TORONTO RAILWAY TERMINALS 1889.

THE ENGINEERS REPORT.

TERMINAL FACILITIES.

Full Text of the Report of Engineer Wellington on the Esplanade Question.

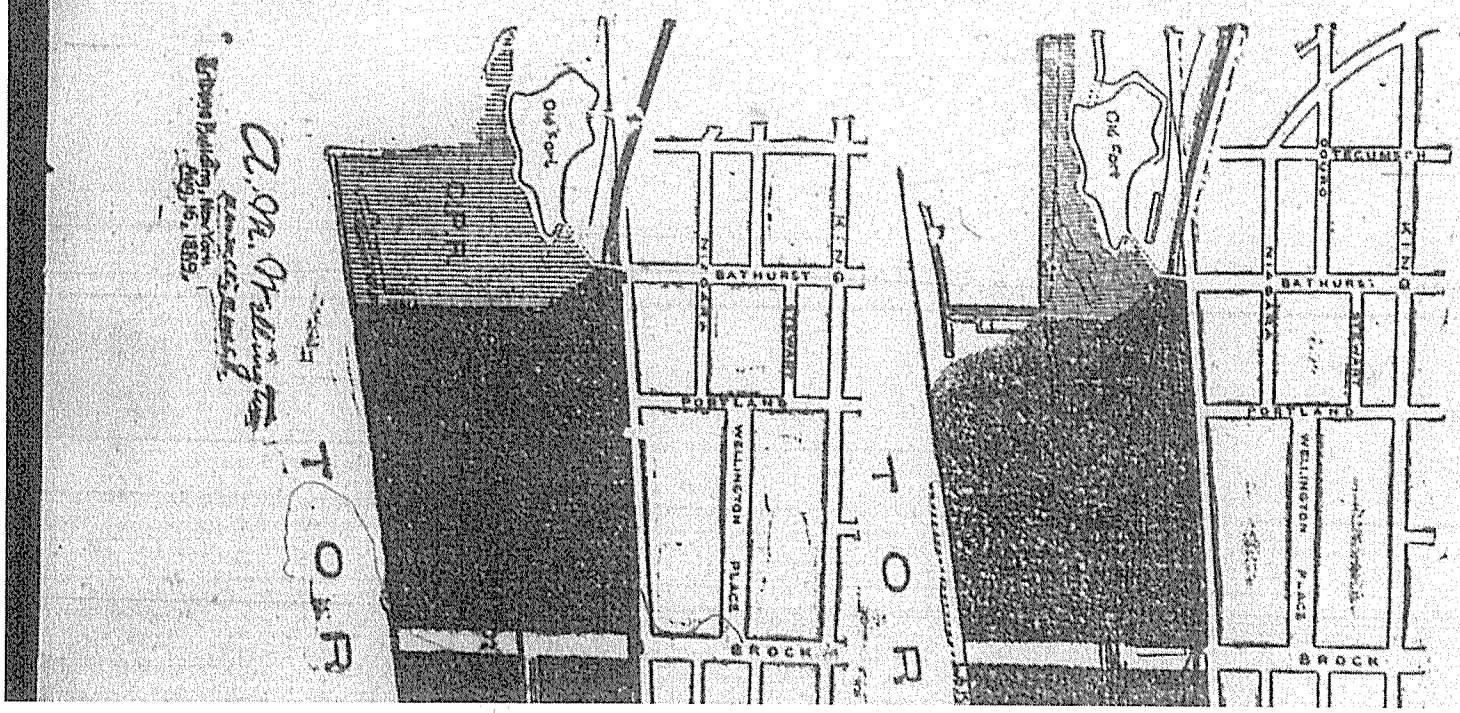
UNION STATION ON PARLIAMENT BLOCK.

A Four-Track Viaduct Proposed to Be Constructed Through Esplanade and Mill Streets.

Mr. A. M. Wellington, the New York engineer, has handed in his report on terminal railway facilities in Toronto to the Railway Committee of the Board of Trade. Following is the full text of the report:—

To the Chairman and Members of the Railway Committee of the Board of Trade of Toronto:

GENTLEMEN,—Having been commissioned by you to examine the existing and proposed status of the railway facilities along the water front of the City of Toronto with the view of posing what arrangement would be most in keeping with the interests and wishes of the citizens and of the great railway companies concerned, and having fulfilled your instructions



THE WATER FRONT PLAN.

Engineer A. M. Wellington, of New York, who was commissioned on behalf of the Board of Trade to report a scheme for terminal railway facilities in Toronto that would solve the Esplanade difficulties, has handed his report to the Railway Committee of the Board. We publish the document, together with the plan to which it refers, in this issue of THE GLOBE. Our readers will perceive that the engineer has dealt exhaustively with the whole situation. He recommends in brief :—

The erection of a Union Station on the south half of the Parliament Building square.

The bending of Front street around to the north of the projected Union Station.

Approaches by four surface tracks from Bathurst street.

A four-track viaduct from the east through Esplanade and Mill streets.

A swing bridge over the Don.

Utilisation of the land bounded by York street, Peter street, Front street, and the new windmill line, for local freight purposes, the north half to be used by the Grand Trunk and the southern portion by the Canadian Pacific.

The conversion of the land along the water front, from York to Yonge streets, into a water side park with piers and boat houses for the yacht clubs, Island ferries and other pleasure boating interests.

The city, it is recommended, should take over from the Canadian Pacific Railway all the land and right of way it has acquired along the Esplanade from York to Parliament streets, and credit that Company with it on the cost of the work. The total cost of the work is estimated at $2,654,300. It is proposed that the whole shall be carried out at the cost of the city under a non-political Commission, and that running rights over the new works be granted in perpetuity to the railways concerned at a fixed annual rental sufficient to return to the city say 2½ to 3 per cent. of the cost, the city to retain power to grant similar running rights to

tions.

This comprehensive plan involves the construction of much less elevated railway and the expenditure of much less money than had been generally reckoned on. So far as we can see at present it provides well for all interests concerned. It appears to secure the three prime requisites: (1) Easy access to the water front for citizens, independent shippers and vehicles; (2) large facilities for the railway companies already serving the city; (3) such civic control as will enable all railways which may hereafter enter the city to come in and compete on reasonable terms. The project of a draw-bridge over the Don does not recommend itself, for it will involve some danger and considerable stoppage of trains. But it is stated that owners of shipping may compel the railways to pass over that river by such bridge or bridges as will permit high-built craft to pass freely. If so, the draw-bridge is a necessary evil. Under discussion the plan and recommendations of Mr. Wellington may possibly be found improvable, but at present we see nothing lacking in them.

MR. LAURIER'S TOUR.

years, and it is as nothing compared with its effect upon the value of real estate.

