

Project Info

 19 / 05 / 17

 CCH8™ Bulk Rolls

 430m²

 Transverse and Longitudinal layers

 Lulu 92, Royal Commission Jubail, Saudi Arabia

 FOQSCO

 CCH5™ and CCH8™ were installed as a fully impermeable channel lining solution



Completed channel following installation

In May 2017, CC Hydro™ (CCH) was installed as an impermeable channel lining solution at Lulu 92, Royal Commission Jubail in Saudi Arabia.

The client, Royal Commission Jubail, required a channel to be constructed that would not erode and block the pathway of the water way, especially during heavy rains.

Conventional concrete was considered but would have required a significant amount of time and road closures. The specification of CC Hydro™ meant that installation times were significantly reduced, with the project taking just 2 days to complete. Due to the nature of the material, road closures were not required, and as a result, there were overall cost savings for the client.

CC Hydro™, a Geosynthetic Cementitious Composite Barrier (GCCB), is the world's first all-in-one armoured impermeable liner, created specifically for containment applications such as bund, lagoon and tank base lining.

CCH combines the concrete filled geotextile technology of Concrete Canvas® with a highly impermeable, chemically resistant geomembrane liner. The liner incorporates a hi-visibility welding strip which allows joints to be thermally welded with a double-track or triple-track air channel for on-site testing. CCH removes the need for protective top cover, dramatically reducing installation times and simplifying logistics.



Channel prior to works



Following profiling and grading of the channel



Compacting the substrate



Installation of geotextile



Deploying CC from spreader beam and boom truck



CC deployed from spreader beam and steel stand



Thermal welding of CCH overlaps



CCH pegged within anchor trenches



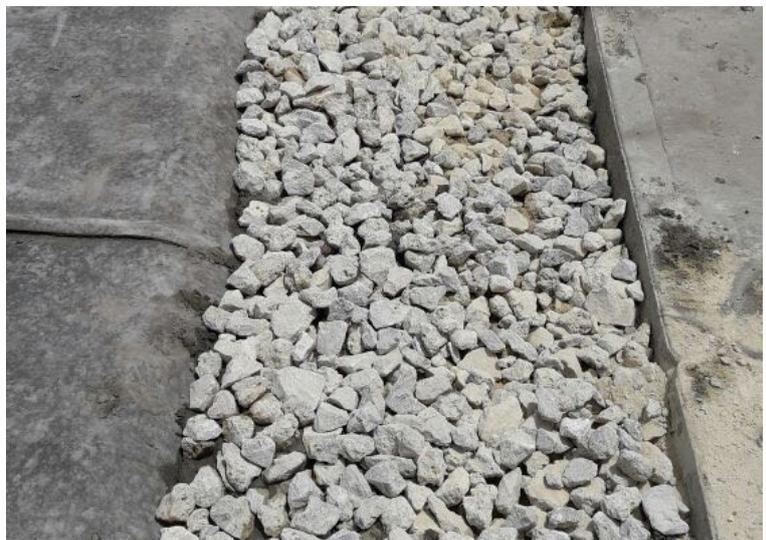
Fixing CCH to existing concrete infrastructure



Hydration of CCH was carried out in the evenings



Anchor trenches filled with poured concrete



Gravel placed over poured concrete anchor trench for neater termination



On a return visit to site in January 2020, the channel was found to be performing well

In preparation for the installation, loose soil and vegetation were removed by the client prior to handing over to the contractor, FOQSCO. The channel had crumbled over time due to erosion of the soil and gravel-based substrate. To prepare it for installation, the channel was profiled, graded and then compacted using plate compactors. Anchor trenches were then prepared on both shoulders and a layer of geotextile was laid across the channel profile to provide an additional layer of protection to the CCH geomembrane backing, preventing puncture from the gravel below.

Bulk rolls of CCH8™ were delivered to the site and mounted onto a spreader beam which was suspended from a boom truck. The CCH was then deployed transversely across the channel and cut to length in situ, with the leading and trailing ends captured within the anchor trenches and secured to the substrate using steel ground pegs. In areas that were difficult to access with the boom truck, the CCH was instead dispensed from a steel stand, cut to required length and moved into position by hand.

The CCH was laid with the edge of subsequent layers overlapping the welding strip of the last. The lengths of material were later jointed by thermally welding the PVC layers together. Stainless steel strips and anchor bolts were used to fix the material to existing concrete infrastructure.

Following installation, the CCH material was hydrated; this was carried out in the evenings when temperatures were lower to prevent evaporation of the water used to saturate the material. Rehydration was also carried out one hour later. The anchor trenches backfilled with poured concrete; the anchor trench which runs adjacent to the side walk was also covered with gravel for a neater and more aesthetically pleasing termination detail.

A total of 430m² of CCH8™ was installed in just two days, across approximately 20 hours. The project was deemed a major success and the CCH lined structure is still performing as designed over two years after installation.

The contractor re-visited the site in January 2020, and found that the CC lined channel was still performing as expected and in good condition.