

ON THE RIGHT TRACK AT CUMBERWORTH

CUMBERWORTH, NORTH YORKSHIRE, UNITED KINGDOM

Dynamic Barriers

Problem

Half a mile north of Denby Dale station a single track line emerges from Cumberworth Tunnel into a 14-metre deep cutting, originally dug through lower coal measure formations comprising semi-competent sandstone interspersed with weak, friable siltstones and mudstones.

The cutting slopes stand at angles of 45-55 degrees from the horizontal with individual rock outcrops of 1.0-2.0m in height. Weathering over the past 160 years has resulted in significant weakening of the cutting sides with the consequent risk of instability and debris falling on the old Victorian line.

Mindful of the potential dangers to rail passengers, Network Rail commissioned Chesterfield-based URS to undertake a detailed assessment of the site.

Solution

Access to the site was difficult as the cutting is some distance from the nearest road and wooded areas at the head of the cutting, making it difficult for plant and lifting equipment to be close enough to be effective.

The restricted availability of line blockages also meant that much of the work undertaken had to be done at night. The mix of the different challenges meant that the choice of solution was a fine balancing act between design consultants URS and contractors CML.

Various options were considered at the design stage including spot rock-bolting and the physical removal of individual failures. This was deemed impractical as the rock was likely to break up while drilling and, as weathering continued, further fractures were likely to develop between the rock bolts and scaled areas. A 5-10 year design life anticipated by this method was deemed insufficient.

The situation ultimately chosen was the installation of a network of high-strength dynamic rockfall catch fences

Client: CML (Network Rail)

Designer / Consultant: URS

Contractor: CAN Scotland

Products used (Qty.)

Date of construction: 06/2009 - 08/2009

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Catch fences being installed on the Cumberworth Tunnel line



Catch fences installed on the Cumberworth Tunnel line



Catch fences installed on the Cumberworth Tunnel line



Post installation of the catch fences at Cumberworth



Post installation of the catch fences at Cumberworth



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