

Project Info



04 / 05 / 2020



CC8™ Batched Rolls



45m²



Transverse layers



Kent, England, UK



T Body Jnr Plant Hire Ltd.



CC8™ used to provide a remedial lining solution to a culvert located below a main road in Kent



Completed culvert lining installation in Kent, England

In May 2020, Concrete Canvas® (CC) GCCM* was chosen as a culvert lining solution. An existing culvert located below a main road in Kent had degraded over time as a result of erosion caused by the stream which runs through it. As a result, significant rusting and perforations were seen in the corrugated steel structure and a solution was required to remediate the floor of the culvert.

The client, Kent County Council, had previously worked with CC and therefore did not consider any alternative solutions for the project. Works were carried out by T Body Jnr Plant Hire Ltd.

The flexibility of the material prior to hydration means it can easily conform to the shape of culvert floor, while providing excellent erosion and abrasion resistance when set. CC has a durability in excess of 120 years as certified by the BBA meaning the working life of the culvert would be greatly extended, in turn providing significant cost savings associated with future maintenance or complete replacement of the asset.

Installation of the material was made difficult due to the confined space of the culvert, while the culvert is located below a road, with very limited access to site provided by a small, steep track at the roadside. As a result, batched rolls of CC8™ were manually transported on site as a two-man lift, reducing logistical requirements and eliminating the need for heavy plant on site.

*Geosynthetic Cementitious Composite Mat





Culvert prior to works



Signs of degradation, rust and flaking of the bitumen coating



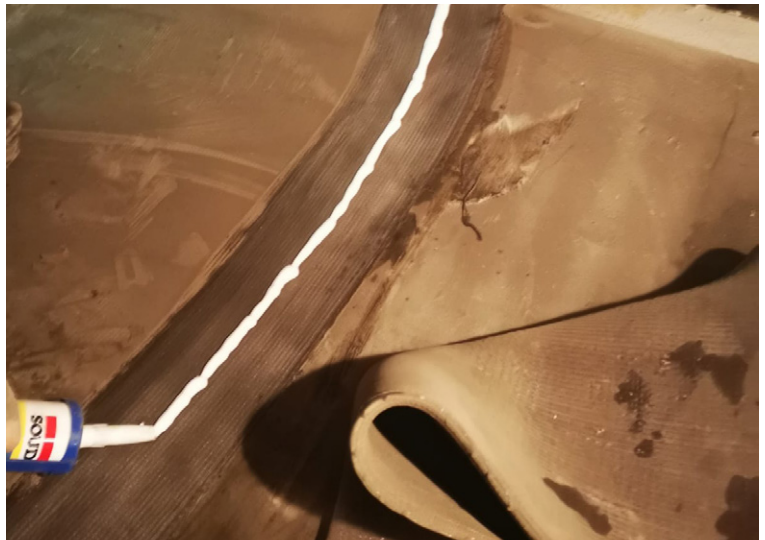
Power hose used to remove bitumen coating, sediment and surface rust



Application of grout to culvert floor and walls



Batched rolls of CC were transported through the culvert on a trolley



Sealant used to reduce permeability of joints



CC attached to wooden battons using stainless steel screws



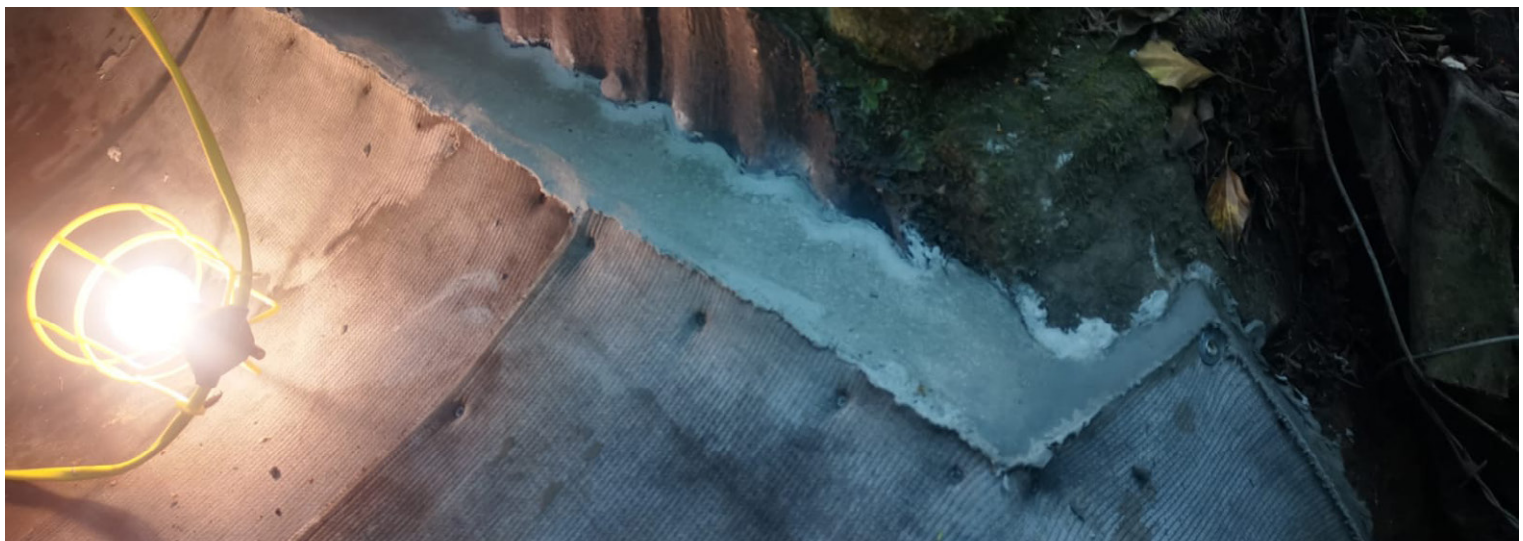
CC edges cut level with wooden batton for neat termination



Grout applied around edges to prevent ingress post-hydration



CC attached to masonry exterior using shot-fired nails



Termination detail outside culvert



Completed culvert lining installation

Prior to installation, the culvert was cleaned and a preparation layer installed. All corrugation inverts were then filled with a fast setting grout to provide an even surface, eliminating any voids beneath the material and ensure a successful installation. Wooden batons were then fixed to the culvert at the termination point on each side.

In order to accommodate the challenging site conditions, small staging areas were created using plywood at either end of the culvert where the material was stored during works. Each batched roll of CC8™ was unwrapped roadside, cut to the exact size required to cover the culvert floor and then carried down to the staging area where it was covered and kept until the contractor was ready to install the material.

Starting at the downstream end of the culvert, each pre-cut length of CC was transported into the culvert using trolleys, unrolled transversely across the culvert floor and the ends fixed to the wooden batons using stainless steel screws. Subsequent layers of CC were shingled so as to overlap the previous layer by 100mm. The material beneath the overlaps was hydrated before a bead of adhesive sealant was applied. 30mm stainless steel screws were then used to reinforce the overlaps. Following installation, the material was hydrated using a bowser and hose attachment.

Once the material had set, grout was applied to the raw edges of the material and over the wooden batons to prevent water ingress below the material and provide a neat termination detail. At the entrance and exit of the culvert, CC aprons were created and secured to the masonry using anchor bolts and further grout applied to the material edges.

A total of 45m² of CC8™ material was installed by a team of four from T Body Jnr Plant Hire Ltd. The project was a success. The client was happy with the outcome, especially with the speed and ease of installation despite the limited site access and restrictions within the culvert.