



Client Volker Fitzpatrick for Network Rail

Project Description Lee Valley Viaduct is between South Tottenham and Blackhorse Road stations in London and carries a two track railway across the River Lee and a reservoir site. The original viaduct had metal bridges on brick piers and the track was supported on a combination of ballast and longitudinal timbers. The project involved reconstructing the bridge decks to accommodate modern loading and all with ballasted track. Ten spans over land could be infilled but two had to remain open and be replaced with new superstructures with suitable headroom. Two other spans over river channels denoted Bridge 32 and Bridge 35 were also replaced using complex methodology as demanded by difficult access.

Cass Hayward Role(s)

- Options studies for rail bridge reconstructions and infilling
- Detailed design for construction and independent checking. Design and checking of temporary works
- Procurement of flood & risk assessment due to reduction in clear spans within the flood plain
- Technical advice during construction & site attendance

Project Statistics

- Design and construction programme – May 2012 to February 2017
- Spans 38 and 40 were reconstructed using Network Rail's Standard (SDD) U-type bridge designs with spans of 10m
- Bridge 35 was reconstructed using a weathering steel composite deck-type bridge of 20.3m span on new abutments with bridge skew of 35 degrees
- Bridge 32 was an all-steel reconstruction with three main girders in an half-through configuration of 23.8m span

Special Features

- Infill spans had new decorative brick clad RC walls and a ground slab between the existing piers with foamed concrete as lightweight self-compacting fill
- The new deck steelwork of Bridge 35 was installed underneath the existing bridge soffit and mounted temporarily on a steel trestling system for support during deck casting and jacking later to level during possession. The steel trestling system once encased in concrete formed the permanent new piers, that were then brick faced
- The new deck steelwork of Bridge 32 was erected piece-small during possession due to the access limitation on crane duties. Even the centre girder doubling plates had to be bolted on in situ to limit lift weights.
- UK Rail Industry Awards Outstanding Project (£3-20m) – Entire Viaduct & Bridge 35 separately shortlisted