

Project Info



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CC5™ Bulk Rolls



460m²



Vertical layers



Guaratingeta, São Paulo,
Brazil



CC5™ was used to
protect a slope and line
a newly constructed
drainage channel
on the site of a Gas
Distribution Plant



Completed slope at the Gas Distribution Plant in Guaratingeta, Brazil

In November 2017, Concrete Canvas® GCCM* (CC) was used to protect a slope in Guaratingeta, São Paulo, Brazil. The slope is located on the site of a Gas Distribution Plant owned by Comgas, Brazil's largest gas distribution company, co-owned by Cosan and Shell.

The slope is situated above an access road, and was highly vegetated. Therefore, the client required a solution to control the vegetation growth on the slope. As part of the works, the client also wanted to create a drainage channel along the toe of the slope, and additionally required a channel lining solution.

Shotcrete and poured concrete were both considered, but the restricted access to the slope meant that use of these solutions would prove difficult to execute. CC was instead specified due to the ability to easily transport the material on site, the reduced need for heavy plant, and its speed and ease of installation.

The works were carried out by Uniforte Engenharia for Comgas.

*Geosynthetic Cementitious Composite Mat



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The slopes prior to the works



The pre-dug anchor trench



The CC was delivered in bulk rolls and mounted onto a spreader beam



The CC was laid vertically down the slope



The material was laid flush to the substrate to avoid voids



Ground pegs fixed the CC to the substrate



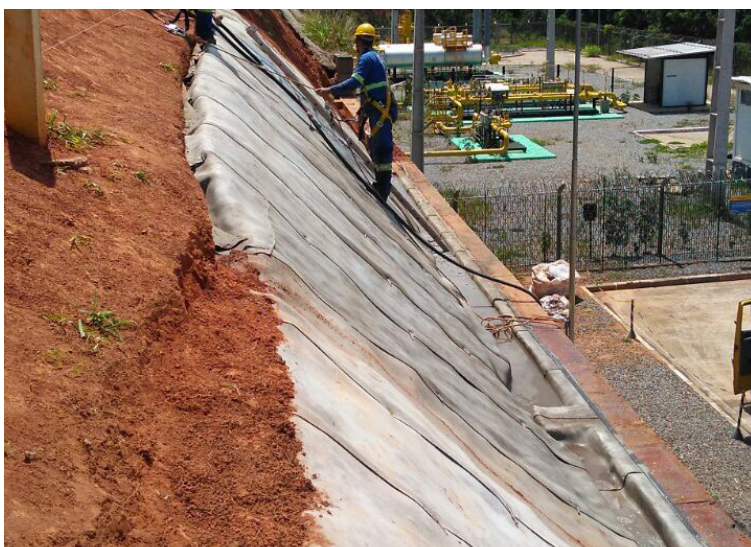
Screws were used to joint layers of material



Climbing equipment was used to install the CC on the steep slopes



A total of 460sqm of the material was used for the installation



The leading edges of the CC were buried in the anchor trench

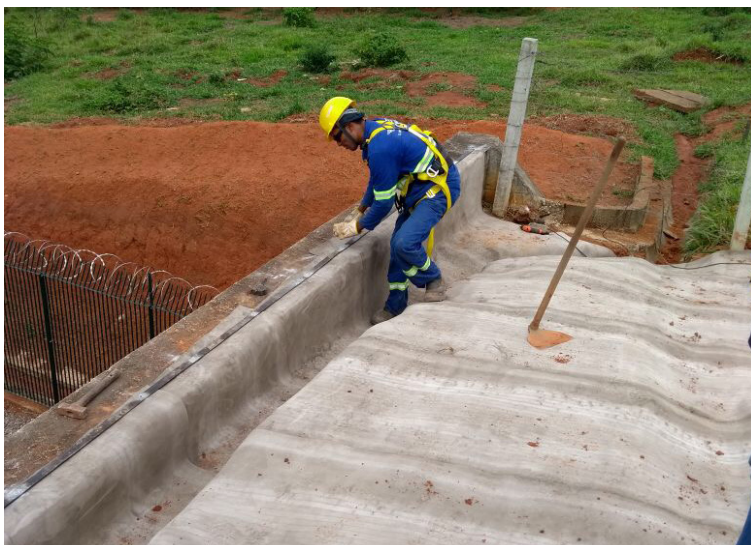
Prior to installation, all vegetation and debris was removed from the slope, and the substrate regraded. Anchor trenches and a drainage ditch at the crest and toe respectively were then dug in preparation for the laying of the CC material. The CC was then delivered in bulk rolls of CC5™, which was mounted onto a spreader beam, suspended from a crane and unrolled on the flat in order to be cut into batched lengths.

The batched material was then transported and laid by hand. The leading end of the material was pegged into the pre-dug anchor trench at the crest of the slope and unrolled down to the wall at the toe, with the team ensuring it remained flush to the substrate and drainage channel to avoid any voids forming below the material. Additional layers of CC were overlapped by 100mm and fixed to the substrate using ground pegs at 1m intervals, and jointed using stainless steel screws.

Once all layers of CC had been laid, the edges at the wall were fixed using anchor bolts and a steel bar; hand tools were then used to trim away excess material from the outside edge of the steel bar to provide a clean finish. Once installation was complete, the CC was hydrated.



Anchor bolts were used to fix the CC to the wall at the toe



Steel rods were also used to secure the material to the wall



Hydration was given via hose



CC was installed on two sections of slope



A close up view of a completed section of slope



Completed section of the slope



The two sections of completed CC-protected slope

In total, 460m² of CC5™ were installed in 5 days by a team of 6 people.

The use of CC resulted in significant time savings and a much cleaner installation in comparison to using poured concrete or shotcrete, which was incredibly important due to the nature of the site. There were also significant financial savings as there were no requirements for specialist labour.

The client was very pleased with the ease and speed of installation, and with the material itself; so much so that they decided to use an additional 60m² of the material for an additional section of the slope, bringing the original specification for this project of 400m² up to the 460m² used on the completed project.