The Grand Trunk Railway has at present no circular track for such a service, but it will probably see fit at some future time to provide itself with a track back of the city parallel with the Canadian Pacific Railway tracks, so as to save itself the great expense of hauling its trains three or four miles more to drop them down to the water front and back again over heavy grades each way; and when or if it does this it also will have a circuit which might be operated by local trains.

In the meantime there will be three to four times as many Grand Trunk Railway as Canadian Pacific Railway trains using the elevated tracks, since the Canadian Pacific Railway will use them only for passenger and strictly local freight service, while all the Grand Trunk Railway through freights will pass over it. Nevertheless, I should recommend, as above stated, that the rental charged for the use of the structure and station, whatever it may be, should be equally divided between the two Companies, and that if at any time a third Company should be admitted to the use of the structure (the right to do which, should any Company apply for the same and connect its tracks with the structure, should be explicitly reserved by the city) the same rental should be divided into equal thirds regardless of the number of trains, leaving each Company to run as many or as few trains as it pleases. It is not likely that the tracks will be overcrowded by any possible traffic of the next half century at least, if operated as they should be, under joint management, and entirely by interlocking block signals and switches.

I advise this equal division of rental, first, because it is the only practicable one, it being quite impossible to say preci-ely what proportion of use each Company enjoys; secondly, because a Company has to go to the same expense in providing itself with such facilities whether it runs one train a day or fifty over them; thirdly, because it seems only a proper concession in favor of the Grand Trunk Railway, which is likely to run the most trains, in view of all the circumstances specified and unspecified.

ESTIMATE OF COST.

Toronto's real park is, and is likely to be, its water front and harbor, and to make this properly available there should be at least some limited park area along the water front, like that proposed, and which would also afford recreation to those too poor or too lazy to avail themselves of pleasure boating privileges.

From the fact that Toronto has almost the only natural harbor on the great lakes, pleasure boating of all kinds is exceptionally attractive there, and, from a merely pecuniary point of view, it would be well to make it as much more so as possible. It is one of the great attractions to draw residents to the city and keep them there throughout the year, after they are able to choose there own abiding place; besides which it is a universal experience that all such park improvements really cost less than nothing, the increase in the taxable value of property being far more than the interest on the cost—otherwise we may be quite certain that such park improvements would not be so universally undertaken. The one proposed is likely to be quite exceptionally beneficial in proportion to its cost, since, in addition to its value as a general breathing spot and an ornament to the city, it encourages a great local interest which is largely peculiar to the city.

The strip of right of way now owned by the Canadian Pacific Railway east of Yonge street might be thrown into Esplanade street if desired, making that street 125 feet instead of 100 feet wide. As there would be a viaduct 52 feet wide down this street, there is some argument in favor of doing this, but on the whole I should advise against it, as involving needless expense. The street is already wide enough, and the land could more advantageously be sold back again to its original owners, as below more fully noted.

SURFACE TRACKS THROUGH ESPLANADE STREET.

There are now six of these tracks, four of them for through trains and two of them used for local freight delivery. Over all these tracks locomotives are freely used at all hours.

I should recommend the removal of all these tracks, and the substitution for them of two rather heavy street car tracks, over which switch engines could pass with safety, but over which they were permitted to pass only between the hours of midnight and 6 a.m. Except between these hours I should advise that all delivery of freight along these tracks between York and Berkeley streets be done by horses.

Such use of horses for switch work would probably prove to be more economical in this locality than the use of locomotives, in addition to which it would entirely do away with a

It is at once impossible and unnecessary to determine in advance precisely the cost of these improvements. It can only be exactly determined by careful estimates of quantities and an actual letting of the work. It will suffice for the present to specify approximate sums which ought not to be exceeded.

On this basis I should estimate the total cost of the entire necessary works, economically but thoroughly well built under judicious and efficient management, as follows:—

Union Station complete	$ 500,000
Retaining wall back of it	42,000
Ground for passenger car storage yard	120,000
Subway approach to G. T. R. freight station near John street	20,000
West approach complete, apart from tracks and right of way (now owned by G. T. R.)	45,000
Four-track elevated structure complete, to and including Don River drawbridge	1,536,000
Embankment and connected work (apart from subways needed in any case)	40,000
Expropriation of Marlborough House and other unestimated minor items, say	110,000
	$2,413,000
Engineering, 5 per cent	120,650
Contingencies, say 5 per cent	120,650
Total cash outlay for construction	$2,654,300

I believe this estimate to be a very liberal one, and, in the aggregate, considerably larger than is necessary. There are in addition certain real estate transfers and adjustments to be made not properly involving, as it seems to me, any transfers of cash, and only one of them is to be added to the cost on which rental is estimated, viz., the narrow strip of right of way for the four tracks between Bathurst and Peter streets, and between Simcoe and York streets. The proper amount of this item I cannot now estimate, but it should not seriously increase the above estimate.

Allowing the total interest charge to be 3½ per cent. on $2,654,300, and one-third to be borne by the city, the G. T. R. and the C. P. R., it will cost each party $33,175 per year gross, in addition to which the city loans its credit and advances the cash.

The rental paid by the Grand Trunk Company, however, would be reduced by the interest at 3½ per cent. on the fair valuation of

(1) The right of way for tracks above noted.

(2) The four parcels of water front lots, two freehold and two leasehold, turned over as above noted, between Peter and York streets

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Such use of horses for switch work would probably prove to be more economical in this locality than the use of locomotives, in addition to which it would entirely do away with a nuisance and public danger. Four horses and a couple of boys would easily do the work here of a switching engine, and throughout Europe as also in New York City horses are extensively used in this way. Elsewhere on this Continent locomotives are almost exclusively used, it may be admitted, but often with questionable judgment. At the most there could be no serious difference either in convenience or expense resulting from the use of horses only along the Esplanade for 18 hours out of 24.

This change made, the present system of delivering freight by stringing cars along the street and allowing whoever has a key to a car to help himself from it, could be continued unchanged; but I should further recommend—not at all as a necessary part of this scheme, but from a general regard for the good name of the city—that this uncouth and primitive system of freight delivery, by which the whole of the principal water front street is in effect turned into a local freight yard, be abandoned altogether. It may be well enough for some straggling country village (although such, in fact, permit it), but it is entirely improper for a city like Toronto—an injury to all and a real benefit to none.

In lieu thereof I should recommend that any of the abutting property-owners along either side of Esplanade street be permitted to run a spur from the surface into his buildings or on to his property. In addition to this the Grand Trunk Railway now has a freight station at the foot of Yonge street and the Canadian Pacific Railway has a freehold water front lot further east which might be converted [illegible] same use, although there is little real need for either of these stations since each road has freight yards at the east end and the west end of the city water front barely a mile apart. It might be quite as well for both roads to sell their intermediate property, but they already have it if they wish it for such use.

In this way there would be no need for cars to stand along Esplanade street, but only to pass along it, and there not being many such cars to deliver daily, this service would not

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(1) The right of way for tracks above noted.

