

Wepener Bridge Concrete Repairs & Cathodic Protection

Tickford Roundabout, Milton Keynes

Client
Milton Keynes Council
Principal Contractor
Ringway
Works Commenced
March 2019
Works Completed
May 2019



Freyssinet was engaged to carry out concrete repairs and on-going corrosion protection to Wepener Bridge, located to the west of the Tickford roundabout on the A422 in Milton Keynes.

Freyssinet's scope of work included:

- Installation of temporary works propping system
- Hydro demolition – removal of de-laminated concrete
- Concrete repairs to 2 No bridge piers
- Cathodic Protection installation – Zinc foil anode system

The works were carried out during one continuous 10-week visit, beginning with temporary works installation. A total of 31 R.M.D props with HFG 1002 jacks and sliding plate system were installed either side of both piers, prior to hydro demolition. All repair works were sequenced due to design constraints resulting in only three jacks being engaged per span at any one time. Once the concrete repairs had taken place and sufficient curing and strength gain was achieved, the Cathodic Protection phase of the works could be undertaken.

All negative, positive, test connections and reference electrodes were installed prior to the Zinc foil anode being applied to each pier, which was coated with a mesh and cementitious topping layer for protection and waterproofing. The monitored Zinc Layer Anode (ZLA) system has a bespoke iGAL battery operated system, which will provide on-going performance data from the reference electrode and its protection of the structure.

The works took place in a challenging and complex environment. There was no vehicular access available to the bridge piers, therefore all heavy plant and equipment had to be lifted over the side of the parapet from a 70mph live dual carriageway, using a 50T mobile crane. A lane closure and IPV were in place for each lift, and the speed limit reduced to 40mph for the duration of the project.

Due to the lack of as-built information for the bridge, a more complex temporary works support design was required for the concrete repairs than first envisaged. It was unclear how the horizontal and vertical forces were being transferred from bridge deck to the piers, resulting in additional sequencing to all repair works. The enhanced design requirements resulted in programme ramifications, but with additional planning the effects were mitigated as much as possible.

Works took place within 2 metres of the River Ouzel, which runs adjacent to the Eastern Pier. Extra care was taken to ensure no waste water from the hydro demolition or repair works contaminated the river. A Siltbuster, heavy duty screening, polythene bund, silt socks and sandbags were all used to successfully prevent run-off into the water course.

Since completion of the project, the pre-commissioning data extracted from the cathodic protection monitoring units is very promising and within the design parameters listed within BS EN ISO 12696. The system will continue to be monitored and the data reviewed by Corrosion Control Services Limited (CCSL).