

Project Info

Bedwas Colliery Ditch Lining

MAY 7 11/02/2011 & 12/01/2016

CC CC13™ Bulk Rolls

3640sqm

W Transverse and Longitudinal layers

G Bedwas, South Wales, UK

H Jim Davies Engineering / Cosslett Engineering

i CC used to provide scour protection to a series of spoil tip drainage channels at a former colliery site in South Wales.



CIVIL ENGINEERING LTD.

JIM DAVIES

www.jdcivils.co.uk



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Completed CC lined drainage channel

A 20 hectare spoil tip, approximately 2 miles north of the town of Bedwas, forms part of the historical mining legacy within the Caerphilly Basin in South Wales. Bedwas Colliery opened in 1913 and produced up to 675,000 tonnes of coal per year before its closure in 1985. The resultant overburden and waste rock generated by the mining activity of the colliery formed the basis of the existing spoil tip. Now managed by Caerphilly County Borough Council, the site has a network of drainage channels to deal with surface run-off.

To prevent erosion of the inverts 3640sqm of these channels were lined with Concrete Canvas® GCCM* (CC), in two phases. The first phase of 2000sqm was completed in early 2011 and the second phase of 1640sqm was completed in January 2016.

CC has excellent resistance to acids, alkalis and sulphates commonly found in mining, quarrying and landfill sites, significantly prolonging the life and serviceability of site drainage channels. By providing effective weed suppression CC also reduces or negates the costly need for maintenance of these channels, which are typically located in remote areas and where any blockage and resultant overspill may have a significant environmental impact.



Satellite imagery provided by Google Maps

*Geosynthetic Cementitious Composite Mat



Phase 1 CC13™ Bulk Roll deployment in challenging weather conditions



Phase 1 CC13™ Bulk Roll deployment in challenging weather conditions



Phase 1 intersection 5 years after installation



Channels show no signs of degradation and no requirement for maintenance

The second phase of works, installed by Jim Davies Civil Engineering, deployed CC13™ in both transverse and longitudinal lay ups to accommodate two sections of channel with distinct profiles. The first section measured approximately 1m in width and 300m in length. This section was lined using a single longitudinal layup, with bulk rolls of material deployed via a spreader beam in continuous lengths. The edges of this section were subsequently benched and backfilled to prevent water ingress undermining the channel. The second section was significantly wider, measuring approximately 2-3m across its width and approximately 1m in depth. It also incorporated a wide corner and several junctions with the incumbent phase 1 lined channels. CC13™ was laid transversely in this section, with the cut edges anchor trenched and backfilled. In both sections the CC was secured to the substrate using fixing pins and overlapped layers were screwed together at regular intervals using stainless steel screws.

The 2 hour delayed setting window meant that installation could continue in inclement weather, which would normally prevent conventional concrete solutions from being used. This was a particular advantage during phase 1 when the contractors, Cosslett Engineering, experienced torrential downpours during installation. Delays were avoided as installation was able to continue even in the extremely wet conditions.



Phase 2 transverse lining



Phase 1 longitudinal lining



Longitudinal overlap detail



Backfilling

Manufactured less than 10 miles from the site, CC has provided an effective and long lasting lining solution, preventing scouring of the drainage network across the spoil tip. The first phase of works, and its robustness demonstrated over the course of five maintenance free years, provided the confidence for Caerphilly County Borough Council to commission the second phase of works.

In total, 3640sqm of CC were installed in two phases, during inclement weather and on remote rural site. Both the contractors and the client appreciated the speed and ease of installation. The solution is now being considered across a number of other similar sites in the South Wales region.



Phase 2 completed longitudinal section of ditch



Phase 2 completed transverse corner section of ditch