

two lines being spaced 16 ft., apart. Round piles of yellow pine were driven every ten ft. upon the outer sides of these were drift-bolted two parallel lines of 12 by 12 inch Southern pine waling strips. One strip being placed at the level of the bulkhead top, and the other below low water line. The lower waling strip was omitted from the sheet piling within the shore lines.

Timber braces, 12 by 12 inch Southern pine were placed across this bulkhead at every pair of the guide piles and a 1 $\frac{3}{4}$ inch iron tie-rod beside each brace. The piles were slightly notched to keep the braces in position.

Along these guide wales was driven a continuous wall of Southern pine sheet piles, tongue and grooved, and mostly 40 feet in length. The sheet piles were 10 by 12 inches with a white pine tongue 4 inches square. Each pile was secured to the waling strips by $\frac{7}{8}$ inch machine bolts.

Between the outer ends of these permanent bulkheads, a temporary one of like character was driven, which formed the cofferdam, and two single lines of temporary sheet piles were driven from bulkhead to bulkhead, enclosing that portion destined to be excavated for the entrance foundations, and the pump well.

Entrance.

The entrance proper of the dock, is concrete foundations and backing, faced with heavy granite masonry. The outer apron is 12 feet wide, the middle apron 12, and the inner 20 ft., The surface of each is level with the exception of the inner, which for a distance of 12 feet slopes downward to the cross drain in the main body of the dock.

The entire surface is bush-hammered to a smooth finish. The sills, two in number, rise vertically from the aprons a height of 18 inches. The minimum width of entrance at the top of the inner sill is 60 ft.

The granite abutments are rock faced, with the exception of the bush-hammered jambs. They rise vertically from the inner sill level a height of 29 feet and recede 10, thus making the width of entrance at the coping level, 80 feet.

Each stone in course is doweled to the stones below, with two iron pins, each 1 inch square and 4 inches long.

Beneath the aprons are 11 steel bands, 10 by $\frac{1}{2}$ inch, by 22 feet, bent upward at the ends, which serve to bind the sill stones together.

Behind the north abutment, the concrete backing is carried in a solid mass to the protection bulkhead, and in the concrete back-