BUND LINING

Project Info

- 03 / 03 / 2017
- CC5™ Bulk Rolls
- 3,000m²
- Transverse
- Far North Queensland, Australia
- undisclosed
- CC5™ was specified to maintain the height of a bund for licensing purposes.

Completed installation

In March 2017, Concrete Canvas® GCCM* (CC) was used to line a bund around petrochemical storage tanks.

Environmental Planning laws require the height of secondary storage bunds around storage tanks to be maintained, to protect the environment and the public from harm in case the storage tanks leak. CC provides hard armour weathering protection of bunds from erosion, and acts as an effective weed suppressant, also protecting against animal damage.

The existing bunds were protected in some parts by vegetation and in others asphalt, yet these methods were inconsistent, required constant expensive maintenance and have potential to become a fire hazard. The client had originally considered using poured concrete and shotcrete to maintain the bund height, but when compared to CC, the concrete options were messy, very expensive, and prone to long term cracking.

Instead, it was decided to line the bund in a GCCM. GCCM's are flexible, concrete-filled geotextiles that harden on hydration to form a thin, durable and waterproof concrete layer. The primary benefit of CC over poured concrete was the speed of installation. Time was critical in this installation as the Northern Region of Australia is hot and humid with working temperatures up to 40°C. Strict Occupational Health and Safety (OHS) procedures had to be taken into account when working in and around the storage of flammable liquids. From a health and safety perspective, the use of a GCCM significantly reduced the amount of time that people were required to work on the installation.

*Geosynthetic Cementitious Composite Mat

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Jointing the CC

CC5™ delivered to site in bulk rolls

Concrete Canvas® is the original GCCM and the first product to declare conformance to ASTM D8364 - Standard Specification for GCCM's. This is the only internationally recognised GCCM specification standard and lists erosion control applications by three classifications, Type I, Type II and Type III. It defines the minimum performance values required for each type based on the use of test methods that are specific to GCCM materials. ASTM D8364 is an important resource for clients, consultants and contractors wishing to ensure the GCCM used on their project is fit for purpose.

CC5™ is a Type I GCCM as defined in ASTM D8364 and was chosen for this project to suit the abrasion, wear and loading requirements. In preparation for the install, the subgrade was profiled, with loose soil, vegetation, soft ground and protruding rocks removed and voids were filled. The bund was topped to correct height with aggregate and compacted.

CC5™ was delivered to the site in bulk rolls, which offer the quickest installation but must be deployed using heavy lifting equipment and a spreader beam. The CC5™ was cut to specific lengths and laid vertically in position and into 300mm x 300mm anchor trenches either side of the bund. Once captured into the anchor trenches the edges of the CC5™ were then backfilled with the existing soil. When positioning subsequent CC layers, they are overlapped by 100mm and jointed. The underlap was hydrated, then a 8mm bead of approved adhesive sealant was applied before the overlap was folded back over and the two layers were secured together using stainless steel screws at 100mm.

Once the installation was complete, a water trunk was supplied to hydrate the CC5™. The CC was hydrated 3 times at 20-minute intervals at the end of each day. CC5™ cannot be over hydrated so there was no requirement to measure exactly the water: CC ratio.

A total of 3,000's m^2 of CC5™ was installed in 8 days, by a team of 4 labourers and 1 excavator, all working 8 to 10hr days. The project was very successful, as previously the vegetation had to be maintained by a crew of 3 labourers up to once a week: using petrol-powered grass trimmers around hydrocarbon storage tanks. With the installation of CC the maintenance cost has now been reduced to zero and has protected the against weathering erosion, providing clear leak detection visibility, and preventing damage from burrowing animals.

Being in a hot humid climate, until CC was installed, the vegetation had to be constantly maintained by a crew of 3 labourers up to once a week: which involved slow operations, using petrol-powered grass trimmers in a high risk zone, around hydrocarbon storage tanks. With the installation of CC the maintenance cost has now been reduced to zero and the bund is has permanently protected the bund against erosion, even after several recent cyclone events.

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