

## Project Info



11 / 09 / 17



CC13™ Bulk Rolls



160m<sup>2</sup>



Transverse layers



Cooks Bridge, Midhurst,  
West Sussex



Suttle Projects



CC13™ was used to provide scour protection and increase the working life of a culvert in West Sussex.



Completed culvert in use

In September 2017, Concrete Canvas® GCCM\* (CC) was used to line a culvert in Cooks Bridge, Midhurst, West Sussex. The culvert was situated under a highway, and provides the only passage under the road for the stream; however, the existing corrugated steel culvert had corroded over time, in part due to the abrasion from sediment and gravel transported along the channel in high flow conditions. The flow of water started to erode the soil beneath the structure, affecting the long-term performance of the culvert. CC was specified to provide scour protection to the culvert and increase the working life of the structure. The works were carried out by Suttle Projects for Igroup/Balfour Beatty Living Places/West Sussex County Council.

Bulk rolls of CC13™ were delivered to site ahead of installation and mounted on a spreader beam to lift the material for batching on the side of the highway above, before the batched lengths were lowered and transported by hand into the culvert. Water was diverted away from the culvert during works using sandbags and overpumping to avoid high water levels in the culvert and the CC being hydrated too quickly, allowing plenty of time to work with the material, as it has a 2-hour workable period following initial hydration before it begins to harden.

To prepare the culvert, debris was removed from the corrugations and the culvert surface was cleaned to remove any sediment, some of which had solidified. The corrugation inverts were then filled with a rapid-set grout to ensure an even surface for the CC to be fixed to, as well as ensuring the material was flush to the culvert and to avoid any voids between the culvert and material. Grout was packed locally around protruding bolts and nuts to avoid potential puncture points.

\*Geosynthetic Cementitious Composite Mat







*Site access was very restricted*



*The waterflow was restricted for the works using sandbags*



*And water redirected using overpumping*



*The culvert prior to prep and installation*



*The culvert floor was corroded and heavily sedimented*



*Quick-set grout was used to fill the voids in the corrugates*





*The grout provided a flat surface to lay the CC on top of*



*The CC was laid transversely across the culvert floor*



*CC was fixed to the culvert using tech screws*



*Voids behind the fixed CC were filled using more grout*



*CC extending onto concrete apron, fixed using tech screws and grout*



*CC aprons at the start of the culvert*





Completed culvert

The CC material was then laid by hand, transversely across the base of the 23m x 6m culvert. The material was fixed to the culvert by drilling holes through the steel and fixing in place using tech screws. The CC was fixed along its edge at roughly 150mm intervals. Additional fixings were then applied at 300-500mm intervals, to help the material fit to the curve of the culvert successfully. Each additional layer was laid in the direction of waterflow, with an overlap over 100mm, and jointed using Clearfix adhesive sealant for added impermeability. Sandbags were then placed on top of the joints to weigh them down while they dried. Once installation was completed, and the grout set, the CC was hydrated using water from the stream.

Once set, the voids at the sides of the culvert and CC material were sealed by filling with poured grout to prevent ingress. At the start of the culvert, where there was a concrete apron, the CC was extended onto this and screwed in place, before a grout fillet was applied along the entire length to prevent water undermining. At the end, the CC was cut level with the headwall and another grout fillet applied and the edge buried with a larger stone.

The project as a whole took 11 days to complete, including mobilisation and preparation work. A total of 160m<sup>2</sup> of CC13™ were installed, fixed and hydrated in 3 days by a team of 4 people (with the majority of the installation time spent fixing the CC to the culvert with tech screws), on a site with limited access and material transported into position by hand.

***“We found Concrete Canvas very easy to deal with. They were extremely helpful and informative about the services they provide and the product itself. They arranged to visit the site to give an informative tool box talk to operatives. The material itself was simple to install, and the speed of install was surprising. We are very pleased with the finished product and will continue to work with Concrete Canvas.”***

Liam Tucker  
Director, Suttle Projects