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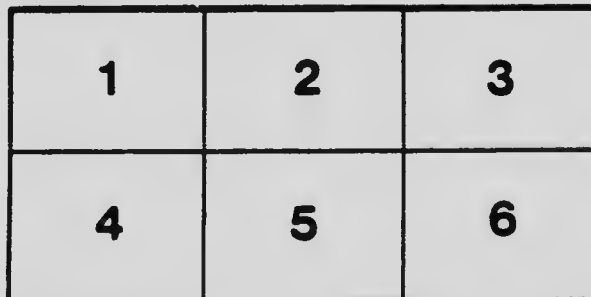
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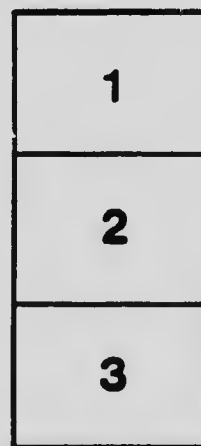
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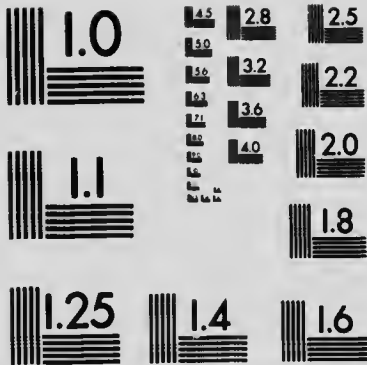
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REPORT
ON
**The Proposed
Hydro-Electric Radial
Railway**

From Port Credit to St. Catharines, Ont.

BY

The Board of Engineers

Appointed at request of Committee of Citizens of Hamilton

By

**THE CANADIAN SOCIETY OF
CIVIL ENGINEERS,**

Toronto Branch

1913

Lt.-Col. R. W. Leonard
W. F. Tye

Sir John Kennedy
L. A. Herdt

Walter J. Francis

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HYDRO-RADIAL INQUIRY.

260 St. James Street,

Montreal, September 6th, 1917.

C. W. Cartwright, Esq.,

Chairman of the Committee of Citizens of Hamilton,
321 Bay Street South, Hamilton, Ont.

Dear Sir :

On behalf of the Board of Engineers appointed by your Committee to report upon the proposition of constructing and operating a Hydro-Electric Radial Railway from Port Credit to St. Catharines, we take pleasure in enclosing herewith the report on the question.

The Board has been unanimous in its findings in regard to the specific features named in your letter of instructions, and in its conclusion.

The estimates of capital cost as given by the Hydro-Electric Power Commission have been used by the Board, in accordance with the letter of instructions, but the Board does not endorse the estimates of cost in any way, as the Hydro-Electric Power Commission do not give the information necessary whereby they could be checked.

For your convenience, we are here briefly stating the substance of the report.

Public Necessity.

The first specific feature in the letter is the determination of the public necessity for the proposed Port Credit-St. Catharines Line. **Your Board finds that no public necessity exists for the construction of the proposed line, because the particular district is at the present time thoroughly well provided with steam, electric and water transportation facilities;** because the Province, of which the district forms a part, is also amply provided with transportation facilities; and because the number of transportation companies already operating in the district makes it quite unnecessary to inaugurate a new and distinct System.

This phase of the question is more particularly referred to in the report from page 12 to page 14.

Operating Revenue, Fixed Charges and Operating Expenses, and Extension to the Frontier.

The second, third and fourth specific features in the letter refer to financial matters. A request is made for the estimated operating revenue based on the conditions in the territory to be served by the proposed lines; the estimated annual fixed charges and operating expenses based on the estimated cost as stated by the Commission, \$11,360,363;

and an estimate of the cost of the construction of a proposed extension from St. Catharines to the Niagara Frontier, coupled with an estimate of the earnings probable on through traffic obtainable at the Frontier when such extension shall have been made.

Your Board estimates that the financial statement of the proposed line under local traffic conditions, will be as follows :

Revenue from Operation, 59.6 miles at \$6,000 per mile	\$ 357,600
Operating Expenses, 61% of \$357,600	218,136

Net Operating Revenue	\$ 139,464
-----------------------------	------------

Fixed Charges—

Interest on \$11,360,363 (as given by the Hydro-Electric Power Commission), at 5½%	\$ 624,820
--	------------

Yearly deficit, exclusive of taxes and sinking fund	\$ 485,356
(Sinking Fund is not chargeable during the first ten years).	

Your Board further estimates that the financial statement of the proposed line under all traffic conditions, will be as follows after ten years :

Revenue from Operation, 59.6 miles at \$16,000 per mile	\$ 953,600
Operating Expenses, 65% of \$953,600	619,840

Net Operating Revenue	\$ 333,760
-----------------------------	------------

Fixed Charges—

Interest on \$11,360,363 (as given by the Hydro-Electric Power Commission), at 5½%	\$ 624,820
Sinking Fund, at 1%	113,604
	<hr/>
	\$ 738,424

Yearly deficit, exclusive of taxes	\$ 404,664
--	------------

The cost of an extension to the Frontier has been estimated at about \$2,280,000, arrived at from a consideration of the figures given by the Commission for the line from Port Credit to St. Catharines.

This phase of the question is more particularly referred to in the report from page 14 to page 20.

General Comments.

The letter of instructions makes the fifth specific feature perfectly general in its nature. It requests the submission of pertinent information developed in the study of the question.

The effect of " Good Roads " on transportation questions generally is of very great importance. Your Board finds that it would be much more in the interest of Hamilton if " Good Roads " were seriously taken up, rather than the proposed Port Credit-St. Catharines Line. The amount proposed to be expended on the proposed line would build at least 800 miles of good roads in the Hamilton district.

The information regarding terminal facilities is so indeterminate that your Board has not been able to satisfy itself regarding the obliga-

tion of the City of Hamilton in connection with the essential terminal expenditures and costs.

The system of financing and apportionment of losses or profits, being entirely arbitrary and not within the control of Hamilton, is sure to cause dissatisfaction.

The proposed By-law and Agreement is vague and indefinite in many particulars. By it the City of Hamilton would become responsible for nearly six million dollars (\$6,000,000), and would start into the railway business, from which it would have practically no opportunity to withdraw, and over the operation of which it would have no control.

One of the parties to the agreement would have entire control without any responsibility, financial or otherwise, while the other party would have no control, and would be, at the same time, responsible to the last dollar.

The Agreement would prevent Hamilton from entering into any arrangement with any transportation company without the consent of the Hydro Electric Commission. The City could be required to give a free right-of-way over any corporation property.

The apportionment of losses or profits has not been definitely stated. The question of assistance in operating the line under unavoidable and uncontrollable circumstances is not fairly stated. The Agreement would require the City to give the proposed railway practically exclusive interests.

The renewal clause makes the Agreement virtually a perpetual one. No audit is provided for. The Agreement as a whole is indeterminate and obscure, although it is definitely stated that the municipalities shall bear all losses in operation, while the Hydro-Electric Power Commission is definitely relieved from any and every responsibility, at the same time having the final and binding decision in all matters.

Generally, Hamilton would be placing itself entirely in the hands of a Commission over which, by the terms of the proposed Agreement, it would have absolutely no control or authority. The Board considers this a very important matter, as the City is called upon by the proposed Agreement to guarantee over half the cost of the proposed line.

Conclusion.

Your Board has reached the unanimous conclusion that it is not in the interest of Hamilton to enter into the proposed Agreement.

For a full discussion of the project we would respectfully refer you to the text of the report.

On behalf of the Board, we desire to express our sincere appreciation of the many courtesies shown to the Board and to its assistants, not only by yourself and the members of the Citizen's Committee, but also by very many others.

Yours very truly,

R. W. LEONARD,
Chairman.

WALTER J FRANCIS,
Secretary.

