

## Project Info



05 / 11 / 18



CC8™ Batched Rolls



150m²



Transverse layers



Near Southwaite,  
Cumbria, UK



Network Rail



Masonry culvert lined  
using CC8™ to prolong  
its working life and  
prevent erosion



Completed installation

In November 2018, Concrete Canvas® (CC) GCCM\* was specified for use as a culvert lining solution. The culvert is situated below the west coast mainline, owned by Network Rail, near Southwaite in Cumbria.

While the culvert was in a fair condition prior to the works, it was a masonry structure which had become overgrown with weeds and was in need of a lining solution to prevent erosion of the masonry floor and walls, and prolong its working life.

CC was chosen for the project by Network Rail due to its ease of install, use and transportation on site. The limited access to site meant any materials had to be transported down a muddy slope via wheelbarrows or trolleys. As a result, CC's man-portable batched rolls were specified.

The client, Network Rail, carried out works for this project themselves, with support provided by internal design engineers.

Prior to installation, any missing sections of masonry or large voids were filled to prevent water ingress below the CC material. Vegetation was removed, and sections of a wall were repaired and repointed where required.

\*Geosynthetic Cementitious Composite Mat







*Proximity of culvert to rail line*



*Site access*



*Water overpumped*



*Culvert prior to works*



*CC batched rolls transported by trolley*



*Fixing CC to masonry wall*





Jointing overlaps using shot-fired nails



Termination of CC edges using steel bars and grout



Hydration of CC on walls



Grout & stones applied to CC floor to provide rocky surface for fish



Termination details on wall outside culvert



CC edges grouted to prevent ingress at wall





*Completed installation, with additional stone floor*

Working with the design engineer and Site Agent, the batched rolls of CC were cut to 3.5 linear metre lengths which covered the invert of the culvert and the return up the walls on each side to a height that would be above a high-water line. Batching the material to the exact required lengths allowed for minimal wastage and made the material easier to handle in the culvert.

The material was fixed to the masonry culvert with a mixture of shot fired nails and masonry bolts at 200mm centres on each overlap. The termination detail on the wall of the culvert was a galvanised steel strip securing the edge of the canvas to the wall and the galvanised strips were secured at 300mm centres. At the end of the installation a small bead of grout was then added to the top of the strip to neaten the edges and further prevent ingress of water.

The material was hydrated in accordance with CC's hydration guidelines. Water from the upstream side of the culvert was used with a sump pump to hydrate the material, with buckets used to hydrate CC on the culvert walls.

The installation was carried out over a five days, including culvert preparation, by a team of 5. The Site Agent was impressed with the ease of installation of the material and how easily it moulded into shape.