



SAMPHIRE HOE IN DOVER,

BRUGG
Geobrugg 
Safety is our nature

Samphire Hoe in Dover

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Kent

2015

Network Rail Ltd.
Fairhurst - Consulting Structural and Civil Engineers
CAN Geotechnical Ltd.

The chalk cliffs at Dover form a vital element of the Kent Downs Area of outstanding natural beauty, a nationally important and protected landscape. Samphire Hoe is a new piece of land created by Eurotunnel during the construction of the Channel Tunnel.

Samphire Hoe cutting has a history of rockfall, with previous failures landing on the track.

The design remit was to extend the life of the earthwork such that there is a reduced likelihood of speed restrictions or line closure due to rockfall.

Tactile inspection by Fairhurst revealed the main mechanisms of slope instability to comprise ravelling across the slope face, caused by surface weathering and preferential erosion of weaker chalk horizons, together with more localised toppling, wedge sliding and planar sliding failures of individual blocks.

Working alongside Fairhurst - Consulting Structural and Civil Engineers of Glasgow CAN Geotechnical Ltd. undertook the installation of 13 individual Geobrugg rockfall barriers. The GBE range of barriers were chosen for their ease of installation. Their low anchor forces meant shorter anchors with the resultant decrease in drilling time, allowing for a far shorter program. The strict vertical drop testing and certifications that come with these fences meant that the only choice of supplier was the world leading technology innovator Geobrugg.

Rockfall analysis was undertaken by Fairhurst and the system energy and height were specified from this point forward. In total 785 metres of GBE-500A and 446 metres of GBE-1000A have been installed between Abbotscliffe and Shakespeare Tunnels. The barriers were used in combination with localised areas of Geobrugg high tensile TECCO® SYSTEM³ flexible facing in total 3150 square metres of TECCO® G65/3 and 350 pieces of P33 system spike plates were installed.

Railway

Galvanized, GEOBRUGG SUPERCOATING

500 kJ, 1000 kJ

4.0 m, 5.0 m

446 m - 785 m



Train passing under one of the GBE-1000A (for 1000 kJ) rockfall barriers while under going its final inspection.



Evidence of rock fall below the cliffs before any remedial measures were taken. Visible is a normal chain link fence, which has previously been breached leading to track closures.



Cliffs during TECCO® SYSTEM³ stabilization works.



Rope access techniques in use for drilling and installation of the TECCO® SYSTEM³ stabilization.



Cliff area stabilized with the TECCO® SYSTEM³. Rockfalls triggered here could over top the rockfall barriers below.



GBE-500A (for 500 kJ) rockfall barrier below the cliffs. Note the evidence of small rockfalls already stopped by the barrier.



GBE-1000A (for 1000 kJ) rockfall barriers during installation. Here you can see the final adjustments to the vertical ropes.



Final checks on GBE-1000A rockfall barrier line. Cliff below stabilized with TECCO® SYSTEM³.



Final adjustments on the GBE-1000A rockfall barrier. This barrier offers unbeatable installation simplicity.



Another line of GBE-1000A rockfall barriers during final inspection.



Another view of GBE-1000A rockfall barriers during final inspection.

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