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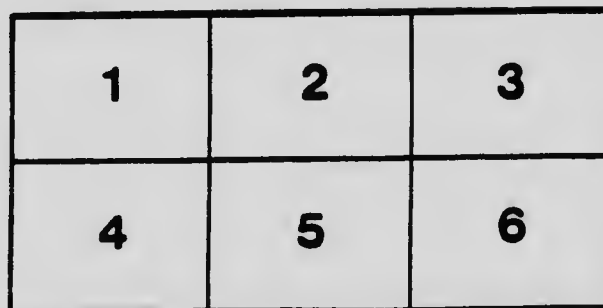
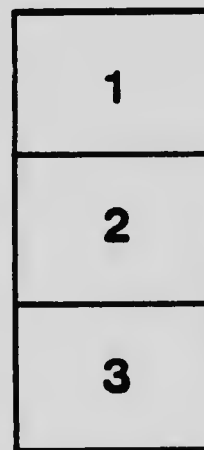
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91
REPORT OF ENGINEERS

ON THE

Separation of Grades in Connection with
the Railway Lines Along the
Water Front

AND ON

THE PROPOSED UNION STATION

CITY OF TORONTO

1907

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1907

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REPORT

BY

W. BARCLAY PARSONS, C. B. SMITH,
C. H. RUST

June 10th, 1907.

*To His Worship the Mayor and the Common Council of the City of
Toronto:*

GENTLEMEN.—In compliance with the resolution of the Council, dated January 28th, 1907, in which the City Engineer of Toronto was authorized to retain the services of consulting engineers to act with himself, to report upon the whole question of railway transportation facilities, along the entire front of the City, extending from the Humber River on the west to the extreme limits of the City on the east, together with consideration of the plans submitted by the railway companies of the proposed new Union Station, the various schemes of trackage and other arrangements incidental thereto, he engaged the services of Mr. Wm. Barclay Parsons of New York, and Mr. C. B. Smith of this City, and the commission thus appointed hereby submits the following report:

As soon as the formation of the Commission was determined upon, we held meetings in Toronto and jointly made an examination of the railways from the Humber River east, of the various proposed sites for the new passenger station, of the water front and streets, and the other physical conditions of Toronto, in so far as they bore upon the problems contemplated by your resolution. Subsequently Mr. Parsons had conferences with Mr. Perriani, who had been appointed by the Board of Trade to report to them on the same matters; with Mr. Francis, the Chief Engineer of Messrs. Westinghouse, Church, Kerr & Company, who had been retained by the Grand Trunk Railway Company to pre-

pare plans for the new Union Station, and on the 16th day of May a meeting was held in Mr. Parsons' office, which was attended by His Worship the Mayor, Messrs. Berrian, Steele and Moyes, representing the Board of Trade, Messrs. Kerr and Francis, Mr. Currene, architect for the railway, and the members of the Commission.

The questions submitted to the Commission by the Council cover several different problems, which are not related to the extent that a decision on one concludes a decision on the others. For your convenience and for the better understanding of the matters involved, it would seem well that these various questions should be set forth and considered separately. In general they can be stated to be as follows.

First:—The Passenger Station;

Second:—The approaches thereto, from the diamond crossing on the west to Parliament Street on the east;

Third:—The disposition of the tracks from the River Humber to the diamond crossing;

Fourth:—Disposition of the tracks from Parliament Street to and beyond Queen Street.

First:—Passenger Station.

The railway companies and the City have already entered into a general agreement as to the location of a new passenger station, this agreement bearing date of April 22nd, 1905. In accordance with the terms of this agreement the railway company has made voluminous studies through its engineers and architects. All such studies and plans have been submitted to the Commission and explained by their designers.

In general, the station as proposed is of the "through" type, with ten parallel tracks.

Facing Front Street, and extending from York Street to Bay Street, is the station building of exceedingly handsome design, and with extensive accommodations for passengers, baggage and freight. To get access to the inter-track platforms from the station building, without crossing the tracks on the level, various plans have been prepared, some based on overhead bridges, others on subways. All the tracks and platforms are to be covered by a train shed. In some of the plans the train shed is shown as requiring the closing of York Street and the doing away with the existing bridge, substituting in place thereof a new bridge to be located between Bay and Yonge Streets.

The officers of the Board of Trade, actuated by the desire to secure for the City the best and most convenient station, have urged upon your Commission the consideration of a "head-on" station, in which all the tracks shall terminate, to be located on the Government house property and abutting on King Street.

At the request of the Board of Trade, Mr. Berrian, their engineer, has prepared full and elaborate plans for a station of the head-on type, as described above. Through the courtesy of the officers of the Board of Trade and Mr. Berrian these plans have been submitted to the Commission and have been discussed by the Commission and Mr. Berrian jointly.

We have considered at great length the advantages and disadvantages of both plans, and we are of the unanimous opinion that it would be better to locate the station itself substantially in the position as proposed by the Grand Trunk Railway Company, and already accepted by the City, but with certain modifications of details. We believe that Mr. Berrian has made the best possible solution of the problem for a head-on station submitted by him, reflecting great credit on his ingenuity; but even in spite of this solution the head-on station is, in principle, open to such very serious objections as to warrant its rejection.

While the bulk of travel to and from Toronto is travel that terminates or originates in Toronto, there is, notwithstanding, a large portion of travel that is through traffic. A head-on station involves the necessity of every through train reversing its direction at the station or being backed in one direction while loaded with passengers across a series of junction switches and frogs, involving not only danger but a very serious delay to every train.

Toronto, while being the most important city in Canada, west of Montreal, is, nevertheless, not located on the shortest line between the western and eastern limits of the Dominion. The natural tendency of traffic is to seek the shortest route and line of least resistance, which in this case, from geographical reasons, would be around Toronto. Any bar that is placed in the way of the running of trains through Toronto would naturally incline the railways to send their through trains by some other route. For the proper development of Toronto's railway facilities and the encouragement of through traffic, obstacles should be removed and not imposed, and it would seem to us to be a wise policy on the part of those charged with Toronto's welfare to encourage in every way possible the passing of traffic through the City, and in the most commodious and economical manner.

We believe that a "head-on" station is not the best type of station for Toronto for the above and following reasons:

1st. Delay in through traffic:

2nd. The passing of all trains, some of them loaded with passengers, across a complicated system of crossings and frogs, and at times passing such trains in reverse direction;

3rd. Placing an absolute limit upon any increase in the size of the station, as no additional tracks could be added to the station unless the abutting streets on the east and the west of the terminal grounds were acquired;

4th. Great expense, both in the construction and the acquisition of land and the displacement or re-arrangement, with attending cost, of the existing freight delivery and other yards of the Grand Trunk and Canadian Pacific Railways.

Reverting to the plans of the Grand Trunk Railway Company, as submitted to the Commission, we would recommend that, while approving the location and general type of the building as proposed, instead of having all the tracks connected through the station, the seven tracks next to Front Street should be cut in the centre of the station and for a distance sufficient to give a wide and commodious passageway. There would then be seven head-on or terminal tracks from both the east and west, or fourteen such tracks in all, with three through tracks on the southerly side. A passenger going from the station to the trains, or vice versa, would then pass on a level without the inconvenience either of ascending or descending steps to any of the local tracks or to the first of the through tracks, or without crossing any track.

From the northerly side of the first of the through tracks there could then be constructed a short subway beneath such track leading to the platform between the second and third of the through tracks; such subway to be used only at the time when the first of the through tracks was occupied by a standing train, which condition would rarely occur.

If this modification of the Grand Trunk's plans was adopted, Toronto would have all the advantages claimed for a head-on station, namely, a terminus for local trains, direct access to platforms, and simplicity of working. In fact there could really be two head-on stations separating east and west bound traffic, with a third or through train station in connection, and in which passengers would proceed directly from the station to their trains, and with practically no longer walk than would be had with the head-on station, as above described. In

fact at times the walk might be shorter, because with the more limited track accommodations in the King Street station there might be occasion when two trains might have to stand one in front of the other on a single track, whereas with the greater number of tracks with the other station this contingency would probably never occur.

Another advantage of the station as proposed, especially with the modifications here recommended, would be that the station capacity would not be limited to the present construction. The station building itself is one of very large capacity, the waiting room being actually larger than the waiting room in the present Grand Central Station in New York, which has sufficed for the traffic of the New York Central, New York & Harlem and the New England Railroad systems. Should more track accommodation be needed, it is a simple matter to add on the southerly side as many new tracks as may be needed. If such new tracks are required for through traffic, the subway connecting them could be extended; if they were required for local traffic then the existing through tracks would be cut in the middle and the level concourse extended to the south.

The type of station that the Commission has in mind and which is here recommended is somewhat similar to the station at Providence, R. I., on the New York, New Haven & Hartford Railroad. Providence is a city of about the size of Toronto, in the centre, however, of a much more densely populated country, with about the same number of tracks as is proposed for the Toronto station, but already doing a business about double the existing traffic at Toronto, and with the full capacity of the station never reached.

