



"Drawing No.2" - chain links and pins

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Isambard Kingdom Brunel's **ironwork** contract and specification for Clifton Suspension Bridge *1840*

The exhibition features the only surviving contract engineering specifications for the Clifton Suspension Bridge, which were only rediscovered in 2006, Brunel's bi-centenary year, are on public view in the library of the Institution of Civil Engineers for the first time.

The drawings reflect the remarkable developments in iron technology and the science of suspension bridge engineering at the time giving a fascinating glimpse of civil engineering in transition.

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6 November until 12 January 2007.

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The approved design for the Clifton Suspension Bridge, 1831
by Samuel Jackson
Pen, ink and watercolour
Bristol's Museums,
Galleries and Archives



Timeline:

- 1829 First competition.
- 1830 Second competition.
- 1831 I K Brunel appointed engineer, work halted by the Bristol Riots.
- 1836 Foundation Ceremony.
- 1839 Tenders for ironwork sought.
- 1840 Ironwork Contract.
- 1842 Piers and abutments completed.
- 1843 Work abandoned as funds are exhausted.
- 1853 Ironwork sold, the chains to the Royal Albert Bridge at Saltash.
- 1859 Isambard Kingdom Brunel dies, aged 53.
- 1860 Brunel's Hungerford bridge demolished, chains sold to Clifton.
- 1863 Work starts, to a modified design by J Hawkshaw and W H Barlow.
- 1864 The Bridge opens at mid-day on 8 December.

The Clifton Suspension Bridge was I K Brunel's first independent professional commission. The project was beset with problems from the outset, not least a lack of funding. The bridge was subsequently completed to a modified design in 1864 by W H Barlow and J Hawkshaw as a memorial to Brunel by his fellow engineers.

The nine drawings are dated 10 November 1840, ten years after Brunel's competition entries and winning design. They are reproduced by kind permission of B R Board (Residuary) Ltd. The beautifully executed pen and ink drawings illustrate the components of the ironwork specification. Subsequent research has confirmed that half of the ironwork for the Brunel design was fabricated and the major part of which was delivered to Bristol before the project was abandoned and the ironwork sold.

An intricate scale model of Brunel's deck design accompanies the exhibition. The model demonstrates the complexity of the design, a prototype Pratt truss. Construction of the model revealed two major errors on the drawings. One of the castings did not have any way of accommodating the bowstring tension members. More significantly, the timber diagonals of the longitudinal truss clash with the bowstring tension members. The timber diagonals were possibly only intended to provide bracing during construction.

The organisers are inviting visitors to the exhibition to give their views on the proposed method of construction, whether it was a viable design and how long it would have lasted.

This exhibition has been commissioned by Clifton Suspension Bridge Trust, with support from Brunel 200, to celebrate the latter part of Isambard Kingdom Brunel's bi-centenary. It was conceived by Alf Perry and designed by Adrian Andrews.