

St Lawrence Creek Rail Bridge

Girders with encased cathodic protection

Case study



Bridge asset life maximised with built-in cathodic protection

When Queensland Rail undertook a \$28m upgrade of the St Lawrence Creek Rail Bridge, they were committed to implementing a long term, durable, and cost effective solution.

The bridge is a low level structure and most of the superstructure and substructure is in the tidal splash zone. In order to ensure a long service life, Queensland Rail (QR) elected to have a cathodic protection (CP) system in the entire bridge components, including the prestressed precast girder.

When tenders were called, Humes staff quickly realised this was breaking new ground and that the proposed CP system would be difficult to install using normal girder casting processes, because of the potential for damaging the CP anodes and wiring during casting. Humes staff proposed the use of super workable concrete in the tender. This alternative was accepted by QR and the supply of the girders was awarded to Humes. The super workable concrete mix was researched and tested months before construction began.

To manufacture the 80 x 25m concrete girders, Humes addressed all technical issues to ensure the delivery of quality product. The cathodic protection system was fitted into the reinforcement cage then fully tested by approved contractors prior to fitting it into the casting mould. The CP testing method was carried again at various stages of its fabrication, prior to casting, after stripping the product of mould and also once installed at the site. This rigorous testing regime ensured all girders met project specification.

To eliminate the need for double-handling the girders, and lessening the chances of the CP being damaged while in transit, Humes constructed a purpose-built storage facility for the girders at its Rockhampton factory.

Humes was also able to reduce construction times on site by supplying a total precast solution for the supply of diaphragms (which are usually manufactured in-situ), relieving slabs and walkway panels. All products were made at Humes' Rockhampton plant.

Project

St Lawrence Creek
Rail Bridge

Client

Queensland Rail

Product supplied

25 metre concrete girders with encased cathodic protection, 70 precast diaphragms, four relieving slabs, 60 walkway panels



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