REPORT
ON
The Proposed Hydro-Electric Radial Railway
FROM
Port Credit to St. Catharines, Ont.
BY
THE BOARD OF ENGINEERS

Appointed by a Committee of Citizens of Hamilton

LT.-COL. R. W. LEONARD
W. F. TYE.

SIR JOHN KENNEDY.
L. A. HERDT.

WALTER J. FRANCIS

Preamble.

Following a letter addressed by Messrs. C. W. Cartwright, G. C. Copley, George Hope, Arthur F. Hatch and Thomas W. Lester, a Committee of Citizens of Hamilton, to the Secretary of the Toronto Branch of the Canadian Society of Civil Engineers, under date of February 21st, 1917, the undersigned engineers were duly appointed to report upon the proposed Hydro-Electric Radial Railway from Port Credit to St. Catharines, Ont. The desires of the Committee are clearly set forth in the letter above referred to, and which is here transcribed in full :—

“ Hamilton, Ont., February 21st, 1917.

“ Professor L. M. Arkley,
Secretary, Toronto Branch Canadian Society of Civil Engineers,
Toronto, Ont.

“ Dear Sir:—

“ A proposition looking to the construction and operation of an Hydro-Electric Radial Railway from Port Credit, near Toronto, to St. Catharines was, on January 1st, 1917, submitted to the vote of the rate-payers of the various municipalities through which such railway was proposed to be constructed, with the result that three of the municipalities, to wit: the City of Hamilton, Nelson Township and Saltfleet Township, refused to authorize their respective Councils to enter into the agreements proposed with the Hydro-Electric Power Commission of Ontario for the construction and operation of such line. It is now publicly stated by members or officers of the said Commission that the rejected by-laws will be, at an early date, offered again to the vote of the rate-payers of the municipalities affected and that if such by-laws shall be adopted the construction of the proposed railway line will be thereby assured. A copy of the rejected by-law submitted to the rate-payers of the City of Hamilton is herewith enclosed.

“ The by-law, as you will note, provides for the creation of a debenture issue of \$5,869,286 by the City of Hamilton to cover its proportion of the cost of construction and equipment of the proposed Radial Railway. It is claimed by the representatives of the Hydro-Electric Power Commission that the obligation of the City, under such debentures, if issued, is purely that of guarantor and that as a matter of fact the tax-payers of the City will not be called upon ever to contribute toward the cost of the construction, equipment or operation, while those opposed to the by-law claim that ultimately the entire amount of debentures issued will have to be paid by the rate-payers, because of the alleged certainty that the railway will not be able to operate at a profit.

" The undersigned residents and rate-payers of the City of Hamilton, being unable to satisfy ourselves as to the accuracy of the various arguments advanced by the respective parties and seeking to obtain absolutely reliable data concerning the railway proposed, cannot think of a more dependable source of information than a report on the question based on an examination by a committee of engineers selected by your executive, which committee, we are confident would bring out the facts and formulate an unbiased report, which would aid the citizens of Hamilton and other municipalities in determining whether the project is in the interest of the people.

" We appreciate that a large amount of study and detail work will be required in securing data and formulating and preparing a report, and that the members of the committee should not be expected to devote a large part of their time to this work without reasonable compensation. At the same time, as the matter is one of public interest and the burden of the expense would fall upon us, we would ask that, if your Society is disposed to take up the question, the fees and expenses of the engineers composing the committee be made as moderate as possible, consistent with a complete study of the whole matter.

" The specific features which it seems to us desirable to have covered, by the report should include the following :

- " 1. Determination of the question as to the public necessity for the proposed Port Credit-St. Catharines line.
- " 2. The estimated operating revenue based upon the conditions in the territory to be served by the proposed line.
- " 3. The estimated annual fixed charges and operating expenses based on the estimated cost as stated by the Commission, \$11,360,363.
- " 4. As it is claimed by the Hydro Power Commission that a large volume of through traffic is obtainable by the Radial line when same shall be extended from St. Catharines to the Niagara Frontier, it is desired that the report asked for should also cover an estimate of the cost of the construction of such extension, coupled with an estimate of the earnings probable on through traffic obtainable at the Frontier when such extension shall have been made.
- " 5. Such other information as your committee deem pertinent to the matter, and which may be developed from their study of the project.

" We will make every endeavor to obtain the co-operation of the Government in this matter, in order that the details of the project, as proposed by the Commission be available for use by the engineering committee you may appoint.

" The undersigned will be responsible for the prompt payment on presentation of bill covering all charges and expenses in connection with the proposed examination and report, and, if desired, such advances will be made from time to time, as may be required.

" Please address your communications to

" MR. C. W. CARTWRIGHT, Chairman,

" 321 Bay Street South,

" Hamilton, Ontario,

and the same will receive prompt attention.

" Trusting that we may be favored with early action in this matter: we beg to remain,

" Very respectfully yours,

" C. W. CARTWRIGHT,

" GEO. HOPE.

" G. C. COPPLEY.

" THOMAS W. LESTER."

" ARTHUR F. HATCH.

At the preliminary meeting on March 13th, 1917, the organization for the work was decided upon, and Colonel Leonard was confirmed as Chairman of the Board. Mr. Francis was appointed Secretary. The work of the Board has since been proceeded with continuously. Correspondence has been carried on with a great many persons who might be able to furnish useful information, the district has been visited, electric railways, not only in the district, but throughout the Province and in the United States have been studied individually, and data have been collected from a great many sources. The information supplied by the Hydro-Electric Power Commission to the City of Hamilton, and all other available material has been studied and deliberated upon.

SOURCES OF INFORMATION.

The Hydro-Electric Power Commission of Ontario.

With a view to providing authentic official information for the Board of Engineers, Mr. C. W. Cartwright, Chairman of the Hamilton Committee, addressed the Premier of Ontario on March 1st, 1917, as follows:—

“ I enclose herewith copy of letter addressed by a committee of citizens of Hamilton to the Secretary of the Toronto Branch, Canadian Society of Civil Engineers, also copy of their reply thereto.

“ In accordance with a clause in the communication to the Society, with reference to seeking the co-operation of the Government, I beg to place before you formally, an earnest request from the Committee that your Government lend every assistance to the Board of Engineers appointed, by instructing the Hydro-Electric Power Commission to give them access to their plans, estimates and other data in reference to the proposed project.

“ No doubt the Commission have spent considerable time and money in the preparation of their data, and as the burden of the expense in connection with the Board of Engineers now appointed will fall upon us, we seek to minimize that as much as possible by saving any unnecessary duplication of work.

“ I would like to point out that the appointment of this Board shows an earnest desire to place the subject in the hands of eminent men who are unbiased and not connected with affected interests, as you will note that the Toronto Branch have included no local members of the Society on the Board.

“ Yours respectfully,

“ (Sgd.) C. W. CARTWRIGHT,

“ Chairman.”

To which the following reply was received by Mr. Cartwright from Sir William Hearst, under date of March 21st, 1917:—

“ In further reference to your letter of the 1st instant, in which you request this Government to instruct the Hydro-Electric Power Commission to permit a Committee appointed by the Toronto Branch of the Canadian Society of Civil Engineers to have access to the plans, estimates and other data in connection with the proposed Hydro-Electric Railway project from Port Credit to St. Catharines, I beg to say that the Commission point out that your communication would indicate that the Committee had been ostensibly appointed to make an independent and impartial enquiry and report upon the merits and demerits of the Hydro Radial project. They express the opinion that before any such action is taken the interested municipalities should be consulted and their wishes ascertained, and they state that no request has been made by any Municipal Council where the radial by-laws have been submitted.