Whatever type of station is adopted, the Commission is of the firm belief that York Street should not be severed, but that traffic be carried from Front Street to the water front unobstructed, and that a similar connection be made at Yonge Street, a compromise bridge between Bay Street and Yonge Street, to take the place of a connection at Yonge Street, and the present bridge at York Street being wholly insufficient. In fact to supply additional facilities we believe that the arrangement already made between your Board and the Grand Trunk Railway Company for a foot bridge at Bay Street should be carried into effect. We might suggest that this foot bridge be constructed of ample width to accommodate the large number of people that reach the ferries by this street.

Second—The Approaches to the Station.

In any consideration as to what should be done to the approaches to the station, it seems to the Commission that the water front of the City

of Toronto and its development is of paramount importance, and that the disposition and treatment of the tracks be considered primarily from that point of view. The limits of the water front of the City within the present harbor protection are none too large. The total distance along the Windmill line between the western channel and the western limit of Ashbridge's Bay immediately at the foot of Parliament Street, is about two miles. Of this distance a large part is occupied by railway yards and less than one-half of it is open for development for commercial purposes.

The City has established on its map and has constructed in small part a marginal street called Lake Street, and has also established a line southerly of Lake Street to which improvements by piers or wharves may be carried. What should be done with the approaches to the new station necessarily has great bearing upon the water front property. An inspection of the map, even after Lake Street is completed, shows that but a small part of Toronto water front will be capable of any extensive improvement.

Between the water front and the railroad tracks on the Esplanade there should be sufficient space to permit the construction of manufacturing industries, warehouses, store yards or other large terminal improvements which can be served by railroad connections on the one side and water connections on the other. In this respect Toronto is exceedingly favorably situated, and the full use of such situation should, it seems to us, be secured.

Without attempting to go into any details of design, we have considered and recommend to you the possibility of establishing along the water front a large marginal street that should have a width of at least 125 feet, extending from (say) Cherry Street westerly to Queen's Wharf channel, connecting at that point with a proposed boulevard, which we understand is proposed to be constructed, thence to the Humber, thus furnishing a great thoroughfare the full water front of the City of Toronto.

If this new street were located at a distance of at least 600 feet from the Esplanade, which would place it just southerly of the proposed location of Lake Street, between Scott and Parliament Streets, there would then be a sufficient area between such street and the Esplanade for a systematic and extensive development. The water front then could be divided so as to give in the neighborhood of the foot of Yonge, Bay and York Streets, passenger accommodations for ferries and for the passenger steamers running to Hamilton, the St. Lawrence, Niagara, or to local points along the lake shore, with accommodations

for the purely commercial vessels on the east, for yacht and boat clubs on the west and connection between the railways and lake beyond, but with freedom of connection between them all.

If some such plan as is here indicated were taken up and studied in detail, we believe that there would result to Toronto not only new land of great value in itself, but also a great increase in its commercial facilities that would have a far reaching effect on all values in and business of the City.

With the water front thus developed, the traffic between it and the City, not only for water borne freight, but for freight that would be brought to the industries and warehouses by the railways themselves, will become of great importance, and its care of more concern than even that of the present existing traffic. To permit this new traffic to pass the running tracks of two great railways on level crossings, no matter how well protected by gates and watchmen, is at great cost to the company and a great burden, both in danger and delay, to the citizens of the City. We strongly recommend to you, therefore, that steps should be taken in connection with the proposed station to so arrange the track approaches thereto that these level crossings should each and all be permanently removed. This can be done in two ways:

First, by elevating the tracks, and

Second, by elevating the streets.

Both plans have their advantages, but as both of them involve certain questions of legal rights and other questions of policy as to which we are not advised, we think it better to lay before you the relative advantages of the plans, so that you may see all phases of the question. From our standpoint, however, we are of the opinion that the preponderance of advantages is in favor of the elevation of the streets.

It has been suggested that the station itself be placed at such elevation as to permit the tracks running to the east to pass over all streets from Bay Street easterly, such streets to be carried beneath the tracks at their existing levels. The additional cost of the construction of the station at the higher level can be taken as negligible in amount. If the main running tracks, at least four in number (which we consider sufficient) were thus elevated and Bay Street carried beneath, a total reconstruction of the existing yards of the railway companies would, however, become necessary. The local freight house of the Canadian Pacific Railway would have to be moved and the classification and delivery tracks connected only at the west end, instead of at both ends as at present. Along Esplanade east of Yonge Street there are at

present certain tracks on the surface for ear delivery and other private tracks turning into industries and warehouses. It appears, after consideration it will be impossible to do away with these tracks. Their presence is of great importance to the business of Toronto. It has been proposed, however, that no tracks of this nature be carried across Yonge Street, but we consider it necessary for the accommodation of the traffic at this point that on the north the tracks should be carried as far west as Scott Street, and on the south as far as the east side of Yonge Street, this latter being especially necessary to provide for the shipment of fruit which now takes place at the Yonge Street wharf. These tracks would necessarily cross all the streets east of Yonge at grade. In order to diminish the danger, it has been proposed that shifting on these tracks be limited to the night hours, or that the shifting engines be preceded by a man on foot with a flag, as the danger of running a train close to, and therefore obscured by the masonry of a viaduct, would be exceedingly dangerous.

On the other hand, if the streets are carried over the railway there need be no reconstruction of the existing yards, and there will be no interference with the industries located on the Esplanade. Crossing of all tracks at level should be absolutely eliminated, and there should even be an extension of the facilities afforded by private track delivery if the development of the water front so required it, as in our judgment it will.

It would not seem necessary, in order to furnish proper connections to the water front, that every street now on the map need be connected with the marginal street. If there were four, or at the utmost five, approaches east of Yonge Street, the full requirements of the case, even with the developed water front, would be met. Should a marginal street be constructed, as suggested, a distance of at least 600 feet from the Esplanade, the gradient on the approaches crossing the tracks would not exceed 4%, which is less than the existing gradient rise from the Esplanade to Front Street, at least as far east as Princess Street, and such approaches would reach the grade of the marginal street on the north line without requiring curved approaches, as in the present York Street approach.

Summarizing the advantages and disadvantages of the two plans, we have for track elevation—

Advantages:

Every street would be carried through to the water front at its existing elevation.

The disadvantages are:

First:—That the raising of the station would place the tracks westerly of it at such a height as to require the abolition of the John Street bridge;

Second:—The existing freight yards would have to be reconstructed;

Third:—The shifting and delivery facilities on the Esplanade reduced;

Fourth:—Crossings of the shifting tracks on the Esplanade would still remain;

Fifth:—Greater cost.

As to the separation of streets and railway by street bridges, the advantages are:

First:—No interference with existing tracks;

Second:—Delivery facilities on the Esplanade can be increased.

Third:—A less cost;

Fourth:—Better appearance to persons approaching from the water.

The disadvantage is:

That some streets will be cut off before reaching the water.

This probably will result in property owners abutting upon the Esplanade claiming damages for the closing of these streets.

In discussing the advantages and disadvantages we have not alluded to the question of damages. In all probability, judging from what has happened in other cities, the property owners, in the event of a viaduct being constructed, will set up alleged claims for damage to their property.

We are so firmly of the opinion that all level crossings of streets and tracks should be eliminated, that we recommend, in the event of street bridges over the railways being adopted, that the main running tracks east of Yonge Street be fenced as far as Parliament Street. This will present the same facilities for unobstructed train speeds as the viaduct would. On the other hand it would abolish the private crossings

from the south side of the Esplanade as efficiently as the viaduct, and the cost, if any, of such abolition would be equally a charge against both projects.

We have estimated that the cost of track elevation from Bathurst Street to a point east of Queen Street on the Grand Trunk Railway would be substantially \$3,000,000. This provides for a four-track viaduct from Yonge Street eastwardly to Parliament Street, where the Canadian Pacific and Grand Trunk lines separate. We have assumed that this work will be carried on a concrete filled viaduct with bridges at every street opening 66 feet wide.

The portion east of Parliament Street on the Canadian Pacific Railway would be a two-track viaduct running down to the present grade near Queen Street. This would give subway crossings at Front Street and Tate Street, and probably with the slight depression of the street a subway could be constructed at Eastern Avenue.

On the Grand Trunk Railway, east of Parliament Street, a two-track embankment constructed eastwardly a distance of 7,600 feet. This will provide for subway crossings at Eastern Avenue and Queen Street.

We have also provided for elevating all the tracks south of the proposed Station for a width of about 500 feet. This width going west is gradually decreased until it assumes the normal width of four tracks at John Street, which width continues to Bathurst Street.

A ramp is provided for on the north side to reach the Grand Trunk Railway passenger coach yard on a one per cent. grade.

From the diamond crossing immediately west of the Strachan Avenue bridge to the Humber River we have taken the plan and estimate prepared by Mr. Hobson, the Chief Engineer of the Grand Trunk Railway Company. Mr. Hobson in his estimate provides for four tracks and gives the total cost of the work at \$1,000,000. This estimate does not, however, provide for a bridge at the Queen Street crossing at Sunnyside, which would cost, including land damages, about \$100,000. This plan provides for the depression of the tracks commencing at the diamond crossing and running westerly to Queen Street. The tracks would be depressed sufficiently to provide for over-head bridges at intersecting streets.