(2) The four parcels of water front lots, two freehold and two leasehold, turned over as above noted, between Peter and York streets, aggregating about 12 acres of land now almost exclusively under water and utilised.

The last item is not an expense to the city nor an addition to the cost of these improvements, being charged up against the Canadian Pacific Railway at the same valuation as is allowed for it to the Grand Trunk Railway. But it must not be forgotten that it is the city and not the Canadian Pacific Railway which needs to acquire this property, in order to enable these improvements to be carried through. The Canadian Pacific Railway has already secured and paid for all the land it really needs, apart from these lands, between Yonge and York streets. It is the city which has cause to be most anxious to give it at least equal facilities elsewhere. This being so clear it does not appear probable that there will be any difficulty in amicably arranging for the transfer, but should it prove otherwise, the case is pre-eminently one calling for the exercise of the right of eminent domain.

The rental paid by the Canadian Pacific Railway would be diminished by the interest on:—

(1) The total outlay ($412,000) so far incurred for right of way between York and Berkeley streets.

(2) The construction expenses so far incurred for removal of buildings, docking and filling in, so far as this work is applicable to city uses.

Against these two items should be debited the interest on:—

(1) The valuation on the twelve acres of land under water above noted transferred from the Grand Trunk.

(2) The estimated cost of the two overhead bridges at Yonge and York streets, and some minor like improvements required by the location of its present yard, but not by that proposed, which is in the neighborhood of $200,000.

(3) A reasonable valuation on the part of the waterworks lot turned over to the C. P. R. by the city.

The net effect of the preceding would be to very considerably reduce the rentals to be paid by the Companies, making the net cost to them

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The Canadian Pacific Railway track back of the city runs through a region thinly populated as yet, and also with few street crossings at grade, which can also be eliminated by subways as necessity for so doing appears.

These conditions, in addition to the saving of ten to fifteen minutes' time on every train entering the city, render at once possible a local "rapid transit" service over the circuit of 15½ miles which the Canadian Pacific Railway now has within the city limits, or will have as soon as all its tracks are laid. This circuit can be made by local trains in one hour with great ease, making stops every half mile on an average, or 30 stops in all, so that two trains would afford a half-hourly service, and two trains more during a few hours of the day only would give quarter-hourly service. The circuit might possibly be made in 45 or 50 minutes. In my judgment such a service would more than cover expenses even in the first year, and develop into a most profitable traffic later, while it would be a great public convenience and its effect upon the development of the outskirts of the city and upon the value of property there would certainly be important. Without the improvement along the Esplanade herein outlined such a service is practically impossible. The time would be lengthed at least 15 minutes and so large a proportion of the traffic would be driven to the horse cars as to make the whole service inexpedient. This will become at once apparent by studying the present local time cards, despite the fact that they rather understate the actual time used.

The local conditions are unusually favorable for such a service except along the water front, and to establish it is one of the strong reasons why the city should not hesitate to carry through these improvements, because the city has a far deeper interest than any railway can have in having such a service established. The profit from such trains over expenses will not become considerable for several years, and it is as nothing compared with its effect upon the value of real estate.

The Grand Trunk Railway has at present no circular track for such a service, but it will probably see fit at some future time to provide itself with a track back of the city parallel with the Canadian Pacific Railway tracks, so as to save itself the great expense of hauling its trains three or four miles more to drop them down to the water front and back again over heavy grades each way; and when or if it does this it also will have a circuit which might be operated by local trains.

In the meantime there will be three to four times as many Grand Trunk Railway as Canadian Pacific Railway trains using the elevated tracks, since the Canadian Pacific Railway will use them only for passenger and strictly local freight service, while all the Grand Trunk Railway through freights will pass over it. Nevertheless, I should recommend, as above stated, that the rental charged for the use of the structure and station, whatever it may be, should be equally divided between the two Companies, and that if at any time a third Company should be admitted to the use of the structure (the right to do which, should any Company apply for the same and [illegible]

make, so that any arrangement of the kind here proposed is impossible to arrange for. It is rare, indeed, that eight different Companies once entering a city will have consolidated into two.

Moreover, it is extremely rare that a city is in such imminent danger of serious injury which it can only arrest by some spurt of enterprise on its own part as is Toronto at this moment. It cannot be too often nor too earnestly impressed upon the citizens of Toronto that the railways by their own unaided efforts cannot do much better by the city than they are now proposing to do, and ought not to be asked to. The Grand Trunk, as the first comer, has certain property, which it has bought and paid for. Whether more than it needs or not, it cannot be expected to turn over part of its property which it may possibly find some use for in the future, to smooth the path of a rival to compete with it, without some compensating advantages to itself, which that rival cannot offer. Neither can its interloping rival expropriate this property. For one railway to expropriate from another is a dubious process, even when necessity can be shown, but in this case no necessity can be shown by the C. P. R., for that Company can go, and has gone, further along on the water front and found property suitable for its needs, which it has bought in the open market, and its needs, moreover, are not merely a certain total area, but a long, continuous strip, so that a yard may be properly laid out on it.

I cannot therefore regard the absence of any exact precedent for precisely such a plan as I have recommended herein as any real objection to it or reason why it should not be carried out. The real difficulty lies in impressing on a great municipality the necessity of united and prompt action. Should this be obtained there will not be any serious difficulty in obtaining the assent of the railways, since the arrangement herein proposed is greatly to the advantage of both of them, and they would be placing themselves in an odious and indefensible attitude before the public should they persist in antagonising it, an attitude which no great corporation wishes to take or remain in. But, failing some such public action in aid of a more rational solution, I am unable to see how any better arrangement can be effected than that which is now proposed and in process of execution, which will leave the City of Toronto with over two-thirds of its water front occupied by railway yards and with access to the remaining fraction obstructed by six railway tracks on the level over which locomotives and through trains are constantly running.

Despite all the relief which can be obtained by overhead bridges, the growth of population and of railway traffic will soon make this situation so intolerable that relief from it will then be demanded at any cost. Such relief can be obtained in advance much more cheaply and more effectively than it can be at any later date. It remains to be seen whether the citizens of Toronto appreciate this fact, and take the necessary action while there is yet time.

(Signed) A. M. WELLINGTON.

August 16th, 1889. New York.

sum expended in filling along the water front east of York street and deducting interest on the cost of the overhead bridges which the C.P.R.R. is saving from constructing under the plan outlined, might aggregate some $20,000 per annum, which the city would concede to the C.P.R.R. toward its annual rental, in return for having all this property east of York street turned over to it.

This property being turned over to the city, the question arises, what should be done with it? It may probably be disposed of by the city in time for all or more than it cost, keeping in view the improvement in the character of Esplanade street which will result from elevating the tracks, but if there be sufficient public spirit in Toronto to permit of it, there is the other and far better use for it alluded to above.