“ The Commission further point out that, so far as their information goes, Colonel Leonard, the Chairman of the Committee, is not an elec-

trical engineer, and has not had experience in the operation of electric railways; and that they are informed this statement is also true of other members of the Committee. The Commission, furthermore, express doubt as to Colonel Leonard being able to deal with the matter in an impartial manner. Colonel Leonard, they say, has expressed himself as strongly adverse to the Hydro-Electric Radial scheme on the public platform in St. Catharines and elsewhere, and has already challenged the accuracy of the estimates and data furnished by the Commission.

" In view of the attitude heretofore taken by Colonel Leonard, the fact that he has been chosen and has accepted the Chairmanship of the Committee, does not assure the Commission that the tribunal would be one able to render an impartial finding in the interests of the public, and of the electors who are financially interested in the scheme, or a finding that would be accepted by the general public as such.

" As you are aware, by-laws have already been submitted to twenty-five municipalities and carried in all with the exception of two townships and the City of Hamilton.

" The Commission believe that injustice might be done to the whole scheme if the data and material in their hands were handed over, and made the subject of a prejudiced attack by a Committee appointed by Mr. E. W. Oliver, Assistant Chief Engineer of the Canadian Northern Railway, Mr. E. G. Hewson, Division Engineer of the Grand Trunk Railway, and other three members of the Executive of the Toronto Branch, Canadian Society of Civil Engineers.

" The estimates and data submitted to the municipalities are public property, and open for inspection by the Committee or any person else, but for the reasons above set out, the Hydro-Electric Power Commission do not think it would be in the public interest to hand over to the Committee you mention, the files of the Commission on this subject.

" Yours truly

" (Sgd.) W. H. HEARST."

On April 3rd, 1917, the Board addressed a letter to Sir Adam Beck, Chairman of the Hydro-Electric Power Commission of Ontario, as follows :—

" A number of ratepaying citizens of the City of Hamilton have requested Lieutenant-Colonel Leonard, Sir John Kennedy, Mr. W. F. Tye, Dr. L. A. Herdt and the writer to advise them regarding the hydro radial railway proposed by your Commission between Port Credit and St. Catharines, stating that they are most anxious to do their duty to Hamilton and the rest of the district, and that they desire our advice to enable them to exercise their franchise intelligently. The engineers above named have acceded to the request, and, for this reason, are desirous of giving full consideration to all authentic information in direct regard thereto.

" Knowing that your Commission has given the whole subject careful attention and study, the Board of Engineers will appreciate it if you may be good enough to send the writer a route map and profile of the proposed radial lines, together with such other information as you may deem of service to enable the Board to report to its clients.

" I have the honour to be, Sir,

" Yours respectfully,

" (Sgd.) WALTER J. FRANCIS,

" Secretary of the Board."

To which, after a brief acknowledgement, the following reply was received, dated April 11th, 1917 :

" With reference to yours of the 3rd inst., and my acknowledgement of the 5th inst.

" This matter was brought before a meeting of the Commission recently held, and I was instructed to advise you that there is no authority given allowing the route maps and profiles of the proposed radial lines to be taken from this office.

" I was further instructed to say to you that you might, if your people so desire, get in touch with Mr. F. A. Gaby, Chief Engineer of this Commission, with a view to making an appointment by which the material to which you refer might be inspected at the Administration Building of the Commission, 190 University Avenue, Toronto.

" Yours truly,

" (Sgd.) W. W. POPE,
" Secretary."

On June 11th, following a telephone appointment, the Secretary of the Board, with Mr. Busfield, who had been continuously engaged in the collection of data, met Mr. Gaby at his office. During the interview Mr. Gaby frankly stated that he had no authority whatever to give any information excepting to municipalities, but he expressed himself as willing to discuss the matter at greater length in the near future.

On June 28th, the interview was continued, but Mr. Gaby repeated that he had no authority to give the Board access to any documents.

Hydro-Electric Railway Association of Ontario.

On May 26th a letter was addressed to the Secretary of the Hydro-Electric Railway Association of Ontario, as follows :

" As you are, no doubt, aware, the above Board of Engineers was requested by a committee of ratepayers of the City of Hamilton to investigate and report upon the proposed Port Credit-Hamilton-St. Catharines Radial Electric Railway.

" If the Hydro-Electric Railway Association have any data or information in connection with the proposed Hydro-Radials that they may consider would be of assistance to the Board, the receipt of such information would be very much appreciated.

" Yours very truly,

" (Sgd.) WALTER J. FRANCIS,
" Secretary of the Board."

to which the following reply was received, dated June 2nd, 1917 :—

" Your favor of the 26th ult. received, re information, and will be laid before our Executive Committee at once.

" Yours very truly,

" (Sgd.) T. J. HANNIGAN,
" Secretary."

Nothing further was received from the Association.

The Mayor, Controllors, Aldermen and Officers of the City of Hamilton.

On March 27th, 1917, the Board, being at the City Hall with Mr. E. R. Gray, City Engineer of Hamilton, were informally introduced to His Worship, Mayor Booker, four of the Controllors, a number of the Aldermen and the City Clerk. An informal discussion followed, in which the greater number of those present took part. City Engineer Gray and the City Clerk were requested by the Mayor to facilitate the work of the Board in every reasonable way. Much valuable assistance has been obtained from the City Engineer, and his hearty co-operation and assistance is sincerely appreciated, as well as that of many others connected with the City's administration.

Electric Railways.

The operating statistics and traffic conditions of practically every electric interurban railway on the continent have been individually examined. The electric railways named below were actually inspected and much valuable and confidential information was given by many of the officials thereof. The cheerful support and co-operation of all the railway authorities, not only in Canada, but also in the United States, has been much appreciated.

- The Toronto & York Radial Railway.
- The Toronto Suburban Railway
- The Hamilton Radial Railway.
- The Hamilton, Grimsby & Beamsville Railway.
- The Hamilton & Dundas Street Railway.
- The Brantford & Hamilton Electric Railway.
- The Hamilton Street Railway.
- The Niagara, St. Catharines & Toronto Railway.
- The Lake Erie & Northern Railway.
- The Galt, Preston & Hespeler Street Railway.
- The London & Port Stanley Railway.
- The London & Lake Erie Transportation Co.
- The Chatham, Wallaceburg & Lake Erie Railway.
- The Windsor, Essex & Lake Shore Railway.
- The Sandwich, Windsor & Amherstburg Railway.
- The Hull Electric Railway.
- The Montreal & Southern Counties Railway.
- The Detroit United Railway.
- The Detroit, Jackson & Chicago Railway.
- The Detroit, Munroe & Toledo Railway.
- The Rapid Railway System.

In addition to which correspond: has been carried on with :—

- The Chicago, North Shore & Milwaukee Railway.
 - The Rockford & Interurban Railway.
 - The Los Angeles Electric Railway.
 - The Pennsylvania Railroad.
 - The New York, New Haven & Hartford Railroad.
 - The New York Central Railroad.
 - The Chicago, Milwaukee & St. Paul Railroad.
 - The Illinois Electric Railway Association.
 - The General Electric Traffic Association.
 - The American Electric Railway Association;
- and a number of other public bodies, including the National Association of Railway Commissions and the Toronto-Hamilton Highway Commission.

Statutes.

Studies have been made of statutes bearing on the question, more particularly the following :—

- The Hydro-Electric Railway Act, 1914, and its amendments.
- The Hydro-Electric Railway Act, 1916.
- The Hydro-Electric Power Commission Acts.
- The Ontario Railway Act.
- The Ontario Public Works Act.
- The Ontario Municipal Act.

Governmental Reports.

The statistics contained in the following Governmental reports, referring principally to steam and electric railways, have been carefully analyzed :—

Dominion of Canada Railway Statistics, 1911-1916.
Annual Reports of the Ontario Railway & Municipal Board.
Annual Reports of the Hydro-Electric Power Commission of Ontario.
Annual Report on Highway Improvement, Ontario, 1915.
Annual Reports of the Interstate Commerce Commission, Statistics of
of Railways.

