

## Emersons Green East Cycle Footbridge



### Details

<b>Location</b>	Emersons Green, Bristol, South Gloucestershire
<b>Description</b>	Cycle Footbridge
<b>Client</b>	South Gloucestershire Council
<b>Date of project</b>	2016-2019 (Survey/Design/Testing phase). Construction expected to be completed 2020
<b>Where FRP composites are used and why</b>	<p>The proposed footbridge comprises carbon fibre reinforced polymer (CFRP) arch ribs supporting a glass fibre reinforced polymer (GFRP) deck</p> <p>One of the key drivers behind this project was to promote the use of composite materials in the construction industry and assist in removing some associated barriers that prevent wider adoption.</p> <p>Beyond this, the inherent benefits of FRP are well known. Its reduced mass will allow for installation of the whole structure over the road in one lift; in turn reducing construction costs and impact on the road users. It is also envisaged to require fewer major maintenance interventions, offering reduced long term costs to the asset owner and reduced impact on road users.</p> <p>A suite of monitoring equipment is proposed to be included within the structure to facilitate future research and structural health monitoring.</p>
<b>Specific design details</b>	<p>The proposed bridge is a 54m span, tied bowstring arch, spanning a dual carriageway, north of Bristol. It comprises a 5m wide deck supported from an arch structure on stainless steel hangers at 2m intervals.</p> <p>The deck is constructed from 6m long fabricated modules and is formed of an external shell of sandwich panels supported by an internal frame of longitudinal and transverse diaphragms.</p> <p>The arch structure has a rise of 11.5m and consists of two arch ribs inclined towards the center line. Transverse GFRP cross-members are provided at discrete locations along the length of the arch.</p>
<b>Type of composite used</b>	<p>The proposed deck design largely comprises sandwich panel construction and utilises resin infused GRP, formed of biaxial E-glass fabric with a vinylester resin and PET foam core.</p> <p>The proposed arch design utilises both carbon and glass fibres in resin infused components. These components are formed of uniaxial HS carbon fibre and biaxial E-glass fibre fabrics with an epoxy resin.</p>
<b>Current Project partners</b>	<p>Designer – WSP with sub-consultant Optima Projects Contractor – Tarmac Fabricator – TBC Monitoring - University of Bristol</p>

### Contact