From Queen Street crossing at Sunnyside west to Humber it is proposed to have the track elevated, and under-crossings could be constructed into High Park, and also at the various streets west of this point, which are in the municipality of Toronto Junction.

If this work was carried out with only two tracks as at present, it would cost probably not more than \$500,000. The large additional cost is caused by the right-of-way that would be required for the construction of the two additional tracks.

The total cost, therefore, to abolish grade crossings and to elevate the tracks throughout the City, from the west City limit at the Humber to a point east of the Queen Street crossing on the Grand Trunk Railway, would be approximately \$4,000,000. This does not include any amount for the reconstruction of the yards, re-laying of the tracks along the Esplanade, delays and inconvenience to travel pending the reconstruction, nor have we included any allowance for possible abutting damages incident to the construction of a raised viaduct in the centre of Esplanade Street. For both projects there might be some abutting damages to obliterate private rights crossing the tracks at grade.

The cost of five overhead bridges, including one at Yonge Street, would be about \$800,000. This estimate includes an allowance for the damages to abutting property.

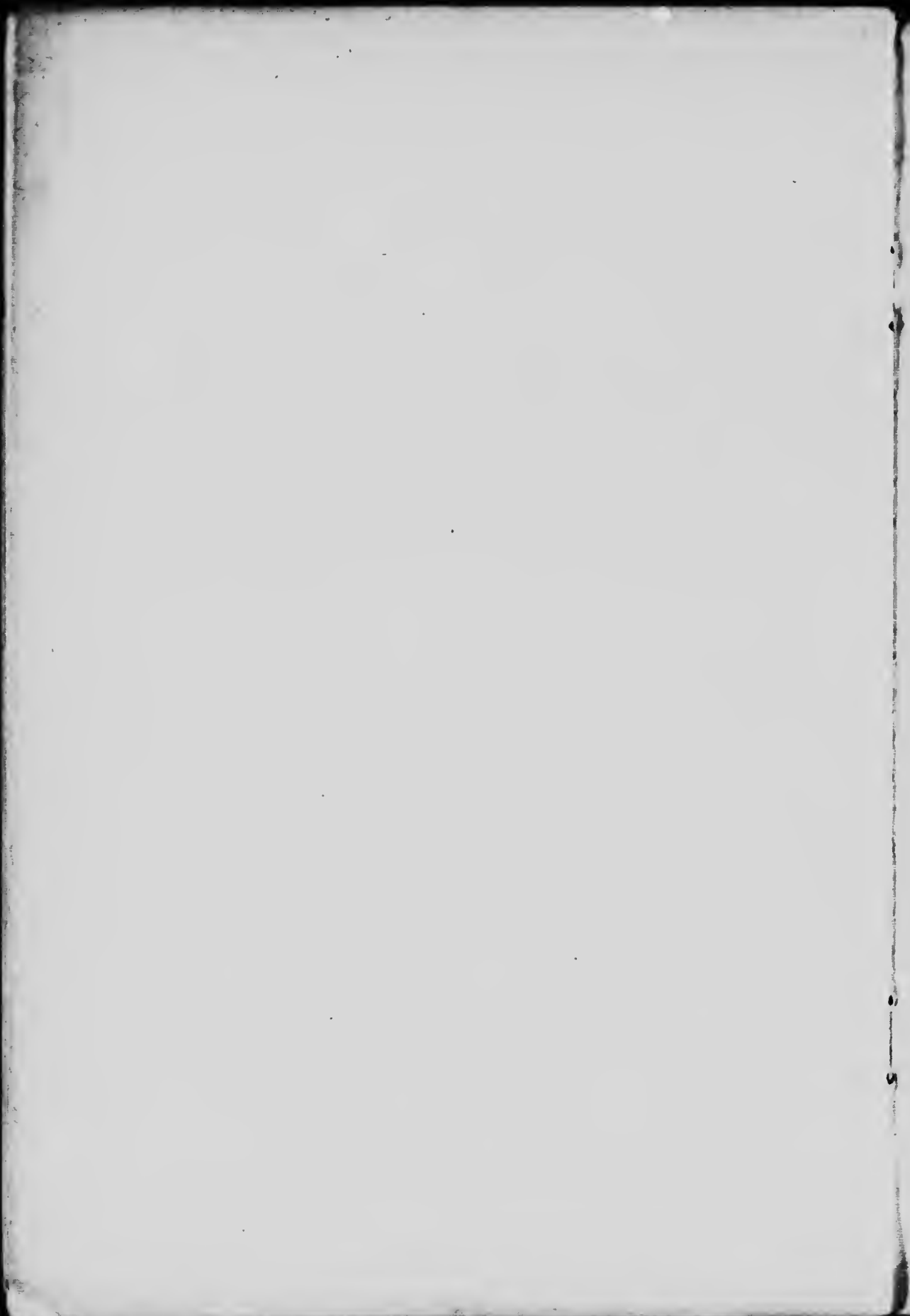
The question as to what proportion of the cost of this work should be borne by the City is, we consider, a matter of policy to be determined by your Council, but we would point out that in the construction of the York Street bridge, the City paid one-third of the cost, and we would suggest that, if the tracks are elevated, the City should not be called upon to bear any larger amount of expense of the work than they would have to do if it was decided that overhead bridges were the best solution of the problem.

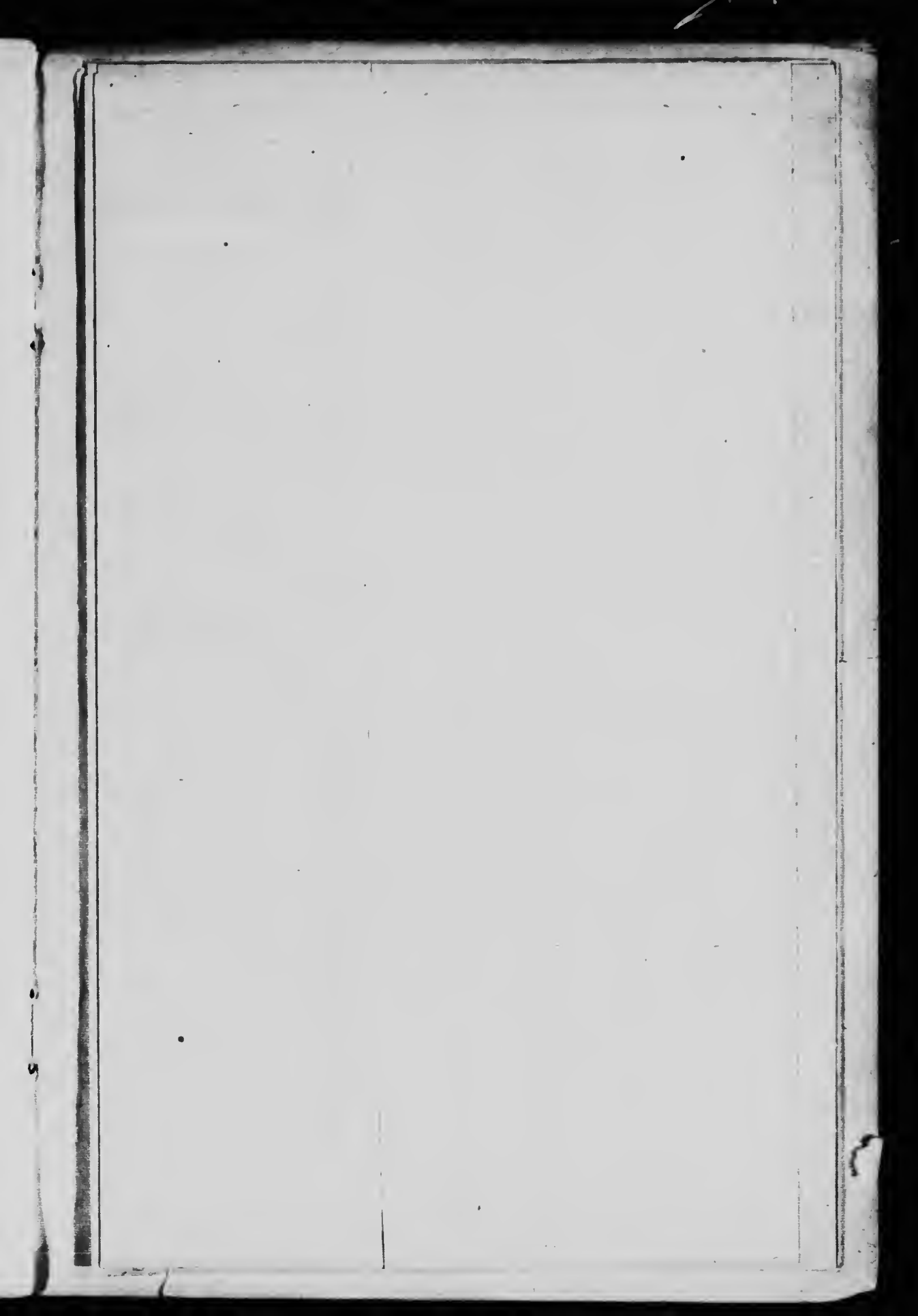
A plan showing both projects for track or street elevation is attached hereto.

