

## PUMPHOUSE VIADUCT - A5189 ST. PETER'S BRIDGE BEARING REPLACEMENT



### Project Brief

Bridge jacking and temporary works design and installation.

Design, manufacture and installation of 16 no. stainless steel free sliding spherical bearings and 8 no. stainless steel guide spherical bearings.

### Project Team

- Client:** Staffordshire County Council  
**Main Contractor:** CLM (Curral Lewis & Martin Construction Ltd)  
**Sub Contractor:** USL Ekspan

### Background Information

Pumphouse Viaduct (consisting of 7 piers between the abutments) lies on the western section of the A5189 St. Peter's Bridge and is one of the five structures that forms part of this bridge.

St. Peter's Bridge carries the A5189 over a flood plain and the River Trent to the south east of Burton Upon Trent town centre, with Pumphouse Viaduct located over the Trent Washlands.

The bearings on Pumphouse Viaduct and St Peter's Bridge articulate on a combination of fixed, free and longitudinal guided spherical bearings. The free sliding spherical bearings at all of the south piers and abutment positions of Pumphouse Viaduct were severely corroded, due to water ingress from the above leaking expansion joints, as were a number of spherical guide bearings on the north of the structure. USL Ekspan's bearing inspection in 2010 had highlighted similar findings as well as stagnant water that was visible on a number of the pier tops, causing spalling of concrete and the bearing grout beds. These attributes significantly affected and inhibited bearing functionality necessary for the damp environment they were designed to operate in.

### USL Ekspan's Workscope

With a £6.1 million scheme for Burton Gateways Investment secured for essential strengthening works on all five structures for St. Peter's Bridge, CLM (Curral Lewis & Martin Construction) contracted Ekspan to replace the bearings on Pumphouse Viaduct.

USL Ekspan designed (to EN1337 standards), manufactured and installed 16 no. stainless steel free and guide spherical bearings. The programme of works for this installation was completed in two phases with careful planning of temporary works, bridge jacking and bearing removal sequencing with Mabey Hire to constrain and monitor the structure. Works on this project included: design and installation of temporary works and bridge jacking; hydro demolition of the top piers and abutments; removal of old spherical bearings; installation of new bearings; recasting of concrete; shuttering and grouting of new bearing beds and final de-jacking of the bridge.

The project's location had been exposed to unpredicted snow and periods of flooding, despite this USL Ekspan successfully completed the bearing installation ahead of schedule.



*Super props temporarily support the bridge deck during bearing installation*



*New stainless steel spherical bearing - pre-concrete works*



*Completed installation of stainless steel spherical bearing*

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