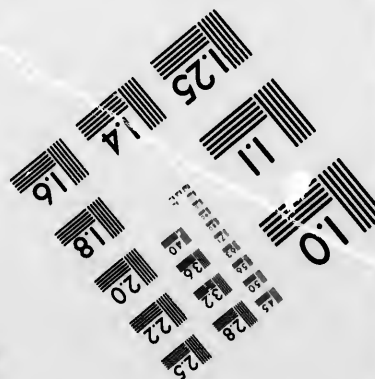
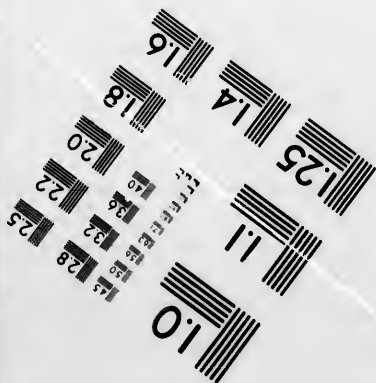
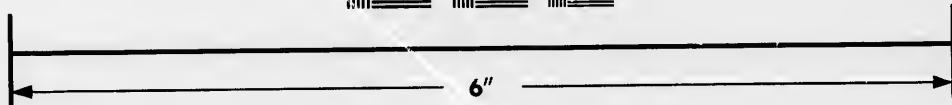
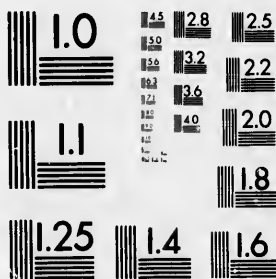


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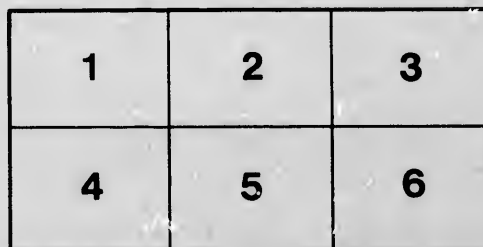
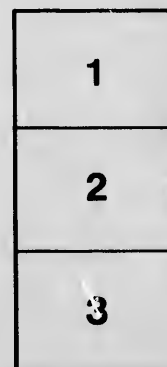
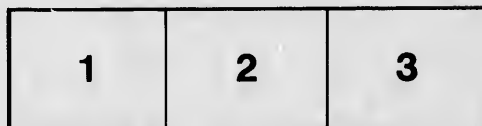
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REPORT  
OF THE  
CITY ENGINEER, QUEBEC,  
ON THE PROPOSED IMPROVEMENTS IN THE MOUTH OF  
THE RIVER ST. CHARLES.

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REPORT  
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ON THE PROPOSED IMPROVEMENTS IN THE MOUTH OF  
THE RIVER ST. CHARLES.

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CITY HALL,

QUEBEC, Dec. 17th, 1875.

*His Worship the Mayor, The Aldermen, Councillors,  
and Citizens of the City of Quebec.*

GENTLEMEN,

You are of course aware that competition plans for the improvement of the Harbour of Quebec were advertised for, several designs sent in, and, as it appears, the first prize (\$5,000) awarded to MM. Kinipple and Morris, to say nothing of some \$8,000 additional which have been paid these gentlemen for surveys and schemes of improvements at Levis, Cap Blanc and elsewhere,

It may have been imperative to award the prize, even if the best of the plans were worthless (as, on my recent visit to Ottawa, I found to be the prevailing opinion at head quarters) no restriction having been inserted in the advertisement, as should have been, to the effect that should the best of the plans submitted prove to be valueless and impracticable, the prize would not be awarded.

It is better, however, to have sacrificed \$13,000 for useless plans and exparte reports than to engulf half a million of dollars in the St. Charles, or as Mr. Page has it, \$850,000 to build a wharf or jetty in the position proposed by Messrs. Kinipple & Morris, to wit: from the inner or South East corner of the Gas Works to the outer or North East end of the present breakwater or ballast wharf.

I say, that to do this would be sheer madness on the part of all concerned, and that if an attempt be made to carry out so absurd a scheme, it will be the duty of the City Council and citizens of Quebec to rise in a body and put a stop to the execution of a project which instead of improving the Harbour of Quebec will annihilate and destroy it and render it unfit for the object for which nature and a beneficent Providence have evidently intended it.

