CONCRETE CANVAS®

CHANNEL LINING

Project Info

- 01 / 06 / 20
- CC8™ Bulk Rolls
- 140m²
- Transverse layers
- M49, Avonmouth, England, UK
- Galliford Try
- CC used to line a drainage channel alongside a new junction on the M49

Completed CC lined drainage channel section alongside the new A49 Junction in Avonmouth

In June 2020, Concrete Canvas® (CC) GCCM* was specified as a channel lining solution for a new roadside drainage channel which would service a new stretch of the M49.

Historically there has been no direct access to the M49 for the port of Avonmouth and the Avonmouth Severnside Enterprise Area. To rectify this, Highways England undertook the construction of a new motorway junction. The site of the works lies on an area of flat land prone to flooding and crosses numerous canals and waterways.

The main contractor, Galliford Try, needed to protect the completed motorway bridges and the junction from scour and undermining.

In order to do this, a 25m long channel (terminating at a pre-cast concrete headwall) was constructed and lined with CC8™ to provide long term durability and erosion control.

Highways England and Galliford Try both have experience of working with CC and are familiar with the product's benefits over traditional concreting solutions. As a result, no other solutions were considered for this project. Works were carried out by Galliford Try for Highways England.

*Geosynthetic Cementitious Composite Mat

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Prior to installation, the channel was regulated with any large voids filled and large rock removed. Anchor trenches were created on each shoulder of the channel.

Bulk Rolls of CC8™ were delivered to site and suspended from an excavator-mounted spreader beam. The CC was unrolled from the spreader beam and cut down to 3.5m lengths elsewhere on site in order to create batched lengths that could be easily transported by hand. This was a necessity on this site due to the site restrictions and availability of plant both small enough to access the channel safely but also large enough to lift the Bulk Rolls without toppling. By using batched lengths, health and safety on this project was greatly improved.

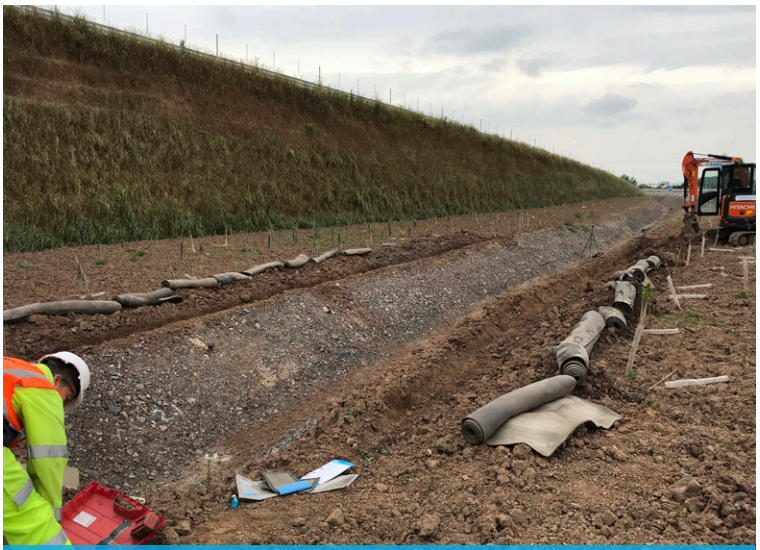
Once cut to length, the batched sections of CC8™ were loaded onto a pickup truck and transported to the channel. Each length was then off loaded and moved into place by three people. The first leading edge of CC was captured within one of the anchor trenches and the CC laid transversely across the channel, with the other end positioned in the middle of the base of the channel. A second length was then laid in the same way from the opposite shoulder.

In the channel invert, where the CC edges met, the upper layer was folded in on itself, with the raw edge tucked underneath to prevent loss of fines during hydration and provide a neater joint detail. The resulting overlap, measuring 100mm was then jointed by inserting 30mm stainless steel screws through the three layers of material, positioned at 200mm centres.

Channel profile excavated and graded

Preparation of anchor trenches

Ground work completed



CC Bulk Rolls were batched off site and positioned alongside the channel

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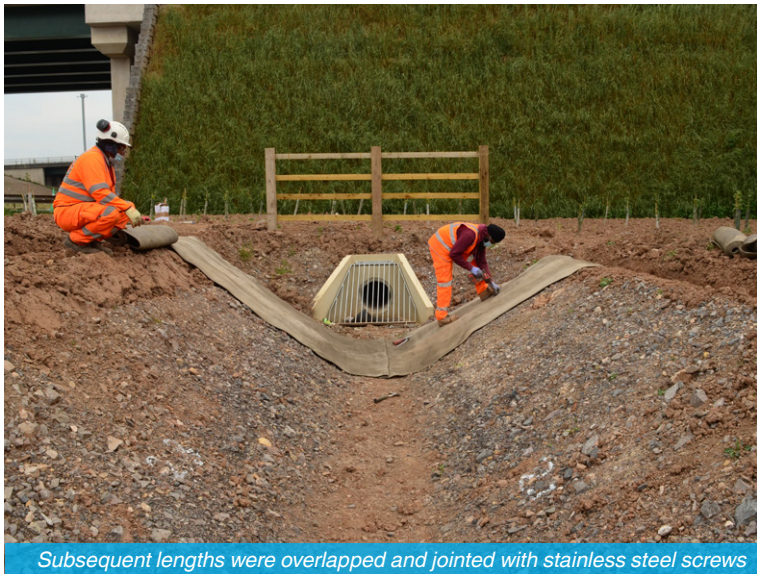
3 and 3.5m lengths of CC deployed down each channel side slope

