

Gubberford Lane Embankment Stabilisation (LNW Civils Package 606 Earthworks)

Client: Network Rail
Designers: Leeke Associates
Date: June—Oct 2012
Value: £950k

The Gubberford Lane Embankment Stabilisation scheme is part of a Design & Construct earthworks improvement package carried out for Network Rail.

The site is situated on the Preston Ribble Junction to Cove Level Crossing Line (CGJ6). It is adjacent to the M6 motorway approximately 2km north of Garstang and 12km south of Lancaster. The overall objective of the scheme was to re-grade and secure the embankment to achieve minimum FOS of 1.3 complete with toe drain along full length and reinstatement of the embankment shoulder and safe cress walkway along full length of fix, ensuring the walkway was directed around the rear of the gantries where necessary. Working with designers Leeke Associates our solution for the scheme was based on a soil nailing methodology.

The work involved de-vegetation and tree felling along the embankment followed by stabilisation of the Down Side embankment slope using a system of soil nails and slope netting to reinforce the existing steep earthwork and provide additional lateral support to the OLE gantries.

New drainage was provided by installing a granular filter drain at the toe of the embankment, outfalling into the existing culvert and adjacent watercourse along Gubberford Lane.

A compliant safe cress was constructed at the crest of the stabilised slope using compacted granular fill and the S&T troughing raised and repositioned where required. Grondomat piles were installed around gantries to provide walkway support and handrails provided. A 10m long ballast retention structure was also constructed at the tie in to Gubberford Lane Bridge.

The soil nails were 6m long hollow bars grouted into 120mm diameter holes at approximate 1.75m spacings over a 240m length of embankment followed by placing netting and galvanised soil nail head plates. A series of test nails were installed and pull-out tested to prove the design. Soil nails were installed with a combination of Klemm tracked geotechnical drilling rig and long reach excavator with soil nailing feed beam. 24 hr track monitoring was carried out for the duration of the works.



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The work was undertaken from private gardens and we had to carefully remove walls, fences, garden sheds and planting to allow installation of the main access, haul road and working area to the base of the embankment. In addition we had to bridge over a pet cemetery at the end of one garden and work around several mature trees in the gardens. Track safety fence (Vortok) was established in a Safeguarded Green Zone during a T3 possession. It was installed along the entire length of the required work site adjacent to the Down Main side of the track at a 1.25m offset from the cess rail to provide a Separated Green Zone protection for the embankment earthworks programme.

