

Project Info



04 / 10 / 19



CC8™ Bulk Rolls



324m²



Transverse layers



Brgy. San Gregorio,
Laurel, Batangas,
Philippines



PGA-Earth Structure
Solutions, Inc.



CC8™ installed as a
channel lining solution
for drainage channels
situated alongside a
highway and on a steep
slope face



Completed channel lining section down slope face

In October 2019, Concrete Canvas® (CC) GCCM* was specified as a channel lining solution to provide a diversion for surface runoff from a highway towards an existing drainage channel. The project site is located in the Laurel barangay (administrative division) of San Gregorio in Batangas, Philippines.

The channel requiring lining was newly constructed, beginning as a narrow drainage channel at the side of the road and leading to a second channel which runs down the face of a steep slope to the existing drainage system below.

The clients initially considered installing concrete canals, however this posed complications due to the requirement for formworks and installation of rebars which would be a lengthy process. Due to the disproportionate steep slopes, the material's flexibility, minimum requirements for slope trimmings and requiring fewer crew members for install, it was ultimately established that the installation would be more efficient if Concrete Canvas® was used. The specified CC8™ material was supplied and installed by PGA-Earth Structure Solutions Inc.

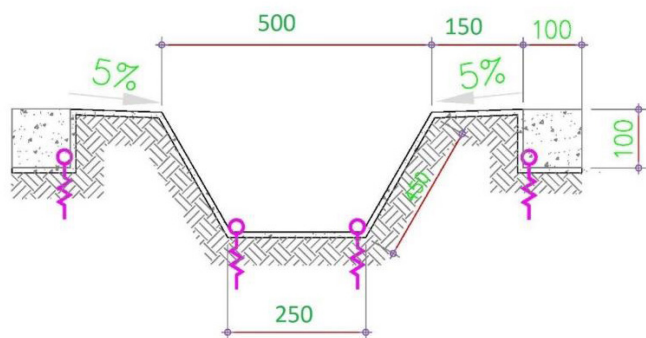
The layout for the CC installation was planned prior to works. In preparation for the installation, the channel sections were excavated and anchor trenches dug on each shoulder. A level bar was also used during this process to ensure that the water flow would travel directly down the channel. The ground was then compacted prior to placement of the CC8™.

*Geosynthetic Cementitious Composite Mat





Installation site prior to works



5 DITCH DRAIN
DETAIL USING CC8
SCALE N.T.S

Typical proposed channel lining cross section



Excavating roadside drainage channel using shovels



Roadside channel aims to divert surface runoff



Preparing channel down slope face



Section of slope following ground preparation



Installing CC at the outfall at toe of slope



Team worked from the toe of the slope to the crest



Corner detail



CC was easily installed around existing infrastructure



Completed section of roadside channel



Installation in progress

The CC was delivered to site in bulk rolls and cut to required lengths as per the plans, allowing the material to be moved into place by hand, making the installation process safer for the team, particularly when working on the slope. The CC was laid transversely across the channel's width, with each edge captured in the anchor trenches using ground pegs.

The installation began at the outfall at the bottom of the slope, with the team working upwards to ensure the overlapping layers of CC were shingled in the direction of water flow to prevent ingress. Overlaps of 100mm to 150mm were created, the material secured in place and the material below the overlap hydrated before an adhesive sealant was applied. The overlaps were then put back into place and jointed using stainless steel screws at 100mm centres. On the slope, additional fixings were used in the channel invert to further prevent ingress and undermining of the CC during high flow events.

Once installation on the slope was completed, the roadside drainage channel was laid in a similar manner. The CC was hydrated for periods of 2 hours or more and repeated an hour later to ensure sufficient hydration due to the site's prevalent drying conditions. The anchor trenches were later backfilled with poured concrete.

A total of 324m² of CC8™ were installed by a team of six over a period of three weeks as the team were simultaneously carrying out other works on the site.

The project was deemed 100% successful and CC was able to effectively divert surface runoff from the highway to the existing down-drain. CC was a cost-effective solution, provided easy application and transport and a much faster installation process compared to traditional methods. The clients are impressed with CC and are already considering using it again for their next channel lining and slope protection projects.