Jointing the invert overlap



Subsequent lengths were overlapped and jointed with stainless steel screws

CC edges captured in the anchor trenches with ground pegs

View of channel invert

Termination detail at either end of the channel

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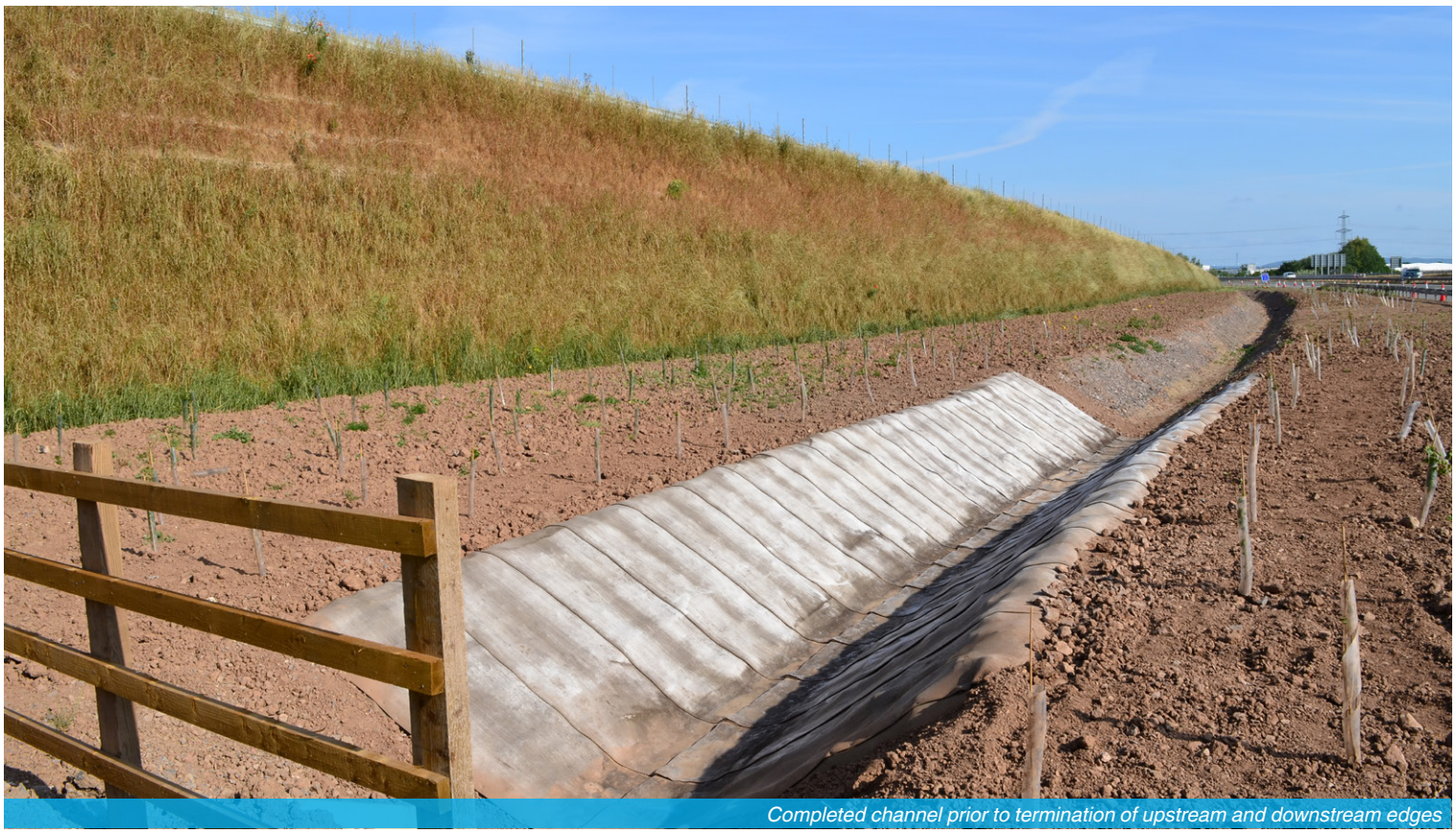

Completed channel prior to termination of upstream and downstream edges

This installation method was repeated down the length of the channel section. Once completed, the CC was hydrated using a 1000L bowser and jet wash with a spray setting to prevent potential washout of fines which could result from the use of a direct jet of water. As a result, the CC was hydrated in a controlled way and the water evenly distributed.

A total of 140m^2 was installed over just two days by a team of four. The installation of CC8™ on this section of channel will provide erosion control and prevent the formation of scour pockets and undermining in the soil along the section of channel at the headwall outlet, particularly during rain and storm events.

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