



## SPOTLIGHT ON

# READING BRIDGE

## REFURBISHMENT AND STRENGTHENING

VolkerLaser was contracted to deliver major strengthening works to Reading Bridge, a historic spandrel arch structure, which forms an essential part of the strategic transport network in Berkshire.

Originally opened in 1923, Reading Bridge was built using an early form of reinforced concrete developed by the French engineer, Francois Hennebique. Major strengthening works were identified in 2013, by Reading Borough Council, in order to extend the longevity of the structure. The bridge provides a vital transport link to thousands of motorists within Berkshire, carrying around 24,000 vehicles each day.

Due to the bridge spanning the River Thames, VolkerLaser worked closely with the Environment Agency, agreeing that initial inspections should be carried out to evaluate the full scope of works needed. A team installed a scaffolding system to allow for a visual inspection, as well as tap testing. These tests identified hollow points across the whole structure, which were subsequently marked and broken out ready for repair. Throughout these inspections, the VolkerLaser team developed a unique knowledge of the structure, which aided in the programme planning process, mitigating any potential delays.

The next phase of works involved 1,500m<sup>3</sup> of foam concrete being pumped into the south approach ramp and cored through the deck before it was filled in from the top. Following a three month waiting period, to allow the concrete to settle, the team then applied a grouting product, as well as using a sheer bolt system to thicken the abutments, strengthening the entire structure.

VolkerLaser proposed an innovative method of carbon fibre strengthening using thin, strong and flexible carbon fibre plates, designed and installed to provide a cost effective solution without detracting visually from the original design of the structure. The plates were applied to the soffit of the bridge deck and beams, which also increased the carrying

capacity of the bridge. The team also carbon wrapped the spandrel columns to assist with the management of the constraints of the loadings and the vehicles above.

The VolkerLaser team maintained a proactive approach throughout, creating a collaborative relationship with Reading Borough Council to ensure planned closures and technical issues were addressed regularly in order to maintain a smooth operation. As part of the programme, VolkerLaser was permitted to run a series of off-peak lane closures, including some night closures, in order to carry out works under the centre line of the carriageway. A full two-week closure was included in the works, in order to strip the bridge deck and install carbon fibre rods to waterproof and strengthen the beams. In order to minimise the number of motorists affected by the works, VolkerLaser worked with the council, planning the closure so the second week coincided with the school half term, when traffic levels were considerably lower.

The project was completed within 32 weeks - ahead of schedule, exceeding all customer expectations. The reinforced and stabilised Reading Bridge is now able to offer a safer, more durable and trusted route across the River Thames for thousands of vehicles every day.

**£2 M**  
CONTRACT VALUE

**32 WEEKS**  
PROJECT DURATION

**1,500M<sup>3</sup>**  
FOAM CONCRETE



**REFURBISHMENT AND STRENGTHENING WORKS AT READING BRIDGE, INCLUDING WATERPROOFING AND CATHODIC PROTECTION.**

