



The Clifton Suspension Bridge is a 150-year-old wrought iron structure designed by Isambard Kingom Brunel in 1830 and opened to traffic in 1864. This Grade 1 listed structure spans 214m across the Avon gorge at a height of 74m above the River Avon. Flint & Neill is employed as the Term Consultant to the Clifton Suspension Bridge Trust to provide specialist advice on all aspects of inspection, maintenance, repair and refurbishment of this historic and iconic bridge.

F&N perform annual close-visual inspections of the bridge and work closely with the Bridge Master and his staff on all structural maintenance issues. A programme of maintenance work has been developed with the Bridge Master in order to ensure the critical parts of the bridge are maintained to the highest standards.

In order to assist F&N with the many refurbishments projects a model of the bridge has been developed so that the load effects of, for example, the surfacing removal/replacement and the removal and replacement of hangers can be modelled as part as an integral part of the design process. Analysis has extended to the effects on the bridge from severe snow loading and vibrations induced by wind loading.

The drainage of the bridge has been improved following the resurfacing of the bridge deck and replacement of the articulated span expansion joints and installation of a bespoke drainage system. The opportunity was also taken to repair and replace some wrought iron parts and timber decking when the bridge was closed to traffic during weekend closures. F&N prepared all the contract documents and specifications and supervised the work during week day and weekend closures.

As part of the special inspections F&N have developed procedures for the bridge staff to remove and replace the wrought iron hangers in order to promote rotation of the hangers at their critical connection with the bridge deck.

It's some time since the stonework of the bridge was maintained and so F&N have worked with local architects and have prepared the contract documents for the restoration of all the bridge stonework. This is being undertaken over a 6 year period which has required approvals from the local planning and conservation officers.

Specialists have been brought in by F&N to assist with special inspections. For example the vaulted stone structure of the Leigh Woods abutments, ultrasonic phased array equipment has been used to inspect the cast iron tower saddles. MPI has been used to check the critical parts of the hangers and magnetic flux leakage procedures are being developed for further hanger inspections by mechanical means.

The continuing day to day advice extends to designing access arrangements into the vaulted structure of the Leigh Woods abutments which were improved when F&N prepared scheme designs which lead to access steelwork being installed in 2009. The Painting of wrought iron structure is an ongoing maintenance requirement and F&N have provided advice to the Bridge Master on the existing and planned maintenance painting of the wrought iron structure.

Client:
Clifton Suspension Bridge Trust

Location:
Bristol, UK

Service Dates:
2006 - Present

Services:
Term Consultant

