

TUNNELLING.

Tunnels

25. The tunnelling will consist of "Line Tunnels" and "Stream Tunnels"; the former shall be formed to an exact minimum section according to drawing No. 9 and the latter to drawing No. 10. For the purpose of tendering the sectional area of "Line Tunnels" shall be calculated at 405 superficial feet, equal to 15 cubic yards to the lineal foot of Tunnel. The "Stream Tunnels," where formed, shall be driven through the solid rock which, in some places, forms the sides of ravines, they must be formed in the manner to be pointed out in each case. Open cuttings at the ends will be excavated, to give an easy flow to the water; these open cuttings may be slightly curved, but the Tunnels proper must be perfectly straight from end to end, with the sides as smooth as practicable. The up-stream end in each Tunnel must generally be one foot lower than the bed of the stream opposite, and they must be driven with a proper inclination. Care must be taken to leave a solid pillar of rock between the Tunnel and the side of the ravine, equal (except in special cases) to not less than about double the diameter of the Tunnel. The thickness of solid rock over the Tunnel shall be similarly proportioned.

Crib wharfing

26. Crib wharfing will have to be resorted to at some points as noted on profile according to general drawing No. 42.

Rip-rap.

27. Whenever the slopes of the embankments are liable to be washed by the overflow of streams, they will require to be protected by a rip-rap wall of stones carefully laid by hand to such thickness and height as may be directed by the Engineer, generally about 18 in. above high water level.

Rock facing.

28. Special attention is called to those long stretches of embankment to be made on low lands subject to over-flow to a considerable depth. The slopes of these will require to be protected with rock facing, the stones for which will have to be quarried and brought by train or by water from a considerable distance.

Embankment at Port Moody.

29. The slope of the embankment at Port Moody extends below water at high tide and will have to be protected with rip-rap of large well formed stone laid by hand.

Public roads

30. At all public roadways, cattle-guards will be established and will be constructed according to drawing No. 13. The roadway between cattle-guards will be planked and the public road properly graded and gravelled as far as the limits of the Railway right-of-way. Under this heading the bridging of side ditches, fences from cattle-guards to the line fences of the Railway, also post and sign board, and everything necessary to complete the crossing, will be embraced. The fences connecting cattle-guards with right-of-way fences, will be post and board, or post and wire as per drawings.

Farm crossings

31. Farm crossings will be established wherever required and directed. They

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