I have already said that the jetty or breakwater proposed to be erected according to the premiated designs, is to consist essentially in a line of wharf from the inner angle of the Gas house to the ballast wharf.

Now, Mr. Mayor & Gentlemen, if you will consult the plans just alluded to, you will see that the proposed wharf not only includes so small an area as to be practically valueless, but actually cuts off the properties of Messrs. Dinning, Clint and Convey, &c., from all communication with the river; thus entailing an inevitable outlay of thousands of pounds to these gentlemen in damages for so doing, and, likely, a much larger sum to



Renaud, Laroche and other proprietors along St. Paul street, on account of the very small space left for vessels to move in between their wharves and that proposed to be erected.

America, has now no need, as it had half a century ago, of going to Europe for Engineers. Our Pages, Shanlys, Flemings, Keefers, Lights, and others have more to teach than to be taught. American Engineering at the present day, as far surpasses in extent, ingenuity of construction and boldness of conception, that of the Old Continent, as it fell short of it 50 years ago. European Canals are mere pigmies to our artificial waters. American Railroads, in extent, are more than in the rest of the world together and their cost per mile less than one half the latter

Such stupendous works as the St. Louis Bridge over the Mississippi, with 500 ft. spans built without centering from a depth of 120 ft. below the surface of the river, the blasting operations at Hell Gate in New York Harbour : the new bridge between New York and Brooklyn 1600 ft. span, with towers 360 ft. high founded in 80 ft. depth of water, were never even dreamed of in the Old World, and yet we fail to see that men accustomed to deal with the narrow and shallow waters and of the Old Continent, such as the Tees, the Thames and the Mersey, &c., are not precisely the men to be looked to for those broad and expansive ideas which are required in dealing with such rivers as the St. Lawrence and with estuaries of such extent as that opening into it from the mouth of the St. Charles.

In my opinion, and as will be seen by referring to the accompanying plan which I have prepared for the purpose, the main jetty or breakwater which Messrs Kinipple and Morris would place at X Z, as shown by the dotted lines on my plan, I would remove Northward to the alinement of Prince Edward Street as at A B C, thus enclosing fully five times as great an area as contemplated by the above mentioned gentlemen.

The wharf at X Z precludes the possibility of running out wharves or piers from it towards those proceeding in an opposite direction from St. Paul St. ; while, if built as proposed by me, on the Prince Edward St. line, it will afford space for piers ranging from 500 to 1250 ft. in extent. each of which is designated on my plan " Future Extension," and thus afford 7000 ft. lineal of wharfage or  $1\frac{1}{3}$  miles in addition to the 8620 ft. ( $1\frac{2}{3}$  miles) which the two faces of the jetty A C will afford, with an additional mile for the Dalhousie Street wharf prolongation and the new breakwater Northward of the ballast wharf, or altogether 4 miles of wharfage exclusive of the present ballast wharf.

It will already have been inferred then, that my scheme consists in a jetty some 4310 ft. in extent, running out in a Northeasterly direction from Ramsay St. prolonged, to a point opposite and some 1400 ft. Northward of the ballast wharf, as at AC on accompanying plan. This jetty shall not be less than 400 ft. in breadth, presenting two longitudinal thoroughfares or avenues 100 ft. in width and two ranges of building lots each 100 ft. in depth and 50 feet frontage (some 150 in number) for stores, manufactories and dwelling houses, &c.

The space thus enclosed, Northward by the proposed jetty and Eastward by the breakwater already alluded to, would then be divided by a wharf 100 ft. in width or more, in the alinement of Dalhousie Street, as at E B on plan, into two docks or basins, the one (West) to become hereafter a wet dock with 25 ft. of water at high tide, an area of 72 4-10 acres and 12180 ft. of wharf frontage ; the other (East) a tidal dock with 25 ft. depth of water at low tide, and area of  $54\frac{1}{3}$  acres and 6660 ft. lin. of wharfage.

