

# Massive CRB walls stabilise warehouse building platform

**A**veng Infraset's RidgeBloks® have been used for the construction of two exceptionally large concrete retaining block (CRB) walls which were essential components in securing a bulk-fill terrace and a large post-tensioned concrete surface bed at Tunney Ext 12 in Germiston. The surface bed supports a warehouse and distribution centre built for earth-moving-equipment giant, Komatsu.

Variable geology and sloping land presented an exceptional set of challenges in the successful execution of this project.

The CRB walls were specified by the project developer, Investec Property, and were designed by Verdi Consulting Engineers (Verdicon) in collaboration with international consulting giant, Hatch. Local earthworks contractor, Power Construction, was engaged for the civil work and Valcal International constructed the retaining walls.

The lower wall, 450 m long and topping 13 m, was built to face off and secure the bulk-fill terrace above, maximising the space available for development. The upper wall, 436 m long and 15 m high, stabilises the embankment which rises above the building platform. It was a cut-and-fill operation which involved the blasting and excavation of large quantities of rock.

Verdicon MD, Trevor Green, said that besides creating additional usable space, the advantage of CRB walls is their modularity which makes them sufficiently flexible to accommodate ground movement while retaining structural integrity.



*Aveng Infraset Landscape Products sales manager, Brennan Small, stands in front of the 13-m section of the wall in-fill.*

"By contrast it takes only minimal movement for reinforced concrete or brick walls to crack while an equivalent wall in reinforced concrete is typically several times more costly. We specified Aveng Infraset's RidgeBloks® for the Tunney project primarily because they are solid, unlike most other blocks on the market which are hollow, and their interlocking design prevents them from sliding, a distinct advantage.

"As both of the walls exceed a height of 10 m, they were constructed in a closed-face configuration for the first 3 – 5 m and in open-face thereafter. The lower retaining wall was built after the earthen terrace had been constructed.

"Power Construction battered the bulk earthworks platform at 45°, while the lower wall was built at an angle of 70°. During its construction, Valcal International benched the embankment to avoid the creation of a preferential failure plane. In addition, we specified geosynthetic reinforcing at a ratio of 70% to wall height which was installed at every third layer of RidgeBloks®," explained Green.

The cut wall section consists mostly of rock from several different geologies and is topped by ± two metres of soil. Although global instability was not an issue, numerous wedges (jointing) in the rock face meant that over time pieces of rock would dislodge and fall.

Rock bolts and mesh could have been used to secure the upper wall but Verdicon opted for the CRB option. Besides costing slightly less, it avoids the ongoing maintenance issues which the former option would have entailed. This wall was built at an angle of 75° using a minimum of 1m geofabric and stabilised fill compacted at 150-mm layers. Above the rock a more traditional geogrid installation of 50% to 60% wall height was applied.

Aveng Infraset Landscape Products sales manager, Brennan Small, says that the scope and scale of the Tunney project is one of the more spectacular examples of the versatility, structural integrity and cost-effectiveness of Aveng Infraset's RidgeBloks®. ■



*A portion of the completed wall in-fill.*

**More information Brennan Small,  
Tel: +27(0)12 652 0000 / [www.infraset.com](http://www.infraset.com)**