

## A1035 HULL BRIDGE VIADUCT - TICKTON BEARING & JOINT REPLACEMENT WORKS



### Project Brief

Supply and installation of 460 no. bearings (18 no. mechanical guides, 46 no. pots and 396 no. elastomeric bearings) and 2 no. USL Ekspan TF900 expansion joints.

### Project Team

**Client:** East Riding of Yorkshire Council  
**Main Contractor:** North Midland Construction  
**Sub Contractor:** USL Ekspan

### Background Information

The Tickton Viaduct carries the A1035 between the towns of Beverley & Leven in the county of East Yorkshire. The 180m long structure comprises of 10 simply supported spans on 9 piers and 2 abutments. In cross section, the bridge deck comprises 23 no. pre-stressed concrete beams on elastomeric bearings with upper sliding surfaces. A reinforced insitu concrete deck is cast on top of the beams with an asphalt two-way single carriageway and walkway.

USL Ekspan undertook an inspection in 2015, for design consultant Mason Clark Associates, and identified deficiencies with the structure's existing bearings and joints. North Midland Construction awarded USL Ekspan the contract to carry out full bearing replacements on all 9 piers, on both abutments, and replacement of both the viaduct's finger joints.

### USL Ekspan's Workscope

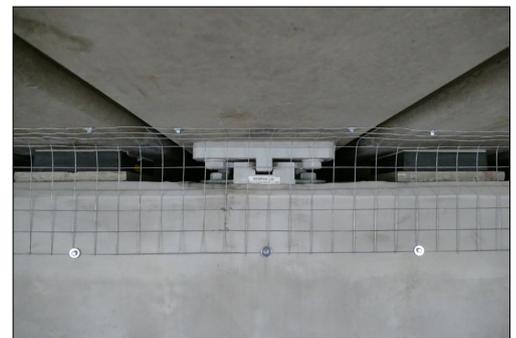
USL Ekspan's scope of works included: bearing, temporary works and scaffold design; manufacture and supply of elastomeric and mechanical bearings; scaffolding and temporary works installation; hydro-demolition works to remove the existing bridge bearings; installation of the new bridge bearings; concrete reinstatement local to the piers; removal of temporary works; replacement of old finger joints with USL Ekspan TF900 joints during night phases whilst bearing installation phases were undertaken during the day.

This project presented a number of challenges and unforeseen circumstances. These included; managing multiple subcontractors whilst working at several pier locations simultaneously; maintaining a tight programme to ensure the project spend was completed in line with the client's fiscal budgets; difficult access for plant and equipment when working close to the river bank; certain operations governed by tidal working; adverse weather conditions with snow experienced in early spring; unforeseen condition of steel work of pier reinforcing when completing concrete activities; minimal space between bridge pier and soffit for temporary works design and the uncovered alignment of the existing precast concrete beams.

USL Ekspan overcame all challenges, the most notable being, the offer of a value-engineered solution in place of the proposed propping system which would have inflated costs if a cofferdam had to be installed at the river piers. Bespoke jacking of 44 specially designed low-height jacking cylinders with spherical heads and mechanical lock enabled direct jacking of the structure from the low bearing shelf. All works were carried out successfully within time and budget, and digital monitoring throughout operations ensured no additional stresses were induced in the structure.



*Bespoke, low-height abutment jacking accommodates the structure's height restriction between bridge pier and soffit*



*New elastomeric and guide bearings installed complete with pigeon netting*



*TF900 expansion joint installed*

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