United States Census Reports.
Dominion of Canada Census Reports.
United States Department of Commerce Bureau of the Census, Report
on Street and Electric Railways.

Reports of Public Utilities or Railroad Commissions, in the following
States :—

California,	Maine,	New Jersey,
Connecticut,	Maryland,	New York (1st Dist.),
Idaho,	Massachusetts,	New York (2nd Dist.),
Indiana,	Michigan,	Ohio,
Illinois,	Nebraska,	Wisconsin,
Iowa,	New Hampshire,	

and the District of Columbia.

Transportation Reports.

Copies of the principal transportation reports of recent years, more particularly the following, have been obtained and studied :—

Report to the Civic Transportation Committee on Radial Railway Entrances and Rapid Transit for the City of Toronto.

Report of the Royal Commission of Inquiry into the Railways and Transportation in Canada.

Report on Detroit Railway Traffic and proposed Subway.

Maps.

For studying conditions in Ontario, use has been made, among others, of the following maps :—

Department of Militia & Defense, topographical maps,

Postal Map of the Province of Ontario.

Map of Ontario, published by the Ontario Bureau of Mines.

Map of Ontario, published by the Public Roads & Highways Commission, 1913.

Department of the Interior, topographical maps.

Department of the Interior Atlas of Canada, 1915.

Official Maps of the City of Hamilton.

Official Route Map, Plan and Profile, submitted by the Hydro-Electric Power Commission to the City of Hamilton.

Route Map of proposed extensions of the Canadian Northern Railway.

In addition to the above, numerous maps published by Railway Commissions, Traffic Associations, and similar bodies, showing electric railways throughout the continent, have been utilized.

Inspection.

The members of the Board are individually familiar, not only with the particular district in which the proposed line is located, but also with the Province of Ontario as a whole, and the adjacent territory in the United States. To further supplement this information the Board has made special examinations of the territory through which the line is located, in addition to the Secretary and other members, as well as Mr. Busfield, having spent much time individually going over the route and examining the territory from the standpoint of obtainable traffic.

DESCRIPTION OF THE PROPOSED LINE.

The description of the proposed railway as submitted to the citizens of Hamilton by the Hydro-Electric Power Commission is as follows:—
Proposed Port Credit-St. Catharines Electric Railway. Details of Route, Estimates and Proposed Service.

Municipalities Interested.

TOWNSHIPS—Toronto, Trafalgar, Nelson, East Flamboro, West Flamboro, Barton, Saltfleet, North Grimsby, Clinton, Louth and Grantham.

VILLAGES—Grimsby and Beamsville.

TOWNS—Oakville and Burlington.

CITIES—Hamilton and St. Catharines.

ROUTE—From junction with Toronto and London Line at Port Credit south-westerly through Clarkson, Oakville, Bronte and Burlington, to Hamilton, and from thence easterly through Winona, Grimsby, Beamsville and Jordan to St. Catharines.

For details of route see Section "A" of the Agreement.

Total Mileage—Port Credit to St. Catharines, 59.57.

1. Capital Cost.	Estimates.
Right-of-way, track construction and build- ings	\$ 8,935,363
Sub-stations, car shops and rolling stock ...	2,425,000
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TOTAL GROSS COST OF CONSTRUCTION AND EQUIPMENT	\$11,360,363
2. Annual Operating Revenue.	
Passenger Revenue	\$ 760,000
Freight Revenue	545,000
Miscellaneous Revenue	57,000
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Total	\$ 1,362,000
3. Annual Charges.	
Operating Expenses	\$ 570,289
Maintenance Expenses	152,193
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Total Operating and Maintenance Expenses	722,482
Interest Charges	568,018
<hr/>	
Total Annual Charges	\$ 1,290,500

Description of Construction, Equipment and Service.

The class of construction, covered by the estimate is based upon a single track line of 80 lb. rails, located on private right-of-way for practically the entire distance. The line will be double-tracked through the City of Hamilton, with practically no level highway crossings, thus allowing high speed right through the City. By connecting with the Toronto-London line at Port Credit, it will be possible to utilize the high speed entrance of that line to the large radial terminal already provided for it in the centre of the City of Toronto. The Toronto entrance has no level highway crossings between the centre of the City and New Toronto, and utilizes a steel viaduct along the harbor front, a tunnel under the exhibition grounds, an open cut through South Parkdale, and an elevated embankment from Sunnyside to the Humber River.

Ample allowance has been made to cover a very high class of construction, and 80 lb. steel rails, concrete culverts, steel bridges and other similar structures are designed to carry, in an economical manner, the

heaviest types of freight cars now in use on steam railways. Proper station facilities, freight sheds and team tracks have been provided in the various municipalities, and especially in Hamilton, where provision was made for a passenger terminal of sufficient size to accommodate the other lines that are proposed for that district.

The 1,500 volt direct current system of power supply has been estimated upon, with four substations located at various points between Port Credit and St. Catharines. This voltage and substation spacing will ensure ample power supply to heavy freight trains.

To take care of the traffic, the following equipment has been estimated upon :—

30 3-compartment, all steel, passenger motor cars.	
6 Suburban passenger motor cars.	15 Passenger trail cars.
4 Express motor cars.	10 60-ton steel locomotives.
2 Motor work cars.	350 freight cars.

The furnishings of the passenger cars will be of high standard and approximately 500 H. P. in motor capacity on each car will allow high speed, even when a trailer is hauled.

It is anticipated to give practically hourly service between Toronto and St. Catharines, with a sub urban service for a few miles both east and north of Hamilton. Limited cars, making a few stops between termini, will be run at certain hours of the day to take care of the through business, and these cars should make practically the same running time between Toronto and St. Catharines as is now in effect on the Grand Trunk. Local cars will, of course, be run in addition to the limited trains, and these will stop at approximately one mile intervals.

The ten locomotives provided for in the estimates will be used to haul heavy freight trains, and it is anticipated that from three to six round trips per day will be required to handle the freight business that has been estimated. In addition to this, express cars will also be used to handle light package, milk and freight business. These cars can make frequent stops along the line and collect milk cans, farm produce, etc., at points convenient to the residents of the different section."

Comparative Quantities for Reference.

In making comparisons between electric railways, it is impossible to use gross amounts, so various units, such as the mile of railway, mile of track, train-mile, car-mile, car-hour are generally employed. In this particular instance it is necessary that the mile of railway should be used for comparative purposes, the figures contained in the above description are therefore reduced to the following "per mile" quantities, so that comparison can be made with those referred to elsewhere in this report.

Capital Cost	\$190,706	per mile
Passenger Revenue	\$ 12,752	"
Freight Revenue	9,144	"
Miscellaneous	956	"
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Total Revenue	\$ 22,852	"
Operating and Maintenance Expenses	\$ 12,122	"
Operating Ratio	53.1	per cent.

PUBLIC NECESSITY.

The first point which the letter of instructions sets forth is that of public necessity. The reference is : " Specific features, which it seems to us desirable to have covered by the report should include (1) The determination of the question of the public necessity for the proposed Port

Credit-St. Catharines line."

After giving due consideration to the whole question, we find that no public necessity exists for the proposed line.

We reached this conclusion for the following reasons :—

(a) The particular district is at the present time thoroughly well provided with steam, electric and water transportation facilities.

(b) The province of which the district forms a part is also amply provided with transportation facilities.

(c) In view of the number of transportation companies already operating in the district, it is quite unnecessary to inaugurate a new and distinct system.

The following discussion treats of these reasons in detail :—

(a) Transportation Facilities in the District.

