

METALOCK UK'S LARGEST EVER METALOCK COLD REPAIR PROJECT CONTINUES

In 1985 Metalock Engineering was contacted by British Rail to investigate the feasibility of a cold repair to the cracked cast iron fascia panels on the high level bridge over the River Tyne, a Grade 1 listed structure.

The high level bridge was opened in September 1849 and spans the Tyne at Newcastle in North East England; it originally carried three rail tracks on the upper deck with a roadway on a lower level. The bridge has six spans of cast iron tied with wrought iron strings supporting the railway.

Metalock surveyed the damaged components and calculated a cost for site repairs. The cost was passed to British Rail who eventually decided against using the Metalock cold repair process, opting instead to use steel plates placed across the cracks and bolted onto the fascia panel.

Eighteen years later, further inspections showed an increase in damage to many of the bridge castings, so a decision, was taken to find a permanent repair solution.

In May 2003 Metalock Engineering was once again invited to attend a site meeting at the bridge with a view to carrying out a permanent repair. A preliminary inspection was carried out and found that netting had been placed over certain areas of damage to prevent items dropping into the river below. This proved that the previous type of repair had been unsuccessful and potentially dangerous.

It was decided that a full damaged fascia panel would be delivered to Metalock's Coventry workshops and repaired without cost, to prove the repair process to English Heritage (responsible for Graded Structures in the UK), the bridge consulting engineers and engineers for the main contractors. The governing bodies were invited to the Coventry workshops to view the repair process being carried out on the panel and view a presentation on Metalock heritage repairs. The visitors were impressed with both the repair and the presentation, showing the full scale of repairs carried out to UK heritage structures.

Further site visits and meetings followed and finally an order was placed with Metalock Engineering UK. The first part of the bridge repair was to the false arches which had suffered cracking close to the edge of the square columns and the only way to repair was to cut out a section, fit a new cast iron rectangular block, secured into position using the Metalock cold repair process and finally dress back to the original form. These inserts varied from 500mm to 1050mm long and 50mm thick.

The consultants were so impressed with the Metalock repair process that additional repairs to a number of cracked support columns, were awarded to Metalock. Each repaired support column had 800mm to 1000mm of fracture and was originally to be repaired by banding using steel collars. Further orders were placed with Metalock to repair the road deck fascia panels, this work commenced 16th May 2005.

It was decided to repair all damaged fascia panels in their relevant positions to prevent further damage occurring during dismantling. Prior to repairs being carried out all panels were grit blasted, exposing even further damage. Three types of repair were carried out. The 1st was a standard crack; the 2nd a cast iron insert and the 3rd a stepped insert.

Patterns were made for the new castings and the cast iron inserts manufactured to the form. In addition to the site repairs a total of 59 cracked and broken cast iron gutters were delivered to Coventry Workshops for repair.

The cast iron gutters had damage in the form of broken lugs and sections completely broken in half. Jigs were made to assist with the clamping and alignment prior to repairs being carried out. The underside of the gutters had standing feet for location purposes, many of which had been damaged. A section of the gutter was cut out to accept a tailed new insert and Metalocked into position.

The order was the largest ever received in the UK company's 59 year history for carrying out repairs using the famous Metalock cold repair process and certainly the longest running ever undertaken. To date, a total of 644 man days were worked in 2005, repairing a variety of cracked, broken or completely missing bridge castings to the road deck level. Work continues.



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Completed in 1849, the Newcastle High Level bridge is the first major example of a wrought iron tied arch or bow string girder bridge

Metalock Engineering UK

Unit H 5
Pilgrims Walk
Prologis Park
Coventry
CV6 4QG
England
Phone: +44 (0) 24 7636 0084
Fax: +44 (0) 24 7636 0190
E-mail: sales@metalock.co.uk
www.metalock.co.uk



REG IN ENGLAND NO: 469627

VAT. No. GB 646 9227 09