bus Manufacturer's Institute, School Bus Manufacturers Institute Test Code, School Bus Manufacturers Institute, 5530 Wisconsin Avenue, Washington, D.C. 20015, 1954.

of the window and the bottom of the seat frame and shall extend completely around the school bus body except for door openings and the body cowl panel. These shall be fastened to each vertical structural member in any one or any combination of the following methods as long as stress continuity of the member(s) is maintained;

(a) Installed between vertical members;

(b) Installed behind panels but attached to vertical members;

(c) Installed outside external panels.

(3) The fastening method employed shall be such that the strength of strainer(s) is fully utilized.

Rear Corner Reinforcement

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

Floor Sills

(1) There shall be one main body sill at each side post and two intermediate body sills on approximately 10 inch centres. All sills shall be of equal height, not to exceed 3 inches. All sills shall extend the width of the body

floor except where structural members or features restrict the area.

(2) The main body sill shall be equivalent to, or heavier than, 10 gauge and each intermediate body sill shall be equivalent to, or heavier than, 16 gauge, or each of all body sills shall be equivalent to, or greater than, 14 gauge. All sills shall be permanently attached to the floor.

(3) Connections between the sides and floor system shall be capable of distributing loads from vertical posts to all floor sills. As evidence that this requirement is fulfilled, none of the following conditions shall occur during or after the application of the load, as called for in the Static Load Test Code.[34]

(a) Appreciable difference in deflection between adjacent sills;

(b) Failure or separation in joints where floor, floor sills, and sides connect;

(c) Twisting, buckling, or deformation of floor sill cross sections.

Openings

(1) All openings between the chassis and passenger carrying compartment, made due to alterations by the body manufacturer, shall be sealed.

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[34]Ibid.

Defrosters

(1) Defrosters shall be of sufficient capacity to keep the windshield, the window to the left of the driver, and glass in the entrance door clear of fog, frost and snow. This may be done by using fans or by taking heat directly from the approved heater or auxiliary heaters.

Service Door

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

(Note) Power operated doors shall be equipped for manual operation in case of power failure. (D250.1)[35]

(2) The service door shall be located on the right side of the school bus opposite the driver and within his direct view.

(3) The service door shall have a minimum horizontal opening of 24 inches and minimum vertical opening of 68 inches.

(4) The service door shall be of a split type, sedan type, or jack-knife type. A split-type door includes any sectioned door which divides and opens inward or outward.

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[35]Canadian Standards Association, C.S.A. Standard D250.1-1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975.)

If one section of a split-type door opens inward and the other opens outward, the front section shall open outward.

(5) Both upper and lower panels shall be double-paned hermetically- sealed safety glass. The bottom of the lower glass panel shall not be more than 35 inches from the ground when the school bus is unloaded. The top of the upper glass panel shall not be more than 6 inches from the top of the door.

(6) The vertical closing edges shall be equipped with flexible material to protect the children's fingers.

(7) There shall be no door to the left of the driver.

Emergency Door and Emergency Window

(1) The emergency door shall be located in the centre of the rear end of the school bus or in the rear half of the left side of the bus if the engine or the luggage compartment is so located as to make it impossible to place the door in the centre at the rear end.

(2) The emergency door shall have a minimum horizontal opening of 24 inches and a minimum vertical opening of 48 inches measured from the floor level.

(3) The rear emergency door if located at the centre rear of the school bus shall be hinged on the right side as viewed from the exterior at the rear of the school bus. If the emergency door is located on the left side of the school bus, then the hinge shall be on the left edge of the

door as viewed from the exterior. The emergency door in either location shall open outward and shall be labelled inside to indicate how it operates.

(4) The upper portion of the emergency door shall be equipped with approved safety glass, the exposed area of which shall be not less than 400 square inches.

(5) There shall be no steps leading to the emergency door.

(6) No seat or other object shall be so placed in the school bus as to restrict any part of the passageway leading to either the rear or leftside emergency door to an opening smaller than a rectangle of 12 inches in width and 48 inches in height measured from the floor level.

(7) The words, "EMERGENCY DOOR", and/or "SORTIE DE SECOURS", both inside and outside, in letters at least 2 inches high shall be placed above the emergency door or on the upper portion of the emergency door.

