A USEFUL TYPE OF CRIBWORK.

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C RIBWORK in some form has been in use ever since the beginning of engineering, and will continue to be used, because in certain classes of work substitutes will be difficult or impossible to find.

Types of cribwork are many, ranging from the cribs made of round logs, notched sufficiently to prevent movement and give a good bearing, which were used in bridge construction in the days of early settlement, to the immense cribs used in the foundations of the Quebec Bridge and other structures, and to the concrete cribs used at Port Weller on the new Welland Ship Canal.

The writer wishes to give to the readers of The Canadian Engineer a general idea of a type of crib

which has given much satisfaction, and, while the dimensions and description given herein refer to one particular crib, variations in dimensions and form can easily be made to suit such circumstances as may occur, and with equal satisfaction.

After the crib-seat had been excavated, soundings were taken from a float mooring into the required position every two feet along the front, back and ends, and also along the line of the longitudinal ties.

These soundings were plotted and the bottom of the crib built to conform to the crib-seat as found.

Ways had been prepared for the building of the crib, and the cribs were built up about fourteen to sixteen courses before launching. They were then built up afloat to the required height, in this case about sixteen feet.

This crib was 40 ft. long, 16 ft. wide on the top, and 18 ft. wide on the bottom, this difference in width being made up by a batter four feet high. The general details are shown on the accompanying plan.

The material used was 4 in. by 12 in. plank, the cross ties and ends being pine and the remainder mixed timber of good quality. Ten-inch wire nails, weighing four to the pound, were used to fasten the planks, and an average of about eighty were used in each course.

The front face was built solid, each longitudinal course being made up of not more than three planks, and filling pieces were cut to fill exactly the spaces between the ties. The back was left open, that is, no filling pieces were required between the ties; the back longitudinal courses were the same as in the front face, not more than three planks, but each butt was supported and overlaid by a 4 in. by 12 in. block, not less than three feet long.

The longitudinal ties were three in each course, of lengths shown on the plan. The ends were open, except from the bottom to the top of the batter between the longitudinal ties and the face sticks, where filling pieces were required. Similar filling pieces were used in each row of ties as well as the ends. In all cases where filling pieces were called for they were required to fill the space completely.

Floors were placed in four pockets only, as the plan shows. These floors were to carry ballast as an aid in sinking the cribs.

After the cribs had been built up to the necessary height they were towed into position for sinking. The floored pockets were filled with stone until the cribs were almost awash. A deck of loose plank was laid over the unfloored pockets and skips of stone placed on this deck to complete the sinking. These skips were handled from a floating derrick and found very convenient, for if the crib moved off line, raising one or two skips were usually sufficient to lighten it enough to make it easy to bring the crib to line again. Before starting to sink each crib (after the first one) two pieces of 4 in. by 12 in. plank were spiked on one end of the crib on the face, with one end projecting by the end of the crib. This projecting end was kept against the face of the last crib sunk, thus insuring that end being in line, and it was necessary to have a transit point on the other end of the crib only.

After the crib had been sunk the floored pockets were well filled before the skips were removed, then filling all pockets was continued.

As mentioned before, this description is of a certain



crib built by the writer, but changes might be made to suit conditions. For instance, in this crib the batter was on the face of the crib, but if a plumb face were required from top to bottom, the batter could be omitted, or even built on the back of the crib, where the larger base and weight of backfill on the batter would increase the stability of the crib.

Several advantages of this type of crib may be pointed out, as follows:---

(a) Four in. by 12 in. plank will in many localities be easier to purchase and be cheaper than larger sized timber, such as 12 in. by 12 in.

(b) Ease in handling this size of timber.

(c) Unskilled labor can, under an ordinary foreman, build this crib, there being no dovetails or other joints to make. If the cross-ties be bought the required length, the main items are cutting filling pieces and driving the spikes.

(d) Rapidity in construction (often a matter of importance), as two men can carry any plank used.

(e) Small openings between courses permit of the use of small stone for filling, which in many localities is a consideration; and with care in building, earth may be used for filling where stone is particularly hard to get.

(f) No boring necessary, as in the case where driftbolts are used to fasten crib timbers; a saving in time and labor.