Repairs

Bearing Replacement & Concrete Repairs

Neath River Bridge, South Wales

Client
Neath Port Talbot County Borough Council

Principal Contractor
Freyssinet Limited

Works Commenced
Summer 2016

Works Completed
February 2017

Contract Value
£1,200,000

The Neath River Bridge carries the A474 over the River Neath, linking the A465 dual carriageway with Stockham's Corner. Built in the 1970s, it is a three span continuous structure and the main access route into Neath town centre.

Following a bridge inspection on behalf of Neath Port Talbot Borough Council (NPTCBC), it was determined that a full refurbishment was required.

Freyssinet was appointed principle contractor to carry out the works, which included:

- Load testing of the existing scaffold sockets in the deck soffit
- Preparation (blasting) and painting of box girders, bracing and other parts of the beams
- Concrete repairs to the soffit of the deck and cantilever section
- Concrete repairs to parapets
- Concrete repairs to columns and bearing plinths
- Bearing replacement
- Jacking and support system design
- Replace access doors/gates to abutments
- Defoliation works to wing walls

As the bridge is a critical access road, a tight programme was required in order to minimise traffic disruption. The scheme was further complicated by the challenging nature of the environment - Neath River is tidal with the level of the water varying greatly throughout the day. A traffic management system was implemented to avoid total route closure and the work was mostly carried out from underneath the bridge.

Following a detailed survey of each of the piers, removal of damaged concrete was carried out using hydro-demolition by Aquaforce Limited.

Due to the nature of the project, a fast and effective application method was required for the pier strengthening works. Utilising high-performance Webercem spray RS dry-spray concrete, Freyssinet carried out bridge pier strengthening by installing a reinforced jacket around each of the structural piers in the tidal zone of the River Neath, where traditional shuttering and poured concrete method was not practical.

Freyssinet designed a bespoke 'backing-board' system, which allowed the material to be applied in panels during low tide. This reduced the need for full shuttering to be installed prior to works and enabled the fast setting attributes of the concrete to achieve large build-up of depth of material. The accurate control of the dry-spray technique also addressed the environmental issues of working adjacent to water and the riverbank. The application process proved accurate and fast enabling the contract to be delivered to the agreed schedule.

Once the concrete sleeves were cast and cured, the bridge decking was jacked using hydraulic locking collar jacks in preparation for the replacement of 20 bearings. Bearing replacement to the east abutment and the west set piers took place first, followed by the west abutment and east set of piers in a second phase. This allowed the maintenance of longitudinal and transverse fixity, while at the same time ensuring the bridge could be jacked with limited impact to the live or dead load characteristics of the structure.

When the bearing replacement works and subsequent bridge de-jacking were complete, further concrete repairs to the bridge parapet and soffits were carried out, followed by painting works.

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