

HOSPITAL BEND, CAPE TOWN
WESTERN CAPE

GEOTECHNICAL ENGINEERING - MASS GRAVITY WALLS

Product: PVC Coated Gabions

Problem

The final phase of the planned upgrading of the N2 freeway between the Cape Town International Airport and the city centre required the upgrading of the Hospital Bend Interchange. The area occupied by the interchange is very restricted and needed to be well utilised as the intention was to eliminate extensive weaving manoeuvres. The potential impact on the adjacent Table Mountain National Park and Rhodes Trust Land and the accessibility to the Groote Schuur Hospital, and the need to confine improvements within the existing road reserve were major concerns.

This created a need for long stretches of retaining walls all along the toe of the mountain slope

An important requirement was that these walls would be aesthetically pleasing and a that the structure become a landmark befitting the high profile that Cape Town has become in the international tourism market.

Solution

Maccaferri SA were approached by Consultants BKS and Orrie Welby Solomon to investigate the use of gabions to construct the required walls owing to the possibility that they could be packed with good selected Cape Sandstone which would not only provide the mass required in a Mass Gravity Design but would also create a stunning visual feature rather than a bland industrial looking solution offered by alternative methods.

Maccaferri are manufacturers of wire products in general and gabions in particular. Gabions for this project were manufactured using double twist hexagonal woven mesh, which complies locally with SANS 1580:2005, thereby ensuring the structure's durability. The wire used to manufacture the mesh is Class A zinc-galvanised, manufactured according to SANS 675:1997, and can be provided with heavy duty heat bonded PVC coating of nominal 0,5mm wall thickness.

It was suggested that a PVC coating be provided owing to the proximity to the coast. The PVC coating on the wire mesh ensures a certified life of at least 120 years.

Maccaferri are able to offer, in addition to the standard grey PVC coating, a brown PVC which was felt would blend in well with the natural colour of the Cape Sandstone. This option of a brown PVC is well suited to the rocks available in the Western Cape and can be seen in many gabion projects in the province.



PHOTO 1 - Showing progress of construction



PHOTO 2 - The wall has become a landmark visible to all those entering the city from the inland areas and the airport.

Client name:

CITY OF CAPE TOWN

Main contractor name:

HAW & INGLIS

Consultant:

BKS AND ORRIE WELBY SOLOMON

Product used:

PVC COATED GABIONS

Construction info:

Construction date:	STARTED MAY 2008
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Completion date:	COMPLETED APRIL 2010
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Benefits

Gabions are very versatile building elements owing to the concept that light empty wire mesh cages can be easily placed into position under restricted working conditions, and then these cages, once wired up and fixed into position, can be filled by hand with the rocks that in conjunction with the wire mesh form a structural unit.

The operation requires no plant making it easy for the contractor to work within the restricted confines of the project. There is no propping or formwork required unlike in other methods of construction such as reinforced concrete which needs weeks of temporary support while the concrete cures and slowly develops its design strength.

Gabions provide instant strength and each unit becomes stable and capable of working within the structure the moment it is filled with rock.

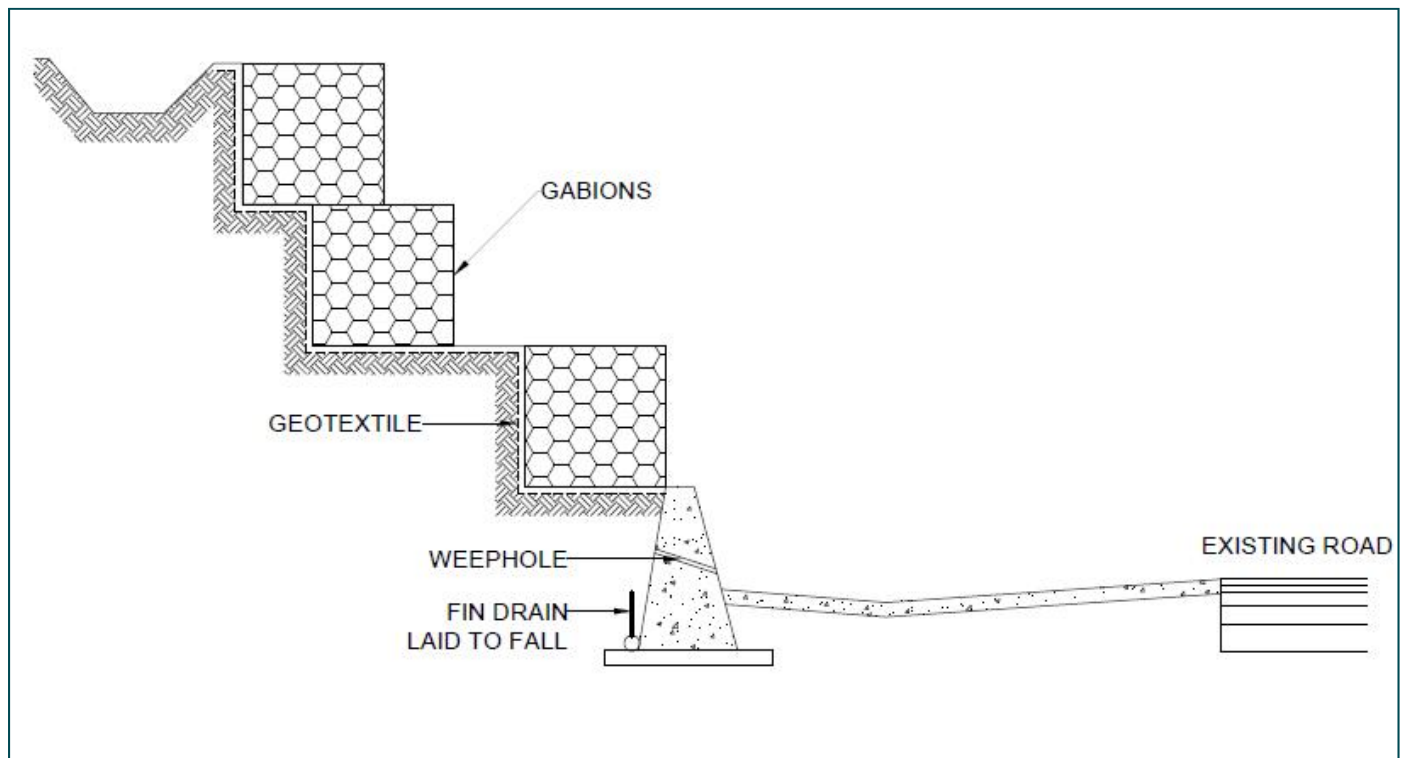
The flexible nature of gabions enables the completed structure to absorb, without sudden failure, any unanticipated additional loads accidentally imposed on the structure.

Gabions are also easy to erect which assists project management to keep with contractual time constraints.

Gabions provide a natural finish which blends in well with the mountainous surrounding and with carefully placed and well selected rocks can provide a very attractive feature architectural feature if required.



PHOTO 4 - Gabions blend in well with beautiful Table Mountain scenery.



Typical Cross Section

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