

of only 16 or 17 ft. of water. It will be seen that it was necessary to design a crib that would not have a greater draft than this but that would be stable nevertheless, as it is to be towed, when built, a distance of several miles to its permanent location.

The harbor is being formed by building two parallel earth embankments from the original shore line for a distance of one mile and a half into the lake and dredging between them. These embankments will be protected by

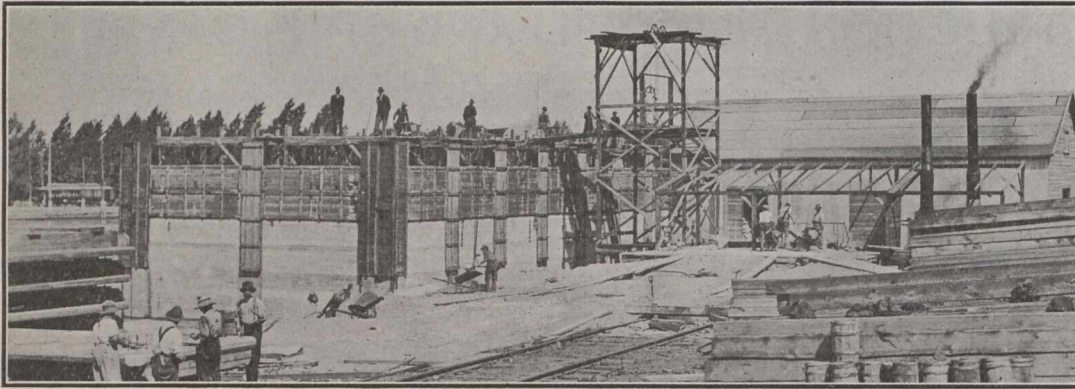


Fig. 2.—Concreting Plant, Showing Transportation Method. Removable Bottoms for the Compartments Under Construction at Left.

rough rip-rap for the greater portion of their length, but there are portions which are to be sustained on the inside with these reinforced concrete cribs. They will provide vertical faces for the mooring of ships and, at the outer end where the embankments converge, will give a navigating channel for the full width between embankments. The parts of the harbor where cribs are situated are shown in Fig. 5. On the west side they extend inshore to meet a retaining wall. This retaining wall is carried as near the lake shore as is possible without resorting to subaqueous construction.

The design which was adopted required a crib 110 ft. long x 38 ft. wide x 34 ft. in height, having a displacement of about 2,000 tons. As stated, there are to be 55 of these cribs. Each is divided by a longitudinal centre wall and 8 interior cross-walls, thus providing 18 compartments. The outside end and longitudinal walls extend from top to bottom without an opening of any description, while the interior walls have a rectangular opening 8 ft. x

14 ft., the bottom of which is 12 ft. from the top of the crib. The purpose of these openings is to reduce the weight of the crib and, since they are near the top, to bring its centre of gravity lower down. Thus each pocket is separated from those adjoining for a depth of 22 ft. and it is intended that each shall be watertight. Watertightness is important, since the crib is required to float during construction and possibly for some considerable time after it is built. A feature of the complete separation of the lower portion of the pockets is that, in the event of a leak

developing in some part of the structure, only one or two pockets are flooded and the crib, instead of sinking, merely heels over somewhat from the vertical. As the crib draws 16 ft., it requires about 18 ft. of water in the crib to cause it to rest on the site. When in this position there is no flow between pockets and more water is not let in until the crib is correctly placed.

A new and very important feature is the provision of a removable watertight bottom for each compartment. By its use the crib may be sunk directly on the sea bottom by admitting water through sea valves. When properly placed, the braces which hold the removable bottoms in place are released and the latter are removed, to be used over and over again in the construction and transportation of other cribs. Attention is called to the fact that the filling for the crib will rest directly

on the sea bottom, which is a very desirable feature.

During the process of sinking, by carefully admitting the water, the crib can be brought to within a few inches of the bottom and, when brought into exact position and line, a little more water admitted will bring it to rest in position. If, for any reason, it gets out of line while sinking the last few inches, some of the water can be pumped out and the crib will float again, thus allowing the error to be corrected. Each crib is provided with vertical

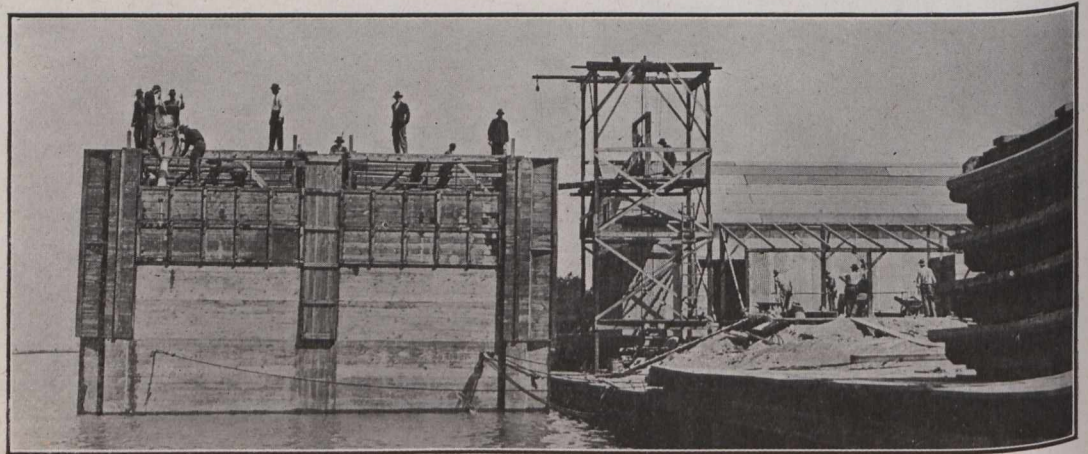


Fig. 3.—View Showing Method of Placing Concrete. It is elevated in barrows and transported over various runways to different parts of the crib. A pile of completed wooden bottoms is shown at extreme right.

projecting ribs at opposite ends and arranged in such a way that the crib will be keyed to the two adjoining ones.

The reasons for constructing a crib with bottomless pockets are for economy, since, as stated, the timber bottoms can be used over and over again, and for the purpose of allowing the crib filling to rest upon the sea bottom instead of on the bottom of the crib as is ordinarily the case. This tends to prevent settlement and prevents undue strains upon the crib and secures an even bearing