

masonry of the entrance and power house foundations. 4th. Construction of the timber work and the main body of the dock.

A contract was signed on June 30th, 1899, with the Delaware Construction Co., of Wilmington, Del., covering all the work in parts 1 to 4, and they commenced operations a few days later. The mechanical equipment, the caisson gate and the superstructure of the power house were arranged for by special contracts to be noted later.

DETAILED DESCRIPTION.

Foundations.

The nature of the soil upon which the dock was built varied considerably as shown by the materials encountered during construction. In excavating one of the bulkheads, after the river mud had been removed, there followed a layer of yellow clay some 8 or 10 inches in thickness; a few inches of vegetable matter resembling peat; a stratum 4 feet thick, composed of coarse quartzite pebbles and fine red sand merging into densely compacted layers of pure sand; and beneath all extending to some undetermined depth, a pure white clay. Before water had reached it, this clay was exceedingly hard, would take on some polish when rubbed, and was sometimes used by the carpenters to chalk lines. After standing some time in contact with water it became softer, resembling somewhat the texture of castile soap.

The concrete work about the dock entrance was in all cases placed directly upon this clay. It is doubtful if any of the piles or sheet piles ever penetrated this material to any extent. In fact those of the temporary work which were afterward pulled, appeared as if they had landed upon a rock, and the whiteness of their points was evidence enough as to what they had landed upon. No actual rock was however, encountered at any point.

Protection Work.

The safety and efficiency of a timber dry dock depends in a large measure upon the possibility of keeping water away from the piles and foundations. In the work under consideration this was a very important matter, for as has been mentioned above, over 200 feet of the structure was situated in the waters of the harbor.

It was proposed to surround the entire dock, (excepting of course the entrance way) with a single line of sheet piling. Commencing back some 65 feet from the shore line and extending outward to the limits of the dock, this line was to be doubled, the