

Grooves.—Grooves to be formed in the face-blocks on the harbour side for the reception of the fenders in the manner indicated on Fig. 6, drawing No. 3.

Sleepers.—Simultaneously with the advancement of the works seaward, the sleepers of maitai wood, of the dimensions and form shown on Fig. 8, drawing No. 3, are to be laid in the positions indicated in the cross-sections, and resting on the blocks. These sleepers may be in such lengths as can be conveniently obtained in the colony

Concrete-in-mass Roadway.—Concrete-in-mass, composed of one part of Portland cement to eight of broken stone, shingle, and sand, must be deposited between the sleepers last described in the manner shown on the sections, and brought up to an approximately true surface, having a gradient of 1 in 60, falling towards the coping, at a depth throughout of 8in. below the finished surface of the roadway

Pitch-paving.—Step by step as the work is carried seaward the pitch-paving between the rails and the seaward rail and parapet must be laid as shown on the sections, so as to render the work available for use to the fullest extent during progress. This paving to consist of selected stone from the quarry, hammer-dressed, laid on edge, and grouted so as to form a suitable surface for cart and other traffic.

Fenders.—Provide fenders of totara wood throughout the harbour-face of that portion of the pier where formed in accordance with Fig. 1, drawing No. 4. Each fender to consist of a whole-timber inner piece, and a half-timber facing securely trenailed thereto, both to be sawn on all four sides and the face-pieces chamfered at the front arrises. 4in. by $\frac{7}{8}$ in. galvanised wrought-iron bands to be provided and securely bolted with 1 $\frac{3}{4}$ in. jagged bolts, having upset ends, for holding back the inner pieces into the grooves previously specified to be formed in the concrete blocks, the back of the inner piece being splayed $\frac{1}{2}$ in. on each side to fit the groove.

Bollard-cases.—Provide cast-iron bollard-cases to fix on the fender-piles at intervals of 60ft. apart, centre to centre, measured along the pier. Each bollard to be secured by a pair of 1 $\frac{3}{4}$ in. anchor-bolts passing through pipes introduced into the blocks for the purpose, and drawn up tight on the inside by means of a nut bearing on a cast-iron washer and hardwood block the upper end of each bar to have an eye for the reception of a 1 $\frac{1}{2}$ in. bolt for attachment to a 4 $\frac{1}{2}$ in. by $\frac{5}{8}$ in. wrought-iron strap passing around a collar in the bollard (see Fig. 5, drawing No. 4). Provide solid wrought-iron rail standards and bars of the character shown on Fig. 7, drawing No. 3, at the boat-steps, each to be attached to the coping by means of a jagged toe-bolt 12in. long, having an upset end running down in a hole bored in the coping for its reception, the latter having two small chases into which grout would be poured, care being taken that the standards are temporarily secured, pending the setting of the cement.

Railways.—The arrangement of the permanent railways on the pier are shown on the general drawing No. 2 these consist of a line on the colonial gauge, to be used as a block service road during the construction of the pier out as far as the boat-steps between the junction of the two sections (Fig. 1, drawing No. 3, and Fig. 1, drawing No. 4) from which point there would be a double line on the 3ft. 6in. gauge. In addition to these roads a railway 15ft. centre to centre would be laid throughout the length of the pier for the portable setting-machine, the harbour rail of which would be utilised as the seaward rail of the inner permanent line, on the 3ft. 6in. gauge above referred to (see Fig. 1, drawing No. 2, and Fig. 4, drawing No. 3). All the lines of rails to be of steel, 53lb. per yard, colonial section, those for the setting-machine being of steel, and 70lb. per yard, switchers and crossings to be provided at the points indicated on the drawing.

JOHN COODE.

H.—BILL OF QUANTITIES FOR WORKS PROPOSED BY SIR JOHN COODE IN HIS REPORT DATED 17TH MARCH, 1880.

Bill of Quantities of Work to be executed if Pier is completed to the Full Extent coloured Red on Drawing No. 1—viz., to YY—exclusive of Formation of Workyard, and the Shops, Sheds, and Railways thereon.

Root, from starting-point to low-water spring-tide—	
259 cub. yd. excavation for walls.	
3,371 " concrete-in-mass above low-water	
95 " " under pitching of roadway	
137 " concrete paving.	
9,600 " filling.	
485 cub. ft. timber in longitudinal sleepers.	
190 (number) cross-sleepers.	
331 $\frac{1}{4}$ cwt. steel rails.	
12 $\frac{1}{2}$ " fish plates.	
11 $\frac{1}{2}$ " bolts and spikes.	
4 (number) sets switches and crossings.	
81 cub. yd. pitching.	
385 " road-metalling.	
Breakwater pier from low-water spring-tides out to YY on drawing No. 1—	
12,764 cub. yd. concrete in bags below low water	
3,421 " " apron below low water	
895 " broken stone for levelling below low water.	
1,566 sq. yd. levelling bags above low water	
27,888 cub. yd. concrete in blocks below low water	
44,101 " " " above low water.	
4,864 " " masswork parapet.	
595 " " " under pitching of roadway	
4,931 cub. ft. timber in longitudinal sleepers,	