

Project Info



May 2013



CC8™ Bulk Rolls



335m²



Vertical layers



Cloudhill Quarry,
Derby, UK



DHRA



CC trialled as an
alternative to shotcrete
in providing surface
erosion protection to
sandstone.



Completed section of slope lined with CC5

In May 2013, Concrete Canvas® (CC) GCCM* was trialled as an alternative to shotcrete to provide surface erosion protection to sections of sandstone overburden at a limestone quarry site in Derby, UK. Reinforcing the sandstone overburden would allow the quarry site to conduct additional excavation and blasting, maximising the potential yield of the site and helping to ensure its continued operation for an additional 10 years.

CC8™ bulk rolls were delivered to site and suspended from a spreader beam using a 3.5T telescopic forklift. The CC was batched to specific lengths to match individual heights, from ground level to the top of the overburden, using a cut-off saw. This ensured that there was no wastage as each length was tailored to match the rock face exactly.

Using a rough terrain cherry picker, each length was then initially hung from the top onto the rock face using 250mm steel ground pegs, folding the top edge by 50mm to ensure a neat termination and reduce the risk of water ingress between the CC and the substrate.

Subsequent layers of CC were then positioned with an overlap of 100mm to the adjacent layer. These overlapped sections were then screwed together with 30mm stainless screws at 200mm intervals using an auto-fed screwdriver. The CC layer was then secured to the rock face at 2m intervals along the overlaps and at void points using 100mm long rock bolts with 20mm washers to ensure intimate contact between the CC and reduce void spaces.

*Geosynthetic Cementitious Composite Mat





Cloudhill Quarry site



Quarry rock surface with unstable sandstone overburden prior to installation



CC delivered to site in bulk rolls



Unset CC8 was cut to length using a disk cutter



CC hung from top of rock surface using steel ground pegs



Overlapped CC edges fixed using auto-fed screw driver



Rock bolts used to reinforce fixings



CC hydrated water from a dust suppression tank



GEWI thread bar system with load bearing plates and nuts



Completed installation prior to blasting

Once the CC had been secured, it was hydrated using water from a 4000 gallon dust suppression tank. Post set, the CC layer was draped in Geobrugg Deltax wire mesh and the rock face stabilised using a GEWI thread bar system with load-bearing plates and nuts.

Successful blasting of the rock face took place two weeks later with no signs of slope deterioration from either blast or the period of weathering since installation. CC also proved to be 60% less expensive than the traditionally used shotcrete option and saved Breedon Aggregates over £14,000. The 335m² trial installation was completed in two days using a crew of three.

“The installation of Concrete Canvas was a new one for DHRA but proved to be quick and cost effective. There is no mess, no clean down of machinery and is I believe environmentally friendly and could prove to be a useful alternative to spray-crete in difficult access situations.”

Simon Jackson
DHRA Geotechnical Ltd.
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