

## Project Info



26 / 09 / 16



CC13™ Bulk Rolls



190m<sup>2</sup>



Transverse layers



Branscombe, Devon



South West Highways



To prevent erosion and instability of a steep slope that had recently experienced a landslide



*The finished installation, from the top of the slope*

In September 2016, Concrete Canvas® GCCM\* (CC) was used to create a drainage channel as part of remedial works to a recent landslide. The greensand on clay slope had recently experienced a slippage, created by surface water run-off from a neighbouring field, flowing down the slope causing saturation and instability. The solution involved creating a concrete channel to quickly direct future surface water run-off down the slope and under a trackway, where rocks placed in an outfall pool area would take energy out of the water before entering existing streams in the wooded area. The works were carried out by South West Highways for Devon County Council.

The trees and vegetation were removed from the slope as they were unstable after the slip and were a danger to the workforce. The slope was regraded to a safe angle, before the 70m channel was excavated by hand. The channel was excavated to purposefully create changes in depth and orientation to help control the flow of water down the slope, whilst preventing further saturation and potential further instability. Given the slope angle and soil conditions, access for heavy lifting equipment was limited and the use of conventional concrete channel linings would have been very slow or costly to install.

Because of these limitations, Concrete Canvas® was chosen to line the channel. CC is a cement impregnated geotextile that hardens on hydration to form a durable, fibre reinforced, impermeable concrete layer. CC can be cut to the exact section of any given channel, eliminating waste and accommodating variations in profile. CC's main advantages over conventional concrete are speed and ease of install, cost savings, durability and environmental friendliness.

\*Geosynthetic Cementitious Composite Mat







*Visible signs of a previous landslide*



*Vegetation was removed and the channel was dug by hand*



*CC grouted into existing channel*



*CC5™ was installed to provide slope protection at the steepest point*



*Channel connected to pipe under trackway*





*The complete drainage channel, installed entirely by hand*

CC13™ bulk rolls were delivered to the bottom of the channel, cut to the required cross section length and then transported up the slope by hand. The CC was deployed in a transverse layup to accommodate changes in channel depth and orientation, whilst reducing manual handling requirements. The CC was overlapped in the direction of water flow by 100mm, jointed using stainless steel screws at 200mm centres and anchored to the ground by the use of steel pegs. The anchor trenches at both sides of the channel were backfilled with soil, and the leading edges of the CC were grouted into the existing concrete cattle grid and pipe which ran under the trackway at the base of the structure, to prevent water ingress beneath the CC and to create a neat termination detail.

After the installation of CC, Willow was planted on the slope to assist with dewatering, and a French drain was created at the toe to relieve pore water pressures.