We remain, gentlemen,

Yours respectfully,

W. BARCLAY PARSONS,
C. B. SMITH,
C. H. RUST.



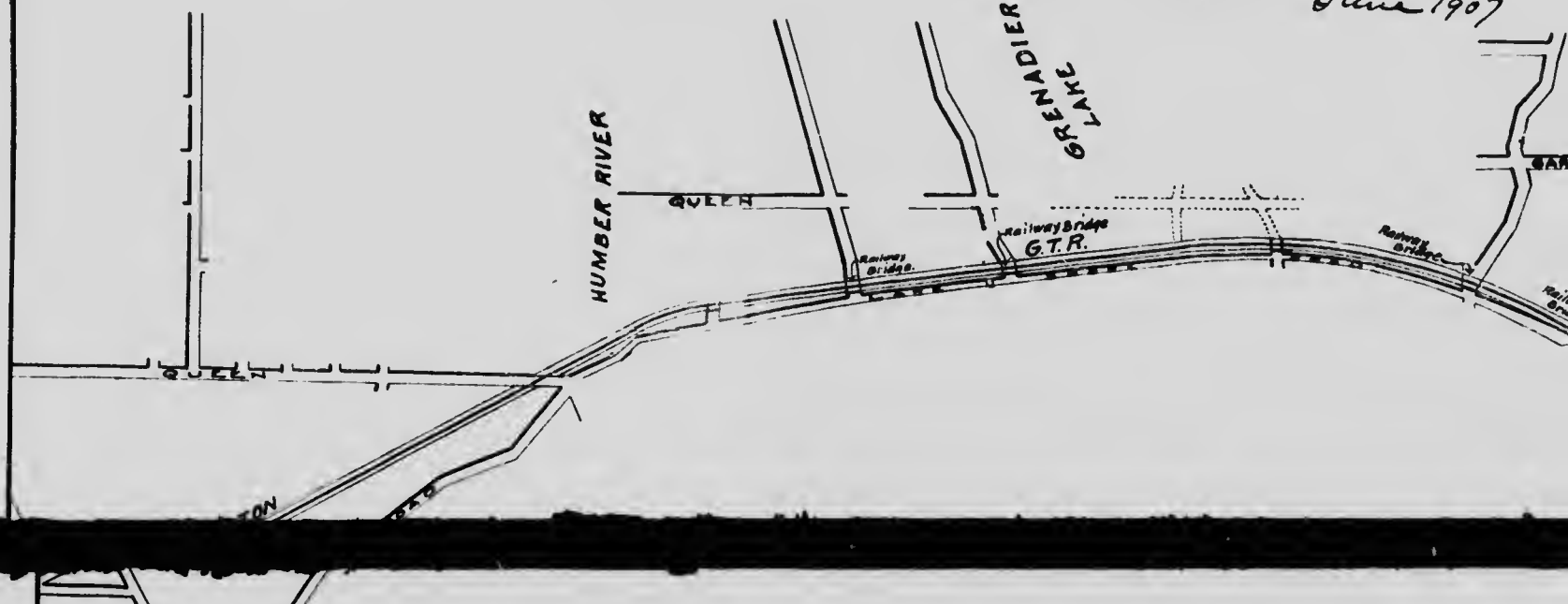


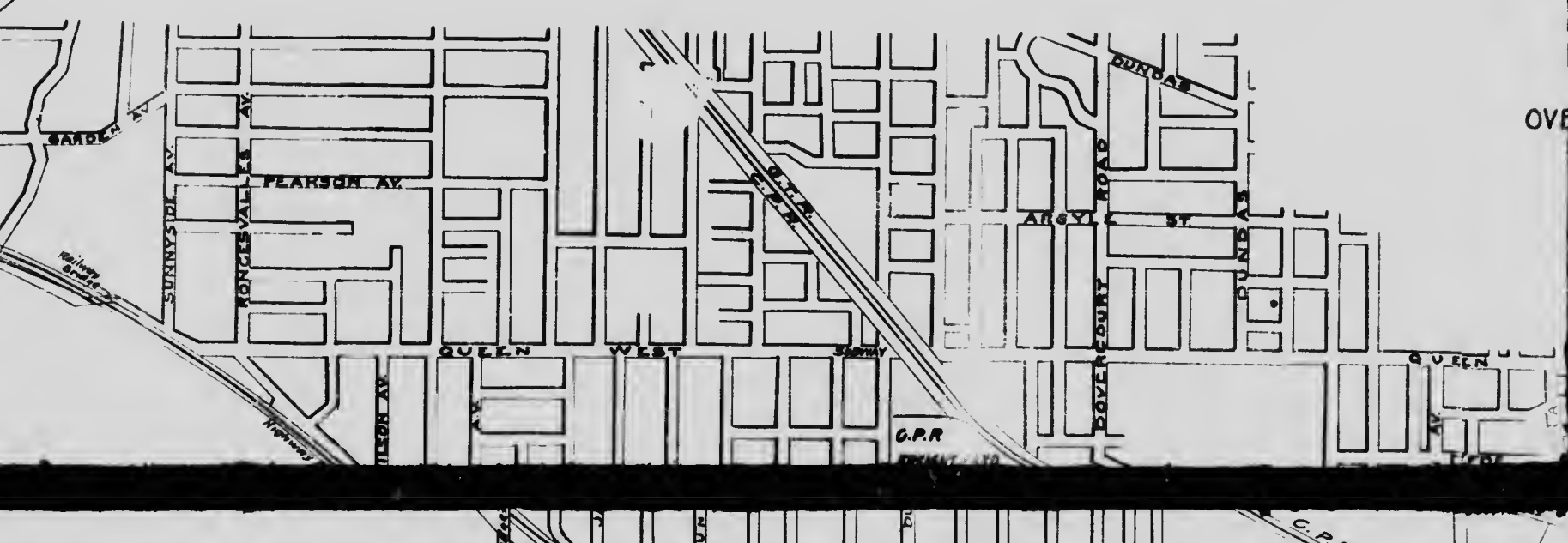


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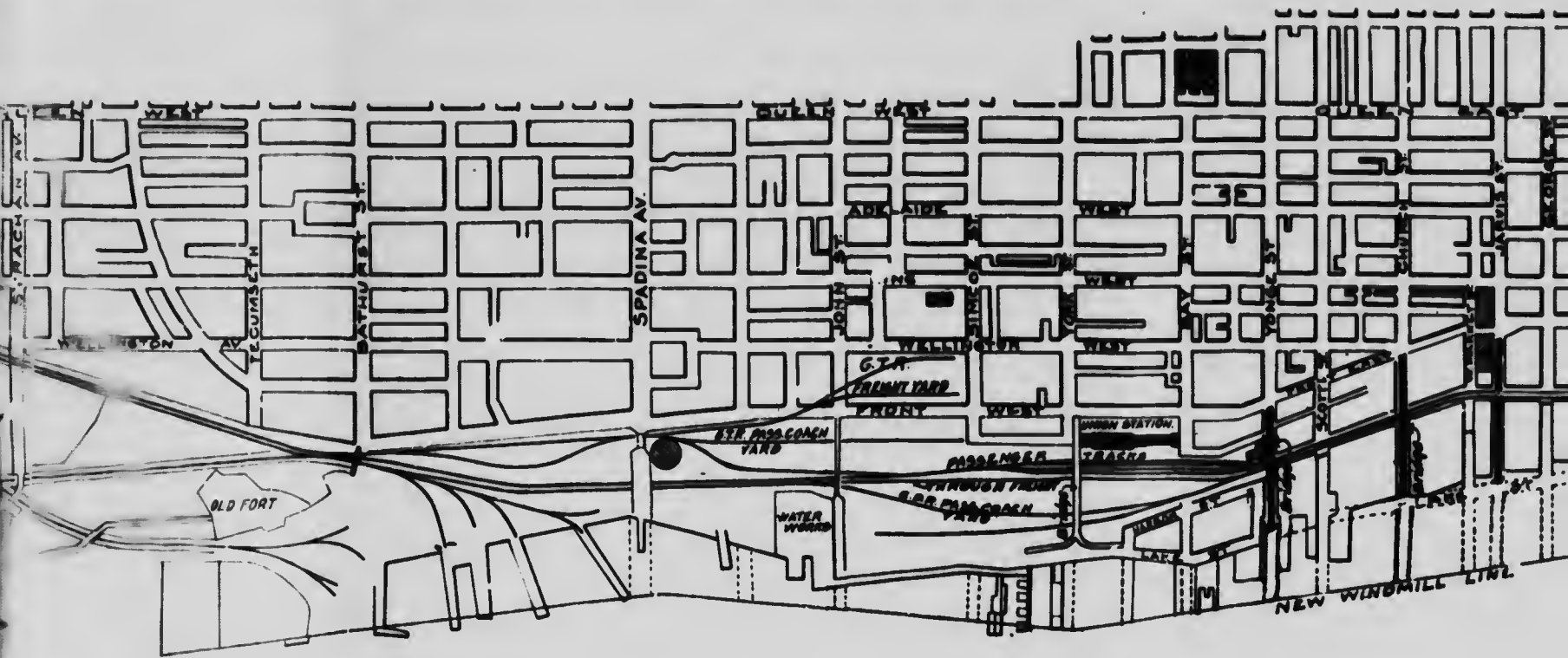
CITY OF TORONTO
 PLANS
 SHOWING ALTERNATIVE PROPOSALS FOR RAILWAY TRACKS
 ALONG THE CITY WATER FRONT
 IN CONNECTION WITH THE
 NEW UNION STATION
 SCALE 1000 FT. = 1 IN
 A. M. DEL.

