

REPORT ON VICTORIA HARBOR.

The report of Mr. Louis Coste, M.I.C.E., the engineer sent by the Public Works Department at Ottawa last December to investigate the requirements of Victoria, B.C., with a view to equipping this port for the great shipping development of coming years, have been made public. They outline the preliminary details for the construction of adequate harbor works for Victoria, the first part of a great scheme of development. Mr. Coste's plan is for progressive construction, making provision for enlargement as the trade develops, and no time is to be lost in beginning the work. Construction is expected to begin on the breakwater from Ogden Point, the first work, in the near future.

A breakwater of concrete blocks surmounted by a concrete wall, 2,500 feet in length, is to extend westerly from Ogden Point, with a concrete pier 1,100 feet long on the inner side, the breakwater to cost \$1,250,000. Four other large concrete piers, with spacious warehouses and modern cargo-handling facilities, and a railway ferry slip where the car-ferries can load and unload their trains, will be built. The piers will be of 500, 700, 720, 800 and 1,100 feet in length, and these will be built immediately following a survey and borings, the construction of the first of the piers being hurried to increase the present accommodation for large ocean going steamers in view of the rapid increase of the shipping of the port. It is estimated that this pier will cost \$400,000. The proposed piers will offer 6,400 feet of berthing for steamships and with the outer wharf piers accommodation will be provided for over a score of ocean-going steamers.

To connect the harbor works with the railroad terminals on the Songhees reserve a bascule bridge will be provided from the reserve to Laurel Point with trackage on Montreal Street to the various piers. The railroads will thus be enabled to move their trains to and from the seven great warehouses and the grain elevator to be provided.

For the growing coastwise trade the inner harbor is to be greatly developed, a comprehensive scheme for dredging, deepening and the clearance of obstructions being outlined. Much reclamation work is to be done, and the harbor lines are clearly defined.

Mr. Coste recommends that the placing of the port under a harbor commission be considered. His reports follow:

The harbor of Victoria is situated at the southeast end of Vancouver Island, practically at the junction of the Strait of Georgia and the Strait of Juan de Fuca. This harbor is divided into two parts, known locally as the inner harbor and the outer harbor.

The inner harbor extends from Shoal Point on the east side and McLaughlin Point on the west side, to the east end of James Bay in an easterly direction, a distance of one and a half miles, and to Selkirk waters in a northerly direction, a distance of nearly two miles. The available depth of water, at lowest tide, in the channel, and close in to the principal wharves, is 20 feet, obtained almost altogether by dredging and blasting operations. This depth of twenty feet is, in my opinion, the maximum depth to which that part of Victoria harbor should be dredged, as the restricted area of possible navigable water limits the sizes of the steamers which can utilize it to a maximum length of 350 feet, and a draft of 17 feet.

This inner harbor is a very valuable asset to the city of Victoria, to the province, and to Canada generally. Its coasting trade is very large, and is increasing annually at a rapid rate, but it is not possible to accommodate large

ocean liners within its limits, and this has rendered necessary the creation of the outer harbor, with which this report deals exclusively in so far as required works are concerned.

The outer harbor of Victoria is immediately south of the entrance to the inner harbor. It may be said to extend from Shoal Point to Holland Point, on the east side, a distance of 6,000 feet, and from McLaughlin Point to Macaulay Point, on the west side, a distance of 3,000 feet, comprising an area of nearly 300 acres of water, varying in depth from 30 to 80 feet. In that harbor the spring tides rise 7 to 10 feet, and the neaps 5 to 8 feet, the low tides being very irregular. The datum for excavation by the Public Works Department is the zero of the gauge of the old customs wharf.

Mr. Coste suggests that a breakwater 2,500 feet in length should be built of a rip-rap foundation surmounted by a concrete wall protected on the seaward side by concrete blocks. This will protect all the wharves and the entrance to the inner harbor. The estimated cost of this breakwater is as follows:

Rip-rap stone, 365,000 cubic yards at \$1.40.....	\$ 511,000
Concrete wall, 36,000 cubic yards at \$8.00.....	288,000
Concrete blocks, 4,000 cubic yards at \$9.00.....	365,000
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	\$1,164,000
Superintendence and contingencies	86,000
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	\$1,250,000

The project of wharf development comprises a railway ferry slip, four piers respectively 500, 700, 720 and 800 feet in length, and in addition a wharf 1,100 feet in length along the inner face of the breakwater.

Among other things Mr. Coste recommends:

1. That the breakwater be built; cost, \$1,250,000;
2. That a survey of the outer harbor be made at once to ascertain the cost of building wharves as shown on plan;
3. That, as soon as the survey is completed, pier No. 1 be built. Approximate cost, \$400,000;
4. That negotiations be entered into with the Provincial Government, the Canadian Pacific Railway and the Canadian Northern Railway, with a view to affording rail connections to the outer harbor, by the construction of a bridge between the Songhees Point and Laurel Point or otherwise;
5. That the question of placing the whole of the harbor of Victoria in commission, be considered.

He also suggests for the inner harbor:

1. That a thorough survey of the harbor of Victoria be undertaken at once, boring being essential;
2. That the programme of works to be done by the plant owned by the government, recommended in this report, be approved, and instructions given accordingly for carrying it out;
3. That the shoal east of Songhees Point be removed by contract work as soon as the survey of the harbor is completed;
4. That that part of the harbor known as West Bay be thoroughly examined, to ascertain whether or not it is feasible to build in that bay a modern railway terminus, consisting of ferry slips and wharves.

As an emergency putty a new use was recently found for old newspapers. A party being in need of a crack filler and not being in a convenient position to obtain the real article made a boiling mixture of one pound flour and three quarts water and then soaked the paper, when the liquid had assumed a pasty condition.

The filler dried hard and did not shrink to any extent.