VolkerLaser

East Cliff Viaduct

VolkerLaser was contracted to undertake bearing replacement and associated works, including jacking and temporary works, on the East Cliff Viaduct in Dover.

The East Cliff Viaduct is a seven span, 348m long viaduct connecting the A20 at promenade level to the A2 on the cliffs. It carries a 3-lane carriageway (of varying width) and 2m wide footways on each side.

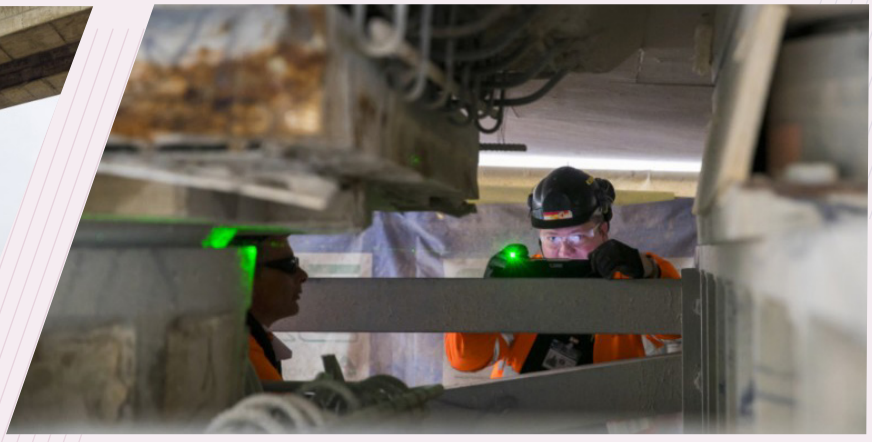
In plan, the structures follow a 1,015m radius circular curve, supporting a three-lane, 10m-wide carriageway over the first three spans. The alignment then transitions on Span 4, widening to a three-lane, 12m-wide carriageway along a tighter 117.5m radius curve over Spans 5 to 7.

The structure was originally constructed in 1976, but due in part to age and the costal conditions, the bearings were identified as requiring replacement. The bearings across all piers were showing significant deterioration, primarily through corrosion.

Building on our established relationship with the Port of Dover, our specialist team undertook eight months of Early Contractor Involvement (ECI), including structural monitoring, temporary works design and fabrication, and the development of a bespoke jacking system to address unequal loading during lifting operations. Monitoring of the bridge continued throughout the process.

All six piers on the viaduct required bespoke temporary works systems to facilitate the replacement of the existing non-functioning bearings. As well as the bearings replacement, the scope of works included the reconstruction of the bearing plinths and localised concrete repairs to the top of the piers. Deck drainage was also to be reinstated where disturbed by the other works.

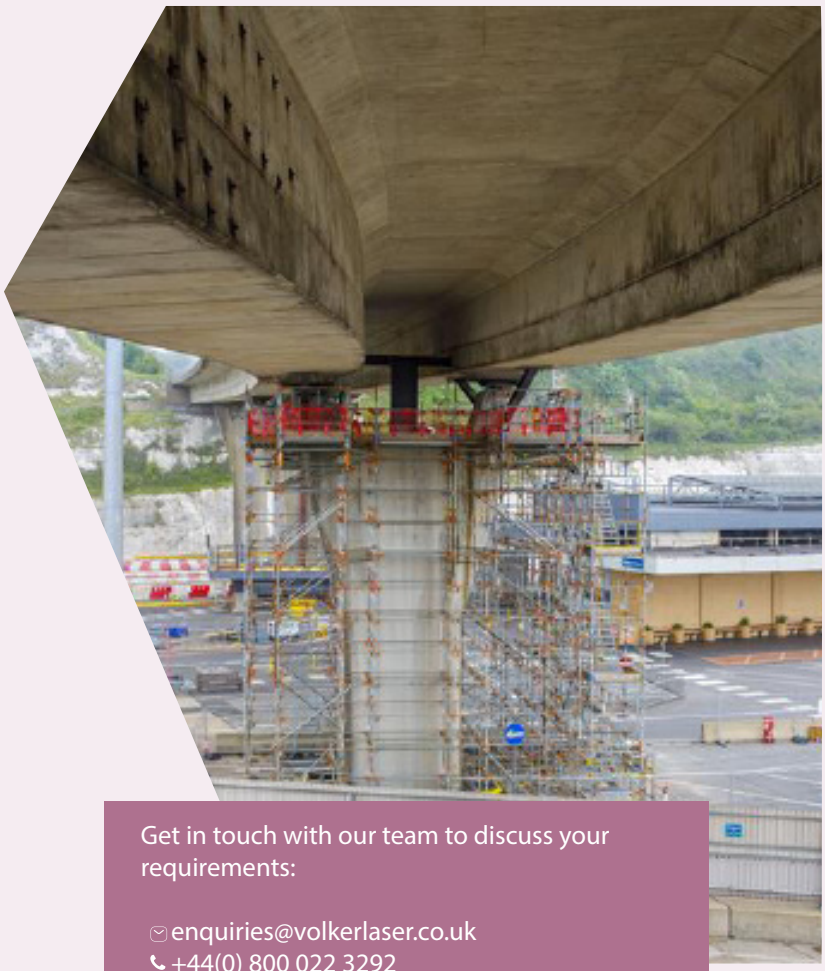
At the lower piers, a trestle system has been designed to bear directly onto the pile cap. At the taller piers, a high-level solution wa required to minimise disruption to the port. As a result, a hanger frame solution was developed. The 50-tonne hanging frame was constructed at ground level on four concrete plinths, and the hanger beams, which connect the frame to the structure, were pre-installed onto the pier support 13m above the hanging frame.



The hanger beams and hanging frame were connected using eight Dywidag bars, each fitted with a 60-tonne hydraulic jack. All jacks were synchronised to lift the frame in 250mm increments to within a ±1mm tolerance. The lift took two days, with one additional day to secure the frame. Despite encountering complex and unforeseen engineering challenges, our specialist team provided innovative solutions throughout. While the programme was extended, it was efficiently managed by our operational and commercial teams. Ongoing collaboration with National Highways, Costain, and the wider VolkerLaser team was key to the project's successful delivery.

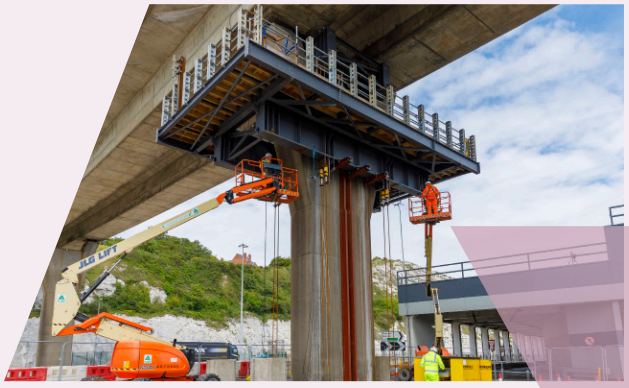
"This project and the team has had to contend with an assortment of unexpected challenges and constraints be it existing conditions being widely different than expected, water cascading over the piers, and hidden asbestos, to name a few. Not only were these resolved in a very agile manner by the collaborative team including, the Port of Dover, designers, National Highways, VolkerLaser and others but they learned from these quickly, mitigating those risks for the remainder of the works completing three months ahead of the extended schedule and under budget."

Marcus Hollan
Senior project manager, Costain



Get in touch with our team to discuss your requirements:

enquiries@volkerlaser.co.uk
+44(0) 800 022 3292



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