A WATER FRONT PARK.

I should recommend that the entire area turned over to the city as above between York and Yonge streets be converted into a public water front park, 1,600 ft. long by 700 ft. deep and containing 25.7 acres; that the rather shabby structures which now accommodate the yachting, boating, Island ferriage and pleasure steamboat travel of the city should be replaced by buildings of a more ornamental character along portions of this park water front, under strict restrictions as to character and management, and that in addition there should be pavilions, music stands, etc., for the general use of the public.

All the work which has so far been done along this water front by the Canadian Pacific Railway, and which it is proposed that the city shall assume, is adapted directly to this use. The cost of continuing and completing the work, so as to make a finished park, will be so moderate that it may safely be assumed that no city of the size of Toronto will ever have obtained so fine a park so cheaply. The opportunity is one which, if now neglected, is never likely to return, and it would be a discredit to the city if it should not eagerly avail itself of it, should it occur.

Toronto is now more poorly provided with parks than any city of its size on the Continent, with one or two possible exceptions. The one fine park it has within its limits, Queen's Park, is of limited area, and is now being converted into grounds for a new Parliament building. The fine tract known as the High Park is too far from the centre of population to be generally available.

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way the city should not hesitate to carry through these improvements, because the city has a far deeper interest than any railway can have in having such a service established. The profit from such trains over expenses will not become considerable for several years, and it is as nothing compared with its effect upon the value of real estate.

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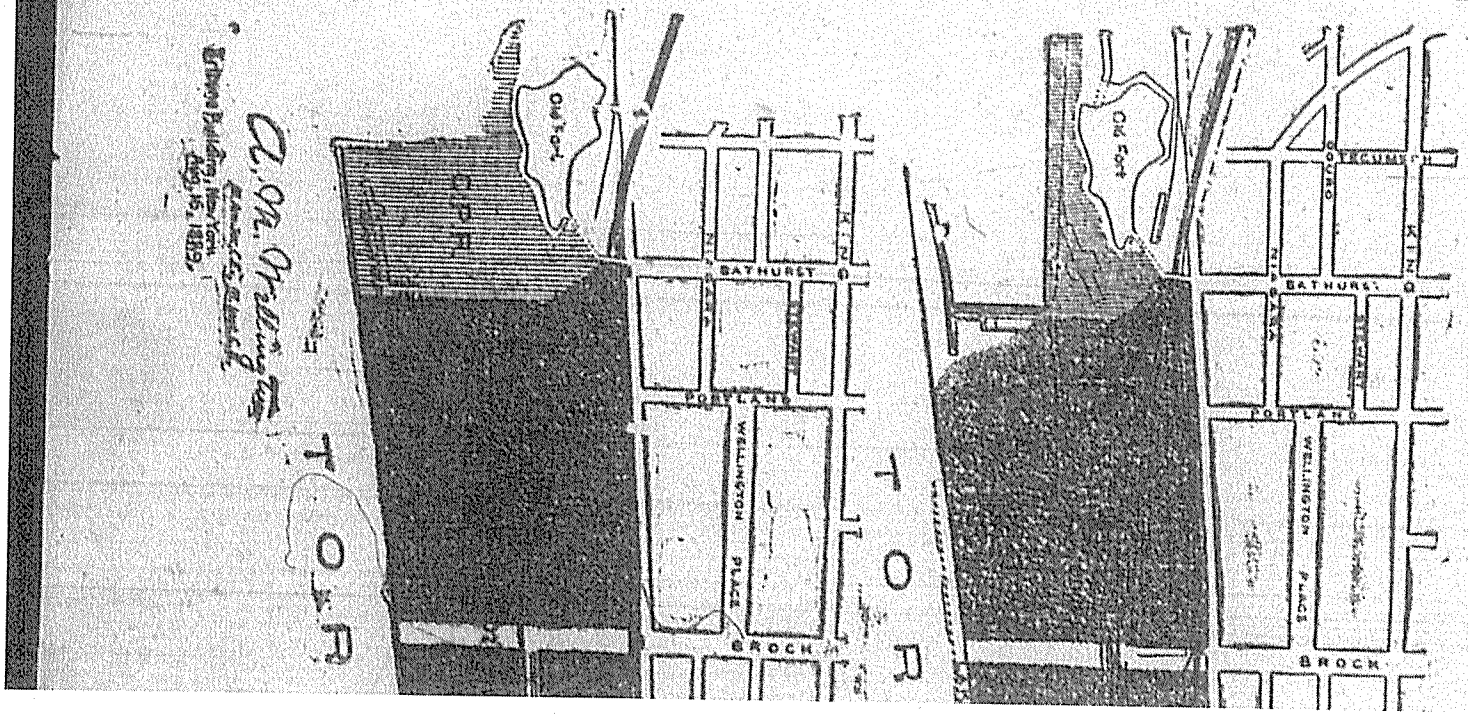


in that respect by a careful study of the situation, I now beg leave to submit the following report :—

The difficulties which are now felt in Toronto are, in their substance, common to it, and to nearly every other large city on the Continent, all arising from the general fact that the railways in the cities have grown up together very rapidly from small beginnings, when the magnitude to which the traffic of each would grow was little appreciated, and when, even if it had been appreciated, capital was too scarce and costly to admit of adequate provisions to avoid such future difficulties.

UNAVOIDABLE DIFFICULTIES.

To have exacted them would have prevented the construction of most of the early railways altogether, and it was, therefore, in the interests of the cities themselves that such conditions of practice were permitted. Under modern conditions very great annoyances are already resulting from such early practice in Toronto and many other cities, but, great as the evils now are, it is important to remember in any study of such problems that they still tend to become rapidly greater owing to simultaneous growth in both the size of the cities and of railway traffic, which for many years to come is certain to go on in almost geometric ratio.

Any plan, therefore, which will not be adequate for at least double the present population and present railway traffic is to that extent imperfect.

THE SITUATION FAVORABLE.

The situation in Toronto is in two respects more favorable than in most other cities. In the first place, there are but two corporations to deal with and to satisfy in regard to any proposed plans, the Grand Trunk Railway and the Canada Pacific Railway, these two great companies having absorbed the six other independent lines which formerly entered the city, viz., the Northern, Great Western, Midland and Toronto & Nipissing, absorbed by the Grand Trunk, and the Toronto, Grey & Bruce and the Credit Valley absorbed by the Canada Pacific. But for this fortunate fact it would probably be hopeless to attempt to reconcile conflicting interests. I do not understand either of the two great resulting corporations to be in a position to incur any large present expense for Toronto betterments, nor have I to propose that either of them shall incur any such expense, but it is far easier to provide for satisfying all their reasonable [illegible] be deducted interest on the value of the property turned over. Were they to construct the works themselves the cost might be $30,000 each. They can well afford the smaller sum, while they might easily hesitate as to the larger sum.