(8) If the emergency door is located on the left hand side of the school bus;

(a) The window at the rear shall be designed as an emergency exit and shall be no smaller than 16 inches in height and 54 inches in width on school buses 80 inches or more in width; it shall be no smaller than 16 inches in height and 48 inches in width on school buses less than 80 inches in width. The window shall be hinged from the top and devised and operated to ensure against accidental closing in an emergency.

(b) Panelling is required to cover the space between the top of the rear divan seat and the inside surface of the emergency window at the rear.

(9) The words "EMERGENCY EXIT" and/or "SORTIE DE SECOURS", in letters at least 2 inches high, shall be placed directly above the emergency window on the inside and directly below it on the outside.

(10) The emergency door and emergency window shall be designed to be opened from the inside and outside the bus and shall be equipped with a fastening device which may be quickly released but is designed to offer protection against accidental release. Control from the driver's seat shall not be permitted. Provision for opening from the outside shall consist of a non-detachable device so designed as to prevent hitching-to, but to permit opening when necessary.

(11) The emergency door shall be equipped with a slide-bar, cam-operated lock. The slide-bar shall have a minimum stroke of 1 inch. The emergency door lock shall be equipped with a suitable electric plunger-type switch connected with a buzzer located in the driver's compartment. The switch may be enclosed in a metal case, and wires leading from the switch shall be concealed in the school bus body. The switch shall be so installed that the plunger contacts the farthest edge of the slide-bar in such a manner that any movement of the slide-bar will immediately close the circuit on the switch and activate the buzzer.

(12) The door lock shall be equipped with an interior handle that extends approximately to the centre of the emergency door. It shall lift up to release the lock.

(13) The emergency window in the rear shall be equipped with a latch on the inside, connected with the electric buzzer that will actuate when the latch is being released. It shall be so equipped on the outside with a nondetachable fastening device so designed as to prevent hitching-to, but to permit opening from the outside.

(Note) An arrow indicating the direction the release mechanism should be turned (re-clause 10) to open the emergency door shall be painted in a contrasting color on the inside and outside of the emergency door. (D250.1)[36]

Fire Extinguisher

(1) The school bus shall be equipped with at least one dry-chemical type fire extinguisher mounted in the extinguisher manufacturer's bracket of the automotive type, in a location readily accessible to the driver. If the fire extinguisher is not in view (such as in a closed compartment), its location shall be clearly marked.

(2) The fire extinguisher shall bear the label of a recognized testing agency, showing a rating of not less than 2-A; 10-B; C.

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[36]Ibid.

(Note) The fire extinguisher shall be equipped with a pressure gauge which will indicate the condition of the extinguisher. (D250.1)[37]

First-Aid Kit

(1) The school bus shall carry a unitized kit packed in a sturdy, dustproof metal container and shall contain at least the following;

(a) Triangular bandage - 2

(b) Bandage compress 4 in. - 1

(c) Gauze compress 36 in. x 36 in. - 1

(d) Bandages 2 in. x 6 yds. - 2

(e) Telfa pads - 4

(f) Safety bands 1 inch wide - 12

(g) Tube gauze with applicator - 5 yds.

(h) Metal splint 2-3/4 in. x 24 in. rolled - 1

(i) Safety pins 2 in. - 12

(j) Scissors small - 1 pair

(Note) The first aid kit shall be mounted in a location readily accessible to the driver. If the first aid kit is not in view, its location shall be clearly marked. The kit shall contain the following; (D250.1)[38]

(a) Adhesive dressings 1 in. x 3 in., individually wrapped - 150

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[37]Ibid.

[38]Ibid.

(b) Compress dressings, 2 in.	- 8
(c) Compress dressings, 4 in.	- 6
(d) Eye dressing kit (1 eye shield and 2 gauze pads)	- 2
(e) Gauze dressings, 4 ply, minimum 36 in. x 36 in. square	- 3
(f) Gauze bandages, 2 in. x 6 yds.	- 2
(g) Adhesive tape, 1 in. x 5 yds.	- 1
(h) Triangular bandage	- 6
(i) Metal splint 2-3/4 in. x 24 in. rolled	- 1
(j) Scissors (pair)	- 1
(k) Sliver tweezers (pair)	- 1
(l) Safety pins 2 inch	- 12

Floor Covering

(1) The floor in the underseat area, including the wheel housing, driver's compartment, and toeboard, shall be covered with a fire-retardant covering. The covering shall have a minimum overall thickness of .125 inch. The covering shall be made of rubber, linoleum, or a commensurate product.