Am. Barclay Carson -
C.B. Smith
C.H. Ross June 1907

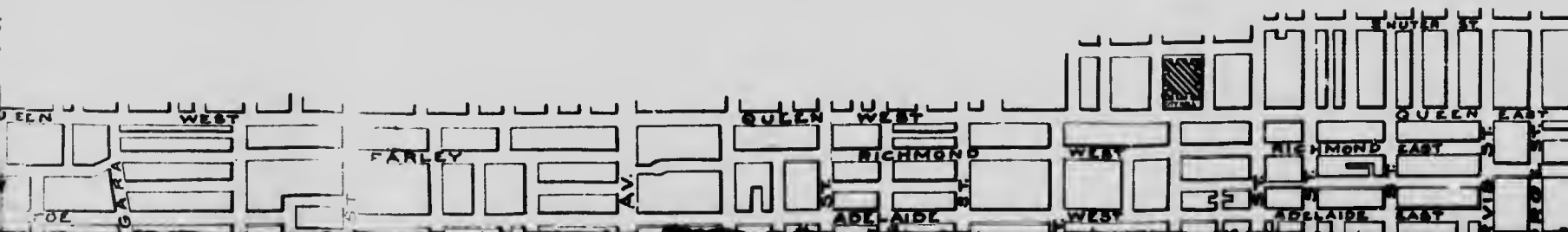


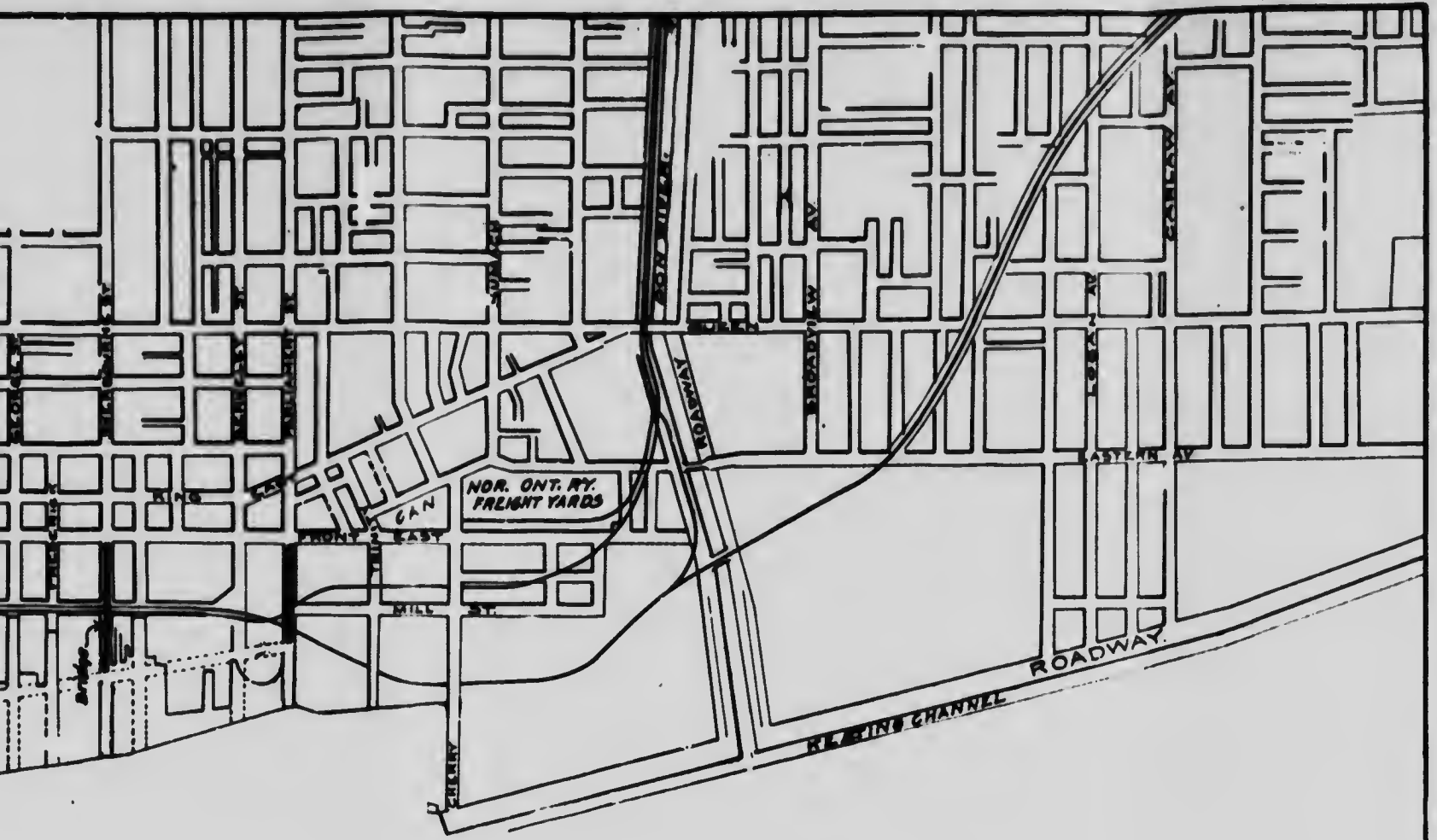


**PROPOSED
OVER AND UNDER CROSSINGS FROM DUFFERIN STREET TO THE HUMBER RIVER
AND
BRIDGES OVER RAILWAY TRACKS BETWEEN THE NEW UNION STATION AND CHERRY STREET**



**PROPOSED
OVER AND UNDER CROSSINGS FROM DUFFERIN STREET TO THE HUMBER RIVER
AND
VIADUCT FROM BATHURST STREET TO QUEEN STREET EAST.**