For the present, the communication between the tidal and future wet dock would be a mere opening in the Dalhousie Street wharf with a swing or draw bridge over it to allow of passing to and fro ; but as the

plan indicates, a lock should be made at some future time so as to allow of entering the wet dock at any stage of the tide,

Within the tidal dock and at its North-westerly corner, is the proposed graving dock, its length 500 ft. and breadth 100 or thereabouts, which would allow of docking a vessel of the largest dimensions, or several at a time, of less size. The uncoloured line of breakwater from D to M or even N, as proposed by Berlinguet and as shown by dotted lines on my plan, it may be advisable to adopt, instead of the line from D to L, should the dredging at D L prove more costly than the additional length of jetty, with the further and manifest advantage of increasing by so much the area of the tidal dock, and, by the augmented distance of the breakwater, the stillness of the water within the enclosure.

The Section on the same sheet and other accompanying sections, show the mode of construction, the outer wharf at J K L (the margin coloured red on plan) being of course constructed first as a protection against wind, waves and weather, to the inner wharf at A B C and to prevent silting by the Sediment from the River St. Charles during the dredging out of the space to be occupied by the last mentioned wharf and that from Dalhousie Street.

Should it be found practicable in a pecuniary point of view to extend the dredging of the wet and tidal docks at an early date, in such case the outer or protection wharf may at once be laid along the line O P Q instead of J K L, thus affording additional space for the deposit of the excavated material and an additional avenue with two additional ranges of building lots as shown on plan; or, such of the material as could not be so utilized, removed to deep water of the river St. Lawrence and there deposited.

The plan proposed by me as compared with that of Mr. Berlinguet, will show that we both agree in running

out a jetty from Prince Edward street, while I totally disagree with him as I do with Kinipple & Morris in their proposal to make an inner jetty from the gas works to the present breakwater, though in this respect Berlinguet's scheme is preferable to that of the other gentlemen, in as much as his jetty is further north and leaves an open space at the end of the ballast wharf, while both designs very unceremoniously strike right across the frontage of our Harbour at the Palais and completely annihilate our municipal docks and basins between St. Roch and Ramsay streets.

My plan shows the proposed new street to be opened next year, parallel to and to the North of St. Paul street. This street in my opinion should be made to intersect Ramsay street at the "Place d'Orleans" South of the Gas house and the thoroughfare continued thence to St. Joseph street, thus forming with St. Joseph and Dalhousie streets, a continuous line of traffic or commercial boulevard from the Western limits of the city in St. Roch and Jacques Cartier wards, through St. Peter's ward to Champlain ward, along which it may likely be some day continued to the city limits at Cap Blanc on the St. Lawrence, in connection with the highly important line projected by the Honorable Minister of Public Works, Mr. Garneau, and other spirited gentlemen, as a branch line from the North Shore Railroad, through the Valley of the Cap Rouge river to meet the Northern branch or main line coming in an opposite direction from the lower town through Dalhousie street.

But to effect this improvement in the way it should be carried out, would, in my opinion, necessitate the removal of the proposed N. S. R. R. terminus to the North side of the alinement of St. Joseph street, as shown on plan. The traffic from St. Rochs through St. Peter's ward to the St. Lawrence would then be uninterrupted by the Railroad, as it is essential that it should be.

The ground remaining to the Corporation South of St. Joseph street, could then again be devoted to its more legitimate use as a market, with cattle stands in close proximity, as they should be, to the line of railroad and Palace Harbour. The portion westward of St. Nicolas street prolonged, I would make a hay market of; another portion I would utilize, as at present, for a Water Works and Corporation lumber yard, and the remainder as a stand for trucks and other vehicles.

As to the freight shed lately constructed by the N. S. R. R. Co., it might be taken by the Corporation at a valuation and turned into a fire station or devoted to other purposes and the cost thereof assumed by the City as part payment for the ground to be ceded by the Corporation for the proposed terminus. The loss to the city by not utilizing the foundations of the passenger station would be very trifling when compared with the many and manifest advantages of keeping the Railroad and its terminus and buildings clear of the principal line of communication from St. Rochs to the proposed new street already alluded to.

The Palace Harbour docks and basins I should then construct as shown on plan, Northward of Prince Edward street, and with five jetties or piers and a frontage of 4185 ft. towards the St. Charles, or over 500 feet more wharfage than we now enjoy, or did, before the railroad wharf was built across the Palais. The removal of our docks Northward into deeper water would also be very beneficial in other respects, as vessels could then frequent the Palais which are not now capable of doing so from want of depth, and our Harbour revenues would thus increase in a notable proportion, as the North Channel of the river would by the proposed works be subject to a much greater scour than at present and thus become deepened so as to admit of its being navigated by vessels of greater draught of water than heretofore.

