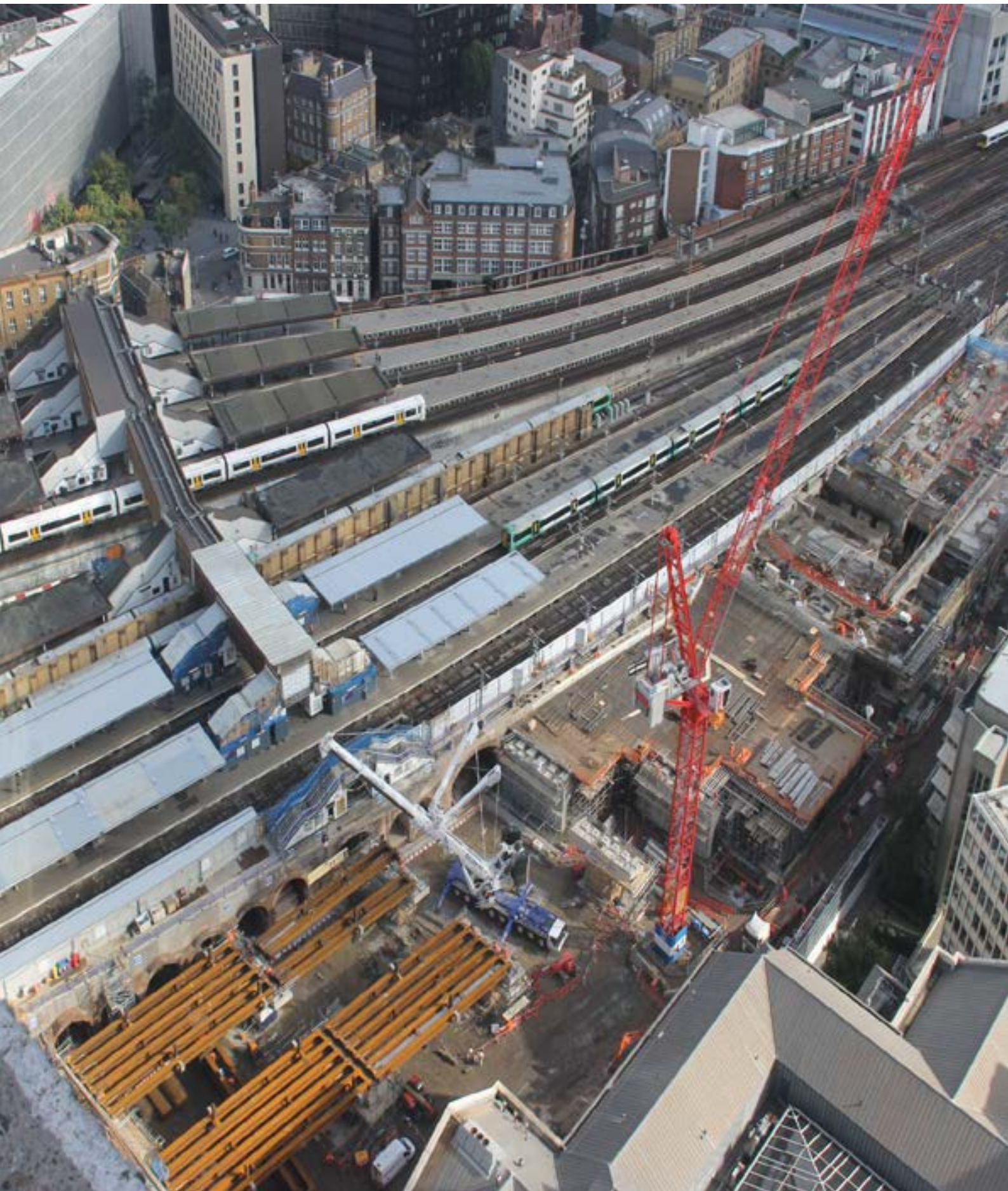
London Bridge Station

Concourse Bridge Decks



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Project data

Client: Network Rail

Main contractor: Costain

Completed: Ongoing – due for complete May 2017

Tonnage: 3,600te

Project overview

London Bridge Station is a major rail hub within the heart of London on the south bank of the river Thames and at the foot of the Shard of Glass building. The station is undergoing a full major redevelopment which is an extremely prestigious project, fraught with logistical planning.

The concourse bridge decks will span the open concourse area of the new station, allowing more line to pass through the station. The concourse bridge decks are made up of 3 or 4 spans of simply supported decks for each rail line. Each bridge deck consists of six plate girders braced and tied at the ends with trimmer beams. Once installed, the beams will be mass filled with concrete and fitted with platforms, rail lines and canopies..

Scope of Cleveland Bridge work

Cleveland Bridge scope of work was the supply, fabrication, trial erection (within the Darlington facility), delivery and installation of 29 plate girder rail bridge decks, consisting of 6 main girders braced together. These girders will subsequently be completely filled with concrete.

The project was split into six phases which were due on site at various planned dates between October 2013 and May 2017. Due to the location and complicated logistics, very careful co-ordination with Costain was required to ensure all steelwork could be delivered into the site and erected either using cranes or SPMT systems.

Fabrication

All steelwork was fabricated and painted (where applicable) in Cleveland Bridge Darlington facility. All of the girders were of a plate girder configuration, the lengths (spans) required were such that they could be complete within the facility and no additional longitudinal splices were required.

The steelwork was prepared using Cleveland Bridge profiling equipment, consisting a T&I machine and saw and drill line with a lot of shop welding. After fabrication, all of the components were put into their pairs and then put together for a trial assembly to check for fit and alignment issues. Upon completion of the trial erection, the deck was separated into the pairs ready for dispatch, Cleveland Bridge also fitted GRP formwork at this time as requested by the client.

Installation

Due to the site logistsics, careful consideration had to be given to the method of installation, for example if a crane could be used, if the site tower crane could be utilised or would it require more than one crane. These considerations had to be made for every deck as each had differing constraints, not only accessing site with the crane, but then using it. Some of the early decks had to be installed using specially commissioned scissor lifts in tandem with SPMT to elevate and position the girders into place on the pier tops, each pair being set up and alignments checked prior to installing the adjacent pair. Whilst others, although being complicated to plan, were erected using cranes of various capacities. Completion of Works – The final Deck was installed December 2016, with the de-jacking to reset bearings on both decks being early 2017 to complete the works.

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