(4) The City of Toronto owes more to the railways than the railways owe to Toronto. However it may be with a property like the New York Central, which has been enormously profitable to its owners, there would be an injustice in forcing comparatively poor corporations, which have yet served the public as well as the New York Central, into expenses demanded much less by the growth of their own traffic than by the growth of the city.

(5) If the railways contributed a part or all of the cost of the structure they might with reason demand that it should be retained for ever for their sole use. This is not for the interest of the city, nor should it be permitted under any circumstances. While there seems no immediate probability of any third company coming to the city, nor any need therefor, the city should carefully guard the right of any new company to obtain running rights to the Union passenger station, nor can either of the present corporations serving the city reasonably object to this. It will still be difficult enough for any such company to place itself in a position to compete for Toronto business on equal terms.

A SUMMARY OF THE PLANS.

In more detail, the plans above recommended may be summarised as follows:—

The block now occupied by the old Parliament Buildings is about 940 feet long by 415 feet deep, the width of Front street, on the south of it, being about 83 feet. By placing the south wall of the new station on or near to the south line of Front street, as shown in figure 2, the street being deflected north around the front of the station, there will be room for a Union Station 175 feet wide, containing six or more tracks, for a street or plaza in front of that of about 123 feet, and yet leave 200 feet of the block, in depth, fronting on Wellington street, or nearly half of it, available for sale.

It does not admit of doubt that this residue, with the Union Station built, would be worth more than the whole block is now or otherwise will be. Among other desirable uses to which it might be put, it would furnish a most admirable site for a large hotel. The block, being now public property, the rear half of it, comprising 200

as entirely acceptable, should provide for permanently relieving the remaining mile of water front from York street to Berkeley street from all obstruction by tracks, leaving access to it perfectly free. It is a scant water front at best for a city of half a million of people, such as Toronto bids fair to become.

INTOLERABLE ESPLANADE EVILS.

It can be and it should be freed from all obstruction by railway tracks. The intolerable nature of the evils which may flow from the situation like the present one may be better comprehended by fancying a six track belt railway on a level extending along all the water front of New York.

The port would be destroyed. It is not likely that Toronto will ever have the present population of New York, and still less likely that there will ever be as many people and teams seeking access to each mile of water front, but the population of Toronto per mile is already larger than New York's, and a much less active use of it would cause such an obstruction to be regarded as an intolerable evil. Two methods of remedying this evil exist, by building overhead roadway bridges across the tracks, or by lifting the tracks bodily above the street level on an elevated structure.

The overhead bridges are far better than nothing, but under the conditions existing in Toronto their use is open to several very serious objections. It seems unnecessary to consider these objections in detail, however, as I judge that by the plans subjoined the necessities of the existing situation, and the reasonable wishes of all three of the parties interested, viz., the Grand Trunk Railway, the Canadian Pacific Railway and the City of Toronto, will be met more completely than by any other plan which has been submitted or has occurred to me, and it provides for elevating the tracks above the streets along the stated mile of water front. I have constantly borne in mind that any plan, to have reasonable chance of adoption, must do equal justice to all of these three great interests and must, if possible, be more favorable to each than any other available would be.

A NEW UNION STATION.

The plan which I have to propose as meeting these conditions is in brief this:—That a new Union Station shall be constructed on the south half of the Parliament building square, bowing Front street out around it to the north. The grade of the tracks in this building to be about fifteen feet above the tracks in the present Union Station. The building to be approached from the west by a four-track road on the solid, starting from about Bathurst street and rising by a very gentle incline along the south slope of Front street. A four-track viaduct to start from the station eastwardly and run through the centre of Esplande and Mill streets, in a nearly straight line to a point somewhat west of the Don River crossing, where it will fork, one double track branch being for the Canadian Pacific, and the other for the Grand Trunk. The elevated tracks to pass over the upper deck of the Don bridge at about the level of the [illegible] tracks, and surmounted by a tower over 200 feet high, showed a total cost of $700,000 only.

Back of the station there should be place two tracks for freight use, as shown in figure 2, resting on solid ground, which may probably need to be supported by a retaining wall. The cost of such a wall for the entire distance between Simcoe and John streets need not exceed $12,000.

PASSENGER CAR STORAGE GROUND.

It will be necessary, or at least desirable, in order to save needless switching, that there should be a considerable number of storage tracks for passenger cars in the immediate vicinity of the station and on the same level therewith. The chief necessity for this ground is on behalf of the Canadian Pacific Railway, the Grand Trunk having other available ground reasonably accessible, and if used by only one railway it should pay for it. But, as it would be convenient to both companies to have available storage tracks in the immediate vicinity, the costs thereof is included in the general estimate.

Such storage ground can best be obtained (Front street being already deflected northward around the station) by expropriating 100 to 150 feet in depth off the block between Peter and John streets. This will enable Front street to be moved 100 to 150 feet north along this block, and leave available, where Front street now is, a space of 600 feet by 100 feet or more, which will easily suffice for storing 40 to 60 cars. This is enough for all legitimate needs of such a yard, which is merely for cleaning cars and temporary storage between trains. There are many important stations which have no storage ground available without a considerable haul.

The cost of this land I cannot pretend to estimate. It is not occupied by valuable buildings, nor likely to be, and I am advised that $100,000 to $130,000 is more than it should cost.

The acquisition of this ground is convenient, not only for its specific purpose, but to facilitate the location of the four-track west approach to the station and the construction of a subway approach to the Grand Trunk freight house, near John street, which may be needed. The net cost of such a subway, if built in connection with the Union Station and retaining wall above, should not exceed $20,000, if indeed it shall finally appear to be needed at all.

THE WEST APPROACH.

The four tracks of the west approach should start from Bathurst street and follow substantially the present line and grade to a point about midway in the block between Bathurst and Brock streets. They should thence rise on an easy grade on solid ground, catching on to south slope of Front street to the station.

The track between Bathurst and Brock streets is substantially a level, if I am correctly informed, and about eight feet above city datum. There will, therefore, be a rise of about 15 feet to be made in a distance of about 2,600 feet, giving an upgrade of about 30 feet per mile. So far from this being a disadvantage, it is to be preferred to a level, tending to help to start trains out quickly from the sta-

sidered to be fully understood, but its main scope and purpose will be understood from the above and from a study of the accompanying map. The total cost of the work thus outlined should not exceed $2,254,300, as will appear in more detail below.

A NON-POLITICAL COMMISSION.

