

A course of sheet piles 6 inches thick and 9 feet long will be placed along both sides of each pier, and one along the front and sides of the abutments. They are all to be connected with a range of sheet piles of like dimensions, carried along each side of the Aqueduct immediately on the upper and lower sides of the starlings.

The sheet piles must be well jointed and have their outer edges chamfered. When in place their tops are to be fastened to the sills with 9 inch spikes; those across the water ways are to be spiked to sill timbers placed there and secured to piles driven for that purpose.

Masonry.—The stone of which the Aqueduct is to be built must be of the best class of approved, sound and durable gray limestone, free from seams, dries, shakes, sand holes and all other defects, and generally of the dimensions herein stated. The face stones must be of uniform texture and color, laid in regular courses on their natural beds. In the retaining or side walls of the structure, the courses may vary from 15 to 30 inches in height, but the thickest courses above the crown of the arches must invariably be placed lowest, thence diminish upward in regular succession to the course under the coping. The face work of the abutments, piers, the inside face of the retaining walls, and their principal adjoining wings, are all to be of boucharded work, and dressed throughout in such a manner that, when laid, neither the horizontal nor the vertical joints will at any place exceed three-sixteenths of an inch.

As previously intimated, there are to be six arches, each 40 feet span and 7 feet rise. It may now be stated that the two at the south end and the two northern ones are to be circular segments made to a radius of $32\frac{1}{2}$ feet; about four-fifths of each of the other two arches are to be made to a like radius, but the other one-fifth of them, which adjoins the centre or third pier from the south end, is to be made to a radius of $11\frac{1}{2}$ feet, and the springing line in both these cases will be 3 feet lower than that of the other arches, or that of the opposite sides of the same arches of which they form a part.

It being thus contemplated to build the new structure at two different times, and in such a manner as to be in two divisions—that is to say, to execute the works connected with the three southern arches independently of the three at the north end of the structure. This unavoidable course renders necessary the adoption of certain precautionary measures, intended to meet the thrust of the third or northern arch of the first division.

With a view, in part, of effecting this object, the centre pier of the structure, or the third pier from the north and south ends, is to be two feet wider than any of the others, and part of the two adjoining arches are to be made in some respects elliptical. In addition to which, the second and third piers and arches from the south end of the structure are to be connected together by tie rods in the following manner:—

Six tie rods are to be let in, between the two lower courses of footings, to the masonry, of a length to reach from the south side of the second pier to the north side of the third, or what may be called the abutment pier, and the north part of the first division.

These rods are to be arranged in such a manner that three of them will come directly under and within the line of the retaining wall on each side, one being under the centre line of the wall, one two feet from the line of the outer face, and another within two feet of the inner line. They are to be of wrought iron $2\frac{1}{2}$ inches round or square, or of round iron 3 inches diameter, as may be subsequently decided. They may be in two lengths, coupled in an approved manner, by means of a suitable connecting bolt passing through a double eye formed in the end of one half, and a single eye made on the other half of the bar.

The outer ends of each bar to be upset, one end slotted for a key, and the other end screwed to receive a nut and washer. The joints, keys, thread and nuts must in all cases be fully equal to the strength of the bar.

On the upper side of the first course of masonry over the arches there are to be bars of like dimensions directly over those first mentioned, let in their full depth