(2) The floor covering in the aisle shall be of an aisle - type fire-retardant rubber or equivalent, non-skid wear-resistant, and ribbed. The minimum overall thickness shall be .1875 inch measured from the tops of the ribs. The rubber floor covering shall meet C.G.S.B. Specification

20-GP-32, Matting: Floor, Rubber or Plastic.[39]

(Note) In the above clause the durometer hardness shall be 80 ± 10. (D250.1)[40]

(2) The floor covering must be permanently bonded to the floor and must not crack when subjected to sudden changes in temperature. Bonding or adhesive material shall be waterproof and shall be of the type recommended by the manufacturer of floor-covering material. All seams must be sealed with a waterproof sealer.

Heaters

(1) Where heaters are required, they shall be hot-water or combustion type.

(2) If only one heater is used, it shall be fresh-air or combination fresh-air and recirculating type. If more than one heater is used, additional heaters may be of the recirculating type.

(3) Where hot-water heaters are used, they shall bear a name plate rating in accordance with Standard Code for Testing and Rating Automotive Bus Hot Water Heating and Ventilating Equipment, the plate to be affixed by the heater manufacturer.

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[39]Canadian Government Specifications Board, C.G.S.B. Standards, Canadian Government Specifications Board, 88 Metcalfe Street, Ottawa, Ontario K1A 0S5, 1969.

[40]Canadian Standards Association, C.S.A. Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

(4) All combustion type heaters shall be approved by Underwriter's Laboratories of Canada.

(Note) All combustion type heaters shall be approved by a recognized testing agency. (D250.1)[41]

(Note) Heater hoses shall meet the following requirements:

(a) They shall be adequately supported to guard against excessive wear due to vibration;

(b) The hoses shall not dangle or rub against the chassis or sharp edges, and shall not interfere with, or restrict, the operation of any engine function;

(c) The hoses shall conform to S.A.E. Standard J20, Coolant System Hoses;[42]

(d) Heater lines inside the passenger compartment shall be guarded to prevent accidental contact by the driver or passengers and to provide protection in case of hose bursting.

Identification

(1) The body shall bear the words "SCHOOL BUS" and/or "ECOCIERS" in block letters at least 8 inches high, with a minimum stroke width of 1-1/4 inches, on both the front and rear of the body, or on signs attached thereto. Lettering shall be placed as high as possible without impairment of its visibility.

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[41] Ibid.

[42] Society of Automotive Engineers, S.A.E. Handbook Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale Pa., 15086, 1975.

(Note) Lettering shall conform to details in the Manual on Uniform Traffic Central Services of the Canadian Good Roads Association. (D250.1)[43]

(2) Words "STOP WHEN RED LIGHTS FLASHING" and/or "ARRETEZ AUX SIGNAUX CLIGNOTANTS" shall be displayed on the rear of the bus. The word "STOP" by itself shall not be used. The height of letters shall not exceed 5 inches.

(Note) Unless otherwise required by provincial law, the words "DO NOT PASS WHEN SIGNALS FLASHING" shall be displayed on the rear of the bus in letters as large as possible, but not exceeding 5 inches. The word "STOP" by itself shall not be used. (D250.1)[44]

Inside Height

(1) The inside body height shall be a nominal 72 inches or more, measured metal-to-metal, at any point on the longitudinal centre line from the front vertical bow, to the rear vertical bow.

Insulation

(1) All school buses shall have the ceiling and walls insulated with proper materials to deaden sound and vibration and to reduce heat transfer.

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[43]Canadian Standards Associations, C.S.A. Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

[44]Ibid.

(2) All insulating materials used for the reduction of heat transfer shall be at least 1-1/2 inches thick density 1.1 and shall have a "K" factor of at least .262

(3) A foamed-in-place type of insulation when used alone shall be of equivalent performance.

Interior

(1) The interior of the school bus shall be free of all unnecessary projections likely to cause injury. This standard requires an inner lining on the ceiling and walls.

(2) Ceilings over aisles shall be free of all projections.

General Lamps, Reflectors and Signals

(1) All lamps and their installation shall conform to C.S.A. Standard D106.1, Lighting of Vehicles.[45]

(Note) All lamps and reflectors and their installation, shall conform to C.S.A. Standard D106.1, Lighting of Vehicles,[46] or the Canadian Motor Vehicle Safety Standard 108, Lighting Equipment,[47] or the U.S.A. Federal Motor

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[45]Canadian Standards Association, Standard D106.1 - 1971, Lighting of Vehicles, (Rexdale, Ontario: Canadian Standards Association, 1971.)