As it would be useless to suggest the expenditure of so large a sum of money without seeing how it was to be obtained, I have further to suggest that the entire work should be carried out at the cost of the city through a non-political Commission appointed for this especial purpose, and that running rights over it be granted in perpetuity to the railways concerned at a fixed annual rental, which rental should be such as to return to the city say 2½ to 3 per cent. of the cost, the city to retain power to grant similar running rights to any and all other companies which might apply for it after securing access to the viaduct terminals at Bathurst street or the Don River, or both; but the rental received from such new companies to go toward the reduction of other rentals, so that in no case should the city exact a larger total rental than 2½ per cent. on the cost of the work. The companies using the station and viaduct to maintain the works in addition to paying rental. For reasons below more fully outlined I judge it to be equitable and expedient that the companies using the works should contribute to the maintenance and rental charges in equal fractions, regardless of the number of trains run by each, leaving each to run as many or as few as it pleases. The companies would naturally expect and demand that, if the works were executed under the control of a Commission, the maximum rental charge which they were to pay should be fixed in advance, leaving the city to bear the whole burden of any unforeseen excess of cost, but giving them the benefit of any reduction in cost below the estimate.

ON THE METHOD OF CONSTRUCTION.

The reasons which seem to make this method of construction expedient are these:—

(1) The two great companies which now furnish Toronto with such excellent railway facilities are neither of them in a financial position to undertake such a costly work, if I correctly understand their financial status.

(2) They have not the same necessity for doing so. They can both of them get along fairly well under their existing or proposed arrangements. It is the City of Toronto which will be the greatest sufferer.

(3) The city can raise the money easily at 3½ to 3¾ per cent. The companies would in one way or another have to pay nearly double that, even if it be practically possible for them to raise it at all. Under the suggested arrangement the improvements will cost the companies $33,000 to $47,000 per year each gross, from which is to now belongs to the Grand Trunk Railway, except east of Peter street.

THE EAST APPROACH AND ESPLANADE VIADUCT.

Starting eastwardly from the station the four tracks strike diagonally across the block between York and Simcoe streets south of Front passing nearly through the centre of the Marlborough House, the only building to be destroyed to carry out these recommendations and striking the line of the present Esplanade tracks just east of York street. The value of the property so taken I have no means of estimating, but an ample allowance is included below.

Shortly after leaving the Union Station, about in the middle of the block north of the present Union Station, it is proposed that the line shall pass upon a four-track iron viaduct, similar in its general plan to the elevated railways of New York, and pass thence through the centre of Esplanade street, and directly over the present tracks to Berkeley street, where the line will leave the Esplanade and continue straight through Mill street to a point between Cherry and East streets, making the total length of the four-track viaduct about 7,500 feet, (1.43 miles). Here the viaduct will fork into two double-track structures, one branch for the Grand Trunk Railway, continuing on to and across the Don River where the present Grand Trunk bridge now is, about 1,850 feet (.34 mile), and the other for the Canadian Pacific Railway curving to the north and slightly descending to and across Eastern avenue which it crosses with about 13 feet clearance, enabling a connection to be easily made with the Canadian Pacific Railway tracks along the Don River, passing under the Queen street bridge, after that structure has been raised sufficiently to enable the tracks to pass under it, as it will have to be in time in any case.

There will be no greater necessity for doing, however, by this plan than by any other. It might be found better, if deemed advisable, that the four-track viaduct should not fork before reaching the Don, as above outlined, but should be carried in along the next bank of the Don, as proposed for the C. P. R. tracks, until Gerrard street has been passed, when the two G. T. R. tracks could then branch off due east to a connection with the G. T. R. present line. The present G. T. R. bridge at the mouth of the Don and the mile of track thence to Gerrard street could then be abandoned. This would involve no sacrifice of convenient access to the present G. T. R. yard at the mouth of the Don, and would somewhat decrease the total cost of the improvement, but as this change, if finally decided on, does not affect the solution of the Esplanade question proper, I assume, for the purpose of this report, that the tracks across and along the Don are to remain as now existing and proposed.

The grade of this structure I should advise

(CONTINUED ON PAGE 6).

TERMINAL FACILITIES.

Full Text of the Report of Engineer Wellington on the Esplanade Question.

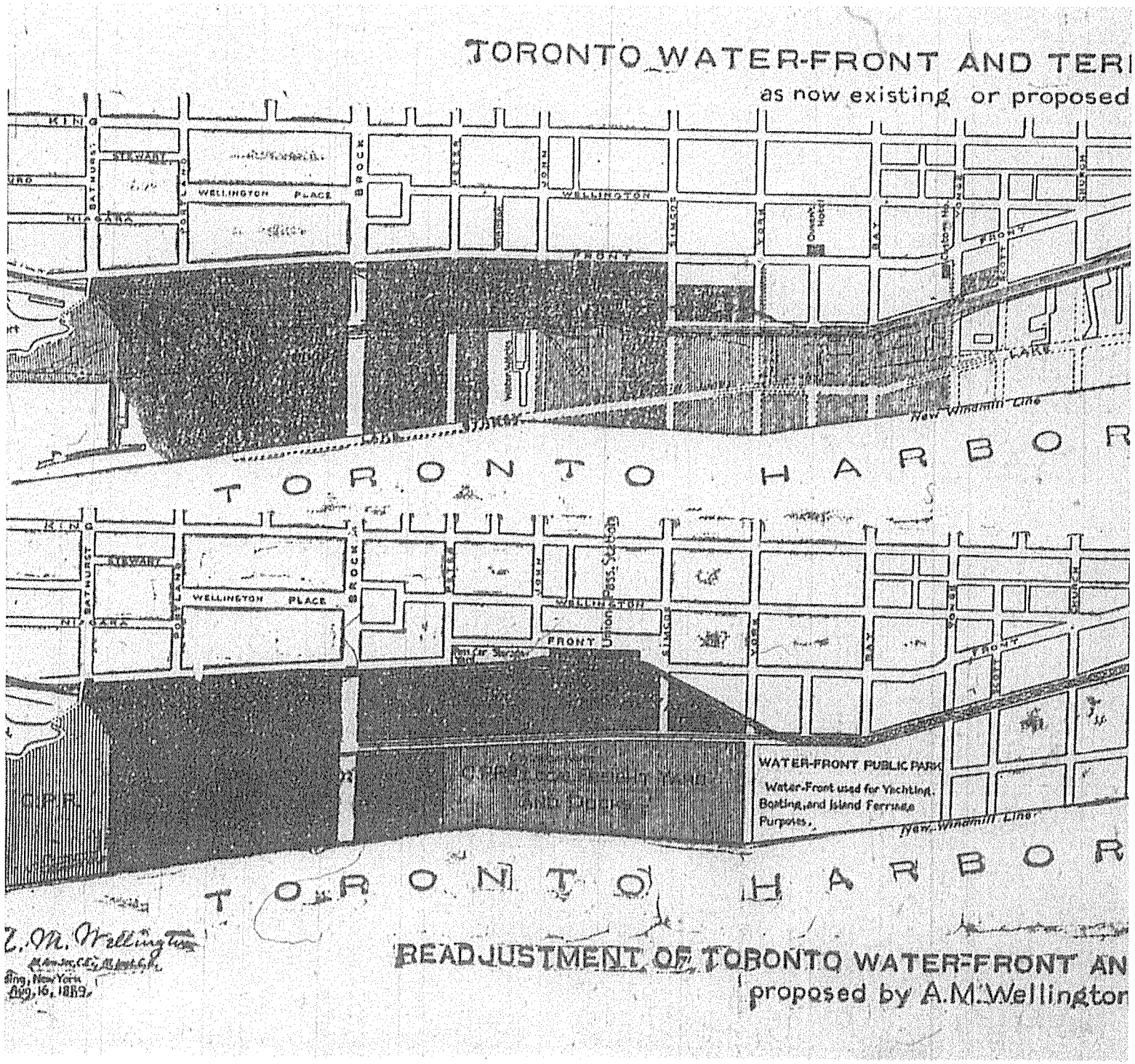
UNION STATION ON PARLIAMENT BLOCK.

