

Thornaby Footbridge



Overview

Bridge deck replacement using steel beams and glass-fibre reinforced polymer pultruded decking.

Details

Location	Thornaby-on-Tees, Stockton-on-Tees.
Description	Deck replacement using steel beams and GFRP pultruded decking.
Client	Stockton-on-Tees Borough Council.
Date of project	2014.
Where FRP composites are used and why	<p>This £1m design and construct scheme for Stockton-on-Tees Borough Council (SBC) involved the design and replacement of a 120 year old, dilapidated footbridge at Thornaby railway station. The 40m long, 3-span bridge forms a vital link for pedestrians to Teesdale Business Park, Durham University Stockton Campus and Stockton Town Centre.</p> <p>Balfour Beatty (BB) with designers Atkins and client SBC collaboratively designed and constructed an innovative and cost effective 'phased' replacement solution completing works within 6 hour weekend railway possession windows. This ensured zero disruption to the heavily used railway network and minimal disruption to the public and local businesses.</p> <p>The superstructure design comprised a hybrid Steel Beam / FRP Composite Deck (Fiberline Composites HD Plank). The FRP deck resulted in weight savings reducing the impact on the existing substructure. Being able to sustainably reuse the existing masonry supports saved the project in excess of £200,000 and represented excellent value for the client.</p>
Specific design details	Significant temporary works were required to repair the existing aging Victorian infrastructure. This would have resulted in significantly unwanted delay. An innovative design approach was taken with the bridge articulation changed and light-weighting undertaken to reduce the loads entering the substructure and allow for its economical repair. FRP played a large role in achieving weight reduction allowing for its rapid repair.
Type of composite used	Steel beams and GFRP pultruded deck planks. Heat deflecting phenolic plates were also installed to ensure heat dissipated by diesel and steam trains would not interfere with the FRP performance.
Performance in service	No issues to date.
Project partners	Contractor – Balfour Beatty Lead Designer – Atkins FRP Manufacturer – Fiberline Composites
Further information	The project won the ICE (North East) Robert Stephenson Awards Medium Project.

Contact