

A1 Blaydon Haughs Viaduct - Mechanical Movement Joints

Refurbishment of two, six element mechanical expansion joints has now been completed on the A1 trunk road bridge over the River Tyne. This was the first project of a new joint venture between USL BridgeCare and RW Engineering group. The joints were originally supplied in 1989 by RWE subsidiary RW Sollinger Hutte; they were installed on the A1 blaydon haughs viaduct in Gateshead, Tyne and Wear, a stretch of road managed by A-One for the highways Agency, who are responsible for this stretch of the trunk road. The new joint venture with the manufacturer RW-SH wills all USL BridgeCare division to extend its service and product portfolio.

This scheme required the design and fabrication of two special temporary lamellae suitable to be dropped into the joint in order to carry traffic loads, and develop the dismantling and assembly techniques to ensure the work could be carried out in a series of limited working hours overnight carriageway closures.



The project started on the 3rd September 2005 was completed well within the initially allotted 12 week period. The scope of work started with the initial removal of the concrete from around the joints. The following stages of work included the various stages of dismantling the joint, all of which was done from underneath the joint in the expansion cavity while the carriageway was fully closed.

This closure allowed full access for a 30 tonne crane that is needed to remove the existing 12.2 metre long lamella and replace with the specially fabricated temporary works or repaired lamella. These lamellae each have an approximate weight of one tonne. This work is done in a sequence that meant the there was sufficient lamellae whether old, repaired or temporary fixed into place so that the carriageway could be kept open during periods of repair.



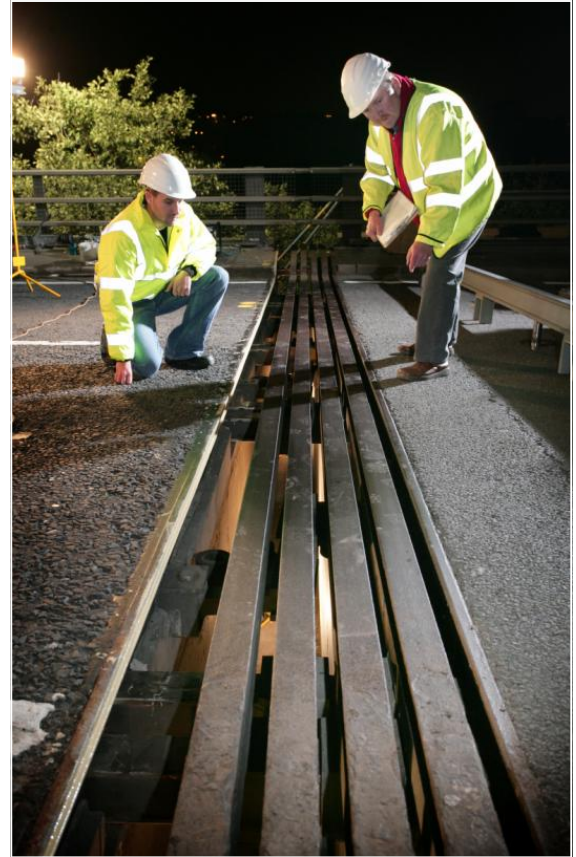
In order to complete the repairs to the lamellae and keep the bridge open outside of the times of on-site operations the two temporary lamellae were utilised. The lamellae were then transported to an off site fabrication facility and carefully inspected in order to fully assess the extent of the work needed to each, allowing repairs of each element comprehensive. All weld positions between the lamella and saddles, which sit on the guide bars, were gouged to remove existing weld and fatigued metal around the crack. RW-SH coded welders from Germany then built back the repair. In one case a 2500mm length of 80 by 80mm Type EN1024 steel was cut out and replaced with new due to the extent of the defects.

All weld repairs are inspected and tested by A-ONE's representative from Sandberg's before the complete lamella is released for shot blasting and factory painting with a 3 coat epoxy/MIO/polyurethane system to the Highways Agency specification. By mid October the north bound carriageway had been reassembled using only seven carriageway closures with all work being completed well within each permitted closure times including new replacement seals and, with the south bound carriageway completed by mid November. Further work is carried out to replace the bearings and pads though all from below while the traffic flows above. All parties agree this solution and methodology for repair will ensure the in-service life of the joint for the foreseeable future though provision has been made for detailed inspections and possible replacement of PTFE bearings 5-7 years after completion.

USL's joint venture with RWE is intended to allow USL BridgeCare to increase its ability to cater for the more demanding needs of the bridge engineering industries. Incorporating the expertise and renowned quality of the RWE joint and bearing systems complimenting the service and product range already offered by USL into a more complete package. This venture will increase USL BridgeCare's ability to cater for the more demanding needs of the bridge engineering industry. The A1 Blydon project has confirmed collaboration is capable of operating in an extremely effective manner, catering for the needs of the individual client, whilst also benefiting both parties creating a strong alliance to meet any future demand for similar projects.



The partnership between USL and RW-SH will work as it has on the A1 Blydon Haughs Viaduct project, with RW-SH supplying specialist parts as well as providing skilled labour. USL BridgeCare will work alongside RW-SH on site to provide necessary local support, whilst also acting in a project management and consultancy role to liaise with clients. The primary geographic focus for this partnership is in the UK and Ireland, largely in part to USL BridgeCare's expert local understanding of the requirements of Highway Agencies and the demands of the customers within this area.

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