[46]Ibid.

[47]Motor Vehicle Safety Act, R.S.C. - 1970, Chapter 26 First Supp.

Vehicle Safety Standard 108, Lamps, Reflective Devices.[48] (D250.1)[49]

Head Lamps

(1) The school bus shall be equipped with headlamps.

Clearance and Side-Marker Lamps

(1) Clearance and side-marker lamps (amber at front, red at rear) shall be mounted as high as possible on a permanent structure of the school bus and in such a manner as to indicate the extreme width of the body. Clearance lamps and side-marker lamps may be in combination.

Tail and Brake Lamps

(1) The school bus shall be equipped with two tail lamps and two stop (brake) lamps, not in combination, emitting red light plainly visible for a distance of 500 feet to the rear. Stop lamps shall have a light intensity at least equal to that of Class A turn signal lamps as established in S.A.E. Standard J 588d, "Turn Signal Lamps."[50]

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[48]National Highway Traffic Safety Administration, U.S. Federal Motor Vehicle Safety Standards, Office of the Federal Registrar, National Archives and Records Service, Washington D.C., 10408, 1966.

[49]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

[50]Society of Automotive Engineers, S.A.E. Handbook Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa. 15086, 1975.

(2) Tail lamps shall be mounted not less than 40 inches from the surface on which the school bus stands. Stop (brake) lamps shall be as high as practicable but below the window line, and spaced as far apart laterally as practicable, but not less than 3 feet. Measurements shall be taken from lamp centres.

Interior Lamps

(1) Interior lamps shall be provided which adequately illuminate the aisle and step-well.

Flashing Red Signal Lamps

(1) The bus shall be equipped with school bus, alternately flashing, red signal lamps intended to identify the vehicle as a school bus and inform other users of the highway that such a school bus is stopped or about to stop on the roadway to take on, or discharge, school children.

(2) The school bus shall be equipped with two red lamps at the rear of the school bus and two red lamps at the front of the school bus, which shall be controlled by an independent manually actuated switch and when actuated shall flash alternately at a rate of 60 to 120 cycles per minute. The "ON" period shall be long enough to permit the bulb filament to come up to full brightness. No brake-operated switch shall be permitted.

(3) There shall be a visible or audible means of giving a clear and unmistakable indication to the driver

when the signalling system is turned on.

(5) Installation of the signal lamps shall comply with the following;

(a) Each signal lamp shall be mounted with its axis substantially parallel to the longitudinal axis of the school bus;

(b) The front and rear lamps shall be spaced as far apart laterally as practicable, but in no case shall the spacing between the centres be less than 40 inches;

(c) Signal lamps shall be mounted at the front on the same horizontal centre line and above the windshield, and at the rear on the same horizontal centre line, so that the lower edge of the lens is not lower than the top line of the side window opening;

(d) Vision of the front signal lamps to the front, and rear signal lamps to the rear, shall be unobstructed by any part of the school bus from 5 degrees above to 10 degrees below the horizontal and from 30 degrees to the right and 30 degrees to the left of the centre line of the school bus;

(e) The area around the lens of each alternately flashing red signal lamp, and extending outward approximately 3 inches, shall be painted black;

(f) Each lamp shall be mounted with its aiming plane, vertical and normal to the school bus axis;

(Note) If acceptable to the authority having jurisdiction, four alternately flashing amber signal lamps may be installed, in addition to the four lamps described in clause 2 above. (D250.1)[51]

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[51]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

Turn Signal Lamps

(1) The school bus shall be equipped with Class A turn signal lamps that meet specifications of S.A.E. Standard J588d, Turn Signal Lamps.[52] These signals must be independent units and shall be equipped with a four-way hazard warning switch to cause simultaneous flashing of turn signal lamps when needed as a vehicular traffic hazard warning.

Flags and Flares

(1) The school bus shall carry, at all times, at least three red cloth flags not less than 12 inches square and a means for mounting for use in warning traffic in the event of prolonged stops on the highway.

(2) The school bus shall also carry at least three red electric lanterns, or three red emergency reflectors, or three advance warning triangles conforming to C.S.A. Standard D171, "Highway Advance Warning Device[53] to be displayed according to provincial law in the event of prolonged stops on the highway.

