

River Cynon Viaduct Reconstruction, Penrhiwceiber, South Wales



Client

AMCO Rail for Network Rail

Project Description

This project was for the reconstruction of the 1889 South Wales Valley Lines three-span heavily skewed crossing of the River Cynon. The original bridge had two separate wrought iron simply-supported single track decks following a curved alignment but the old Down-line deck had been made redundant. A value engineering initiative to overcome severe access restrictions on crane duties changed the design from the replacement standard (SDD) Zed decks originally specified to a bespoke continuous half-through steel girder bridge with a composite deck slab. The redesign involved using the redundant deck with a temporary track realignment thus allowing more time for piece-small reconstruction of up-line deck using lighter components.

Cass Hayward Role(s)

- Concept and detailed design of the new viaduct
- Assessment of existing redundant viaduct to sustain traffic loads during the temporary track realignment and design of essential strengthening including deck timbers
- Temporary works design
- Design of grp re-decking of the redundant span

Project Statistics

- Completed June 2014
- Span lengths 14.5m, 14.3m, 14.5m skewed at 61° to retained substructure supports
- 2.6m headroom to river with rapidly varying water levels

Special Features

- New steelwork arranged as a wider deck to encompass the curved track but simplify fabrication
- Deck cross girders part-embedded in RC composite deck to minimise construction depth and preserve soffit clearance
- Heavily skewed ends demanded temporary piling at the live track-side and intricate detailing, modelled in 3D CAD, to ensure fit of permanent ballast retention at site