

Railway Risk - Off-site & Innovation Reduces Programme Risk at Broad Street

OSBORNE

"Many thanks to the whole team for hosting our visit on Christmas Day. It was really fascinating to see the attention to detail, the excellent layout of the site and the good spirit and morale among the team. Brilliant! I was delighted to travel over the bridge and to see the results of all your hard work. Well done to you all and thank you for your dedication and professionalism."

Mark Carne, CEO Network Rail

PROJECT

Broad Street Bridge Replacement

CUSTOMER

Network Rail

LOCATION

Bramley near Winchester

FRAMEWORK

Infrastructure Projects Southern

COMPLETION

January 2017

VALUE

£1.6M

Issue

Rail bridge replacements are risky business and it was critical to passengers near Basingstoke that the Broad Street Bridge was demolished, rebuilt and open to trains within the 52 hour Christmas blockade.

Situated on a rural road with restricted access, the life-expired brick under-bridge required smart design and methodology to overcome the challenging location and time constraints.

Solution

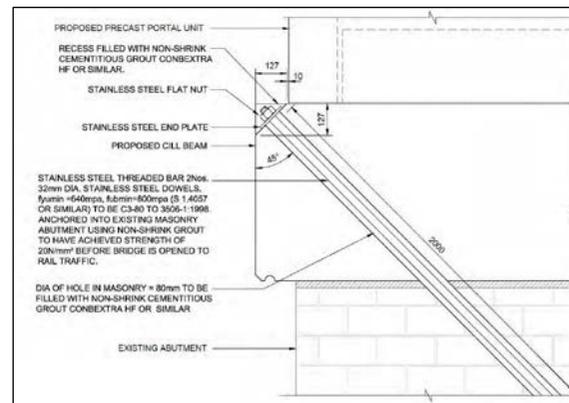
Maximising off-site/off-line manufacture, assembly and testing became central to the design approach from the outset. Collaboration with customer and designer saw pre-cast concrete selected. Pre-cast could be manufactured off-site and pre-assembled nearby to reduce 'on the day' rail possession work. It also gave additional quality, durability and maintenance benefits for Network Rail due to the factory controlled casting environment.

By sustainably reusing the existing foundations we further de-risked and reduced time for

demolition and construction. Retaining the foundations below the 'spring point' of the arch allowed the new supporting cills to be simply placed directly on the existing brickwork avoiding costly construction.

However with the existing foundations being retained, it meant the standard method for installing the cill dowels from above the abutments was not viable. So the team put their heads together to come up with a quick and easy solution that was more advantageous than the original standard detail.

The innovative design was to install the cill dowels on the diagonal from the corners of the cill beams, with the pre-drilled hole through the cill acting as the guide to drill into the abutment. There were several significant benefits as it removed the works from the critical path, removed operatives from the congested area beneath the bridge, and



provided an excellent connection to the solid brickwork. This simple safe solution eased installation and reduced programme risk.

In the lead up to the possession, the new portal frame bridge and the cill beams were pre-cast off-site and pre-assembled on trestles using nearby land. On the night, the structure was simply lifted by SPMT's (self-propelled modular transporters) and driven into position.

Outcome

The bridge was handed back 4 hours before train operations resumed. Success was achieved through collaboration within the Network Rail /Osborne partnership on the Infrastructure Projects Southern Framework.

Co-location and shared outcomes are integral to the single source framework. The result is highly engaged teams who are empowered to develop innovative approaches and solutions.

