

chisel draft round the margin ; in addition to which the quoins and arch stones are to be chamfered in front as shown. The remainder of the fronts shall be substantial block in course, well bonded together in regular courses, not less than 9 inches thick, the beds and joints being pointed and keyed. Should it be found that the rock is sufficiently solid to enable the tunnel lining to be dispensed with or reduced in thickness, the Resident Engineer may reduce the thickness of the brick lining, or withdraw the whole or any portion of it from the contract, and the Contractor shall only be paid for the work actually done. The excavation shall, however, be taken out the full size of the outside of the brick lining, and so that half of the section can be got clear on each side of the centre line ; beyond this nothing is to be excavated except what is absolutely necessary for the security of the work. In the event of the thickness of the brick lining being reduced from 14 inches to 9 inches, the Contractor will in such case be paid an extra ten shillings per cubic yard on the reduced quantity. If considered necessary by the Resident Engineer the work of excavating the tunnel shall be carried on incessantly from both ends, day and night, except on Sundays.

PROTECTION OF SLOPES.

10. The face of embankment at all bridges on both sides for a chain back from the abutment or pier shall be protected to the height shown with rough-quarried bluestone or other hard stone rubble, roughly placed in position by hand. The stones shall average $\frac{1}{2}$ a cubic foot each, and shall be laid 9 inches in thickness at the top, increasing 1 foot in thickness for every 10 feet in perpendicular height. A layer of road metal, quarry refuse, or shingle shall be first disposed over slope of embankment 6 inches in thickness, upon which the rubble shall be placed. The base of this stone protection shall be placed at least 2 feet below the surface of the original ground, the trench being well filled in and rammed when the stonework is complete. Where the slopes of embankments tail into river, they shall be similarly protected to a height of not less than 10 feet above the ordinary water level except where retaining walls or other protection is shown or specified.

STREAM DIVERSIONS AND DITCHES.

11. Ditches for the accommodation of the various small creeks and other watercourses interfered with shall be cut in the positions shown on the general plan, and at such other places as shall be necessary for the protection of the works. Where not otherwise shown, the bottom of the cut shall have an uniform inclination throughout, and shall be made at a level commencing at the bottom of the stream at the lower end, and terminating at the bottom of the stream at the upper end of the diversion. At undefined places, 15 chains of ditches shall be dug in addition to those the position of which is indicated on the general plan. All ditches shall be at least 3 feet wide at the bottom with slopes of 1 horizontal to 1 vertical, and be placed at such level and with such inclination as may be required in each case. A drain is to be cut along the bottom of slopes of cuttings, as shown in drawings, and in all cases must be provided with a proper outfall of at least the same size. Catchwater drains shall be dug above the top of the upper slope of all cuttings, at a distance of from a quarter of a chain to a chain from the top of slopes. These ditches shall average 5 cubic feet per lineal yard, and shall be true and regular to the inclinations directed ; no stumps or roots to be left in them ; they shall be made at the commencement of the work, with proper outfalls, and shall be cleared out from time to time as may be necessary or ordered.

ROAD ALTERATIONS.

12. At the places shown on the general plan and section, and otherwise where required, the present roads are to be diverted or otherwise altered. All district or other public roads shall be formed 18 feet wide, and covered for 12 feet in the centre with 9 inches of $2\frac{1}{2}$ -inch bluestone road metal. The slopes of cuttings and embankments in road alterations, and the mode of trimming them off and draining the road, shall be the same as specified for the railway. The roads are to be formed with a rise in the centre of $\frac{1}{2}$ inch for every foot in width. The old metal or other materials on the present road may be used in re-forming them, if suitable, but the Contractor will be bound to make good all defects therein. Where no section is given of the proposed alterations, the gradients on each side of the line shall in no case be steeper than 1 in 10, with a level portion in the centre 33 feet long, except where the present inclination exceeds these rates, in which case the inclination of the new road shall not exceed that of the present road, unless, in the opinion of the Engineer, a steeper is unavoidable. In addition to the road alterations specified or shown on drawings, Contractors are required to estimate and provide for 500 cubic yards of earthwork, and 50 cubic yards of metalling, to be executed in forming roads to and across the line in such positions as will be directed by the Engineer. No public or private road that crosses or intersects the railway or works thereof shall be obstructed by excavation or otherwise until the Contractor shall have provided such temporary roads as may be necessary for the traffic. The Contractor shall be bound to maintain the roads that have been altered till the termination of the contract, or till the Road Engineer, or Surveyor, or proprietor takes them off his hands.

MATERIALS.

13. Except where otherwise specified, all materials used under this contract shall be of the following kinds and descriptions :—