

Case Study



BELFORD UPSIDE - NORTHUMBERLAND

Client: Railtrack (Network Rail)

Designer: Hyder Consulting

Consultant: Jacobs

Main Contractor: May Gurney Rail

Approved Installer: [Rock Solutions Ltd](#)

PROJECT SPECIFICATION

Railtrack wished to widen the top of this steep railway embankment along a 100m section of the mainline from Newcastle to the Borders. Ground anchors with a design life in excess of 100 years were proposed to increase the factor of safety from about 1.0 to 1.3 using anchor loads calculated at 32kN/m or 48kN per anchor on 1.5m spacings.

SOLUTION

To stabilise the slope in the long term it was necessary to install 6 rows of anchors each driven to about 8m depth and positioned on 1.5m horizontal centres. Working from lightweight portable rigs the anchors were installed with minimal disruption to the line operation. Stainless steel load plates were used to hold a row of Maccaferri gabions in place at the shoulder of the track side as well their rock fall netting used to spread the load across the slope surface.

Anchor System: S10TB aluminium bronze anchor c/w 9m of 12mm Ø stainless steel wire tendon, 200mm x 200mm stainless steel load plate, tilt washer and 12mm stainless steel wedge grip.

Quantity: 225

Anchor Design Life: 120 yrs

Soil Type: Made ground

