

Project Info



20 / 01 / 22



CC5™ & CC8™ Bulk Rolls



2,270m²



Transverse and vertical layers



Kariangau Substation,
Balikpapan, East
Kalimantan, Indonesia



Perusahaan Listrik
Negara (PLN)



CC™ used to provide
erosion protection to
slopes and channels
adjacent to the
substation



Completed CC Installation

In January 2021, Perusahaan Listrik Negara (PLN) carried out work to install Concrete Canvas® GCCM* (CC) to provide erosion control to slopes and channels at the Kariangau Substation in East Kalimantan, Indonesia.

The slopes near the substation were becoming increasingly unstable due to erosion caused by heavy periods of rainfall within the area, so an erosion control solution was needed to protect the substation. Shotcrete was considered as a method to line the slopes and prevent further erosion, but also line a channel at the toe of the slopes to take the rainwater runoff away. However, due to the location having poor access for heavy plant machinery, CC was chosen because of its speed and ease of installation and ability to be installed during the rain.

As defined in [ASTM D8364](#), [Type I](#) GCCMs, can be used for slope protection applications and [Type II](#) GCCMs can be used for channel lining on soil substrates. CC5™ is a Type I GCCM and CC8™ is a Type II GCCM and both were chosen for this project to suit the abrasion, wear and loading requirements for the slopes and channels respectively. CC5™ and CC8™ also [BBA](#) certified with durability in excess of 120 years when used in erosion control applications.

Prior to installation, sharp rocks and protusions were removed from both the slope and channel to prevent damaging the PVC backing. Once removed, both the slope and the channel were re-graded with any voids filled in to create a smooth and uniform surface.

Anchor trenches were excavated around the entire perimeter of the slopes and channels. Due to the limited access, the CC was cut and transported into position by hand. The CC5™ was installed vertically down the slopes, whereas the CC8™ was installed transversely across the channels, lapping in the direction of water flow. The CC was pegged in the anchor trenches to hold the material in place, and the overlaps were jointed using stainless steel screws at 200mm spacings. Once both CC5™ & CC8™ were installed, the material was then hydrated using a portable bowser and hose. Then the anchor trenches were back filled with the excavated soil.

The whole project was carried out by a team of 6, with 2,270m² of CC5™ and CC8™ installed. The client was extremely impressed with the speed in which the CC™ material was installed and are planning to use the material for future projects.

*Geosynthetic Cementitious Composite Mat





Slope before work commenced



CC fully hydrated



Completed channel and slope protection works