

# Bridge to future development



The steel bridge forms part of a new gyratory system that includes the existing bridge.

## A single-span steel bridge forms a central element of an important junction improvement scheme in north Kent.

Straddling north Kent's busy A249, a £22.6M scheme, being undertaken on behalf of Kent County Council (KCC), will see an existing junction significantly improved with the addition of a new steel bridge.

The current A249 and Grovehurst Road interchange, located a few miles west of Sittingbourne, has a 'dumbbell' configuration, whereby a single bridge spans the main highway with roundabouts at either end.

In order to increase capacity and dispense with the roundabouts, a second bridge is being constructed to form a large gyratory system over the A249. This new one-way traffic system will include the existing bridge, which is being repurposed as part of the scheme.

The project is following a pattern that will be seen throughout the country, as infrastructure is upgraded in order to accommodate increased traffic volumes generated by new housing developments.

With a government commitment to deliver 1.5 million new homes over a five-year period, councils up and down the country, alongside developers, are

busy looking for suitable land meet their expected targets.

Wherever these projects are located, the local road network invariably needs improving and this is what's happening in north Kent, where the Borough of Swale has plans for more than 15,000 new homes before 2040.

Just over 4,000 of these homes are planned for the area near this junction. It is known as the A249 corridor and it is located between the M2 junction in the south and the Isle of Sheppey Crossing to the north.

Work started onsite during August 2023 and by the new year (early 2024), the major earthworks had been completed and piles installed for the new bridge's two reinforced concrete abutments.

The new bridge, which will accommodate three traffic lanes, is a single-span steel structure, consisting of eight 45m-long main beams.

The length of the bridge has provided the scheme with some future-proofing as the span is long enough to accommodate extra lanes, if the A249 was ever upgraded from its current two lanes to three lanes in each direction.

Once fabricated and painted, the eight bridge beams were assembled into four braced pairs, which were then delivered to site on extendable trailers.

With a road closure of A249 in place, there was room for a 750t-capacity mobile crane to be positioned for the main lifting duties and also space for the steelwork delivery trucks.

Logistics was a key challenge during the bridge beam installation and keeping disruption to minimum was vital. Traffic was able to be kept flowing during the road closure as vehicles were able to bypass the construction area by using the new and recently completed slipways. This allowed traffic to travel up and over the junction, while the bridge was being installed.

Each bridge beam weighed 29t, but as each braced section was delivered to site with its deck formwork in place, the final weight had to be lifted into place, which was 75t per pair.

The first pair of beams was lifted into place and installed onto the abutments by 2am on the Saturday morning, just hours after the road closure had begun. By 6am, Nusteel Structures, who were overseeing the lifting operation on behalf of Jackson, had the second pair in place.

Lifting large steel elements is always weather dependent and later in the morning the wind speed increased to such a degree that the final two bridge beam pairs could not be installed until later that



**FACT FILE**

**A249 and Grovehurst Road Interchange Improvement Scheme, Kent**  
 Main client: Kent County Council  
 Main contractor: Jackson Civil Engineering  
 Structural engineer: Systra UK  
 Steelwork contractor: Nusteel Structures  
 Steel tonnage: 250t

night when the wind had dropped.

Jackson Civil Engineering Senior Project Manager, Richard du Preez, says: “Everyone in the project team across all departments pulled together in the months before the bridge lift to ensure that procurement, planning, and road and structure facilitating works were undertaken and delivered in time to allow the weekend install to occur. It was a great team effort.”

The project team also had two 100t-capacity mobile cranes on site. These units were used to install the steel stiffeners located between each pair of beams, as well as installing the remainder of the formwork for the concrete deck. Their installation work also included the cantilevering formwork, which is positioned along the two outer most beam edges and is designed to prevent objects from falling off structure.

Summing up, KCC’s Cabinet Member for Highways and Transport, Neil Baker says: “The A249 Grovehurst Road Improvement Scheme will see a new bridge over the dual carriageway below, helping to reduce congestion and make journey times more reliable.

“These road improvements, funded through the government’s Housing Infrastructure Fund and developer contributions, will unlock extra capacity on the area’s roads, delivering on our ambition to put infrastructure in place first before planned housing.” ■

**Steel provides a quick solution**



According to the project team, a benefit of a steel bridge solution was the fact that the beams were all being fabricated offsite at Nusteel Structures’ Kent facility, while the preparatory works were ongoing.

Time is of the essence on all projects and this one is no different. Once the supporting abutments were completed, the steelwork was

ready to be delivered to site and installed during a single weekend road closure, helping to keep the programme on schedule.

Another design benefit of using the material is the fact that it has allowed the bridge to be a single-span structure that does not need a central pier, which has meant fewer road closures and less construction. ■



The bridge beams are long enough to accommodate extra traffic lanes if the A249 was to be upgraded.



Using a 750t-capacity crane, the eight beams were lifted into place in pairs.