

A2M2 Medway Viaduct, UK

Client: Highways Agency
Contractor: CSM, JV
Location: Kent, UK
Products: Megashor

Case Study

A high load capacity Megashor truss and prop solution, devised by RMD Kwikform, was used by joint venture contractor, CSM, for the construction of approach viaducts for the new M2 Medway Bridge, as part of the Cobham to Junction 4 widening project.

The contract involved the construction of 82-metre span in-situ concrete viaducts, supported on huge Megatrusses and inclined Megashor props. It also called for the provision of wall, slab and cantilevered deck formwork for the post-tension twin box girder viaduct. In addition, the contract utilised substantial quantities of RMD Kwikform's Kwikstage shoring system, Superslim Soldiers and Alform Beams, Alsec under-slab access and the Paraslim and Weblite modular composite bridge deck formwork systems.

Eight 6.3-metre deep, 128-metre long Megatrusses were used for each span, each having a bending moment capacity in excess of 13,000kNm. The Warren-type truss was constructed from standard modular Megashor sections that work in tandem with Superslim Soldiers lacing and standard Rapid Tie and flat braces, to provide the required lateral stiffness and wind resistance. In the most highly loaded areas of the truss, standard 1,000kN Megashor sections were replaced by 1,400kN Megashor Plus that were designed especially for this contract.

The Megatruss was assembled at ground level and raised into position. Climbing Jacks were mounted on 100mm square climbing bars restrained to the viaduct piers. Once raised to working level, the inclined Megashor props were fixed to the pile caps at the base of the piers and winched up and fixed to the truss lower chords by the insertion of 100mm diameter high yield pins in special node connections. The base slab was then cast, followed by the walls and top slab.

The inclined props incorporated specially designed base units that enabled the use of 300-tonne hydraulic jacks to measure and adjust prop loads and extensions continuously during sensitive stages of construction.

Dismantling was achieved by simultaneously unloading the props using these hydraulic jacks. The props were lowered to the ground and removed. The trusses were then brought down two metres, using the climbing jacks, before being secured in

place to allow inspection of the base slab soffit. The assembly was then lowered to the ground where the trusses were split into three sections for advancing using multi wheeled transporters in true "Thunderbirds" style. Any length adjustment to accommodate the different lengths between piers was then carried out, and the erection sequence was repeated for the next span.

In total, the contract called for 16 trusses and 12 sets of four raking props. This compares with an earlier proposal that would have necessitated 24 trusses and 12 sets of six props. The new proposal was selected due to the significant reduction in material and transport costs, less weight and substantially reduced labour and programme requirements.