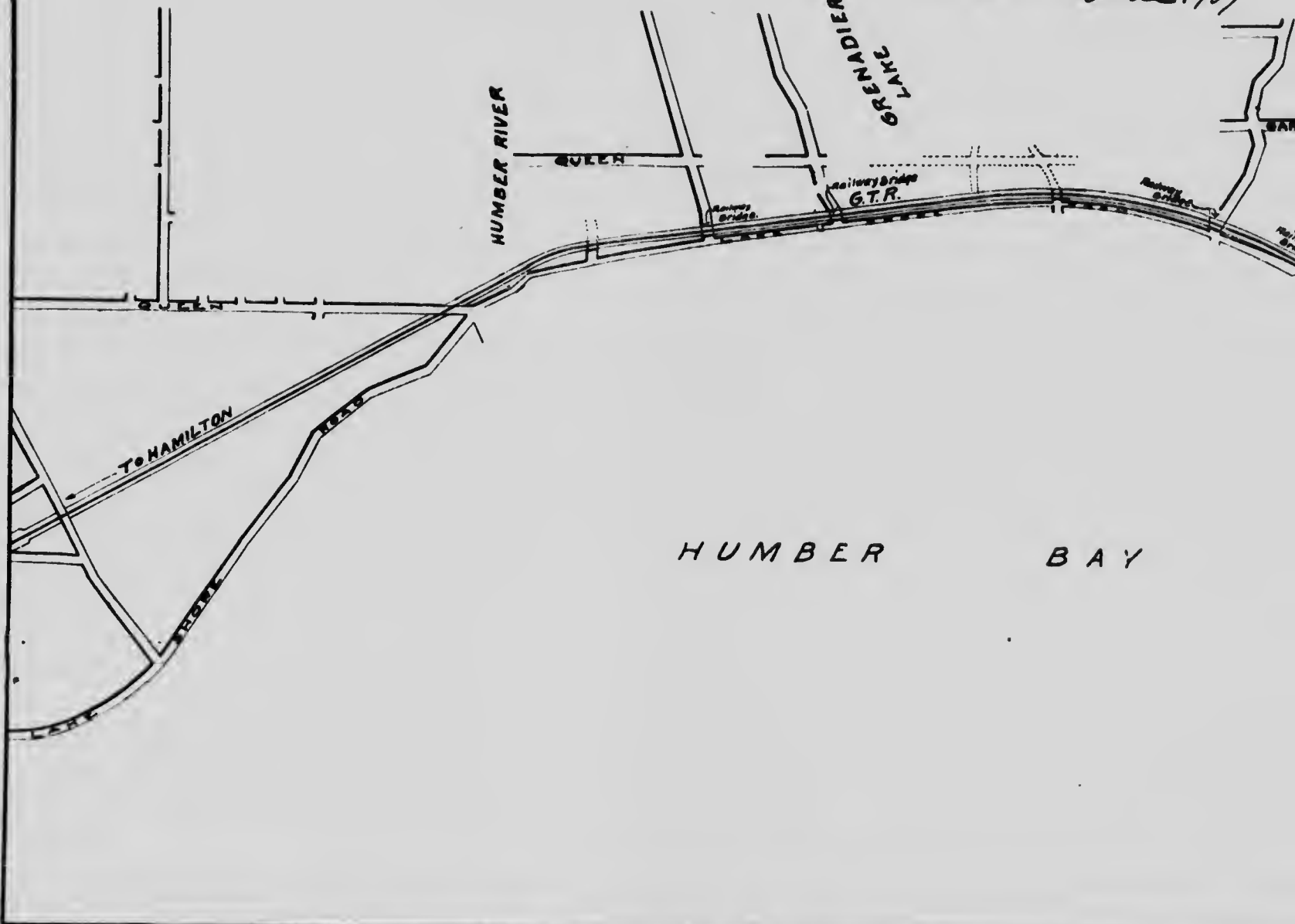


TRIM COVER

CITY OF TORONTO
PLANS
SHOWING ALTERNATIVE PROPOSALS FOR RAILWAY TRACKS
ALONG THE CITY WATER FRONT
IN CONNECTION WITH THE
NEW UNION STATION

SCALE 1000 FT. = 1 IN
A. M. DEN.

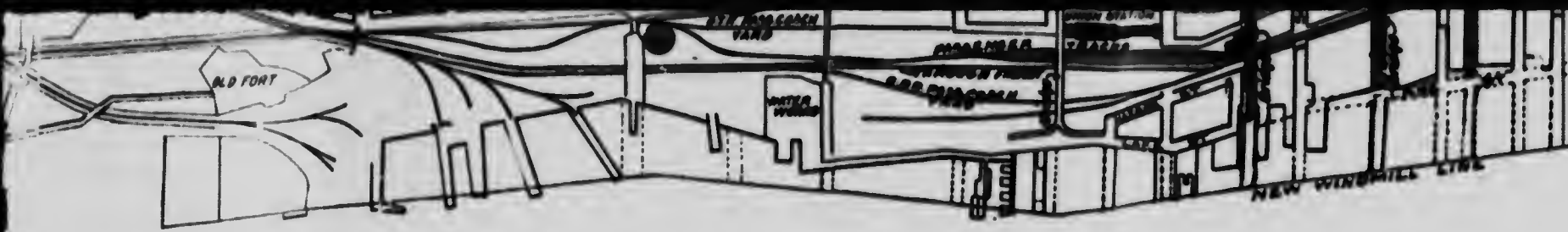
*Wm. Barclay Parsons -
C.B. Smith
C.H. Ross June 1907*