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[52]Society of Automotive Engineers, S.A.E. Handbook, Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, PA. 15086, 1975.

[53]Canadian Standards Association, Standard D171-1964, Highway Advance Warning Device, (Rexdale, Ontario: Canadian Standards Association, 1964).

Metal Treatment

(1) All metal used in construction of the bus body shall be zinc - or aluminum - coated or treated by an equivalent process before the bus body is constructed.

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

(3) In providing for the above requirements, particular attention shall be given to lapped surfaces, welded connections of structural members, cut edges, punched or drilled holes areas in sheet metal, closed or box sections, unvented or undrained areas, and surfaces subjected to abrasion during school bus operation.

(4) As evidence that the above requirements have been met, samples of materials and sections used in construction of the school bus body, when subjected to the 1,000 - hour salt spray test of A.S.T.M. Standard B117, Standard Method of Salt Spray (Fog) Testing,[54] shall not lose more than 10 per cent of material by weight.

Mirrors

(1) The interior clear-view mirror shall be at

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[54]American Society for Testing and Materials, A.S.T.M. Standards, American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103, 1964.

least 6 by 30 inches overall to afford a good view of pupils and roadway to the rear. If not metal backed and framed, the mirror shall be of laminated plate safety glass. It shall have rounded corners and protected edges.

(2) Two exterior clear-view rearview mirrors shall be provided, one to the left and one to the right of the driver. The area of each mirror shall be not less than 50 square inches overall. Each mirror shall be firmly supported, and adjustable to give the driver clear views past the left rear and right rear of the school bus.

(3) An exterior convex mirror of at least 7-1/2 inches in diameter shall be provided and may be located on the left or right side of the school bus in such a manner that the seated driver may observe through its use, areas to the front or side of the school bus where direct observation is not possible.

(Note) A convex mirror shall be firmly mounted on the roof, right windshield corner post, or exterior right rear-view mirror, or a combination thereof, so that the seated driver may observe a reflection of the ground surface immediately adjacent to the right front wheel. (D250.1)[55]

Mounting

(1) The chassis frame shall extend to the rear edge

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[55]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses (Rexdale, Ontario: Canadian Standards Association, 1975).

of the rear body cross member. The school bus body shall be attached to the chassis frame in such a manner as to prevent shifting or separation of the body from the chassis under severe operating conditions.

(2) The body front shall be attached and sealed to the chassis cowl in such a manner as to prevent entry of water, dust, and fumes through the joint between the chassis cowl and the body.

(3) Insulating material shall be placed at all contact points between the body and the chassis frame. Insulating material shall be approximately $\frac{1}{4}$ inch thick, shall have the quality of sidewall of automobile tires, and shall be so attached to the chassis frame or body member that it will not move under severe operating conditions.

Rub Rails

(1) There shall be one rub rail located on each side of the bus approximately at seat level which shall extend from the rear side of the entrance door completely around the school bus body (except for the emergency door) to the point of curvature near the outside cowl on the left side.

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

(3) Both rub rails shall be attached at each body

part and all other upright structural members.

(4) Both rub rails shall be 4 inches or more in width and be of 16 - gauge steel, and shall be constructed in corrugated or ribbed fashion.

(5) Both rub rails shall be applied outside the body or outside the body posts. Pressed-in or snap-on rails do not satisfy this requirement.

(6) In addition to the rub rails required above, a third rail shall be rivited to the skirt of the school bus to be used as a snow rail. Such a snow rail shall be of sufficient strength to withstand snowbanks or snowdrifts without permanent distortion to the skirt.

Sanders

(1) When required or used, sanders shall;

(a) Be of the hopper cartridge - valve type;

(b) Have a metal hopper with all interior surfaces treated to prevent condensation of moisture;

(c) Be of at least 100 pound capacity;

(d) Have a cover on the filler opening of the hopper, which screws into place, sealing the unit airtight;

(e) Have discharge tubes extending to the front of each rear wheel under the fender;

(f) Have no - clogging discharge tubes with slush-proof, non-freezing rubber nozzles;

(g) Be operated by an electric switch with telltale light mounted on the instrument panel;

(h) Be exclusively driver-controlled;

(i) Have a gauge to indicate hoppers need refilling when they are down to one-quart full.