The transportation facilities in the district in question are unusually ample, consisting as they do of the double track of the Grand Trunk Railway, giving both local and through service for passengers and freight, and the joint service provided by the Canadian Pacific, Toronto, Hamilton & Buffalo, and New York Central Railways, also giving local and through service. In other words, there now exists ample transportation facilities for local or long distance traffic on the steam railways to or from all points in Canada or the United States, which have far greater capacity than has yet been utilized. In addition to these, there are local services for both freight and passenger transportation provided by a number of electric lines. There are also numerous water transportation services, both passenger and freight.

The concrete highway now nearing completion between Toronto and Hamilton forms a highly important route, favourable for the local handling of both passengers and freight. Public reference has also been made to the inauguration of a motor transport service between Hamilton and Niagara Falls.

(b) Railway Service in Ontario.

The whole of that portion of the Province of Ontario south of the Ottawa River is unique in the matter of its great railway mileage, considered either from the viewpoint of area or the population served. Within the district referred to, the quantity of railways in the central and in the south-western parts being those parts best suited for agriculture and manufacture, is greater than in the remaining portion. Where the population is not so dense there is not the need for local railway service and it is through these parts that the traffic lines connecting the east and west are located.

If reference be made to the Atlas of Canada, 1915, (Department of Interior), it will be seen on the map showing the density of population in Ontario, that the only sections which are not already well served with or within easy reach of existing railways are those where the population is comparatively sparse. In the more densely populated section south of the counties of Huron and Dufferin, there are no places to be found which are not within reasonable reach of one or other of the existing railways. As a matter of interest, we have compared the mileage of railways per capita in this part of Ontario with corresponding parts of Canada and the United States, and taking into account the average density of population, we find that this district is exceptionally well supplied with railways. It may be specifically stated that whereas Ontario has 4.2 miles of railway for every one thousand people, the eastern provinces in Canada have only on the average 3.7 miles. The United States is well known as a country amply served with railways, but their

mileage per capita is only a little over one-half of that in Canada, or, if the question be studied in detail, in those states where the density of population is comparable with that in Ontario, the mileage of railways per capita is only a fraction of that in this province.

(c) New and Distinct System.

There already exist in the district under discussion enough separate transportation companies to eliminate any possibilities of a monopoly. Freight and passenger tariffs as now existing are on a competitive basis. The inauguration of any entirely new and distinct system of railways is not necessary or desirable under these conditions, and it would be unfair for the Province of Ontario to enter into competition with existing railways which are now operating at a loss and which the Dominion Government has already been compelled to assist financially.

OPERATING REVENUE.

Fixed Charges and Operating Expenses and Extension to the Frontier.

The second, third and fourth points set forth in the letter of instructions, refer entirely to financial matters, in the following words:—"The specific features which it seems to us desirable to have covered by the report should include * * *

(2) The estimated operating revenue based on the conditions in the territory to be served by the proposed lines ; (3) The estimated annual fixed charges and operating expenses, based on the estimated cost as stated by the Commission, \$11,360.363; and (4) * * * estimate of the cost of the construction of such extension (from St. Catharines to the Niagara frontier), coupled with an estimate of the earnings possible on through traffic at the Frontier when such extension shall have been made."

Operating Revenue and Expenses

The available earnings for the line in question may be divided as coming from two different sources:—(a) from Local traffic, by which is meant the passenger and freight traffic originating and terminating within the district ; (b) from through traffic, by which is meant passenger and freight business which neither originates nor terminates on the proposed line, by virtue of connections with steam railways at the Niagara Frontier and at Toronto.

Local Traffic.

The By-law and Agreement, which Hamilton is asked to sanction, provides for a local line from Port Credit to St. Catharines. It is from this viewpoint that the probable earnings must first be considered.

In making an estimate of the operating revenue it has been assumed that the line will obtain a fair share of the available business in the territory. Having regard to the local lines similarly situated, we are of the opinion that the operating revenue under local traffic conditions may fairly be placed at \$6,000 per mile per annum. The following table gives the operating revenues on existing local electric railways:—

Operating Revenues of Local Electric Railways.

RAILWAY	Per mile per annum		
	From Passengers	From Freight	From all Sources
Hamilton, Grimsby & Beamsville	\$4,016	\$1,761	\$6,948
Hamilton & Dundas	7,993	214	8,700
Hamilton Radial Railway	5,831	434	6,606
Brantford & Hamilton Railway	4,709	813	5,808
Toronto & York Railway	6,992	947	8,268
Niagara, St. Catharines & Toronto	6,068	3,338	9,945

The average gross earnings of these roads are therefore a little in excess of \$7,500 per mile, and strictly speaking, a road in competition should only be estimated as being able to earn its equal proportion of the available business, but in view of the high class nature of the proposed service, the very liberal allowance of \$6,000 per mile has been assumed.

In the above table it will be noted that three of the railways have gross earnings of over \$8,000 per mile, but it must be considered that they are partly or wholly city and suburban lines, and that one of them, the Niagara, St. Catharines & Toronto Railway, serves one of the most important manufacturing districts in the Province.

Operating Expenses.

In railway accounts it is the practice to determine operating expenses by using a percentage technically known as "operating ratio," by which is meant the relationship between operating expenses and gross revenue; that is to say, if the operating expenses be one-half the gross revenue, the "operating ratio" is fifty per cent.

The term "gross revenue," is used to represent the total earnings from all sources incidental to the operations of the railway, and not including revenue from such sources as power, real estate, or investments. The term "operating expenses," includes the maintenance of way and structures, the maintenance of equipment, including power plant, traffic expenses, operation of power plant, operation of cars, and general expenses, which include administration, legal expenses and rent of land and tracks and terminals, which is the standard classification as used by the Department of Railways and Canals of Canada.

The operating ratio varies very widely on different railways, as may be seen by reference to the following statistical table:—

COMPARATIVE OPERATING STATISTICS OF ELECTRIC INTERURBAN RAILWAYS.

CANADA.

Railway	Miles Operated	Gross Earnings Per Mile	Operating Expenses Per Mile	Operating Ratio
		\$	\$	%
B. W. W. & L. H.	17.8	10,404	6,382	61.2
B. & H.	23.0	5,808	4,455	76.3
C. E.	36.9	3,429	2,474	71.0
H. &	7.0	8,700	7,267	83.1
H. G. B.	22.0	6,048	5,063	83.9
H. R.	25.0	6,606	5,483	83.2
L. & L. E.	28.0	4,822	3,199	66.1
L. & P. S.	23.6	11,909	7,653	64.0
M. & S. C.	36.8	5,806	5,409	97.4
N. S. C. & T.	60.9	9,945	7,217	72.6
Q. R. L. & P.	28.6	6,999	5,052	72.2
S. W. & A.	40.3	7,241	4,726	65.2
T. S.	18.8	7,410	3,926	52.7
T. & Y. R.	72.4	8,268	6,231	73.6
W. E. & L. S.	36.2	4,369	2,866	65.8
W. S. & L. W.	39.4	3,121	1,915	68.4
STATE OF MAINE.				
A. E.	29.8	4,861	3,047	62.7
A. S.	90.4	3,808	3,006	80.5
L. A. & W.	152.9	4,946	3,165	64.0

STATE OF MASSACHUSETTS.

Railway	Miles Operated	Gross Earnings Per Mile \$	Operating Expenses Per Mile \$	Operating Ratio %
B. S.	757.8	12,326	9,001	73.0
B. & W.	48.9	15,109	9,064	60.1
C. V.	44.9	5,448	3,708	68.5
M. & B.	105.8	9,649	7,053	73.1

STATES OF CONNECTICUT AND RHODE ISLAND.

C. Co'y	503.2	17,782	11,216	63.7
R. I. Co'y	310.5	17,662	11,522	65.2

STATE OF NEW YORK.

