

Project Info



01 / 10 / 19



CC8™ Batched Rolls



400m²



Transverse layers



NI Water Drumaroad
WTW, County Down,
Northern Ireland



Graham Construction



CC8™ was used to line a channel to collect scour water from the new water treatment tank along with emergency over flow from the water treatment works.



Completed installation at the Drumaroad Water Treatment Works

In October 2019, 400m² of Concrete Canvas® (CC) GCCM* was used to line an 80m long channel at the Northern Ireland Water Drumaroad Water Treatment Works in Castlewellan, County Down. The channel currently collects surface run off water from upstream and transports it to a local watercourse where it is safely discharged.

As the sole provider of water and sewerage services in Northern Ireland, NI Water deliver 560 million litres of quality drinking water and treat 330 million litres of wastewater. The Drumaroad Water Treatment Works is the largest in Northern Ireland and currently treats 155 million litres of water per day. As part of the expansion works on site, CC8™ was specified by AECOM for the channel lining section of works and the installation was completed by Graham Construction.

The site conditions and inclement weather during the installation presented several challenges for the contractor. The channel was located in a bogland area and the ground was saturated due to heavy rainfall. The ground had sufficient bearing capacity to accommodate a 13 tonne excavator cutting the channel profile, but the additional weight of lifting and transporting heavy loads would cause the plant to sink, unless temporary haul roads were created. This would have required additional time to import aggregate and create the temporary platforms, increasing project costs. As a result, options such as precast or poured concrete were discounted. Ultimately, CC was chosen as it is available in man-portable batched rolls, reducing the requirement for heavy plant machinery, while its flexible nature meant it could easily accommodate the channel profile without additional excavation and preparation.

*Geosynthetic Cementitious Composite Mat





Bog area prior to excavation



Saturated ground following excavation



Precast headwall with 1200mm twin pipes on upstream side



CC8 batched rolls delivered to site



Temporary diversion channel excavated to divert water



Deploying CC transversely across channel



Hydrating CC below overlaps



Screwing joints & pinning CC into anchor trench



Channel during installation



Precast headwall & CC interface



Headwall section completed



Completed installation



CC channel location on WTW site

80 batched rolls of CC8™ were delivered to site and the channel excavated with a 13T excavator. The contractor ensured the total width of the channel, including anchor trenches on either side, measured 4.5 linear metres so as to match the length of each batched roll to eliminate material wastage.

The rolls were deployed transversely across the width of the channel with the layers overlapped by 100mm, shingled in the direction of water flow, and screwed together at 200mm intervals with stainless steel screws. The joints were not sealed to create weep paths that would prevent the build-up of hydrostatic pressure behind the material. To mitigate water ingress beneath the material, the edges of the CC were terminated into 150mm hand-dug anchor trenches on either side of the channel, with the material pinned and backfilled.

On the upstream side, a recently installed precast concrete headwall contained 1200mm twin pipes which discharged the water into the channel. The CC was terminated into an anchor trench at the headwall interface and the trench backfilled with poured concrete to prevent water ingress and provide a smooth transition from the headwall into the CC lined channel.

The material was hydrated as the contractor moved upstream using a pump and hose with a diffused spray nozzle from surface run-off in the channel. Unlike most concretes, CC uses a specialist high early strength concrete with a limited alkaline reserve. It has a very low wash out rate and when combined with the volume of water required for hydration, these characteristics mean that CC run-off can be directly discharged into the local water course without the need for prior treatment.

Despite the very difficult terrain and inclement weather conditions, 400m² of CC8™ was installed within 1 week with an installation crew of 4 people. The material will provide long-term scour protection and erosion control for the channel and the contractor and client were impressed with the ease and speed of installation.