Seat Belt for Driver

(1) A seat belt for the driver shall be provided to comply with C.G.S.B. Specification 97-GP-209, Seat Belt Assemblies.[56]

(Note) The seat belt shall be equipped with a retractor/retractors of sufficient quality and strength to keep the belts, on both sides, off the floor and enclosed when not in use. This requirement will be deemed to have been met in the use of a sheath and retractor belt assembly. (D250.1)[57]

Seats

(1) All seats shall have a minimum depth of 14 inches.

(2) In determining the seating capacity of the school bus, the allowable average rump width shall be;

(a) 13 inches where a 3-3 seating plan is used;

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[56]Canadian Government Specification Board, C.G.S.B. Standards, Canadian Government Specifications Board 88 Metcalfe Street, Ottawa, Ontario, K1A 0S5, 1968.

[57]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standard Association, 1975).

(b) 15 inches where a 3-2 seating plan is used.

(3) All seats shall be forward facing and shall be securely fastened to that part or parts of the school bus which support them.

(4) No school bus shall be equipped with jump seat or portable seats.

(5) The forward - most pupil seat on the right side of the school bus be located so as not to interfere with the driver's vision, not farther forward than the guard rail behind the driver or rear of the driver's seat when adjusted to the rearmost position.

(6) The minimum centre-to-centre seat spacing shall be 27 inches. The distance between the driver's seat when adjusted to the rearmost position and front face of the seat-back of the forward - most pupil seat on the left side of the school bus shall be not less than 24 inches measured at cushion height.

(7) Seat cushions shall be constructed with springs, foam rubber, polyurethane foam, or other equivalent material. If springs are used, there shall be at least 21 springs per cushion. Padding used to cover springs may be cotton, rubberized hair, foam rubber, or other equivalent material. If cotton or similar material is used, padding for cushions shall be at least 2 inches thick, except for a reasonable distance from the edge of the cushion to allow for curve

of edges. If sponge rubber, rubberized hair, or similar material is used, its thickness shall be at least 5 inches and it shall be depressed not more than 80 per cent when a distributed weight of 345 pounds is applied to it. If cotton or similar material, rubberized hair, foam rubber, or polyurethane foam is used in seat back rests, it shall be approximately 2 inches thick and shall not be depressed more than 30 per cent when a distributed weight of 300 pounds is applied to it. Seat coverings shall be artificial leather equal to coated fabrics, 42 ounce finished weight, 54 inches wide, reinforced backing of 1.06 broken twill. Padding and covering on all seats shall be of a material that will not flash or explode upon contact with a spark or open fire. Seams of seat cushions shall be made of good quality welt.

(Note) All exposed tops and side rails of school bus passenger seats shall be padded extending to seat cushion level with an energy absorption material sufficient to minimize injury producing impact forces. The side rails shall be provided, in such a manner, as to retain the 12 inch aisle. Back cushions shall be constructed so as to eliminate exposed screws or bolts, which contribute to vandalism of seats and their components. (D250.1)[58]

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[58]Ibid.

(8) The minimum distance between the steering wheel and the back rest of the driver's seat shall be 12 inches. The drivers seat shall be strongly attached, shall have vertical adjustment, and shall have fore-and-aft adjustment of not less than 4 inches.

(Note) The minimum distance between the steering wheel and the back rest of the driver's seat shall be 11 inches. (D250.1)[59]

(9) A minimum of 36 inch headroom for the sitting position above the top of the undepressed cushion line in all seats shall be provided. Measurements shall be made vertically not more than 7 inches from the side wall at cushion height and at the fore-and-aft centre of the cushion.

(10) Backs of the seats of similar size shall be of the same width at the top and the same height from the floor and shall slant at the same angle from the floor. The top portion of the frame of each seat, except the rear-most seat, shall be padded and covered.

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

(12) All metal frames shall have rounded corners and be free from sharp edges.

(Note) The passenger seat cushion retention system shall be employed to prevent passenger seat cushions from

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[59]Ibid.

disengaging from seat frames in the event of an accident. Each seat cushion retention system shall be capable of withstanding a vertical static load equal to a minimum of 5 times the weight of the cushion. The system shall be capable of withstanding a forward or rearward static load equal to 20 times the weight of the cushion. (D250.1)[60]

Stanchions and Guard Rails

(1) A vertical stanchion shall be installed at the upper rear corner of the driver's seat in such a position as neither to interfere with adjustment of the driver's seat nor to obstruct a 12 inch aisle. A guard rail, approximately 30 inches above the floor, and so placed as not to interfere with fore-and-aft adjustment of the driver's seat, shall extend from the vertical stanchion to the left-hand wall behind the driver's seat.

