CONCRETE CANVAS®

CHANNEL LINING

Project Info

- 01 / 05 / 19
- CC8™ Bulk Rolls
- 1250m²
- Transverse layers
- Lynemouth Mine Water Treatment Scheme, UK
- JN Bentley
- CC8™ installed as a channel lining solution at a mine water treatment works site in Lynemouth, Northumberland

The Coal Authority

Bentley

Overview of the MWTW site and completed CC channels (top right - Image courtesy of Coal Authority)

In May 2019, Concrete Canvas® (CC) GCCM* was specified for use on a scheme at Lynemouth Mine Water Treatment Scheme in the UK where modification of an existing washout channel was required to provide erosion protection to the slopes.

The existing outfall channel was constructed using poured concrete. The amount of discharge expected due to the construction of new lagoons on the site meant that there was a need to increase the overall capacity of the existing channel and provide erosion control to the existing slopes above the discharge channel. The channel measures 195 linear metres with its sides measuring 2.5m.

Initially, it was considered to use a geotextile to provide the erosion protection to the slopes. Concrete Canvas® was also considered and ultimately chosen due to its superior puncture resistance, durability and UV resistance compared to an exposed geotextile.

Prior to installation of CC, the substrate was graded in accordance with the overall design requirements, all big shrubs, weeds and roots were removed and an anchor trench dug half way up the slope with the excavator.

*Geosynthetic Cementitious Composite Mat

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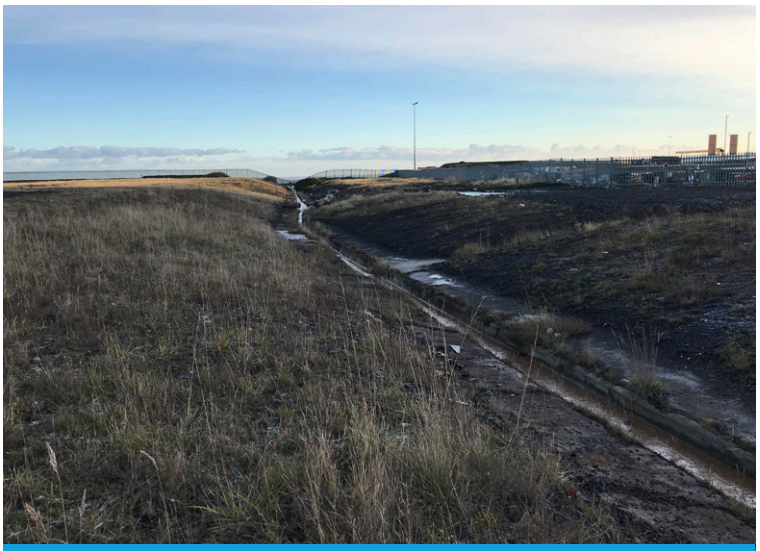
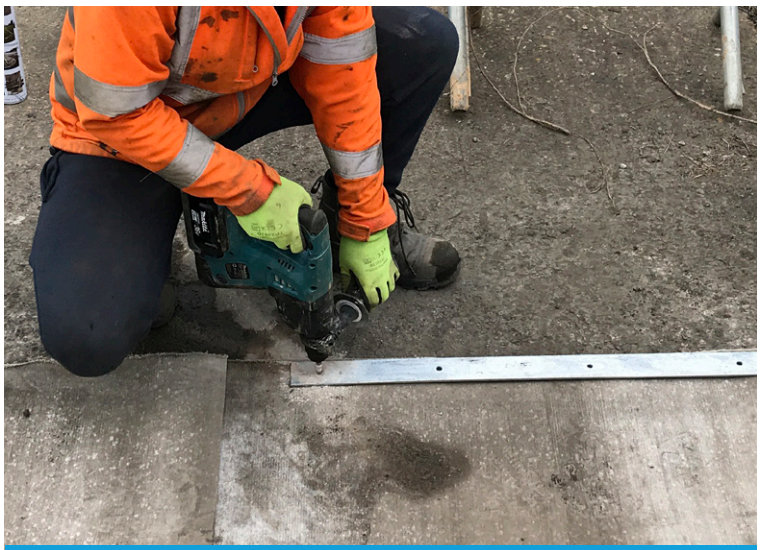
Existing concrete channel prior to works



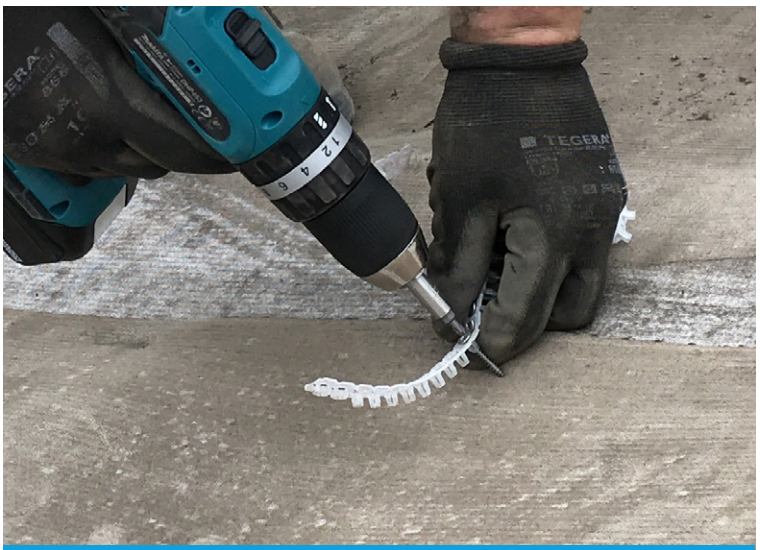
Overview of concrete channel on the site

Grading the slope alongside a stretch of the channel

Edges secured using ground pegs



Termination of CC at existing concrete using steel bars and masonry bolts



CC overlaps were jointed using stainless steel screws

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Hydration of CC following installation

Completed section of CC installation

View of completed CC lined channel

Smaller sections of channel were also lined to improve water management

CC was able to easily accomodate existing pipes and other infrastructure

CC provided additional capacity to the channel

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Aerial view of completed CC lined channels

The CC8™ material was delivered to site in bulk rolls and deployed from a plant-mounted spreader beam. The material was laid transversely across the channel profile and vertically on the slope from crest to toe. Edges of the material were captured within anchor trenches and secured to the substrate using galvanised mild steel ground pegs, inserted through the overlapped CC layers. Overlaps were hydrated prior to jointing using stainless steel screws inserted at 200mm intervals. Where CC terminated against a concrete apron, a combination of masonry bolts, nitrile gaskets and a termination bar were used to fix the material to the structure. Following hydration, the anchor trenches were backfilled.

Along the length of the channel there are several small channels that are prone to suffering from the washing out of the substrate when heavy rain occurs. These smaller channels were also formalised and lined in CC8™ as part of the works to help with the overall management of water on the site.

The installation was carried out over several weeks between May and June in mostly dry conditions. Three teams of three people worked on the project, which was deemed a success on its completion.

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