



KAYTECH CASE STUDY

RECONSTRUCTION OF A DISTRESSED RETAINING WALL USING GEOSYNTHETIC SOLUTIONS

GEOSYNTHETICS USED

bidim®: A continuous filament nonwoven needlepunched geotextile.

bidim® A4: Used as a separation and filtration layer to facilitate drainage and support overall soil stability.

RockGrid® PC: A high-strength composite geogrid providing tensile reinforcement with high modulus characteristics to limit deformation.



CONTACT



Christiaan Van Wyk



083 265 7089



christiaanv@kaytech.co.za



www.kaytech.co.za



53 Harris Avenue, Sebenza,
Edenvale, Johannesburg

PROJECT DESCRIPTION

A previously unreinforced block retaining wall required reconstruction between two platform levels at this development site. The wall developed progressive signs of distress over time, including movement, cracking and misalignment of the block facing, indicating that it was no longer performing as intended.

Given its location near personnel and equipment, remedial action was required to address the developing instability and reduce the risk of further movement or possible failure. A geosynthetic-reinforced solution was subsequently adopted to provide improved reinforcement and accommodate the specific site and loading conditions.

A BETTER SOLUTION

Bela Casa, the contractor on site, began by carefully removing the first half of the failing wall to allow for safe reconstruction. The new design by Delta BEC incorporated Kaytech's RockGrid® PC 100/100 as geosynthetic reinforcement, installed at every three-block lift with a 3m tie-back into the fill. RockGrid® PC provides high-strength tensile reinforcement within the soil mass, helping to distribute loads and limit deformation while contributing to the overall stability of the retaining structure.

In addition, bidim® A4 geotextile was installed at each lift height behind the blocks to act as a filtration layer, preventing the loss of fine backfill material through the block face and mitigating erosion over time.

Once the first section was completed and stabilised, the second half of the original wall was dismantled and rebuilt using the same methodology to ensure consistent structural performance.

The redesigned wall incorporated RockGrid® PC 100/100 reinforcement together with bidim® A4 to provide a reinforced soil solution suited to the site conditions. The system was designed to improve stability and control deformation, while providing the necessary separation and drainage functions within the retaining structure. As with any engineered retaining system, its long-term performance remains dependent on appropriate design, construction, drainage and ongoing site conditions.

Kaytech provided on-site installation support throughout the project, helping ensure the reinforcement system was installed in accordance with the design requirements.



Did you know?



Reduced Maintenance Costs

Retaining walls reinforced with geosynthetics like RockGrid® PC can reduce maintenance costs by up to 30% and extend the lifespan of the structure significantly (Jones, 2012).



Increased Load-Bearing Capacity

Geosynthetic reinforcement solutions distribute stress more evenly, increasing the load-bearing capacity of retaining walls by up to 50% (Koerner, 2012).



Effective Soil Filtration

bidim® A4 geotextile prevents soil erosion by acting as a filter, allowing water to pass while retaining fine soil particles.