



## **Challenging Embankment Stabilisation due to Extreme Weather.**

Case Study

Callow Hill Rail Cutting, on the Swindon to Bristol main line in the County of Wiltshire, was supporting a busy twin track rail line. Balfour Beatty was challenged with delivering a permanent retaining solution, designed by Crouch Waterfall.

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Р R O D U C T S DYWI Drill Hollow Bar Micropile

LOCATION United Kingdom

**T I M E L I N E** 01-2022 - 03-2022

S C O P E Supply Technical Support Design

OWNER Network Rail

GENERAL CONTRACTOR Universal Piling Ltd





## Context

The design solution was based on a slope stability analysis of the embankment, undertaken at critical sections, which identified that there are predominantly cohesive soils with underlying terraces of sands and gravels.

Extreme winter weather caused further deterioration during the project delivery programme: hurricane-force winds from tropical storm 'Barra' significantly interrupted the project midway through. This resulted in the requirement for additional resources to carry out the pre-programmed activities.

Further challenges included heavy cohesive soils, drilling conditions, narrow piling mat constructed for access of a drilling rig, and a very busy, restricted site, which required considerable interface with other contractors working on the project. Additionally, all works had to be carried out under rail possessions.

## Solution

A steel piled wall, complete with DYWIDAG Dywi Drill Tension Pile was identified as the most economical and effective solution.

The retaining sheet piled wall and anchoring system was installed by DYWIDAG's preferred specialist drilling and anchoring contractor Universal Pilling Ltd, over a two weekend rail blockade.

The Operational Readiness Review (ORR) defines a rail blockade as 'the closure of a route for an extended period, typically more than a weekend, usually to allow engineering works'.

The piles were installed using an RTG 19T telescopic leader rig, supported by a Sennebogen 6100HD 100 ton tracked crawler crane. Universal Piling installed the tension anchors with their Ripamonti soil nailing mast, mounted on a 13 ton tracked hydraulic excavator. A total of 84no. tension ground anchors R38-500 galvanised coated 18mtr long, complete with two-stage RS flush drill bits CRC 110mm.

Speaking about the project, Richard Edlington, Programme Manager, Network Rail, said "Great to get the first phase of the stabilisation works at Callow Hill over the line last week and handed back on time. The start was heavily disrupted by Storm Barra, which meant there was a lot of catching up to do, but all 168 sheet piles were installed in a very busy last few days".

Francis McGarry, Investment Director, Network Rail, added "Delivering projects in a real-world environment is always challenging, keeping the team focused on the outcome is great leadership delivering for passengers".