

Construction Specifications of the Canton Viaduct

EXTRACT from written contract between the Boston & Providence Railroad and Dodd & Baldwin, showing the character of the Canton Viaduct.

It is understood that the said viaduct shall commence at a point 10.5 feet north-east of station marked 670, of the centre line of the Boston and Providence Rail Road, and extend 613.5 feet on said centre line, to a point 3 feet south-west of station marked 676, crossing the mill-pond of the Stone Factory, so called : that the said viaduct shall terminate at each end by an abutment and circular wing walls : that the basement wall shall, in every part, be laid on solid foundation – shall extend entirely across the base of the structure, and project from 1 to 2 feet beyond the exterior face of the superstructure, as may be directed.

The said basement wall shall be constructed of the best dry masonry, and the stone of such dimensions as shall be approved of by the Agent or his assistant ; the said basement wall shall in every part commence at least 3 feet below the surface of the earth, except where solid rock shall be encountered, and shall be raised to such elevation as the Agent or his assistant may direct.

The superstructure shall consist of two walls, extending the entire length of the viaduct, connected at intervals of 27½ feet by [buttresses](#) 5½ feet thick, extending transversely across the walls, and projecting 4 feet beyond their faces – the main walls to be 4 feet thick, 4 ½ feet below the grade of the Road, at all points, and to have a [battre](#) on their exterior faces of 1 foot in 48 feet, or 1 inch to 4 feet – the interior faces to be perpendicular, and to have a clear of 4 feet ; the exterior faces of the abutments and buttresses to have a battre conforming to the faces of the walls, viz : 1 foot to 48 feet.

There shall be one [arch](#) for a road-way, situated near station marked 674, the span of which shall be 22 feet - (the distance between the buttresses at this point shall be 26 feet, to conform thereto) – and seven arches of 8 feet span each, for the passage of the water in the pond. The [impost](#) of the arch over the road-way shall be at least 12 feet from the surface of the road – the arch semicircular, and the [voussoirs](#) or ring stones 2 feet long, and not less than 15 inches thick ; the [intrados](#) and vault of the arch to have the same character, and dressed to conform in appearance to the exterior surface of the walls ; each arch over the pond to be situated midway between two buttresses – the imposts to be at least 6 feet above the surface of the water when the pond is full ; the voussoirs to be 18 inches long, and not less than 12 inches thick, and the intrados and vaults of the same character as that of the road-way.

The entire superstructure shall be constructed of the best range work, laid in mortar ; the beds, ends, and 1 inch round the faces of the stones, dressed ; each and every stone in a range, shall have an equable bearing, and shall not have a rise of less than 16 inches ; the stones in each course shall have a rise equal to the face stone of that course ; all inequalities or cavities, formed by the irregular ends of the large stones, to be filled with small stone and mortar, and made solid. The ranges in no instance to be broken between the buttresses, but shall extend so as to include one buttress at least. There shall be a sufficient number of headers in each range to secure the stability of the work, and placed at such intervals as the Agent or his assistant shall direct ; and stone not less than 7 feet in length, and of sufficient thickness, shall be placed at intervals between the buttresses, as binders, to unite the two main walls, and projecting into the wall 18 inches beyond the interior faces.

The exterior surface of the abutments and wing walls, shall be similar the exterior surface of the main walls of the superstructure, and the stone forming the faces of the same laid in mortar ; the stone of the interior of the wing walls shall be laid dry – but in every other respect shall conform to the general character of the superstructure, viz : of the best range work, each stone having a solid bed and bearing, and of dimensions suitable to range with the stone forming the face of the course.

The buttresses shall be carried up to within 7 feet of the grade of the Road, where an impost, projecting about 6 inches, shall be laid, and arches, forming an arch of a circle, with verse sines of 4 feet each, shall be sprung up from buttress to buttress, the voussoirs of which shall be 18 inches through, and the character of the work similar in all respects to the arch over the road-way.

The entire superstructure to be surmounted by a coping 18 inches thick, projecting 1 foot beyond the exterior faces of the ring stones of the arches, and formed of stone of such dimensions as the Agent and Engineer or his assistant may direct, and the seams of the coping stones shall be filled and closed with such cement as shall be durable and impervious to water.

From the Boston and Providence Railroad Corporation's Engineer's Report of June 1st, 1834.