

adequate for general purposes, as its south side was too short for long steamers and the basin in the north side was too narrow. Old pier No. 3, recently rebuilt, is still in good shape and will probably be included in the completed scheme.

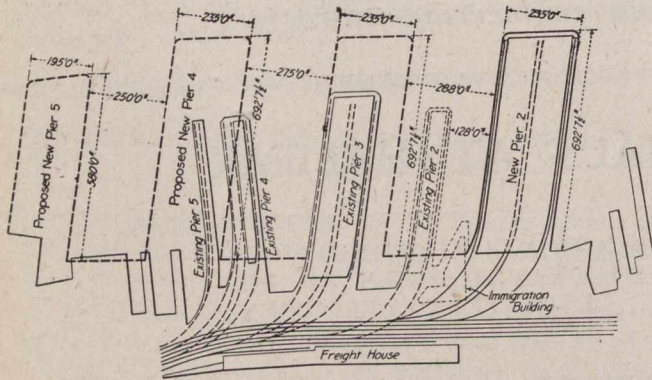


Fig. 2.—General Plan of Development—Existing Piers Shown Dotted.

When these terminals were finally decided upon, Mr. John Kennedy, Hon. M. Can. Soc. C. E., consulting engineer, Montreal, was retained upon the work, and it was under his direction that the contemplated plan was developed and is now being carried out. Mr. A. F. Dyer, C. E., is the resident engineer who is supervising the work, and his assistant is J. Shepherd Lee, C. E.

These improvements make provision for four new piers, pier 2 being 800 ft. by 235 ft., with freight and passenger shed. Pier 3 is for freight purposes only, having the same dimensions as No. 2, and being of similar construction. Pier 4 will also be 800 ft. by 235 ft. with accommodations similar to No. 2. Pier 5 will be 650 ft. by 190 ft. and will be used for smaller steamboat and sailing vessels, as well as for transatlantic steamships. The basin width between piers 2 and 3 will be 280 ft., between Nos. 3 and 4, 275 ft., and between Nos. 4 and 5, 250 ft. These basins will be dredged to a minimum depth of 34 ft. below mean low tide.



Fig. 4.—View of Pile Casting Yard.

Pier 2 is the first to be constructed and is now complete, the Nova Scotia Construction Company having had the contract at \$914,600. This pier is located between the old Immigration Building and the Cunard pier, the latter interfering to a great extent, and now being completely removed.

It was decided, owing to congested yard space, to build a new bulkhead further out in the location indicated. The cribwork of this new bulkhead is to be built in blocks reaching up to about 2 ft. above low water. Above this point the cribwork is to be continuous. The facing of this cribwork is to be of squared timber and made mud-tight. The top of the bulkhead will be finished off with a coping of squared creosoted pine timbers. All timbers over 3 ft. above low water are to be creosoted, the proportions being 12 lbs. of creosote per cubic foot of timber, except for planking, in which case the amount will be increased to 18 lbs.

To strengthen the immigration building wharf where the facing is exposed, sheet piling of squared timber has to be driven along the face and for a distance of 30 ft. beyond the corner. For a further distance of 25 ft. the foundation and cribbing will be protected by round piling. Most of this square sheet piling is to be creosoted, and is to be driven 39 ft.

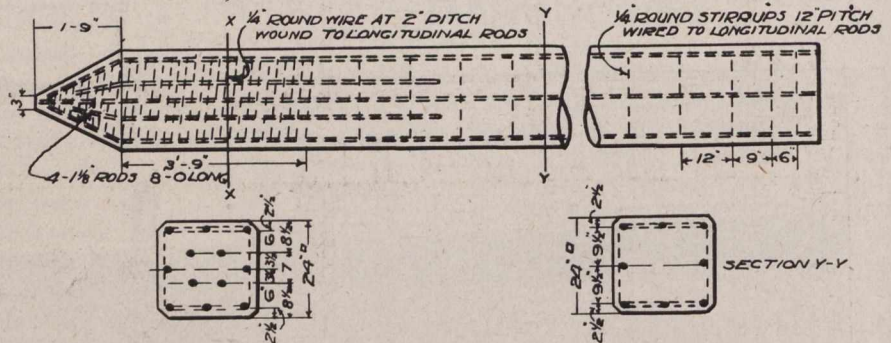


Fig. 3.—Details of Reinforcement of Concrete Piles.

On account of the great depth of water and unevenness of the bottom, there was some difficulty at first as to the mode of construction. The bottom is formed of a substructure of rock, the stratum running nearly perpendicular and presenting a very rough and uneven surface. The rock is covered by a bed of gravel and hardpan varying from 4 ft. to 12 ft. in thickness. This is in turn superimposed by a layer of mud 5 ft. to 25 ft. thick. At the outer end the rock depth is 67 ft., and in shore 44 ft.

Owing to the enormous weight which the supporting piles would be required to carry and owing also to the activity of teredos and limnoria at this point, the use of wooden piles did not meet with favorable consideration, and reinforced concrete piling was adopted instead. The piles are of the construction and size denoted in Fig. 3.

For piles over 70 ft. long the longitudinal reinforcing rods are 1 1/4-in. rounds; between 60 and 70 ft., 1 1/8-in. rounds; and under 60 ft., 1-in. rounds. Four extra 1 1/8-in. longitudinal rods extend up for a short distance from the pointed end. Except near the point of the pile, where the rods are wound with 1/4-in. round wire at a 2-in. pitch, the rods have 1/4-in. wire stirrups, at