

## Project Info



21 / 04 / 21



CC8™ Batched Rolls



35m²



Longitudinal lay-up



West Devon



Devon County Council  
and Mac Plant Ltd



CC8™ installed to  
prevent erosion beneath  
an outfall



Completed Installation

In April 2021, Concrete Canvas® GCCM\* (CC) was used to provide scour and erosion control beneath an outfall on a rural road in West Devon. The surface of the old road had begun to crack due to slope instability. The solution was to rebuild the entire section of road on a new embankment and install modern drainage to intercept the surface water run-off. As part of the new drainage system a new outfall carried surface water run-off from the road and discharged it into a nearby stream at the bottom of the embankment. Concrete Canvas® (CC8) was specified as the ideal choice to line the outfall due to the speed and ease of install on a steep slope. The works were carried out by Mac Plant Ltd for Devon County Council.

Concrete Canvas® is the original GCCM and the first product to declare conformance to [ASTM D8364](#) – Standard Specification for GCCMs. This is the only internationally recognised GCCM specification standard and lists erosion control applications by three classifications, Type I, Type II and Type III. It defines the minimum performance values required for each type based on the use of test methods that are specific to GCCM materials. [ASTM D8364](#) is an important resource for clients, consultants and contractors wishing to ensure the GCCM used on their project is fit for purpose.

CC8™ is a Type II GCCM as defined in [ASTM D8364](#) 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







*CC8™ Batched Rolls being transported to the top of the outfall*



*Batched Rolls installed longitudinally down the outfall*



*Screwed lap joint detail*



*Galvanised steel pegs used to fix the CC8™ to the ground*



*Opening cut into CC8™ material for 250mm dia twin wall carrier pipe*



*Twin wall carrier pipe installed into outfall channel with a overhang detail*





*Auto-fed screwdriver being used to joint the CC8™ using 30mm stainless steel screws*



*An excavator bucket was used to collect water from a nearby stream to hydrate the CC8™*



*Large rocks used to slow water flow as it left the outfall*





*Completed and lined channel with water flowing from the outfall*

It was decided that due to the steep slope that CC8™ batched rolls were required (instead of standard bulk rolls). CC8™ batched rolls weigh 60kg's each and could be carried into place by hand. They were installed longitudinally along the channel meaning there would be little to no requirement for plant or machinery during installation.

The ground was made of re-graded and compacted fill material and the outfall channel was cut into the slope using an 8-tonne excavator. All debris and loose rock were removed from the channel to give a smooth surface for the CC8™ to be placed on. It is important that the PVC backing of the Concrete Canvas material is in direct contact with the soil substrate. Once the CC8™ had been placed along the channel it was jointed using a simple screwed joint. 30mm stainless steel screws were driven along the 100mm wide lap joints at 200mm centres. This provided a mechanically secure joint but still allowed a natural weep path for groundwater to seep into the channel. An auto-fed screw-driver was used to insert the screws to reduce the installation time.

Galvanised steel pegs (250mm long) were inserted along the edges of the CC8™ material at 1m spacings using a 4lb lump hammer. This ensured that the material was fixed to ground and would not slip down the steep slope. The edges were backfilled with soil to provide a neat termination and prevent undermining.





*Completed lined channel*

A 250mm diameter twin-wall carrier pipe was situated at the top of the outfall and was easily accommodated into the CC8™ lined outfall. Prior to hydration CC is flexible and can easily be cut to incorporate pipe penetration details. At the trailing edge, rocks were placed over the CC to slow the water flow and prevent erosion and scour as the water entered the adjacent stream.

The water required to hydrate the CC8™ was sourced from the stream at the toe of the embankment. CC does not require potable or clean water for hydration and the material has a very low alkaline reserve. This meant that during hydration the surface water run-off could be discharged directly into the stream and did not negatively affect the flora and fauna. Unlike poured in-situ concrete, the washout from CC does not typically need to be treated. This was a crucial consideration because the stream joined the River Lyd 50m from the outfall. Pollution of the River Lyd would have resulted in potential fines for the contractor. A team of two groundworkers lined the 20m long outfall over an 8-hour shift. One key benefit of using CC is it offers time and cost-saving opportunities due to significantly reduced installation times.

As a result of installing CC8™, Devon County Council and Mac Plant Ltd provided a long-term erosion control solution that would prevent future degradation of the slope. The CC8™ material effectively controlled the flow of water down the slope, whilst preventing further saturation and potential instability.