A Four-Track Viaduct Proposed to Be Constructed Through Esplanade and Mill Streets.

Mr. A. M. Wellington, the New York engineer, has handed in his report on terminal railway facilities in Toronto to the Railway Committee of the Board of Trade. Following is the full text of the report:—

To the Chairman and Members of the Railway Committee of the Board of Trade of Toronto:

GENTLEMEN,—Having been commissioned by you to examine the existing and proposed status of the railway facilities along the water front of the City of Toronto with the view of seeing what arrangement would be most in keeping with the interests and wishes of the citizens and of the great railway companies concerned, and having fulfilled your instructions


TORONTO WATER-FRONT AND TER
as now existing or proposed
KING
STEWART
WELLINGTON PLACE
BROCK
WELLINGTON
FRONT
BATHURST
NIAGARA
New Windmill Line
TORONTO HARBOR
Union Pass. Station
WATER-FRONT PUBLIC PARK
Water-Front used for Yachting, Boating, and Island Ferriage Purposes.
C.P.R.
New Windmill Line
TORONTO HARBOR
A. M. Wellington
Aug. 16, 1889.
READJUSTMENT OF TORONTO WATER-FRONT AN
proposed by A.M.Wellington

TERMINAL FACILITIES.

(CONTINUED FROM PAGE 3).

to be a level at an elevation about 20 feet above the present tracks in Esplanade street, or about 22 feet above the city datum. This requires a slight rise of 5 feet in the approach from the Union Station, which can be made by a grade of 1 in 300 between York and Yonge streets.

CONSTRUCTION AND COST OF THE VIADUCT.

For practical purposes we may consider the total of iron viaduct as equivalent to 9,600 feet (1.82 miles) of four-track line, which would be constructed under what are called "consolidation" specifications, fit for any working loads or speeds likely to be desired. Such a structure can be constructed in the best manner for $160 per foot, as an outside estimate, or $1,536,000, which amount will include the cost of foundations and of a double deck draw-bridge over the Don River, as below noted, in place of the present fixed spans. Should the competition be sharp and the prices of iron low, its cost might be considerably less.

With this viaduct built, and with no dangerous level road crossing beyond it, passenger trains can easily average 30 miles per hour over it, or pass it in about 3½ minutes. If limited to six miles per hour over the same distance, as they must be to operate tracks on the street level with safety, they must take about 18½ minutes to pass over the same distance—a saving of nearly 15 minutes. This is a great consideration for suburban trains and even through trains, being equivalent in time to the saving of nearly ten miles in distance between Toronto and Montreal. For the effective conduct of a local city service, below alluded to, it is a sine qua non.

BEYOND THE DON RIVER.

The connection of the Grand Trunk tracks beyond the Don River with the elevated tracks should be made by an earth fill along the present line. If the level of the elevated tracks be continued on a level until it strikes the grade of the present tracks, it will strike them a little beyond Queen street, about 3,300 feet from the

first place.

The cost of making this fill is included in the estimate below, the Grand Trunk being a finished road. The Canadian Pacific, not being a finished road over the Don River, may be left to make its own connection with the elevated tracks at Eastern avenue, which is very easy to do.

THE GRAND TRUNK EASTERN YARD.

The important eastern yard of the Grand Trunk Railway along the mouth of the Don Riveris by the above plan made much more convenient than it now is, since it may all be used for yard purposes only, without necessity of reserving tracks for through trains. It must, however, be provided with an eastern outlet, and to this end it is proposed to make the new draw-bridge over the Don River a double deck structure, the upper deck being for the elevated through tracks and the lower deck carrying a yard track at about the level of the present tracks. After passing through the bridge from the yard this track swings out around the base of the fill, and, running slightly up grade along its slope, connects with the through tracks before reaching the Queen street subway. In this way access to the icing yard for refrigerator cars and to the distillery cattle houses, as well as to the Don yard in general, is fully preserved.

Another consideration makes elevated tracks across the Don desirable, viz.:—

THE ASHBRIDGE'S BAY AND EASTERN DISTRICT.

The probability is strong that the Eastern district of the city will in time become densely populated, and that the Ashbridge's Bay water front and the surrounding marshes will be improved. In this case the Canadian Pacific Railway, and any other line which may hereafter enter the city, will be quite certain to demand and obtain access by their own tracks to this district, by enforcing a grade crossing of the Grand Trunk main tracks, if necessary. This highly objectionable necessity is avoided by the elevation of the tracks.

A grade crossing of the lower yard track only is necessary for any tracks coming from the Don River to the Ashbridge's Bay district.

LOCAL FREIGHT YARDS.

The erection of the new Union Station at a higher level and further north, with the other improvements outlined, is not only or chiefly to bring the passenger station nearer to the business centre of the city, nor to save the

ther encroachments on the limited water front of the city, which, in my judgment, have justly excited the apprehension and opposition of the citizens of Toronto, but which they cannot too early and too clearly realise are practically indispensable under the existing status, unless some such general plan as that here outlined is carried out; and for reasons I have above outlined it cannot with any justice or probability of success be demanded that the railways shall agree between themselves to carry out these improvements at their own expense.

By the plan outlined the large quadrangular area bounded by Front street on the north, York street on the east, Peter street on the west and the new "Windmill" or bulkhead line on the south, is released entirely for local freight uses: a district 2,400 feet long by about 1,250 feet deep, an area of nearly 69 acres in all, which will suffice for all the legitimate needs of both companies in this location for a century to come, even without remembering that the Grand Trunk has, just west of this district, a further quadrangular track extending from Peter nearly to Bathurst street and from Front street south to the water front, 2,500 feet long by about 1,400 feet deep, or over 80 acres in area, with which it is not proposed to interfere in any way, and which gives the Grand Trunk Railway all the water front for which it has now or can ever have any legitimate use. Except that its large holdings have been acquired by consolidation of different independent lines, and largely while the city was small and land cheap, it is not likely that it would even have attempted to acquire so great an area along the water front as it now holds, nor is it at all necessary that any of this area should continue to be used for shops, storage tracks, making up trains or through service of any kind. The last it is proposed to move to the elevated tracks; the other uses specified can as well as not be served by other and cheaper land on the outskirts of the city, when and as

land on the outskirts of the city, when and as traffic increases so as to demand it—which will not be for many years.