B. & L. E.	139.3	8,718	5,961	68.4
B. S.	136.9	6,949	5,855	84.3
H. V.	119.3	7,280	4,890	67.2
N. Y. W. & B.	21.4	20,983	17,679	84.2
W. N. Y. & P. T.	92.3	4,730	2,561	54.1
B. L. & R.	58.2	7,494	4,365	58.2
N. Y. & S.	26.2	14,371	9,118	63.4
A. S.	38.3	8,506	5,797	68.1
O. & H.	78.4	3,476	2,300	66.2

STATE OF MARYLAND.

H. & F.	83.5	3,568	2,404	67.4
W. B. & A.	68.9	12,677	6,847	54.0

STATE OF VIRGINIA.

W. & O. D.	72.5	6,214	4,900	78.8
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STATE OF OHIO.

C. & C. T.	53.0	2,584	1,851	71.6
C. S. W. & C.	209.4	5,738	3,691	63.2
C. P. & E.	38.7	10,982	5,160	47.1
C. P. & A.	24.6	5,638	4,090	64.4
C. D. & M.	56.6	6,871	4,258	61.9
I. R. & T.	79.4	3,523	3,185	90.4
L. S. E.	151.9	7,603	4,481	58.9
N. O. T. & L.	177.1	19,609	11,468	58.3
N. O. R. & P.	56.0	3,390	2,425	71.5
O. E.	600.6	5,430	3,260	59.8
S. V. T.	74.7	6,351	3,355	54.9
T. & I.	55.8	4,545	2,838	62.5
T. & W.	84.3	2,890	2,320	80.2
T. B. G. & S.	80.3	4,230	2,411	57.0
W. O.	108.0	6,398	3,726	60.4

STATE OF MICHIGAN.

D. U. R.	495.3	8,743	5,064	57.9
G. R. G. H. & M.	47.7	7,672	4,535	59.1
G. R. H. & C.	46.1	7,288	4,963	68.2
M. R.	129.2	2,885	1,705	59.2
M. U. T.	170.6	10,371	6,084	58.7
S. M.	34.8	5,932	3,261	54.9

STATE OF INDIANA.

C. S. B. & N. I.	95.2	8,129	4,788	81.6
E. R.	68.3	3,693	2,161	58.5
F. W. & N. I.	187.0	7,024	4,250	60.8

Railway	Miles Operated	Gross Earnings Per Mile \$	Operating Expenses Per Mile \$	Operating Ratio %
F. W. & N. W.	42.9	4,459	2,939	65.7
G. & I.	74.8	3,724	3,498	81.1
I. & C. T.	107.4	4,175	2,000	61.6
I. & L. T.	40.9	3,436	-	61.8
I. P. S.	65.8	6,523	45	58.9
L. & N.	20.2	8,159	8,623	105.2
I. R. & L.	61.6	2,829	1,301	45.9
E. & S. I.	54.1	9,689	5,325	54.9
T. H. I. & E.	428.9	6,004	3,861	64.3
U. T. of I.	403.2	6,086	3,621	59.5
W. I.	72.4	3,019	2,135	70.7

STATE OF ILLINOIS.

A. J. & P.	21.3	2,162	1,908	89.8
A. E. & C.	143.3	13,711	9,134	66.3
C. & I. T.	55.0	5,319	2,514	47.3
C. & J. E.	49.2	11,441	8,953	78.5
C. N. S. & M.	105.7	5,516	3,395	61.5
C. A. & P.	28.2	2,318	1,493	64.4
C. L. S. & S. B.	77.6	6,160	4,319	70.1
C. O. & P.	107.8	4,521	2,958	63.1
E. S. L. C. & W.	22.2	4,285	3,021	70.6
E. S. L. & S.	59.6	12,632	10,823	85.6
E. & B.	33.6	4,051	3,226	79.7
I. C.	32.0	2,726	1,765	64.9
B. E. & C.	96.7	4,448	3,420	76.7
I. C. T.	46.4	5,752	3,746	65.1
D. U. & C.	60.7	7,715	5,044	68.4
S. L. S. & P.	224.4	6,109	3,850	63.1
J. & St. T.	47.4	3,688	2,850	77.3
R. I. S.	61.5	5,292	3,241	61.2
R. & I.	78.1	4,813	2,924	60.7

STATE OF WISCONSIN.

M. L. H. & T.	201.2	4,430	3,003	67.7
M. N.	55.6	6,011	3,140	49.2
E. W. R. & L.	60.1	4,974	3,587	72.2

STATE OF IOWA.

F. D. D. M. & S.	127.0	7,403	5,072	68.5
I. U.	84.9	3,999	2,815	73.3
W. C. F. & N.	112.2	5,914	2,750	46.5
I. R. & L.	59.9	6,167	4,000	64.8

STATE OF CALIFORNIA.

C. C. T.	58.6	5,611	4,302	76.7
N. E.	106.0	5,999	5,722	95.4
N. E. (M. & C.)	22.4	2,774	2,340	84.3
O. A. & E.	97.0	5,466	4,178	76.4
P. E.	612.3	14,493	9,842	67.9
P. R.	64.0	4,570	4,120	90.2
S. F. N. & C.	41.6	5,235	3,737	71.4

Having regard to the possibilities of the proposed railway, considered as operating under local traffic conditions, and the operation of lines similarly situated, we are of the opinion that the operating ratio cannot

possibly be better than 61 per cent., which is even more favourable than that obtained by the London and Port Stanley Railway. On this basis the operating expenses will be \$3,660 per mile.

Fixed Charges.

The annual fixed charges on the proposed railway will be made up of interest on the bonds and a sinking fund.

The interest under any condition in the near future will be at least 5½ per cent. per annum, as the money markets of the world must be for years to come pre-empted by the warring nations.

The sinking fund is said in the Agreement to be one per cent. on the estimated cost, and is given as \$113,604 but it is not to apply until after ten years from the issue of the bonds.

In addition to the interest and the sinking fund, the annual fixed charges may also include taxes. The railways operating under Dominion and Ontario charters pay taxes, and "Railway Statistics, (Canada)," includes this item as the primary fixed charge. It has been said that the proposed railway will not be required to pay taxes. It should here be pointed out that the payment of taxes is either a direct or an indirect charge. **If the railway does not directly pay taxes, the people must pay them indirectly in some other way.** A fair taxation rate, based on payments now made by corresponding railways, is in our opinion, not less than \$200 per mile per annum.

The fixed charges will, therefore, amount to \$12,458 per mile, made up as follows :

Interest on Bonds	\$10,488
Sinking Fund (not to apply for ten years)	1,970
Total	\$12,458

In addition, there may be a charge of \$200 per mile for taxes.

Financial Statement for Local Traffic

The financial statement of the proposed line under local traffic conditions will therefore be :—

Revenue from Operation, 59.6 miles at \$6,000 per mile	\$357,600
Operating Expenses, 61 per cent. of \$357,600	218,136

Net Operating Revenue

\$139,464

Fixed Charges—

Interest on \$11,360,363 (as given by the Hydro-Electric Power

Commission), at 5½ per cent.

\$624,820

Yearly deficit, exclusive of taxes and sinking fund

\$485,358

(Sinking Fund is not chargeable during the first ten years).

Extension to the Frontier.

While it is not so stated in the Agreement, it is understood that the proposed line is to be extended to the Frontier, and that suitable connections with other railways will be made so that there may be through traffic between the United States and Canadian points. Under the most favorable circumstances, and after a period of ten to fifteen years, the revenue from through traffic will not exceed \$12,000 per mile, making a total from through and local traffic of \$18,000 per mile.

It is impossible, however, to handle a sufficient quantity of traffic to obtain this revenue over a single track line, such as that contemplated in the estimates submitted to the municipalities. This revenue will necessarily demand the operation of heavy through trains, both passenger

and freight, at high speed, as well as the operation of local trains, both passenger and freight, at comparatively low speed, with frequent stops. The difficulty of train despatching under such conditions is very great, and the limitation of a single track, even with frequent passing tracks, is very quickly reached. The revenue obtainable from a single track with this class of business cannot exceed \$16,000 per mile.