(2) A vertical stanchion shall be installed at the rear of the entrance stepwell from roof to floor. Placement shall not restrict the passageway at any level to less than 24 inches nor the aisle to less than 12 inches.

(3) A guard rail and stepwell guard panel shall be installed from the stepwell stanchion to the right-hand wall to prevent children in the front seat from being thrown into the stepwell in case of a sudden stop. The guard rail shall

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[60]Ibid.

be approximately 30 inches above the floor and its guard panel shall not restrict the entrance passageway to less than 24 inches at any level. The panel shall extend from the guard rail to within 2 inches from the floor. If the panel extends over or into the stepwell opening, it must be flanged at the floor line so as to close any opening between panel and floor.

(4) Clearance between the stepwell guard panel and the first pupil seat shall be at least 24 inches measured from the panel to the front face of the seat back at cushion height.

(5) All stanchions and guard rails shall be a minimum of 1 inch outside diameter and stainless steel clad.

(Note) Stanchions and guard rails shall be padded with energy-absorbing material designed to minimize injury-producing impact forces. Padding on stanchions shall extend to within 3 inches of the school bus ceiling, and to within 3 inches of the school bus floor. Padding of each guard rail shall extend from the school bus wall to its farthest support. (D250.1)[61]

Steps.

(1) The first step at the service door shall be not less than 12 inches and not more than 16 inches from the

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[61] Ibid.

ground, based on standard chassis specifications.

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

(3) Steps shall not protrude beyond the side body line.

(4) A grab handle not less than 10 inches in length shall be provided in an unobstructed location inside the doorway.

(5) Surfaces of steps shall be of a non-skid material.

(Note) All steps, including the floor line platform area, shall meet the following requirements; (D250.1)[62]

(a) They shall be covered with 3/16 inch rubber, metal-backed treads, with at least a 1-1/2 inch white nosing or a 3 inch white, rubber step edge with a metal back at the floor line platform area;

(b) The metal back of the tread, a minimum 24 gauge cold rolled steel, shall be permanently bonded to the ribbed rubber. The grooved design shall be such that said grooves run at a 90 degree angle to the long dimension of the step tread;

(c) The 3/16 inch ribbed step tread shall have a 1-1/2 inch white nosing as an integral piece without any joint;

(d) The rubber portion of the step treads shall have the following characteristics;

(i) Special compounding for good abrasion resistance and high

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[62]Ibid.

coefficient of friction;

(ii) Flexibility so that it can be bent around a ½ inch mandrel both at 130 degrees Fahrenheit and 20 degrees Fahrenheit without breaking, cracking, or crazing;

(iii) Show a durometer hardness of 85 to 95.

(Note) The stepwell shall be adequately illuminated, while being used, by at least one lamp providing a white light. The lamp shall be actuated automatically by the opening of the door. (D250.1)[63]

Stirrup Steps

(1) There shall be one stirrup step and a suitably located handle on each side of the front of the body for easy accessibility for cleaning the windshield and lamps.

Stop Signal Arm

(1) A stop signal arm may be installed on the left side of the bus, and if used, it shall be red color and shall have attached two closely - coupled, flashing red lights.

Storage Compartment

(Note) A metal container of adequate strength and capacity for storage of tire chains and/or tow chains, and such tools as may be necessary for minor emergency repairs

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[63]Ibid.

while the school bus is in route, shall be provided. Such storage container may be located either inside or outside the passenger compartment but, if inside, it shall have a cover capable of being securely latched and it shall be fastened to the floor in the right rear or right front of the school bus. The seat cushion may not serve as a cover for the compartment. (D250.1)[64]

Sun Shield

(1) An interior adjustable sun shield not less than 6 inches by 16 inches in size shall be installed above the windshield.

(Note) Transparent sun shield shall be 6 inches by 30 inches. (D250.1)[65]

Tailpipe

(1) The tailpipe shall not extend beyond the rear bumper.

(Note) The tailpipe shall extend to the rear edge of the body but not beyond the rear bumper. (D250.1)[66]

Undercoating

(1) The entire underside of the front fenders and

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[64]Ibid.

[65]Ibid.

