

INNOVATION IN COMPOSITE DESIGN

FINALIST: Engineered Composites

RailGuard Pro 51 is the world's first GRP box-section handrail system independently verified to exceed the BS 6180:2011 Public Assembly loading requirement.

Previously, GRP handrails achieved approximately 0.37 kN/m against the 1.5 kN/m requirement, preventing their use in many public-access environments and leaving steel as the default.

Engineered Composites Limited challenged this limitation through optimisation of fibre architecture, resin formulation and 51mm box-section geometry. RailGuard Pro 51 achieved 1.657 kN/m at 25mm deflection, independently verified by UKAS-accredited FHB Burton. Testing demonstrated a 4.77x safety factor, 100% elastic recovery and zero permanent deformation, exceeding all five standards tested.

No directly competitive GRP products currently achieve independently verified Public Assembly compliance, making RailGuard Pro 51 a genuinely new specification option.

The system is designed for railway platforms, viaduct walkways, station footbridges and other crowd-accessible infrastructure and is already deployed on live Network Rail and HS2-associated projects. It requires no specialist installation or continuity bonding in electrified rail zones, while providing corrosion-free, maintenance-free performance for up to 50 years. Installation weight can be reduced by up to 75% compared with steel.

Development required specialist expertise in structural engineering, composite materials and pultrusion, supported by multiple cycles of design, trial manufacture, in-house testing and refinement before independent verification.

The innovation opens opportunities across rail, construction, utilities, marine, stadiums, airports and footbridges. The UK Public Assembly structural handrail market is estimated at over £200 million annually, with significant international potential.

The project was led by Engineered Composites, with FHB Burton providing independent testing and verification, building on almost four decades of expertise in pultruded GRP design and manufacturing.



Learn more at: www.engineered-composites.co.uk