The operating expenses under this condition will naturally be very much greater than under local traffic conditions, not only on account of the greater volume of traffic, but also on account of the greater expense of handling mixed traffic. Taking into consideration the operating ratio on other lines similarly situated and with similar traffic conditions, a ratio of 65 per cent. is the most favourable that can be obtained. As an actual example it might be pointed out that on the electrically operated divisions of the Pennsylvania Railroad, the average ratio for the last two and one-half years was 73.3 per cent., notwithstanding the fact that this road has the reputation of being one of the most efficiently operated on the continent.

Financial Statement from All Traffic.

The financial statement of the proposed line under combined local and through traffic conditions, which, however, cannot be reached for a number of years, will therefore be as follows :—

Revenue from Operation, 59.6 miles at \$16,000 per mile	\$953,600
Operating expenses , 65 per cent. of \$953,600	619,840
	<hr/>
Net Operating Revenue	\$333,760
Fixed Charges—	
Interest on \$11,360,363 (as given by the Hydro-Electric Power Commission) at 5½ per cent.	\$624,870
Sinking Fund, at 1 per cent.	113,604
	<hr/>
	\$738,424

Yearly deficit, exclusive of taxes

\$404,664

If, however, a revenue of \$18,000 per mile were to be assumed, it would be necessary to double track the line throughout, which would, therefore increase the fixed charges proportionately, leaving a correspondingly large deficit.

Cost of Extension to the Frontier.

As it was not contemplated that surveys or other extensive work should be undertaken by the Board, and as the Hydro-Electric Power Commission has not considered itself in a position to provide details of the estimates of cost of the proposed lines, nothing remains but to make a comparison with the proposed line from Port Credit to St. Catharines, which is estimated to cost over \$190,000 per mile. While not endorsing the above figure, the extension to the Frontier, being at least twelve miles in length, and through territory comparable to that between Port Credit and St. Catharines, would, on the basis of \$190,000 per mile, cost \$2,280,000. Previous financial statements are not in any way affected by the capital cost of this extension.

In using the distance of twelve miles it is contemplated that the Frontier will be reached at the nearest point, and no provision is made for the crossing of a strip of land along the Niagara River, which is claimed to be the property of the Dominion of Canada. All cost in connection with bridging the river, in itself an important and serious item, is

also omitted; the most optimistic view that could be taken is that one or more American railways might undertake the responsibility of half the cost of the necessary bridge.

GENERAL COMMENTS.

The letter of instructions makes a definite request for general comments. The reference is as follows :

" The specific features which it seems to us desirable to have covered by the report should include * * * (5) Such information as your committee may deem pertinent to the matter, and which may be developed from the study of the project."

A considerable number of points pertinent to the subject matter of the report have developed. The principal of these are " Good Roads," Terminal Facilities, the System of Financing, and the generally obscure and indeterminate Nature of the Project and of the proposed By-law and Agreement.

" Good Roads."

One of the first subjects frequently reached in discussing the project with representative citizens of the Province in various walks of life, was that of " Good Roads," and their effect on transportation generally.

It is a striking fact that compared with the other provinces or other countries with a similar density of population, Ontario is notoriously lacking in good roads. Notwithstanding the fact that there are approximately 55,000 miles of roads in Ontario, it is only necessary to read some of the agricultural journals to realize that the farmers are in need of better roads than those that exist to-day. The whole subject is one which is being given most active consideration by other provinces and many of the states.

The benefits to be derived from " Good Roads " are beyond question, and there is an entire agreement that the development of mechanical road traction is providing a very desirable means of cheap transportation, not only for the agricultural, but also for the manufacturing industries. Such a system is well adapted to a highly developed agricultural and manufacturing district like the part of Ontario under consideration. At the time of writing, one such road is practically completed between Hamilton and Toronto, and the records of traffic show that already the improvement of this road is being a great benefit to its users.

The cost of good roads is small as compared with radial railways. Against them, and in favor of the railways, it may be argued that they provide no direct revenue. In reply it can well be stated that the revenue is indirect, but very effective. Every one of the thousands of users of an improved highway obtains a positive and direct benefit on every occasion on which he uses the road, by an actual and positive reduction of the cost of transportation.

In a district where transportation distances are not great, the largest item of the total cost of transportation is that of conveying the produce from the barn to the railway station. The proposed single track railway, nowhere more than a mile distant from the double-track Grand Trunk Railway, will not in any sense reduce this item of highway haulage, but road improvement would do so very materially.

The importance of the subject may be further appreciated by reference to the report of the Royal Commission to Inquire into Railways and Transportation in Canada, recently submitted to the Federal Government in which the subject is referred to as follows :

Highway Improvement.

" We think the Government would do well to give serious consideration to the question of the cost of bringing grain from the farm to the

railway station. The desire of the farmer to reduce the cost of marketing his grain to the lowest possible point is natural. We do not believe that any serious reduction of rail rates can be expected, and no one can say what ocean rates will be in the future, but we think that the wagon cost is capable of considerable reduction. We find that an average rate per 100 pounds from Battleford, taking this as a typical point, to Liverpool, may be put at not more than 50 cents by the all-rail route to Montreal. By water from Port Arthur, which route carries the vast proportion of the traffic, the through rate would not be more than 40 cents per 100 pounds on the average. On the other hand, typical examples of the cost of wagon haulage have been brought to our notice. We find instances of a cost of 33 cents per 100 pounds for a distance of 12 miles, and of 54 cents per 100 pounds for 35 miles. And we are informed that in that in some cases grain has to be hauled as much as fifty miles to a station. In other words, in cases such as these the cost of delivery at the station is as much as or even more than the total through rate from the station to Liverpool. What method should be adopted to cheapen local haulage is a matter for detailed consideration in each individual case. But, either by road improvement, coupled possibly with an organized system of mechanical traction, or by the construction of short spur lines of the lightest and cheapest possible type, we are persuaded that a good deal might be done at a very moderate expense. And we therefore commend the matter to the serious consideration of both the Dominion and the Provincial Governments."

The amount of money named as the estimated cost of the proposed Port Credit-St. Catharines Line would construct a system of "Good Roads" in this portion of the Province of Ontario, that would be so far reaching in beneficial effect as to be incalculable.

This amount is given by the Hydro-Electric Power Commission as \$11,360,363 sufficient to build three first-class parallel roads, equal in every respect to the Toronto-Hamilton highway, through the district, and in addition, 600 miles of secondary good roads intersecting the former. Taking into consideration the size of the townships concerned, such main roads would nowhere be more than three miles apart, and the secondary roads would be within a mile of each other throughout the whole area.

Considering further, that the cost of constructing the proposed railway between Port Credit and St. Catharines is only a fractional part of the amount proposed to be expended on a system of hydro-radial railways, it is unnecessary to make further reference to the benefits which would accrue to the whole Province of Ontario through expending a considerable but proper amount on "Good Roads" instead of the proposed radial system.

Terminal Facilities.

As far as Hamilton has been advised at the present time, there is no provision for a system of freight terminals in and around the City of Toronto. An examination of any large city will indicate that the steam railways have to provide a large number of terminals for collecting and distributing freight at convenient points throughout the city.

Terminal facilities are of vital importance in the matter of freight cost and freight handling. To illustrate this point, it may be stated that the Canadian Pacific Railway alone has in Toronto freight terminals enough to discharge or collect its freight at fourteen different centres in the city. It is quite unnecessary to refer to the enormous capital expenditure of this system alone for such terminals.

