

Project Info



March 2017



CC5™ Bulk Rolls & Batched Rolls



1213m²



Longitudinal layers



Laguna Niguel, California, USA



E. Stewart and Associates



CC5™ was used to line a series of drainage channels in a public park.



Completed channel along a stretch of the footpath

In March 2017, Concrete Canvas® GCCM* (CC), branded Concrete Cloth™ in the US, was used to line a series of newly constructed drainage channels in Laguna Niguel, California, USA.

The local Public Works department needed to find a solution for a drainage and erosion issue on a popular walking trail in a public park. The trail, which runs across a large slope, was prone to damage and erosion from water runoff. Captured runoff was being directed to a point where it was dissipated with sandbags and riprap before entering a surface inlet leading to a drainpipe. This system frequently clogged with sediment and debris.

In addition to solving drainage issues, Public Works looked into reconfiguring the inlet with a more substantial, long-term solution that would enable sediment collection and allow the ‘cleaned’ runoff to flow into the drainage pipe. The chosen solution would also need to reduce annual maintenance.

Several options were considered, but it was determined that CC would be the best solution for meeting the requirements and demands of the project. The material would also be able to provide a long-term solution that would cut down time and costs associated with regular maintenance and could be easily delivered and installed despite access restrictions.

The works were carried out by E. Stewart and Associates for the Laguna Niguel Public Works department, with material provided by Milliken Infrastructure.

*Geosynthetic Cementitious Composite Mat





Path prior to installation



Existing drainage system



Drain prior to installation



Creation of channel and anchor trench



Completed drainage pipe section



Completed baffling section



Completed channel and drainage section

The material was delivered to site following ground works in both bulk and batched rolls, the latter specified to allow for easier transportation in limited-access sections of the site. Ground works had entailed re-grading the substrate and reversing the pitch of the trail and, in turn, drainage away from its edge and toward the toe of the slope. A V-shaped gutter or channel was then created along the upslope side of the trail, and the substrate compacted and graded again to meet design specifications.

The CC was installed longitudinally, with a layer each side and an overlap of 100mm. The overlaps were jointed using screws and an adhesive sealant while CC edges were fixed using ground anchors. Pre-dug anchor trenches captured material edges, which were then buried to prevent undermining.

The installation crew converted inlets – previously made with stone and sandbags – to more permanent structures. Around inlet basins, sediment capture areas were created and lined. Gravel bags placed on the slopes to aid run-off dissipation were also covered with CC, increasing durability. A 500-gallon tank was used to provide hydration.

A total of 1213m² of CC5™ were installed by a team of 5. Despite the many challenges of the project, CC was able to accommodate and improve existing infrastructure, while also providing a cost effective and adaptable solution.

The crew were able to create a unique, field adaptable application method with the custom trapezoidal channels, which incorporate sediment collection areas. CC has not only provided the area with a substantially more durable solution to handling runoff and sediment but has also eliminated a significant amount of maintenance requirement, making post-storm clean-ups safer, easier and faster to carry out, reducing labour and expenses.