[66]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

body, including floor members and side panels below floor level, shall be coated with fire-resistant, asphalt base, rubber base, or other undercoating material of equal quality applied by spray method to a thickness of not less than 1/8 inch or equivalent in order to seal, to deaden sound, to insulate, and to prevent oxidation.

Ventilation

(1) The body shall be equipped with a suitable, controlled ventilating system of sufficient capacity to maintain a proper quantity of air under operating conditions without opening of windows except in extreme warm weather.

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

Wheel Housings

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

(2) The inside height of wheel housings above the floor line shall not exceed 10 inches.

(3) Wheel housings shall provide clearance for chains on dual wheels.

Windshield and Windows

(1) All glass in the windshield, windows, and doors shall be safety glass, conforming to A.N.S.I. Standard 226.1, "Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways",[67] so mounted that a permanent mark is visible, and of sufficient quality to prevent distortion of view in any direction.

(2) Glass in the windshield shall be heat - absorbent, laminated plate. The windshield shall be large enough to permit the driver to see the roadway clearly, shall be slanted to reduce glare, and shall be installed between the front corner posts that are so designed and placed as to afford minimum obstruction to the driver's view of the roadway.

(3) The windshield shall have a horizontal gradient band starting slightly above the line of the driver's vision and gradually decreasing in light transmission to 20 per cent or less at the top of the windshield.

(4) The window to the driver's immediate left and the first two windows on each side shall be hermetically sealed double paned glass with an insulating air space.

(5) Each full side window shall provide an effective emergency opening of at least 9 inches high and 22 inches

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[67] American National Standards Institute, Inc., A.N.S.I. Standards, American National Standard Institute Inc., 1430 Broadway, New York, New York, 10018, 1966.

wide, obtained by lowering of the window. There shall be at least one knockout window or push out window on hinges on each side.

(6) Knockout type, split-sash windows may be used throughout.

(7) All exposed edges of glass shall be banded.

Windshield Washers and Wipers

(1) The school bus shall be equipped with two adequate, positive action, variable speed, electric - type windshield wipers, each with its own electric motor.

(2) Windshield washer shall be required and shall conform to the body manufacturer's recommendations as to type and size for the school bus on which they are to be used.

(Note) The windshield wiper and washer system shall be effective up to the maximum governed speed of the school bus. (D250.1)[68]

(Note) The windshield wiper arms and blades shall have a non-glare finish. (D250.1)[69]

General Wiring

(1) All wiring shall conform to current standards

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[68]Canadian Standards Association, C.S.A. Standard D250.1, Large School Buses - 1975 (Rexdale, Ontario: Canadian Standards Association, 1975).

[69]Ibid.

of the Society of Automotive Engineers. (S.A.E.)[70]

Circuits

(1) Wiring should be arranged in at least eight regular circuits, as follows;

(a) Head, tail, stop (brake), and instrument panel lamps;

(b) Clearance and stepwell lamps;

(c) Dome lamps;

(d) Starter motor;

(e) Ignition, emergency door signal, and emergency window signal (D250.1)[71];

(f) Turn signal lamps;

(g) Alternately flashing signal lamps;

(h) Horn.

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

(3) Whenever possible, all other electrical functions shall be provided with independent and properly protected circuits.

(4) Each body circuit shall be color-coated and a diagram of the circuits shall be attached to the body in a readily accessible location.

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[70]Society of Automotive Engineers, S.A.E. Handbook, Vol. I, II, Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pa., 15086, 1975.

[71]Canadian Standards Association, Standard D250.1 - 1975, Large School Buses, (Rexdale, Ontario: Canadian Standards Association, 1975).

(Note) Each body circuit shall be coded by number, letter, or color and a diagram of the circuits shall be attached to the body in a readily accessible location.

Fuses and Circuit Breakers

(1) A separate fuse or circuit breaker shall be provided for each circuit except starter motor and ignition circuits and shall be so located to be easily accessible.

Insulation and Protection

(1) All wires within the body shall be insulated and protected by a covering of fibrous loom (or equivalent) which will protect them from external damage and minimize dangers from short circuits. Whenever wires pass through a body member, additional protection in the form of appropriate types of inserts shall be provided.

Fastening and Joining

(1) Wires which cannot be enclosed within the body shell, shall be fastened securely at intervals of not more than 24 inches. All joints shall be soldered or joined by equally effective connectors.

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