

deposited such material convenient to the place as the Engineer may approve of. The Contractor must find all the material required in these drains, and do all the work described. These drains must always be made with a sufficient longitudinal fall for the easy flow of the water.

*Allowance for Shrinkage.*

21. The embankments shall be 17 feet wide at formation level, and the slopes will generally have an inclination of one and a-half horizontal to one perpendicular, but in their formation, whether for the railway or approaches to bridges or level crossings, ample allowance must in the first instance be made by the Contractor, for all subsequent settlement or shrinkage, and particularly in the top width; and for this purpose the top, besides being kept higher than the levels given, shall be formed in the first instance wider than the specified dimensions, to such extent as may be deemed necessary, according to the height of the embankment and the nature of the materials of which it is formed, so that when it is thoroughly consolidated it will stand at least the full width required.

*Borrow Pits.*

22. The embankments will be made up with the materials from the line cuttings and from side ditches, except where otherwise directed; when these are insufficient, the line cuttings will be widened, or materials procured from borrowing pits. All materials placed in the embankments must be approved by the Engineer; no stumps, logs or other perishable or unsuitable material shall be used, and no material shall be supplied without his concurrence until the cuttings are completed.

*Side Ditches.*

23. The ditches at the sides of the embankments shall be cut with slopes not steeper than one and a-half feet base to one foot perpendicular height. The top of the slopes nearest the Railway shall not be less than six feet from the foot of the embankments. These ditches shall be graded so as to carry off the water to the next natural water-course, and where there is so much water as to form a strong current, the ditch shall be formed as far from the embankment as the Engineer may deem necessary for the safety of the latter. Special attention is called to those long stretches of the line on low lands subject to overflow to the depth of several feet from high floods in the rivers, as shown on the profile; no side ditches will be allowed in such places, and the embankments will have to be made from the most convenient borrow pits that can be found at either end. This can only be done by train, and a temporary track will be required. In some cases where the overflow is shallow, as on part of Maria Island, borrow pits may be dug at intervals, but not nearer the embankment than 50 feet. No continuous ditch will be allowed as it would form a leading channel for the overflow and certainly prove destructive to the embankment within a very short period.

*Berm.*

24. In flat sections a berm shall be left between the roadway and ditch of such width as may be deemed expedient, but it shall in no case be less than six feet. Where drainage cannot be conveniently carried off by the side ditches, it will be necessary to excavate off-take ditches to a considerable distance beyond the limits of the Railway grounds. These off-take ditches shall be of such widths and depths as may be required and directed by the Engineer. They shall be sloped not steeper than one and a-half horizontal to one perpendicular, and the materials shall be cast out so as to leave a berm of six feet between the deposit and the top of the slopes of the ditches. The Contractor shall also construct all other drains and ditches which the Engineer may deem necessary for the perfect drainage of the railway and works, he shall also make all necessary diversions of roads and streams as directed by the Engineer.