River Teme Bridge Reconstruction, Ludlow, Shropshire

CASS HAYWARD
CONSULTING ENGINEERS

Client	Balfour Beatty for Network Rail
Project Description	The reconstruction of the 1853 River Teme under-line bridge was made necessary by the extent of defects to the original cast iron spandrel arch superstructure including corrosion and some cracking which had been partially addressed by emergency holding repairs. A speed restriction had been imposed and the project was undertaken as a matter of expediency with crucial design decisions made early to enable rapid progress. A new bridge deck using Network Rail's Standard Trapezoidal Box Girder Design was chosen so that steelwork procurement could proceed and a decision to construct new foundations meant that the design could progress without reliance on the unproven capacity of the existing abutments.
Cass Hayward Role(s)	• Concept and detailed design of new bridge including track • Temporary works design for installation of entire bridge deck in one lift including special lifting frame • Temporary works design for removal of existing spandrel arch superstructure • Site attendance during possession
Project Statistics	• Completed during Christmas possession 2014 • Construction cost £6m • Original bridge arch 24.4m span, 8m high above water level • New twin track bridge 27m span
Special Features	• New standard design steel bridge deck with bearings mounted on purpose-designed 15m long steel box girder cross-head to transfer loads outside of existing bridge footprint to new substructures constructed in advance on spread foundations outside the footprint of the original bridge • New bridge deck assembled in advance of possession on stallages and fitted together with special restraining/lifting frame for erection as a single element • Removal of the existing bridge utilised an overhead frame system with hangers devised specifically to keep the structure intact whilst lifted out in 2 full length sections after release of the arch thrust at the springings using a special jacking system