

corresponding small deflections when loaded, and hence small secondary strains at and near the connections of web members on chords.

The depth of water, force of current, and nature of the bottom were such, that the setting of false work and the assembling of the metal work in place in the usual way would have been difficult, and attended with great risk of displacement by the heavy waves often running down from the lake just above the bridge.

The contractors for the superstructure decided to erect the spans in a sheltered bay, about three miles distant from the bridge, and when fully completed to take them on barges, float into place, and lower on to the masonry.

This was done in the following manner: Two scows built for this purpose, 90' long by 40' in width, were provided with 4 large trestle bents on each; these scows were lashed together with a space of 70' between them. By means of valves, water could be admitted into the hulls, so as to sink them about 2'. When these scows were immediately underneath the span, the water was siphoned out, and the scows rising lifted the span off its false works, allowing the two pannels on either end of the span to project over them.

They were then towed to the bridge site, placed in position between the piers, and by sinking the scows again the span was lowered to its permanent seat on the piers. The details of the scows and trestles used, and the method of placing the span in position between the piers, are fully shown in the accompanying sketch.

Notwithstanding the velocity of the current, the work was very successfully carried out. The 14 spans for the south and middle channel having been floated and placed on piers in 42 days, from October 12th to November 23rd.

Provision was made for storing a number of spans in the bay, when erected, by building the false work or staging, on which to erect them along the shore of the bay, and at right angles to this staging building out into the water two pile piers, or trestles, spaced the length of the spans apart. On these trestles a number of lines of railway iron were laid, and as the erection of each span was completed it was moved sideways out on to the trestles sliding on the railway iron.

Before the work of floating the spans into place began, seven spans had been assembled and rivetted complete, and moved sideways on the trestles into position, to be taken off in turn by the barges, thus enabling the work of assembling and rivetting to progress without interruption.

Spans have before been floated on barges into position, but it is thought this is the first instance in which a large number of spans have been made ready and stored until it was desired to place them on the masonry, and also the first time false work has been so built that the spans when assembled could be moved off it and loaded on barges, without tearing down any portion of the false work or interrupting the work of erection, the usual course having been to erect the span on staging built over the water, and to take down enough of the trestles to admit of the barges being placed beneath the span.

The erection of the superstructure was commenced on the 1st September, 1889, and the last span was floated into position on the 19th February, 1890. Trains going over the entire structure on the following morning. The entire bridge thus occupying ten months and twenty days in construction.