EROSION PROTECTION

Project Info

- 11 / 08 / 21
- CC8™ Bulk Rolls
- 1,000m²
- Transverse
- Network Rail Wessex Route near Yeovil, Somerset.
- Network Rail / QTS
- CC8™ installed to provide erosion protection on a crest drainage channel along the railway line between Yeovil & Crewkerne.

Completed Erosion Protection Works

In August 2021,Concrete Canvas® CC8™ GCCM* was used to provide erosion protection on a crest drainage channel along the railway line between Yeovil and Crewkerne.

The Yeovil to Crewkerne line runs through a steep cutting that was being eroded by surface water run-off from adjacent farmlands. Previously a channel had already been installed to prevent water run-off from eroding the cutting, however over time it had become heavily overgrown with vegetation.

A number of channel lining alternatives were considered. However, it was decided by Network Rail and QTS to install CC8™ due to speed and ease of installation.

CC8™ is a Type II GCCM as defined in ASTM D8364, it is suitable for use on soil subgrades and was chosen for this project to suit the abrasion, wear and loading requirements. CC8™ is also BBA certified with durability in excess of 120 years when used in erosion control applications.

*Geosynthetic Cementitious Composite Mat

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Trapezoidal ditch profile cut prior to install

CC8™ measured & cut into 3.5m lengths

CC8™ Laid transversely & secured with 30mm stainless steel screws

CC8™ Pegged in anchor trench

Sprinkler used to give CC8™ even hydration

Section of new channel with hydrated CC8™

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Completed channel works

Prior to the installation of CC8™, QTS cut a new open channel at the top of the slope using an 8-tonne excavator with a v-ditch bucket attached. CC8™ was delivered in Bulk Roll format. However, due to access restrictions the excavator could not be used to install the CC8™ material. Therfore, 3.5m lengths of CC8™ were cut from the Bulk Rolls to be then carried to the channel for installation. CC8™ is rapid to install, and even without the use of an excavator QTS were able to line 50 linear metres of channel a day.

The CC8™ was laid transversely with the overlapping material laid in the directional flow of water. To prevent any water escape at the joints, a screwed and sealed joint was used. The material was overlapped by 100mm and secured with 30mm stainless steel screws at 200mm spacings. QTS increased the speed of installation by using an auto-fed screw gun to insert the stainless-steel screws into the CC8™ material.

It is important to protect Concrete Canvas™ from being undermined by both wind and water. During periods of heavy rainfall there was a significant water-run off from the farming field next to the cutting. Therefore, free edges of the CC8™ were captured in a 150mm deep anchor trench that ran parallel to the main channel. The CC8™ was folded into the anchor trench and pegged at 1metre spacings using 250mm galvanised steel pegs.

QTS hydrated the CC8™ at the end of every shift. A large water bowser was hired and water pumped through a rigid hose to the point of installation. A sprinkler was attached at the end of the hose which provided an even distribution of water over the CC8™. The tightly woven top surface ensures that the cementitious fines are held inside the material. It is recommended that an excess of water is used during hydration. After the CC8™ was fully hydrated the anchor trenches were then back-filled with topsoil. This effectively sealded the material and prevented any undermining.

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Cascasde connection to the track drainage

Junction detail to collect water from natural drainage paths

Baffled cascade formed with concrete sandbags lined in CC™

Channel/cascade junction detail

QTS and Network Rail were both impressed with the ease of installation offered when using CC8™. As a result, additional material was ordered to line a series of cascades leading from the main crest drainage channel down to the sub-surface drainage at track side.

Concrete filled sandbags were placed in the channels and covered with Concrete Canvas™ to make a cascade detail. CC™ is a flexible material and easily comformed to the shape of the sandbags. CC8™ was specified in the secondary drainage channels as replacement to wet-poured concrete and stone pitching. This reduced the overall logistical footprint of the project as well as the overall carbon footprint.

In total 1,000m^2 of CC8™ was installed in a confined location without the requirement for plant. By lining the channel and cascades with CC8™ any future maintenance has been greatly reduced and the lined channel will now help prevent any slope failure in the future.

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