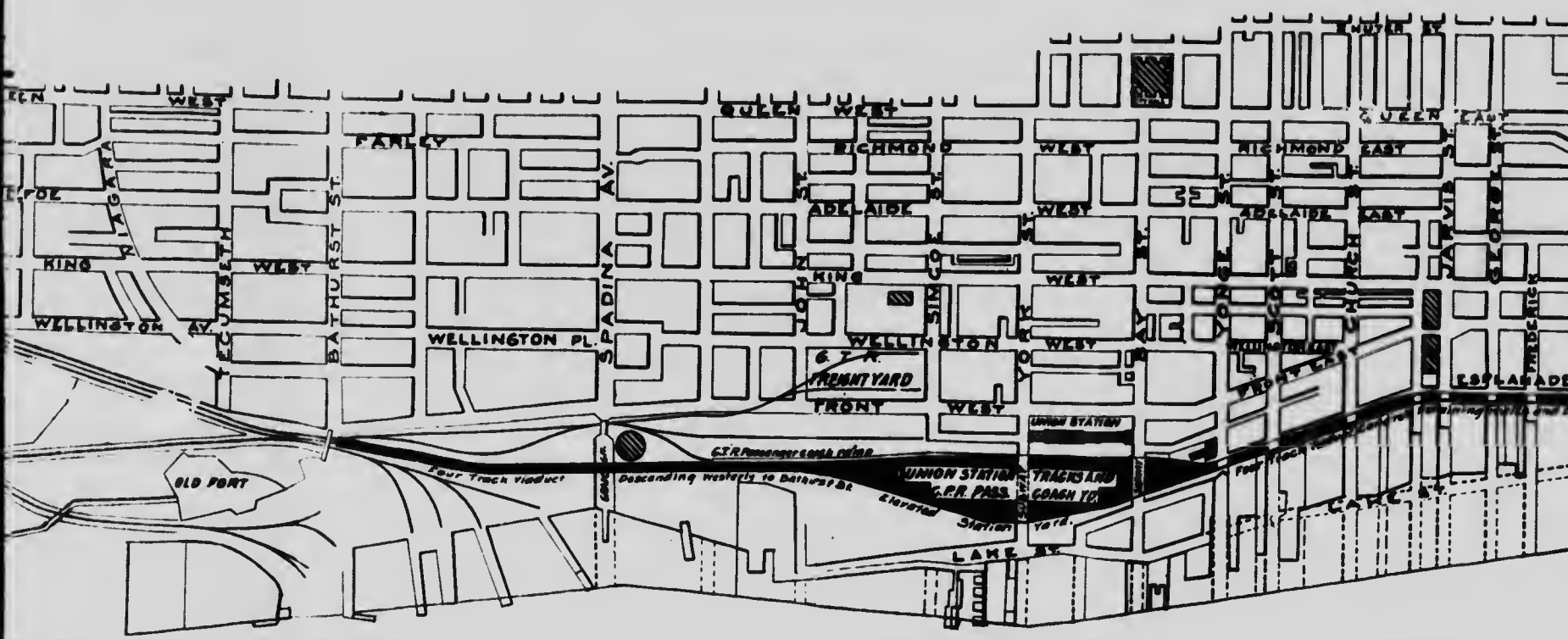
GKS



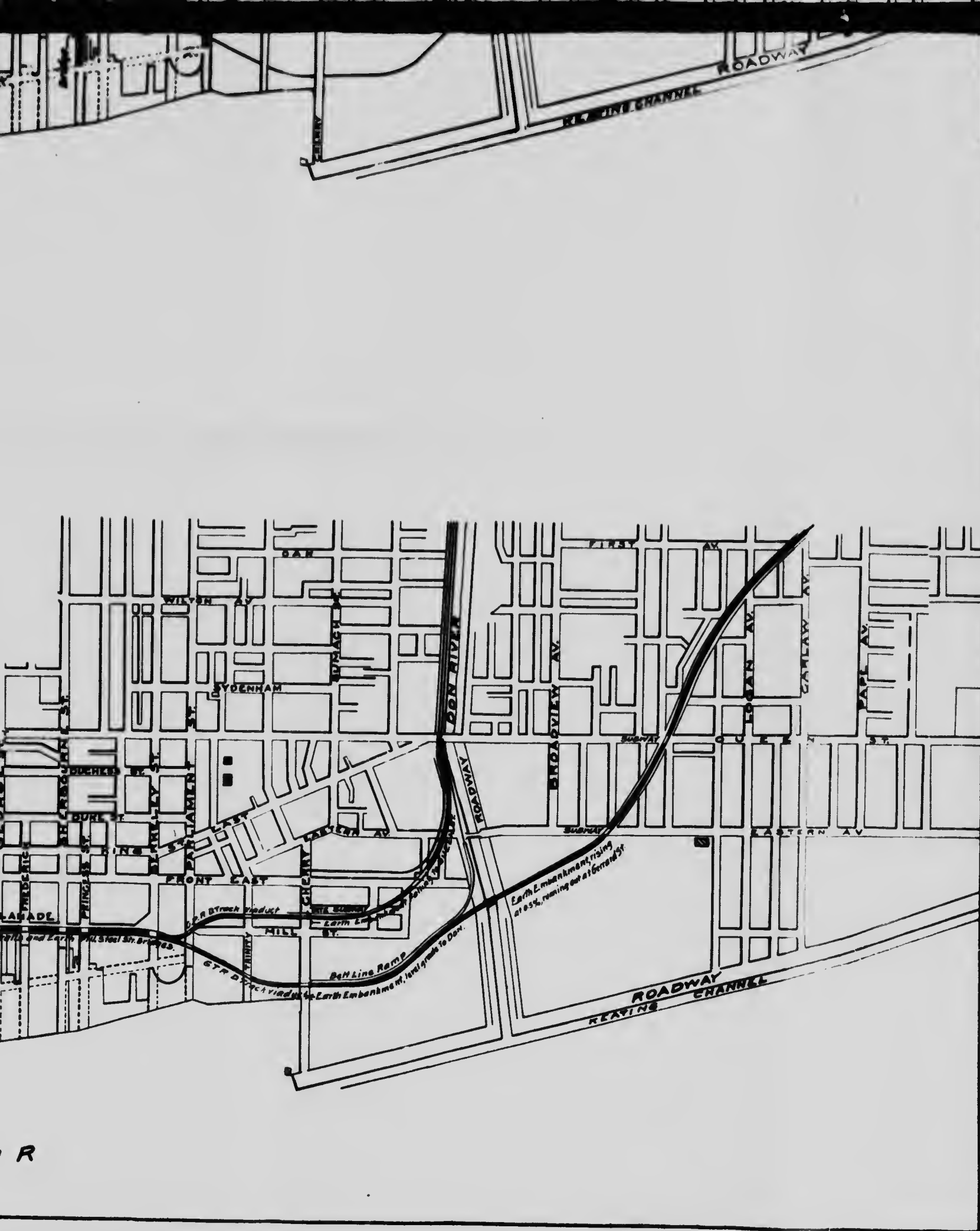
OVER



PROPOSED
 OVER AND UNDER CROSSINGS FROM DUFFERIN STREET TO THE HUMBER RIVER
 AND
 VIADUCT FROM BATHURST STREET TO QUEEN STREET EAST.



H A R B O U R



TRIM SUB: P

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REPORT

BY

R. M. BERNIAN, JOHN W. MOYES

BOSTON, June 29th, 1907.

To the President and Members of the Board of Trade of the City of Toronto, Toronto, Canada:

SIRS,—Having regard for your instruction for a report giving a solution of the Esplanade difficulties presenting themselves in the City of Toronto, beg to say:—

That a close personal investigation has been made, extending from Scarborough Bluff, on the east, to the Humber on the west, and a thorough going into the merits and claims of the railway companies regarding the present location; then having in view the personal safety of the citizens of Toronto, and the providing of means that would give to Toronto a much needed free use of a developed water front, as well as afford perfect facilities for the railway needs. The situation appears to be capable of solution in two ways:

(1) The elevation of the streets;

(2) The elevation of the railways. A concise presentation of the merits of each would perhaps present a solution and provide for a selection.

The physical features of the southern boundary of Toronto traversed by the railways is of a complex character, and must be viewed from the standpoint of what will result in the greatest good to the greatest number, while having reasonable regard to the financial aspect of such solution.

It would appear that each of the several streets, having a southerly direction from Queen Street, have access to the water front of the City, and these rights must be assumed to be maintained for the citizens in any treatment of the question.

Having this in mind, then, let us see what may be done by the elevation of the highways over the railway tracks now situate on the Esplanade. A reasonable assumption would be that each of these streets have a right to the free access spoken of. In that event, then, a bridge and approaches thereto would be necessary.

Commencing at the western end, say York Street, we find between that and Cherry Street, inclusive, ten bridges would be necessary to reasonably serve the apparent rights now enjoyed by Toronto's citizens, but which the danger of crossing the net work of railways at grade, prevents their using.

As the demand for a 22-foot clearance over the rail is imperative for the operation of the railway under a street elevated over these railways, the portion of the bridge prepared for traffic would be in the neighborhood of 25 to 26 feet above the level of the rail and surrounding ground.

Assuming that a 4 per cent. grade on these approaches would be a reasonable one for vehicular operation, we are confronted by the necessity for an approach of between 600 and 700 feet.

From the northerly limit of the railway tracks at Sherbourne Street the approach thereto would commence at a point north of Front and south of King Street. The natural rise of ground at the highest point, Yonge Street, would not entail the necessity for the approaches reaching beyond Front and Yonge Street, but in each event the necessity for carrying a bridge approach to the south would mean the extension of the existing shore line some distance out towards, or even up to, the new Windmill line. If, on the other hand, the approaches to the bridges were carried at right angles, then such approaches could only be constructed with serious invasion of the acquired rights of property holders in that neighborhood.

In the event of construction, giving a straight approach for these bridges, being decided on, then the completion of a bridge scheme, providing for access to the water front of Toronto, must, of necessity, be deferred for many years to come.

The comfort of the citizens would be seriously interfered with, not only by the ascent and descent of the approaches, but also by the

inconvenience caused by smoke, and trains passing under these bridges, to both pedestrians and vehicular traffic.

There is a serious feature in the bridge question affecting Toronto's commercial welfare, as the lifting of water-borne traffic over these bridges must add to the cost of transportation, by a sum of money per ton, that would militate seriously against Toronto's welfare, and this phase must become more acute as the years go by, and Toronto's magnificent water front opportunities from Ashbridge's Bay west, are developed in a proper manner.

Another solution of the situation is to be found in a viaduct plan which would commence immediately east of Bathurst Street and terminate east of Cherry Street near the River Don in the east end. (As shown on the plan herewith).

Under a viaduct arrangement of the Esplanade all trains passing through the City of Toronto, would be carried at an elevation and thereby provide free access at every street on the whole of the water front of Toronto on the existing natural level, there being no need of legal imposition on vehicular, pedestrian or street car traffic as obtains with railway traffic; the altitude of the structure would be very considerably less than that of a bridge, providing for surface operation of railways on the Esplanade. Such a structure would invade no right along the Esplanade, providing a street were laid out immediately south of the viaduct. A viaduct would be available for the use and protection of the citizens and the aiding of Toronto's commercial interests, at a much earlier date, than the suggested bridge plan. Its first cost would be practically all the charge that would be against it, and a solution for all time to come of these frontage difficulties, which have continually beset Toronto's best interests in the past.

You will notice from an inspection of the plan that no private or other interest on the Esplanade proper will be affected; all existing switches and easements thereto are conserved by a surface track maintained east of Church and south and north of the proposed viaduct, for their sole benefit and use. Practice has demonstrated that traffic of this nature can be maintained, under proper regulation, with every safety.

Having in mind the least possibilities for damage costs in connection with the bridge scheme, for the reasons before given, an average of \$200,000 each would be a very modest estimate of the cost of the bridges, but the interest account covering the fixed charge for cost must be augmented by a yearly sum covering maintenance and renewal accounts.

A viaduct for the City of Toronto, between the limits previously set out, would be slightly under two millions of dollars, the details of which sum accompany this.

A summary of the two plans here outlined would then present the following features:

Bridge plan covering ten (10) streets from York Street eastward to the Don (estimated cost).....	\$2,000,000 00
Viaduct plan, providing for every street having access to water front at existing street level (estimated as per detail)	2,000,000 00

The interest account on cost would be practically the same in each case. The maintenance and renewals account, necessitated by a bridge plan at, say 2½%, would be \$50,000 per annum, and would be totally absent in the case of a viaduct.

The cost of extending to the Windmill line, if a straight approach to the bridges was demanded, on the south side, would add seriously to the above figures for a general bridge plan of the Esplanade

Careful study of every feature in connection with the Esplanade situation, of which the foregoing is a summary, leads to no other conclusion than that a viaduct is the preferable solution, giving immediate and permanent relief from the dangers besetting the citizens of Toronto, as well as aiding Toronto's growing commerce and making railway operation more free and much faster.

With a viaduct, the question of providing a railway station suitable for the present and growing needs of Toronto becomes simplified. Such a station (a plan of which accompanies this) would be situate between York and Bay Streets, immediately south of Front, and would provide for all passenger trains from the east and west depositing their passengers on commodious terminal platforms leading to a central concourse slightly above the street level of Front street.

Provision is also made in the accompanying plan for easy and rapid movement of all through trains, as well as making liberal provision for accelerating the movement of freight.

