

rick has tackle for handling four yard boxes which are used almost exclusively for rock work. The boxes are arranged closely together on scows and the dredges load directly into them, care being taken not to overload or cover up the iron work provided for attaching the derrick hoisting and tripping chains.

The principal dimensions of a derrick are as follows:—Length of hull, 76 ft.; width of hull, 27 ft.; maximum depth of hull, 7' 6" to 8' 0" according to derrick; size of main engine 12" x 14" double cylinder.

The boom is 80 feet long and is swung by a turn table working on a pivot casting fastened to the forward deck.

The spud arrangement is similar to that of the dredges, namely, two at bow and one at stern. Spuds are operated by wire ropes as in the dredges, but the method of braking or holding spuds in one position varies. In derricks 5 to 6 the spuds are equipped with chains which run on rollers held in castings at the top of the spud. One end of the chain is secured to one side of the spud slides, while the other end passes through a clamping device bolted to the opposite side of the slide. When the derrick is pinned up, the clamps grip the chain and carry the load. Derrick No. 4 has a wire instead of the chain. In derricks 1 and 3 the arrangement is identical with that of the dredges. The weight is carried by the top wire, the drums being held stationary by brakes.

The original spuds used were 21" square but as they have not proved durable, they are being replaced by spuds 21" x 27".

The main engine has two grooved drums, one for the hoisting wire and the other for the tripping wire. Both drums are fitted with ordinary cone driving frictions which are thrown in or out of gear by steam thrust cylinders secured to the drum shaft and revolving with them. Drums are checked by brake straps operated by foot levers.

Two derricks have steel hog frames and back legs, but the others are of wood throughout.

A derrick day crew is composed of one engineer, one assistant, one fireman and four deckhands. The night crew is the same but with an additional hand as watchman. The engineer is in charge of the shift. The assistant works with the engineer in the operating cabin, the fireman doing the necessary oiling besides firing. The deckhands tend the lines.

As before stated, five tugs are in operation. Two of them are of steel construction while the others are of wood.

The Robert Mackay, the larger of the two steel boats, was built by Messrs. Carrière & Lainé, of Quebec, and delivered to the Harbour Commissioners in the fall of 1901. Her principal dimensions are as follows:—