

Project Report

Knowsley Waste Terminal Access GRP Staircase

INSTALLER

CSM

CLIENT

Network Rail

CONTRACTOR

Step on Safety Ltd supplied the staircase

Issue

The project involved the installation of a 13m long and 5m high GRP staircase on a sloped railway embankment in Knowsley, Merseyside. This staircase was required to provide safe access between the embankment and a cress walkway, equipped with a self-closing safety gate. The main challenges included:

1. Ensuring the structure remained level despite sloped and irregular terrain.
2. Overcoming potential ground conditions that could prevent the Anchor Screw piles from reaching the required design depth of 3.60m.
3. Meeting a 100-year design life requirement for the anchoring system.

Testing

To ensure the solution met the project requirements, torque monitoring was conducted during the installation of the Anchor Screw piles. This testing verified that:

- The ultimate geotechnical capacity of 37.9kN was achieved for the piles.
- The piles met resistance criteria as specified in the geotechnical design calculations.

No pre-installation testing was explicitly mentioned, but the torque monitoring provided on-site validation of performance.

Solution

The following solutions were implemented to address the identified challenges:

1. Anchoring System:
 - Sixteen Anchor Screw piles were selected and installed, each with two helix plates (200/250mm).
 - Adjustable interface plates were incorporated to allow for 7° lateral adjustment, ensuring the staircase remained level despite uneven terrain.
 - The piles were made of galvanised steel, meeting the 100-year design life requirement.
2. Installation Methodology:
 - The Anchor Screw piles were installed using portable handheld equipment, which allowed for quick and efficient placement without requiring railway isolations.



On average, an estimated 70% embodied carbon reduction is achieved with Anchor Screw foundations, compared to traditional methods such as concrete



GRP Staircase

Result

The project successfully met its objectives:

- The GRP staircase was securely installed on the embankment, providing safe and stable access to the cess walkway.
- The adjustable interface plates ensured the staircase was perfectly level despite the challenging terrain.
- The use of portable installation equipment minimised disruption and ensured the project was completed swiftly.
- The anchoring system achieved all required performance criteria, including stability, load capacity, and long-term durability.



 Step on Safety Factory Lane, Brantham, Suffolk, CO11 1NH sales@steponsafety.co.uk	Knowsley Sidings Embankment Stairs In Situ
	Anchor Systems SOS-ANC-KNW-EMB-GA-001 00