Some slight modification to my plans may no doubt be suggested by the Government Engineers, and it may

be found advisable to act accordingly, such for instance as making the centre line of my proposed jetty coincide with that of Prince Edward Street, so as to increase the breadth of channel between said jetty and the wharves on the South shore of the St. Charles, or by curtailing the length of two or more of the wharves on the opposite side ; or the breadth of the avenues might be decreased or three of them made, and narrowed, instead of two, as proposed by Berlinguet.

The graving dock may be placed as already suggested in my first report to the City delegates to Ottawa, His Worship, the Mayor and the Honorable MM. Cauchon and Thibaudeau, that is between Laroche's wharf and that of the Rubber Company, which when the lock is built between the tidal and wet docks, will allow of docking a vessel at any stage of the tide, though the present position on the plan is preferable in other respects, as admitting of its future extension and not requiring the expenditure of a comparatively large sum of money for the purchase of the site alluded to.

In conclusion, Mr. Mayor and Gentlemen, I would insist again on your not countenancing the construction of the proposed jetty as projected by the premiated designs, as, even if it should cost something more than the half million at our disposal to carry out my scheme, it will be better to incur the increased outlay, even if the City should have to pay the additional cost of the outer breakwater, than to carry out a plan which while costing \$500,000, will, as I said before, to a great extent, destroy our harbour instead of improving it any way.

Let the work be commenced in the spring and pushed forward substantially as proposed by me ; there will then be afforded, between the two paralld lines of wharf which are to form the outer walls of the jetty, space for the deposit of ship's ballast, which now bids fair to shallow the St. Lawrence to such an extent as to seriously obstruct navigation before many years are

over. Space will then also be at hand which we do not now possess but which we greatly need for the deposit of refuse from the City, thousands of loads of which are every year available, and much of which is now thrown into our docks and over our wharves at Champlain Market and elsewhere to the very great injury and inconvenience of our berths for pontoons, &c., which now constantly ground at low water and become distorted and destroyed thereby. There will also be room for the material to be dredged from the bed of the estuary for the foundations of the proposed wharves, and to arrive ultimately at the required depth of 25 ft. of water in the tidal and wet docks at low and high tide respectively.

Let it also be remembered that the size of the enclosure as shown on my plan, will allow of a safe berth for the wintering of our pontoons which we now have to send to Blais booms at Cap Blanc and which, two years ago, were in imminent danger of being crushed to pieces and totally destroyed (at a loss of \$25,000 to the City) in company with several steamers and other vessels which were then totally wrecked by the crash of ice from the St. Lawrence when the ice bridge gave way on the 8th of May 1874.

Yes. I say, this magnificent enclosure of 127 acres of space would form a safe harbour for our pontoons and for hundreds of vessels and river craft which now have to seek shelter in a variety of places where their security is more or less jeopardized by exposure to wind, waves, weather and ice, and the harbouring of these vessels alone during the winter would prove a considerable source of profit to the Harbour Trust.

Again, I say, let this jetty be constructed with its 150 building lots or more, and if our people do not, which I am confident they will, take hold of the property at a fair price to the Commissioners, Montrealers will come along and set us the example, and soon there will

spring up to the North of the City a new and additional ward which may not inappropriately be styled "Commercial Ward," where the deep water business of the N. S. R. R. may be carried on with such activity as to cause both it and the docks to become ere long highly remunerative to the City.

There is, of course, not that degree of finish about my plans, nor that lengthiness in my reports which might have been expected, had I been able, as others have done, to devote my whole time, or more of it to the subject, but neither do I look forward to a \$5,000 premium. I shall be content with as many hundreds, added to the satisfaction of having proposed a feasible and common-sense line of action, and of having cautioned the City against incurring an expenditure of half a million of dollars of which the interest must be paid, while no corresponding advantage could be derived therefrom if laid out as proposed by the premiated designs of Messrs Kinipple & Morris.

I have the honor to be,

Mr. Mayor & Gentlemen,

Your obedient servt.

CHAS. BAILLARGÉ.



