



COMPOSITE DESIGN AIDS RAIL SAFETY CREWS

One of the most discussed issues in electrified refurbishment and new-build rail projects is employee safety. In a recent project, Pipex px®, an international distributor of Strongwell products, supplied, fabricated and delivered 223 linear feet of FRP (fiber reinforced polymer) composite walkways and three composite refuges (a dead-end employee escape area) which ran parallel to the railway lines between Network Rail's Bicester and Islip Station in the United Kingdom. Each walkway measured two feet in width and ranged in lengths from 26 feet to 59 feet, with the escape areas measuring approximately 24" x 36". The structures were made of EXTREN® Series 525 plates, 24" FRP I-beam profiles and SAFRAIL™ FRP handrails. Structural elements were fully bonded without mechanical fasteners.

Pipex px® Engineering Services Department faced a daunting challenge with a portion of the walkway which had to span almost 60 feet across a river. The extensive span required the use of 36" EXTREN DWB® for 45 linear feet combined with an FRP splice joint constructed from EXTREN® plates with steel bolts. The splice joint was designed in accordance with Eurocode to meet a service load of 2 kN/m² using hand calculations supported by FEA (Finite Element Analysis). An in-house water load test was later conducted to measure actual deflection, which was 4 kN/m² at 8.5mm.

Pipex px® designed this custom application with a life expectancy of at least 60 years. It was fabricated offsite to enable a fast-track installation and delivery while weighing about a third of its metallic counterpart with low electrical conductivity. ●

TECHNICAL DATA

Product:	FRP Walkways and Refuges
Process:	Pultrusion
Materials & Sizes:	36" EXTREN® DWB EXTREN® Plate EXTREN® I-Beam: 24" SAFRAIL™ Handrail
For:	Pipex px®
User:	Network Rail - between Bicester and Islip Stations, UK



Bristol Location
400 Commonwealth Ave.
Bristol, VA 24201-3820 USA
(276) 645-8000, FAX (276) 645-8132
www.strongwell.com