

Project Info



01 / 08 / 19



CC8™ Batched Rolls



135m²



Transverse layers



Fingal County, Dublin, Ireland



Glas Civil Engineering



CC8™ installed as a remedial solution for three masonry culverts



Completed CC culvert lining installation in Dublin

In August 2019, Concrete Canvas® (CC) GCCM* material was specified by O'Connor Sutton Cronin Consultant Engineers to remediate three dilapidated bridge culverts in Fingal County in Dublin.

The Fingal bridge repairs consisted of renewal works to three structures, Colecot Bridge, Knightstown Bridge and Calliaghwee Bridge, which are located throughout the county council's constituency. Installed by Glas Civil Engineering on behalf of Fingal County Council, the three culverts were lined in 5 days with a crew of four.

The majority of the CC installation works were carried out at the Calliaghwee Bridge, which is a single-span masonry arch bridge, spanning a length of 2.58m and a width of 6.86m. The masonry is square cut in the arch's facing stones, while the arch barrel, spandrel walls and parapet walls are made up of rubble masonry. Prior to the works, the culvert was in a fair condition, however a lining solution was required to prevent further erosion of the masonry floor and walls, and extend the working life of the structure.

CC was chosen for the project due to its ease and speed of installation. In addition to this, the portable batched rolls of CC8™, which can be installed without heavy plant and with simple hand tools, allowed the contractor to readily transport and install the material on a site with very restricted access.

*Geosynthetic Cementitious Composite Mat





CC batched rolls were specified due to restricted site access



Downstream culvert face prior to works



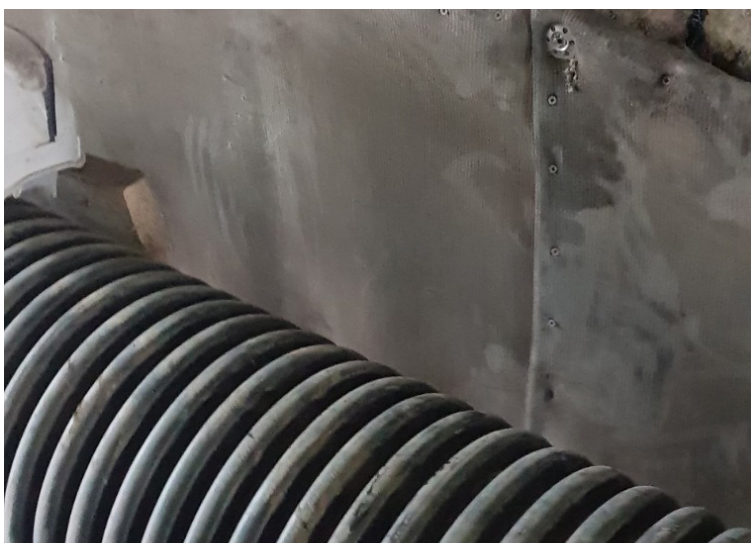
Upstream face prior to sandbags being used to dam water flow



Water overpumped & diverted with HDPE pipe



CC laid transversely across culvert with riverbed reinstated in invert



CC overlap with Hilti stainless steel fixings at regular intervals



Grout applied to top edge of CC to prevent water ingress



Downstream side completed



Completed installation on upstream side



River running through completed culvert lining installation

Prior to works commencing, the river was dammed using sandbags upstream from the culvert and the water was diverted into a HDPE pipe, which was held off the ground with temporary wooden frames, for the project duration. To prepare the culvert, vegetation was removed from the invert and walls and any missing sections of masonry or large voids were filled with a semi-dry mortar mix to provide a flat profile and eliminate voids underneath the CC material.

Due to restricted site access, batched rolls of CC8™ were delivered to site and unrolled by hand transversely across the width of the culvert. The 4.5 linear metre lengths of each batched roll provided sufficient material to cover the invert of the culvert and the return up the walls on each side to a height 100mm above the high-water line.

The adjacent CC layers were overlapped by 100mm and shingled in the direction of water flow to ensure the flow was directed over the joint. The material was fixed to the masonry culvert with stainless steel fixings and washers at 200mm centres on each overlap. CC was installed 150mm below the existing riverbed level and the excavated river bed material was placed over the installed CC at the end of the project. The top edges of the CC were then sealed with a line of grout to prevent water ingress behind the material.

The CC material was extended 1.2 metres from the upstream face and 5 metres from the downstream face of the bridge. Anchor trenches were dug on both sides to capture the CC edges and backfilled with material to prevent water ingress. The contractor used the water running through the HDPE pipe to hydrate the CC material with a hose pipe at the end of each day.

In total, 135m² of CC8™ material was installed by the contractor in five days with a crew of four. The client was impressed with the ease and speed with which CC was installed, along with its minimal environmental impact. CC is likely to be used on further culvert projects in the region.