

GRIFFITHS

civil engineering and construction

Geotechnical Division Case Study Llwyncelyn Road Embankment

Remediation of a 170m section of existing failing embankment adjacent to the B4278 Llwyncelyn Road, Porth, Rhondda Cynon Taf (RCT).

In December 2021 RCT appointed Griffiths via the SEWHF to design and construct a suitable structure capable of retaining a failing over steep embankment adjacent to a carriageway and footway in a busy urban environment.

The embankment had been historically over steepened to accommodate an existing wall and footpath, with soil creep causing displacement of the wall coping stones. Additionally, numerous water issues within the slope were likely contributing to the shallow creep movement of the embankment, as well as depositing water onto the footpath and carriageway causing a significant risk of ice over the winter period.

The remediation works involved removal of 14 No mature trees, minor regrading of the embankment surface, installation of rock anchors/soil nails and netting systems throughout the embankment surface, construction of a reinforced concrete capping beam linked to the existing retaining wall, installation of new drainage systems behind the wall and a key clamp fence installed on top of the wall for future maintenance works.



Pictured above: Griffiths NPTC trained operatives removing 1 of 14 mature trees using a MEWP

Griffith's appointed Hydrock Consultants Limited to produce a detailed design in agreement with the client's requirements and design management consultants CAPITA.

Utilising the existing structure as a foundation, a series of rock bolts and soil nails would be installed at the rear of the wall linked to steel rebar and vertical stainless-steel dowels to prevent rotational failure of the new capping beam.

Griffiths appointed Quantum Traffic Management to install a single lane closure complete with a short diversionary route around the town to minimise disruption which provided a safe working environment for the works whilst maintaining normal one-way operational use for residents and local stakeholders.

Works commenced in early February 2022 for a period of 9-weeks mobilising a suitable compound off site to ensure sufficient working room for the strict construction sequencing ensuring the embankment slope stability and construction quality was carefully maintained throughout the construction phase.

Using our in-house Geotechnical team consisting of engineers, rope access technicians, NPTC trained staff and civil engineering operatives, Griffiths self delivered all works utilising specialist plant and equipment owned and managed by our internal plant hire department.

All works were successfully completed in the 9-week period without any accidents or incidents and to the satisfaction of the client.

Griffith's working in the community

Griffiths engaged with the Client to offer support to local community projects who would benefit from arisings produced by our works.

12t of wood chip arisings were delivered free of charge to a local community project in nearby Treforest.



Pictured above:

TOP: Griffiths Geotechnical Staff installing Soil Nails into the failing slope.

CENTRE: Falsework and Formwork used to construct new capping beam

BOTTOM: Completed works including Key clamp fence detail for future maintenance of the embankment.

Project details at a glance

Client: **Rhondda Cynon Taf**
Location: **Llwyncelyn Road, Porth**
Completed: **April 2022**
Value: **£500,000**
Contract: **NEC3**