LOCAL RETAINING BLOCK ASSISTS WITH UPGRADING OF INFORMAL SETTLEMENTS

IN MARCH 2009, Cape Retaining Systems, the Cape-based retaining block manufacturer and Terraforce licence holder, was approached by Requad Construction to reclaim more habitable surface area for building low-cost homes near Kayamandi, an informal settlement in the vicinity of Stellenbosch. After some consideration, Terraforce retaining blocks were decided on, as they provide a cost-effective, yet durable method for creating platforms and road/sidewalk support on the old farmland earmarked to provide 380 emergency homes to families who are currently living on what will eventually become the parking area for the upgraded Kayamandi sports field and Tourism Centre.

Says Henk van Renssen, project engineer with Arcus Gibb, the engineering and science consulting company involved in the project: "The site, called TRA2 (Temporary Relocation Area 2), forms part of the bigger Watergang Housing Project and will soon be home to 380 families who need to be relocated so that urban upgrading can take place in the area. The homes, for now consisting of basic wooden structures, will eventually give way to 100 permanent homes. The goal is to provide more formal housing in the long run, while improving the general environs."

The retaining blocks used at the Kayamandi site were pioneered by Terraforce – a Cape Town-based precast concrete licensor – 30 years ago and represent one of the most energy-efficient segmental retaining wall systems. Says Jeremy Leighton of Cape Retaining Systems: "What makes this product so popular in the industry is that the blocks require low hardware input for manufacture, and have low transport costs and low inventory requirements at sales outlets. They are hollow, yet strong enough, and require less concrete to do the job when compared with solid block systems, which of course saves money."

He adds that: "Concrete retaining walls constructed using the Terraforce system are easily formed into complex curved shapes or into walls in which the upper and lower profiles are continuously changing. The system also allows you a choice between round face (plant supportive) or flush face (smooth or split version) to suit specific requirements. Above all, they present a closed vertical surface structure that provides the maximum amount of soil mass within the wall, which prevents backfill spillage, while at the same time offering uninhibited permeability."

The first concrete foundations at Kayamandi were laid in November 2009. Each of the three walls is fitted with a 110 mm subsoil drainage pipe that runs along the entire length of the wall and exits through weep holes cut into individual blocks at regular

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intervals. As the walls were built up, a sand drainage layer of 500 mm was filled to the top to prevent possible damming up of water.

A similar project using Terraforce blocks was initiated by the Swaziland Ministry of Urban Development to provide urban upgrading in the suburbs around Mbabane, where steeply sloping and easily erodible topography in a high-rainfall area posed some unique challenges to the local town planners. To prevent further serious damage to the environment, remedial measures were carried out, using manual labour as much as possible. Terraforce LTI blocks and Terracrete hard lawn blocks, supplied by Milito Precast of Manzini, were found to be ideal for providing the following:

- Stormwater drainage channels (Terracrete blocks), filled with soil or soilcrete, depending on the anticipated velocity or volume of water flow
- Cascades, stilling basins and small diversion weirs, filled with soil or concrete as required
- Gravity retaining walls as and when required for road widening or improved stormwater drainage
- Drift crossings and weirs across small streams
- Hard surfaces (Terracrete blocks) at various strategic locations for parking refuse collection bins.

According to Michael Toepfer, owner of Milito Precast, Terraforce products provided cost-effective, environmentally sound solutions, as well as job opportunities: "The blocks are manageable enough to allow manual labour to be used to install them and many unemployed locals managed to find work during the construction period. Because lots of smaller walls were built, no heavy machinery was required and the locals, armed with a shovel and pick, were able to lay the blocks themselves. The workforce came directly out of the informal settlements, and they were monitored and trained by recommended contractors and supervisors."

1 *A Terraforce wall creating a level platform for emergency housing and roads in Kayamandi, Stellenbosch. Here the wall runs around a stormwater drain*

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