

Linney Lane Rail Bridge, Oldham – CFRP Strengthening



The bridge carries road over rail



Preparing the cast iron beam



Applying adhesive



Plates in position

Bonding of high modulus carbon fibre plates to the underside of a cast iron railway bridge enhances the load carrying capacity of the structure.

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|-----------------------|-------------------------|
| Client | Network Rail |
| Consultant | Mouchel Parkman |
| Specialist Contractor | Balvac |
| Framework Contractor | Galliford Northern |
| Value | £185,000 |
| Programme | 3 Weeks / 9 Possessions |
| Completion | June 2003 |

Work commenced on the underside of the cast iron bridge in two stages – the redundant rail side and the live rail side. All carbon fibre reinforced polymer (CFRP) plates and other work to the redundant span could be carried out during normal working hours, however for the live rail span all work had to be carried out during nine-hour night time track possessions.

The works involved grit blasting the beams and then applying a holding primer to prevent any blooming of the cast iron prior to bonding on the high modulus CFRP plates. In total 42 plates of varying lengths and thicknesses were bonded to the downstand beams between the brick arches.

At night time care had to be taken to maintain the temperatures high enough to suit the curing time requirements of the plate bonding adhesive. This was achieved by shrouding the entire bridge in a plastic canopy and using space heaters to raise the ambient temperature. During summer temperatures rose sufficiently to dispense with the use of the shrouding.

Initially the tender had allowed for the replacement of the iron ties between the brick arches. It became apparent during replacement works on the redundant span that the ties were still in good condition and therefore tie replacement on the possession side of the works was omitted.

As the project completion date approached, the client requested that additional painting of all the cast iron soffits was undertaken where plates had been bonded - this work was completed within the possession times already allocated.

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