

## Project Info



11 / 05 / 21



CC8™ Bulk Rolls



450m<sup>2</sup>



Transverse layers



Boghill Dam, Mallusk,  
Co. Antrim, N. Ireland



Hydepark Road  
Developments



CC was used to provide  
an erosion control  
barrier and channel  
lining solution to an  
existing reservoir outlet  
channel



Completed CC lined channel at Boghill Dam in Northern Ireland

In May 2021, 450m<sup>2</sup> of Concrete Canvas® (CC) GCCM\* was used to line a channel at the Boghill Dam in County Antrim in Northern Ireland.

The Boghill Dam is an 18th century Mill dam near Mallusk. Following independent assessments at the dam, the structure was found to be unsafe and houses situated downstream from the reservoir were potentially at risk from flooding.

In order to make the dam safe and ensure it complies with regulations, a decision was made to reduce water levels in the dam. As part of these works on site, CC was specified by AECOM for the outlet channel lining section of works and the installation was completed by the client, Hydepark Road Developments.

The CC channel lining project involved the installation of CC8™ as an erosion control liner for an existing outlet channel which carries water from the reservoir from an inlet chamber and discharges it downstream into a headwall.

The channel in question measures 90 linear metres long, 1m wide at the base with steep side slopes, varying between 45-70 degrees, which required lining up to 1.5m on either side.

\*Geosynthetic Cementitious Composite Mat





The site conditions and inclement weather presented several challenges for the contractor. The site was located in a remote, difficult to access area with the channel situated at the toe of a steep slope which carries surface run off. The restricted site access prevented traditional concrete options which require a mixing truck to be present on-site.

CC was ultimately chosen as it needs no such machinery and the material can be easily installed in areas which may be hard to access for traditional methods. The material also provides a long-term erosion control solution for the client and has been granted a 120-year durability certificate from the BBA.

Bulk Rolls of CC8™ were delivered to site and the channel was excavated using a 13T excavator. The Bulk Rolls were mounted onto a spreader beam and hung from the excavator before being deployed transversely across the channel.

The CC was then cut to required lengths using a utility blade to eliminate material waste. The CC layers were overlapped by 100mm, shingled in the direction of water flow, and screwed together at 200mm intervals with stainless steel screws. When hydrated, the cementitious mix within CC begins to set around the threads of the screws, creating a strong mechanical joint while still providing a natural weep path between the layers that can release hydrostatic pressure in the steep embankment of the channel.



*The Boghill Dam*



*Outlet channel prior to works commencing*



*Channel excavated and inlet pipes installed*



*CC Bulk Roll dispensed from excavator mounted spreader beam*



To mitigate water ingress beneath the CC, the edges were terminated into 150mm anchor trenches on either shoulder of the channel, and the CC was pinned with 250mm galvanised pegs and backfilled with soil.

On the upstream and downstream sides, the CC8™ was terminated into an anchor trench at the inlet chamber and headwall interface and the trenches were backfilled with poured concrete to prevent water ingress and provide a smooth transition from the inlet chamber into the CC lined channel. The CC was hydrated as the contractor moved upstream using a pump and hose with a diffused spray nozzle.

CC uses a specialist high early strength concrete with a limited alkaline reserve and has a very low wash out rate. When combined with the volume of water required for hydration, these properties mean that CC run off can be directly discharged into the local watercourse without the need for prior treatment. Unlike most concretes, CC is not classified as an irritant and is less damaging to the environment. Once hydrated, CC has a working time of 1-2 hours, allowing for installation even in wet weather or underwater.



CC laid transversely across the channel



CC layers screwed using auto-fed screw gun



Inlet pipes installed to relieve hydrostatic pressure from the embankment



Headwall and corner detail





Completed outlet channel

A total of 450m<sup>2</sup> of CC8™ was installed in three days by a team of three people, despite the difficult to access site and inclement weather conditions. The CC will provide long-term erosion control for the channel and significantly reduce future maintenance requirements.

*“We decided to use Concrete Canvas in this project to help us reduce the risk of flooding from the reservoir and in particular provide long term erosion control for the outlet channel during heavy rain. Due to the remote and difficult access to the site, traditional concreting methods would have been extremely difficult. Concrete Canvas allowed us to work around the access restrictions and easily transport the material on site. We were pleased with the speed and ease of the installation of the material and how it could easily be shaped to outlet trench. The material also provided a means of rapidly installing a low carbon concrete channel whilst maintaining the natural aesthetic of the scheme.”*

John Stewart  
JSR Homes Ltd  
(on behalf of Hydepark Road Developments)