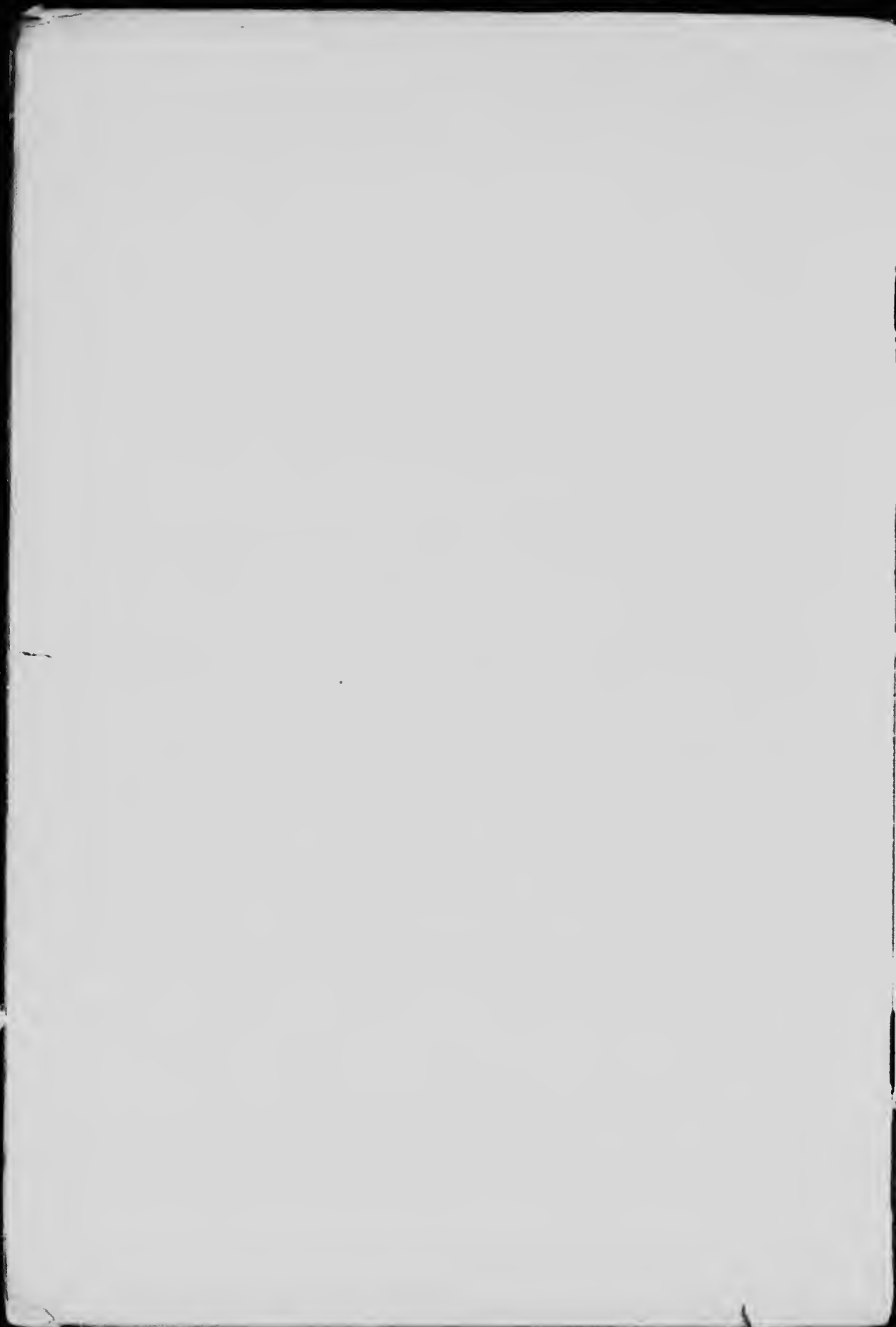
The adoption of a viaduct and station plan as here presented would permit of a suburban railway train development that is not attainable otherwise, and that is one of the growing necessities of Toronto.

In connection with this plan the extension of the viaduct easterly, providing for the entrance of the Grand Trunk, Canadian Pacific, and

Canadian Northern Railways across Queen Street, can be carried out on the exact lines of the plans now presented to you.

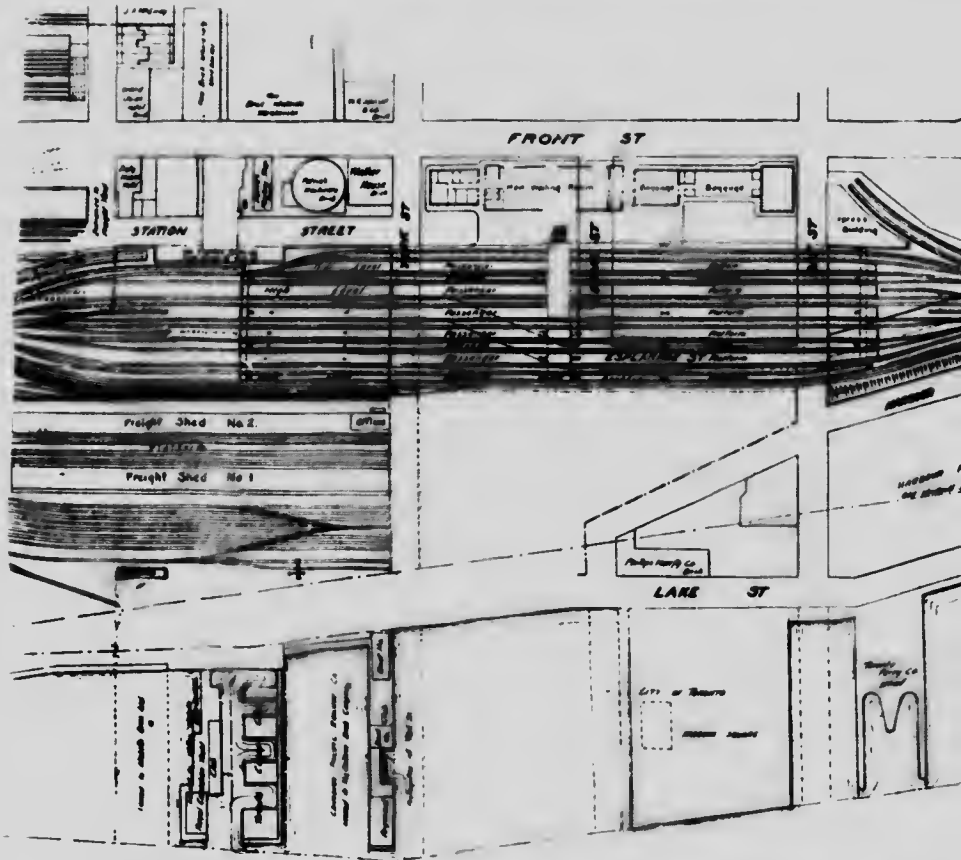
West of where the viaduct ends, near Bathurst Street, the submerging of the railways would begin and be carried westerly toward Sunnyside, and out to the Humber, giving safe crossings at Sunnyside and into the Park. In connection with these suggested additions we desire to point out that not a single dollar of expenditure on the proposed viaduct, as submitted to you, would be lost, as this plan has been prepared with a thorough belief that the eastern street traffic approaching the City must be protected, at no distant day, in the same manner and for the same cause as the proposed improvement of the Esplanade is now suggested.

(Signed) (R. M. BERRIAN.
) JOHN W. MOYES.



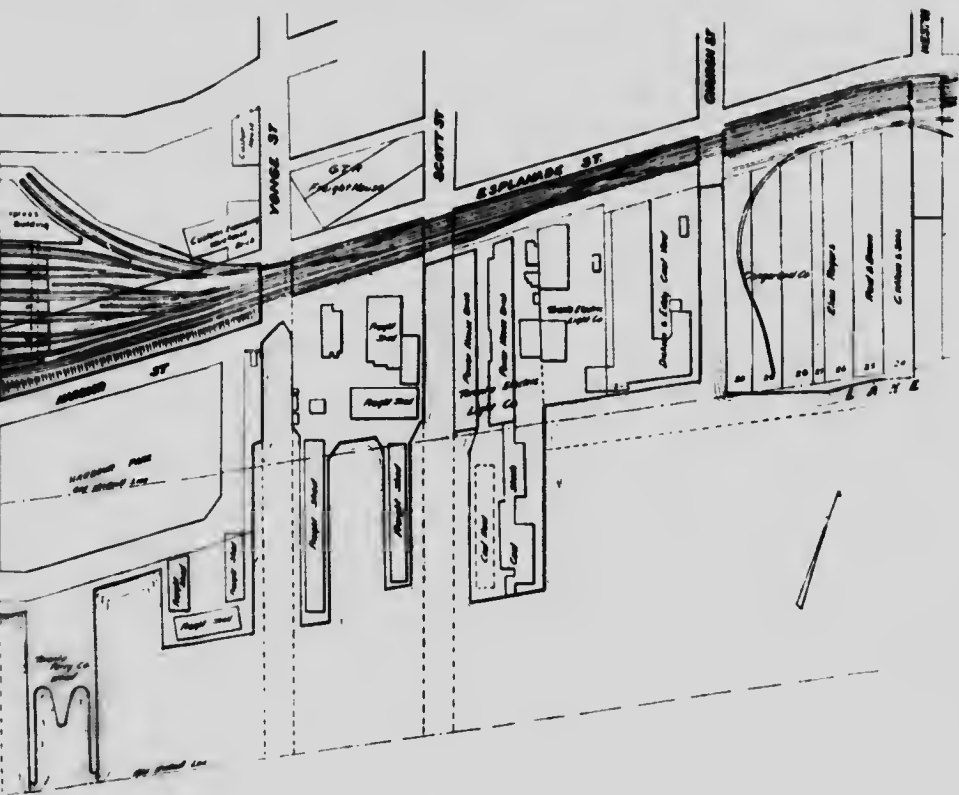


NEW UNION STATION AND VIADUCT



The Plan reproduced above shows the District between Church and York Sts. v
 free access to the Wa

VIADUCT IN THE CENTRAL DISTRICT.



York Sts. where it is proposed to eliminate all tracks on the level, allowing
to the Water Front.

