

Project Info

-  APR 7 April 2014
-  CC5™ Bulk Rolls
-  # 1200m²
-  Transverse layers
-  Walker, Yavapai County, Arizona
-  Environment Quality Management (EQM)
-  CC used to line drainage channels to prevent contamination of surface and storm water



Completed installation in Walker, Arizona

In April 2013, Concrete Canvas® (CC) GCCM* was specified by the United States EPA to line a drainage channel in Walker, located in the Yavapai County region of Arizona. The aim of the project was to address an acid rock drainage issue that was occurring due to surface and storm water coming into contact with mining contaminants. The specified CC material was supplied by Concrete Canvas Ltd's sales and distribution partner for Canada, Nuna Innovation Inc.

To initially address the problem, a channel had been created to capture the contaminated runoff water from four tailings piles at various points. The site was a former tailings pond which had undergone restoration several years ago. The cap and drainage system was in disrepair and no longer functioned, failing to isolate contaminants. Around 99% of the drainage channel around the tailings pile was unlined. Shotcrete had been used but had since deteriorated. This project was necessary to prevent hazardous chemicals from contaminating a residential area and a nearby creek.

Shotcrete was considered but due to the performance of the existing shotcrete, along with the cost, was rejected. A HDPE liner was also considered but would require extensive excavation to prepare the site, and specialist labour, which would both be costly.

Due to its ease of install, the lack of requirement for specialist labour and equipment and preparatory work, CC was specified. The material can also be installed in most weather conditions, and would therefore not halt progress in wet or cold weather.

*Geosynthetic Cementitious Composite Mat



Deployment and cutting of bulk roll



CC was laid transversely in both channel sections



Completion of French drain



Completing first section of channel



Pipe outflow covered with gabions and drain rock



Placement of drain rock over and around perforated pipe



Completed installation

A simple profile was excavated on the upper portion of the channel to accommodate clean drain rock which would surround an 18" perforated pipe. A simple V-shaped channel was excavated in the lower section. Roots and vegetation were then removed from the channels and a 300mm anchor trench excavated on either side.

CC was laid transversely, with layers overlapping by 100mm which were jointed using 19mm screws at 150mm intervals. Galvanised spikes, or ground pegs, measuring approximately 200mm were then used to secure the CC edges within the anchor trenches every 1m. The perforated pipe was then installed and surrounded by the drain rock following hydration of the material.

The project was completed in three days, with just 9 hours required to install the CC, by a team of 4. Had the client chosen to use HDPE, the installation would have taken 7-8 days, providing a time saving of 50-60% and a significant cost saving as a result.

The client commented that CC was easier to use than they had anticipated and it was ideal that they could hydrate a section and continue works on the next. HDPE would have caused delays as it would have to be inspected after installing before moving to the next section.