



OSBORNE

Guaranteeing Quality Gade Valley Viaduct Structural Repairs



PROJECT

Gade Valley Viaduct Strengthening

CUSTOMER

Connect Plus M25

LOCATION

Kings Langley M25/J20

Issue

For Road and Rail infrastructure owners and operators assuring their networks stay open and safe is mission critical.

Structural assets like bridges and underpasses play a crucial part so it is paramount that quality is controlled throughout their construction, maintenance and enhancement.

Focussing on quality control, how can we guarantee compliance?

Solution

At Osborne we have developed a quality control process which exploits Building Information Modelling (BIM) technology. A simple 3D Model of the structure is produced and Autodesk BIM Field and Glue used to record and assign all quality data to the model relative to the respective location.

Our electronic process is more efficient for viewing, storing, verifying and auditing quality data. Importantly too, the output is a 3D model record which provides customers with valuable information for future maintenance and asset decisions.

Take the structural strengthening at Gade Valley Viaduct on the M25 as an example...

During a three year programme we had to carry out fatigue strengthening and latent weld defect repairs to the 11 span, 8 box girder viaduct at Kings Langley.

The challenge was to control quality during installation of 2500 strengthening plates, 48,000 bolts and 750 weld dressings together with 1,000 paint sections. A complex task!

With over 50,000 strengthening components needing an individual quality record, a rigorous control process was essential. The question was how to efficiently monitor quality and record compliance? The answer was to use BIM!

What did we do? The first step was to create a 3D model of the bridge using Light Detection and Ranging (LIDAR) scan. LIDAR used the return time of laser pulses to accurately map the structure.

The resultant survey was imported into modelling software (SketchUp Pro® and Autodesk Navisworks Manage®).

The final step was to upload the 3D model to BIM programmes (Autodesk BIM 360 Glue® and Field®) and adhere the specification, drawings and check sheets to each of the 50,000 strengthening components.

With the model in place Suppliers tagged as-built quality check lists, photographs and test results to the model as work progressed. Records were monitored remotely back in the office saving valuable time and aiding audit.



A key BIM benefit was the seamless transfer of information between all parties, particularly where technical queries needed to be raised and responded too. These were all carried out through the BIM portal, providing location specific as built records.

Outcome

For our customer (Connect Plus and Highways England) the BIM quality process provides high levels of assurance. In addition, the 3D model links to a comprehensive as-built database to aid future asset decisions.

Incredibly too, at Gade 2500 work hours were saved through efficient use of BIM for quality recording.