It is therefore proposed as an essential part of the scheme of adjustment herein outlined that the Grand Trunk shall surrender to the city at a fair valuation the two freehold tracts now held by it in the southern part of the local freight district first above described, viz., a lot just east of Peter street, 250 by 740 feet, now almost wholly under water and unimproved, and a lot just west of Simcoe street 240 by 540 feet (to the old Windmill line, 240 by 775 feet to the new line), which is practically in the same condition and still less available for effectual use by the Grand Trunk Railway. The Grand Trunk Railway also has two adjacent leaseholds, 100 by 800 feet (to the new Windmill line), which should also be surrendered. It is then proposed that the city in its turn shall turn over these two lots and all of its Waterworks lot and wharf not needed for the uses of its pump house to the Canadian Pacific Railway, and also release to the two companies concerned all its right and title to streets and water front (except for Waterworks use) along the entire district between Bathurst and York streets, excepting to those streets which are now open and in use, and a single public street dividing the properties of the two companies, and extending in a nearly straight line from York to Brock streets, chiefly for the purpose of affording access for teams to local freight stations, leaving it to the self-interest of the several companies to provide for public access to their water front by overhead bridges or otherwise, if it at any time appears to them desirable.

The local freight district between Peter and York streets should be divided between the Grand Trunk Railway and Canadian Pacific Railway Companies by the east and west street above described, the precise location of which I am not prepared now to recommend without further study of the local conditions, but which should approximately occupy the present location of Esplanade street between

for public access to their water front by overhead bridges or otherwise, if it at any time appears to them desirable.

The local freight district between Peter and York streets should be divided between the Grand Trunk Railway and Canadian Pacific Railway Companies by the east and west street above described, the precise location of which I am not prepared now to recommend without further study of the local conditions, but which should approximately occupy the present location of Esplanade street between Peter and York (now closed).

This adjustment should include a concession to the Canadian Pacific Railway of right of way for two yard tracks across the Grand Trunk property to the west (which I believe the Canadian Pacific Railway already has secured); and secondly, the right to construct an overhead bridge across the Grand Trunk Railway property to give access to its water front along the line of John street, and some further details of minor importance needless here to particularize, which may yet give trouble if not arranged in advance.

THE GRAND TRUNK LOCAL FREIGHT YARD.

By these arrangements the Grand Trunk gains, first, a release of the present Union Station and

sensibly interfere with the simultaneous use of the same tracks for horse cars, as has been done for nearly fifty years in New York City, with a very heavy traffic of both kinds.

THE IMPROVEMENT IN ESPLANADE STREET.

The result of all these changes could not but be a very marked and rapid improvement in the value of property on both sides of Esplanade street and of the water front generally. New York experience indicates that the existence of a four-track elevated railway through the centre of a business street of this kind and of this width would not reasonably decrease the value of property along it, while the park improvement, the street car service, the freight delivery within the buildings and, above all, the removal of the surface locomotive tracks, would greatly tend to increase it.

How considerable the increase in valuation along Esplanade street is likely to be is evident from the fact that the present assessed valuation of all the property along both sides of the streets between York and Parliament streets is $1,525,740, along a frontage (counting both sides of the street) of 6,674 feet, if I am correctly informed. With the improvements carried out, the probable increase in valuation of this street alone would go far towards covering the entire cost of the improvements herein suggested, but there is, in addition, the probable increase in valuation along Wellington street and elsewhere in the vicinity of the new Union Station, and the general improvement to the valuations of the whole city which would result from so material a betterment of the most conspicuous part of it. As the city, however, derives rental from these improvements also, the case in favour of their construction is very strong.

Before summarising the probable cost of these improvements it will be well to notice first another feature of them, viz.:—

SUBURBAN AND CITY TRAIN SERVICE.

With the water front tracks improved as suggested any speed is practicable over them. The Canadian Pacific Railway and the Grand Trunk Railway tracks running back from the water front in each direction have so few street crossings at grade on them, and those in process of elimination are easily eliminated, that a high rate of speed becomes practicable there also. The Canadian Pacific Railway track back of the city runs through a region thinly populated as yet, and also with few street crossings at grade, which can also be eliminated by subways as necessity for so doing appears.

These conditions, in addition to the saving of ten to fifteen minutes' time on every train entering the city, render at once possible a local "rapid transit" service over the circuit of 15½ miles which the Canadian Pacific Railway now has within the city limits, or will have as soon as all its tracks are laid. This circuit may be

of better facilities in every way for both passenger and freight service, a very moderate one. In addition to this the two Companies are saved the cost of erecting in the early future a new Union Station, the necessity for which is now clear.

The city on its part should in equity be released from a portion of the very moderate burden resting upon it by assessing a fair proportion of the cost of the viaduct upon the property more immediately benefited thereby along Esplanade street, which is sure to increase in value much more proportionately than any other in the city. I am not competent to make any estimate of what this assessment should be, except that it should be moderate.

The city will also have a credit from the sale of the unneeded right, if any, along Esplanade street, and from the valuation placed on that part of the waterworks lot turned over to the use of the C. P. R. These credits I, however, neglect in the estimate.

In proposing the preceding plan, reasonable and beneficial to all parties alike as it appears, I find myself confronted with the fact that I can advance no precedent for such an arrangement as this, the nearest to it being the arrangement for constructing the "Grand Central Station" and costly connecting subway entering the City of New York, to which the city contributed half the cost, or nearly $4,500,000, without securing any ownership, interest or tangible return whatever except that of getting rid of the nuisance of surface tracks. That improvement also was and is used jointly by two companies. The proposed improvements at Buffalo are another similar case. As a rule, however, I am compelled to admit, cities stand quietly by until companies correct these evils at their own expense and of their own motion, or content themselves with bringing legal pressure to bear.

Frequently this policy is effective for the reason that when cities become large enough to make such improvements desirable the leading railways running to them are usually rich. Such is not the case at Toronto. The railways are both of them comparatively poor. Usually there also are many more corporations to be conciliated and arranged for, and the smaller the companies the more trouble they make, so that any arrangement of the kind here proposed is impossible to arrange for. It is rare, indeed, that eight different Companies once entering a city will have consolidated into two.

Moreover, it is extremely rare that a city is in such imminent danger of serious injury which it can only arrest by some spurt of enterprise on its own part as is Toronto at this moment. It cannot be too often nor too earnestly impressed upon the citizens of Toronto that the