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ECS INSTALLS NEW COMPOSITE BRIDGE AT MAPLEDURHAM

Submitted on Thu 25 Feb 2016



ECS was recently commissioned by the Environment Agency to design, supply and install a new bridge at their site at Mapledurham on the river Thames. The project was to replace an existing aging bridge structure that was also strategically hampering other important upgrade and maintenance work required by the Environment Agency. Unlike traditional bridge structures however, this one is made from an innovative, maintenance free composite material with a 50 year guarantee.

This bridge replacement contract had to achieve a number of objectives; to improve the capacity of the local access routes to the Mapledurham weir and lock complex which is part of a much larger refurbishment project taking place across a number of sites on the River Thames and to upgrade the size and strength of the existing bridge structure, which had insufficient capacity for modern vehicles.

To achieve all this the project required an innovative solution that would also take account of the many challenges involved in replacing the bridge; such as the remote site location, limited vehicle access and short time frames required for installation.

To meet these challenges ECS turned to a highly innovative bridge construction technology invented by Fibrecore Europe. Fibrecore uses fibre-reinforced polymers (FRP) to build complete bridge structures at its plant in Holland. The bridge deck is moulded in a single piece, with an integrated bonded anti slip wearing surface. The FRP deck is custom manufactured to have the most efficient combination of strength and stiffness for the particular bridge span and loading required (in this case 13m span and 60t loading) and this results in FRP bridge decks that are around 1/3 the weight of steel or concrete equivalents, offering savings on civils and installation costs. Infracore bridge deck sections up to 48m long can be manufactured in a single moulded piece. With no physical joints, and no exterior paint finish required, the bridge decks are maintenance free and are expected to have a service life in excess of 100 years.

Use of the FRP technology and off-site manufacture approach meant that the composite bridge deck could be constructed and delivered in a very short period of time. Fibrecore Europe has built over 450 bridges installed across mainland Europe, this approach to bridge building however is relatively new to the UK. After several successful projects, ECS is now the nominated agent and supplier for Fibrecore products to the UK.

Due to the nature of the bridge location, access to the Mapledurham site was very restricted and meant that getting a large structure such as a bridge to the site via lorry wasn't feasible. It also meant that getting access for large vehicles such as the lifting cranes to place the bridge into position needed their own separate set of considerations.

As part of the overall turnkey solution, ECS had to create a 350 metre temporary road to allow access for heavy cranes of up to 90 tonnes capacity to facilitate the final stages of the bridge installation.

The use of a lightweight Infracore FRP deck meant that ECS was able to deliver the bridge to site by floating it on a barge down the Thames.

The installation itself was relatively straightforward, with site preparation taking up a large proportion of the build time; the old bridge had to be demolished, new foundations piled and finally casting the new concrete caps around them. Once the foundation preparation was completed and the new Infracore Bridge was craned off the water, the actual installation was completed within a day – a key advantage in utilising a pre-built bridge solution.

ECS's installation of this new bridge provided the Environment Agency with greatly improved access to the weir and lock complex, which in turn allowed additional vital maintenance work in the area to be completed. It also provided a new structure that will last for the next century with little or no maintenance, giving the Environment Agency a rapid solution with very long term benefits.

Website: www.ecsengineeringservices.com (<http://www.ecsengineeringservices.com>)

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CONTACT

Composites UK

Innovation House, 39 Mark Road,
Hemel Hempstead, Herts
HP2 7DN, UK

T: +44 (0)1442 275365

F: +44 (0)1442 275301

E: info@compositesuk.co.uk

[\(mailto:info@compositesuk.co.uk\)](mailto:info@compositesuk.co.uk)



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