

# Underbridge 213 Reconstruction – R. Trent Railway Crossing, Gainsborough



## Client

NEI Thompson Horseley Bridge for British Railways Board Eastern Region

## Project Description

UB213 was constructed originally in 1849 with river spans comprising 2 half-through wrought iron box girders, widened using a central truss in 1901 and strengthened in the floor in 1961 and 1989. A new modern bridge was required to enable operation to continue and with increased ballast depth. A 3-month track closure was permitted for reconstruction and the winning design at a tender competition evolved on the basis of an unique methodology that avoided the use of floating cranes. Four replacement spans including twin 50m long main spans were installed using a permanent works design that was integrated with, and dependent on, this methodology

## Cass Hayward Role(s)

- Tender stage design
- Detailed design of the permanent works
- Temporary works design for the demolition and installation
- Site attendance

## Project Statistics

- Completed March 1992
- Main spans 2 x 50m long structurally continuous with 2 x 3.9m deep half-through girders, composite cross girders and RC floor
- Side spans each single simply supported spans 16m long with 2 x 1.5m deep half-through girders, composite cross girders and RC floor
- All spans skewed at 40 degrees

## Special Features

The methodology as outlined below:

- The existing metal spans were utilised as a launch-way for delivery of the new girders on bogies
- Purpose-made gantries operating on the new main girders were used to dismantle and remove sections of the centre girder first to make way for new trimmer girders at piers
- New trimmer girders then installed in deep pier cut-outs for permanent new girder support and to reduce the effects of increased ballast weight and modern loadings on the retained existing piers and foundations
- Gantries then reused to dismantle and remove sections of old outer girders and install cross girders.

## Awards

- BCSA Structural Steel Design Award 1993