



## ECS utilises FRP to replace aging footbridge

ECS Engineering Services has recently replaced an aging timber pedestrian footbridge, located in Nazeing Marsh near Broxbourne, with a highly durable fibre reinforced polymer (FRP) alternative. Working on behalf of the Environment Agency, the Nottinghamshire based engineering experts utilised innovative Infracore® Inside FRP technology from Fibercore Europe to design, fabricate and install the new prefabricated footbridge that offers the ultimate in service life and safety.

The decision to replace the 21 metre long Kiora footbridge was taken by the Environment Agency who commissioned ECS to provide a durable replacement. As the area is very popular with walkers, a reliable solution was required on a short lead time to minimise potential risk. Having completed a great number of projects of a similar nature as a framework contractor for the Agency, ECS was a natural choice.



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To begin with, ECS engineers inspected the existing bridge installation to assess the extent of replacement required. After some detailed inspection and structural assessment, the existing concrete supports were deemed to be in good condition, but the wooden bridge deck and hand rails were well beyond economic repair and in need of urgent attention. ECS proposed abandoning the use of timber, and suggested installing an FRP bridge deck coupled with a galvanised and powdercoated steel parapet hand railing to boost the service life of the structure.

ECS Engineering Services is a distributor of FRP products from Fibercore Europe, which offer a host of benefits when compared to traditional materials. FRP structures have a service life expected to exceed over 100 years, and require no maintenance other than routine cleaning. This offers a significant maintenance cost reduction through the structures life, and eliminates the associated safety and environmental risks associated with traditional recoating or repainting of steel and timber structures. Consequently, the modest capital cost difference is quickly recovered and an

Infracore FRP bridge will show the lowest whole life costs of any bridge construction technology FRP from Fibercore Europe differentiates itself by its utilisation of Infracore® Inside technology. Glass fibre layers in opposing directions are held together by a continuous structural connection between two outer skins; a construction that provides a strength that surpasses steel and that cannot delaminate. This serves to further increase the service life of FRP beyond the basic aspects of the material. Together with a factory applied, bonded anti slip surface, Infracore is the ideal choice for a pedestrian footbridge to be located in a moist environment. Again the inherent benefits of the material helped to reduce lead times. FRP is very easy to fabricate and low in weight, which means a bridge structure can be transported to site as a complete unit or in modules. As a result, time in transit and overall logistical costs are reduced. The lighter weight construction enabled the existing civil abutments to be utilised without extensive modification or reconstruction

An added advantage is also apparent during installation. As the bridge deck is a one

piece structure moulded off site, to the exact dimensional requirements of the individual project, this significantly minimises the required work on-site, which reduces the impact on the surrounding area. This was vital for the marsh's eco system - one of the more threatened habitat types in the UK. The outcome was that ECS was able to install the new bridge structure in a single day.

David Searle, ECS Project Manager commented: "FRP fitted the demands of this project as it offered the strength and versatility required to offer a durable turnkey solution. We have worked with the Environment Agency utilising this material in various installations for water control and pedestrian access, as its inherent features make it perfectly suited for environmentally sensitive projects in challenging application environments."

To further complement the new FRP elements, ECS also installed a 20% sloping ramp at either end of the bridge to improve disabled access. Now all will be able to enjoy the natural surroundings on a sure footing, thanks to the benefits of modern composite materials.

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