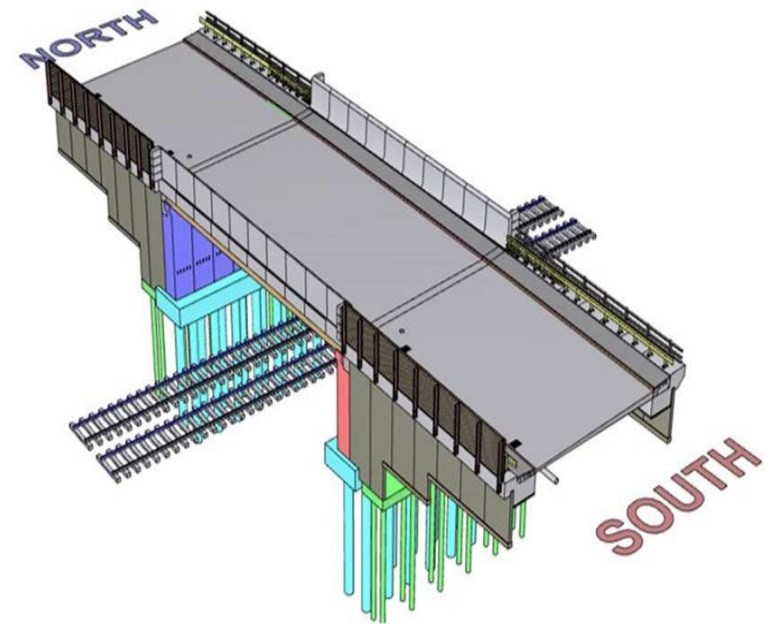


- early contractor involvement
- off-site' modular bridge design
- Network Rail 'outside party' approvals
- no bridge bearings
- foundations piled with trains running
- new slip road opened on time

Case Study

White Hart Junction ECI delivers modular road bridge over railway

PROJECT	White Hart Junction Improvements
CUSTOMER	Swindon Borough Council
LOCATION	Swindon
CONTRACT	NEC Target Cost
COMPLETION	2022





Need

Meeting the housing shortage needs new developments on the outskirts of our cities and towns. Those development must be integrated with good road infrastructure.

At Swindon the council are creating one of the largest greenfield developments in the country. The New Eastern Villages (NEV) will cover 700 hectares with 8,000 new homes, schools, and facilities. Significant road enhancements were proposed including a £30m scheme at White Hart Junction which acts as a conduit between the NEV, Swindon and the A419 connecting to the M4 and M5.

A critical element of the junction upgrade is a new A419 slip road crossing over the Great Western Railway.

From the outset, buildability was a central design consideration. The methodology had to gain technical approval from Network Rail (NR) and the slip road had to be adopted by National Highways.

Swindon Borough Council (SBC) took the early procurement decision to use the National Highways CDF framework and add an Early Contractor Involvement (ECI) stage into the contract with a hold point prior to Design and Construct.

Solution

The ECI phase allowed designer Atkins to work hand in hand with us. Together we had to contend with a busy rail route from London to Bristol, overhead line equipment, and multiple stakeholders.

Working in collaboration, a fully modular bridge was proposed.

A modular design dramatically reduced work adjacent to the railway as well as being economic and safe to install. Elimination of bridge bearings and the factory-controlled quality also contributed to creating a low maintenance structure over this main line route.

- Every structural element was precast: the abutments; parapet; deck beams; and the vertical supports to the reinforced earth approach roads.
- Bridge bearings were eliminated to reduce maintenance.
- A standard piling rig sitting on a specially designed secure platform enabled daytime working with trains running.
- Temporary works were designed in-house by Octavius with 3D modelling and animations to aid NR approvals.

Outcome

ECI brought together the design and delivery teams early in the process to develop a design that fully considered the construction methodology.

- Bulk construction activities were moved off-site.
- Modular elements were installed incrementally using standard maintenance line blocks without the need for long blockades.
- SBC's decision to procure the project through the National Highways framework brought further benefits:
- ECI facilitated a highly collaborative solution with the protection of a hold point to review the design and construct element of the contract.
- As approved suppliers for both Network Rail and National Highways we understood their requirements and governance processes to streamline design and delivery.

Off-site modular construction has safeguarded the operational railway and kept people moving reliably throughout construction. The new junction and slip road to the A419 now connects the New Eastern Villages community.