The absence of a number of terminals means long haul by team or

motor trucks, and the railway so lacking would be at a great disadvantage in competing with other systems. So serious is the lack of proper terminal facilities that none of the minor railways running out of Toronto, as for example, the Toronto, Grey and Bruce; Credit Valley; Northern; and the Toronto and Nipissing, although originally built under liberal bonuses and with warm popular support, were able to give satisfactory service or to continue a separate existence. One after another has failed until all have fallen into the possession of the greater systems.

If, in the present case, it is the intention of the Hydro-Electric Power Commission to provide a large number of terminals in and around Toronto, they can only be provided at very great expense additional to that already estimated, thereby materially increasing the fixed charges on the system.

It is an invariable railway practice to distribute the fixed charges on terminal facilities throughout that part of the system which may be benefited by the terminals in question, and, in this case, a proportion of the fixed charges for the necessary terminals in Toronto should be borne by the Port Credit-St. Catharines line.

On the other hand, if the Hydro-Electric Power Commission does not intend to provide such facilities, there will be excessive terminal costs due to the long distances freight will have to be hauled by team or motor truck, which will inevitably lead to a loss of business which might otherwise be obtained, and will put the proposed radial railway in a very unsatisfactory position to compete with the existing steam and electric railways in the neighborhood.

System of Financing.

It is understood from the Hydro-Electric Acts and the proposed By-law and Agreement that the apportioning of the capital expenditure and the losses or profits are to be determined arbitrarily from time to time.

In the figures already submitted by the Hydro-Electric Power Commission, it is to be noted that **Hamilton is required to assume the financial responsibility for more than half the estimated cost of the proposed line.** The Commission does not show how this amount was arrived at, but it appears to us disproportionately large.

The Board does not consider this policy of attempting to apportion the finances to be in accordance with sound business practice, as it will entail untold difficulties and expenditures arising out of the complicated system of book-keeping and accounting which would be necessary. The difficulties which arise in existing systems where attempts are made to segregate the costs and earnings according to actual business divisions are very great, and such segregations are avoided as much as possible.

It might also be pointed out that in this case the fixed charges to be met are interest on bonds equivalent to the total cost, **which must be paid, regardless of whether such charges are earned or not**, whereas it is usual in railway financing that only a proportion of the capitalization is in the form of bonded indebtedness, the remainder being capital stock, on which dividends may or may not be paid.

Proposed By-law and Agreement.

After a careful study of the proposed By-law and Agreement, and the comparison thereof with the Hydro-Electric Acts, the conclusions have been reached that the meaning is obscure in many cases; that there are certain points in which the requirements are not in accord with each other; that an unusual amount of authority is to be given the Hydro-

Electric Commission and that little or no opportunity is given to the municipalities either to express their views, to assert their rights, or to appeal from decisions rendered by the Commission. In short, the proposed By-law and Agreement makes Hamilton responsible for nearly six million dollars and starts the City into the railway business, from which there is practically no opportunity to withdraw, and over the operation of which it has no control.

In the proposed Agreement is to be found the unique condition that one of the parties has entire control without any responsibility, financial or otherwise, while the other party has no control and is fully responsible to the last dollar. This almost unparalleled condition is even accentuated by the fact that the party in control has all the powers of His Majesty the King, a condition not to be found in any other part of the Dominion, as far as we know.

To be more specific, it is provided, for example, that Hamilton shall not enter into any contract with another transportation company without the consent of the Hydro-Electric Commission. Clearly this will prevent the City, unless the Commission consent, from entering into any agreement with existing railways for sidings, with steamship lines, cartage companies, automobile, bus or stage lines, incline or street railways. Indeed it is difficult to comprehend the limitations within which the City may be confined should the Commission so choose. As an important example of a much needed arrangement with transportation companies, mention might be made of the recent report of railway entrances into Hamilton by Messrs. Tye and Cauchon, regarding which arrangement could not be made without the consent of the Hydro-Electric Commission, if the proposed Agreement were now in force.

The unlimited right of the Hydro-Electric Commission to a free right-of-way over any property of the corporation upon request is unnecessarily broad. It would not be reasonable for the Commission to construct a railway along the city streets without at least the permission of the City. The clause might even be interpreted that the Hydro-Electric Commission might desire to pass through the city hall, and if so, under the Agreement, they would be able to do so.

The clauses relating more particularly to finance are more or less obscure. The apportioning of the losses or the profits, if any, is left entirely in the hands of the Hydro-Electric Commission whereas there should be a definite basis for such apportioning.

As the proposed Agreement is drafted, Hamilton might be put to great expense in such an ordinary matter as snow removal, for it is stated that the municipality shall do everything in its power to remove such "cause of interruption." The bearing of the cost of keeping the proposed line in operation, or in endeavouring to keep it in operation, in the event of unavoidable and uncontrollable circumstances is not clearly stated.

By one of the clauses of the proposed Agreement the City of Hamilton is specifically required "to create the most favourable conditions * * * to increase the revenue of the railway and insure its success." It is quite unnecessary to suggest that there is no limit to the interpretation of this clause. It is highly probable that Hamilton, in common with other cities, may, in the near future, take an active interest in the promotion of "Good Road" building. Indeed, some interest is already being taken in road improvement by Hamilton. There is no guarantee that such an interest will not be interpreted as being detrimental to the proposed railway, particularly as the automobile is making such rapid strides as a competitor in the world of transportation.

The price to be charged for electrical power is altogether at the discretion of the Hydro-Electric Power Commission.

The nature of the service to be provided is quite indeterminate, although it is stated in the information submitted by the Hydro-Electric Power Commission to the City of Hamilton "it is anticipated" that certain services will be given.

The renewal clause makes the document virtually a perpetual Agreement. At the expiration of fifty years there is no provision for the transfer of Hamilton's rights or obligations. In short, the Agreement contemplates the entry of Hamilton into the railway business in such a manner that it is practically impossible for the city to withdraw or stop. The condition appears to be quite different from one in which the rights and privileges may be regularly transferred. In bonds, or other forms of equity in an incorporated company, there is always available a definite mode of transfer.

No audit is provided for. This is certainly a serious and important omission.

The proposed Agreement as a whole, although in accordance with the Statutes of Ontario, is too indeterminate and obscure. Certain parts of it, however, are perfectly explicit, for example, losses in operation which must be made up by Hamilton; the exemption of the Ontario Government and the members of the Hydro-Electric Power Commission from any responsibility of any kind, financial or otherwise; the City's lack of power to enter into transportation agreements of any kind, without the consent of the Commission; and the final and binding decision of the Hydro-Electric Power Commission in all matters.

The present Commissioners will, in the natural course of events, be replaced by new men within a very few years, in the selection of whom neither Hamilton nor the other municipalities can have any direct voice, nor can the municipalities exercise any control whatever over the administration of their property in the railways, nor of the traffic upon them. Dissatisfaction with such uncontrolled management is certain to arise, and, indeed, appears by terms of the Agreement to be anticipated, but instead of providing such means of relief or betterment as are found to be necessary in the management of other business enterprises, it is specifically provided that neither the Commission nor any member thereof, nor any of its officers, may be impeached or subjected to trial in any court without the consent of the Attorney-General of Ontario, nor can they be put out of office for any cause by any power except by the Government of the Province. Experience has abundantly shown that for the successful management of railways and other business enterprises, the proprietors must have control over the directorate, and it has been found necessary in the public interest that railways be put under the control of Provincial or Federal Commissions, as regards all their dealings with the public.

CONCLUSION.

Having considered the whole question, we conclude that it is not in the interest of Hamilton to pass the proposed By-law and enter into the proposed Agreement.

The whole is respectfully submitted,

R. W. LEONARD, Chairman.
SIR JOHN KENNEDY.
W. F. TYE.
L. A. HERDT.
WALTER J. FRANCIS, Secretary.



