

Project Info



04 / 08 / 18



CC5™ Bulk Rolls



7000m²



Vertical layers



Sohar, Oman



Douglas OHI/BLC



CC used to prevent slippage of a channel's side wall which sits around 1.5m Diam pipes



Completed section of CC lined channel wall

In August 2018, Concrete Canvas® GCCM* (CC) was used to prevent the slippage of a channel side wall which sits around 1.5m Diam pipes. The site, located in Sohar, Oman, is a large petrochemical site.

The large channel walls measure 4m in depth by 7m in length and had suffered slippage as a result of weathering and erosion over time. The substrate is also sand-based and very fine, making it more prone to slippage. Due to the nature of the site, and the proximity of the sensitive piping infrastructure to the channel walls, piling and concrete in traditional forms (e.g. poured, pre-cast and sprayed) were not suitable. Time constraints were also an issue as the client wanted to act quickly, get the channel back into use and also due to the 50°C temperatures reached during the day would prevent the use of other solutions as they would crack. As a result, CC was the only viable option.

The works were carried out by Douglas OHI/BLC for McDermott.

In preparation for the installation, the slope was re-graded and the corners banked. The base of the channel was also excavated to ensure it lay below the level of the pipes and pipe support columns. The slope was then watered prior to deploying the CC to add compaction to the slopes when the material was laid.

*Geosynthetic Cementitious Composite Mat





Channel wall prior to lining



Channel wall covered prior to installation



CC depoyed from spreader beam



Corner detail



CC easily accomodates existing infrastructure



CC edges buried at the toe

On the first day, the arrival of the crane was delayed. In order to prevent delaying the progress of the project, the CC was deployed from a spreader beam on a fork lift, and rolled down the slope from the crest before being pegged at the crest and cut to length.

Once the crane arrived, the team found it was easier to begin deployment from the toe of the slope, which was also safer as the slope, despite being watered, was prone to slipping. Each subsequent layer of CC was overlapped by 100mm and these overlaps sealed using two adjacent lines of 7mm beads of Clearfix adhesive sealant. The joints were then screwed at 50mm intervals in a staggered line which has proven to be a more successful method for stability and security of the joints in the region, even in harsh weather conditions and high velocity water flows.

Once sealed and jointed, ground pegs were inserted at every 1m along the material edges, while pegs were inserted where required on the corners to ensure the CC held position as the pipes on the left of the slope, which were operational, caused some vibration. In some areas, the distance between the works site and the active pipe was less than 1m.

Once the installation had been completed, a 5000-gallon tank was used with a pressure pump on a 20mm nominal hose. The CC was hydrated again an hour later and again the following morning due to an increase in wind and temperatures overnight.

A total of 7000m² of CC5™ were installed over three days, with the team working between 7am–12pm and 3pm–6pm in order to prevent the team working in temperatures reaching the mid to high 40s and humidity of 98%+ in the mid-day hours.

The project was a success, and the engineers on site were impressed by the speed at which the CC could be laid and how it kept to the profile of the slope. During the course of the installation, a number of the client's engineers and additional personnel from ORPIC/McDermott visited the site to view progress and were equally impressed.

The client had originally planned 10 days for the installation to take place, providing a time saving of 70%. The installation team were also able to cut each length precisely, and smaller pieces from the bulk rolls were used as infill on the corners, ensuring less than 1% wastage overall.



CC hydrated at the end of each work day



Proximity of channel wall to pipes