

## 102 Rivonia road

Gauteng, South Africa

Design & construct contract for lateral support, bulk excavation and foundation piling for Ernst & Young offices in Sandton, South Africa.



### The project

This project entailed the completion of 5600m<sup>2</sup> of earth retention and the removal of 130000m<sup>3</sup> of soil from the proposed basement area.

## The challenge

Granitic rock was encountered which could only be removed through drilling and blasting in the critical area for the first handover. Geotech reports indicated this band of rock to be elsewhere on the basement excavation.

In order to overcome the time constraints, an aggressive design was prepared in-house for the 5 600m<sup>2</sup> basement. A combination of soldier piles, anchors and gunite arches 125mm thick was tabled.

A further design challenge also had to be overcome as, on the eastern face of the basement, the new Alexander Forbes head office was being constructed. This face is just short of 110m in length and has six levels of parking below ground level. A narrow wedge of soil 8m wide had to be supported between the two basements as a connector road was being built between the two sites, thus preventing the removal of the soil wedge during construction phase.

## The solution

Our Design Department presented a solution to “tie” the two basements together with 32mm Gewi bars and walers.

This necessitated pin-point precision drilling in order to drill through the gunite arches in the neighbouring building’s basement. The tie bars were installed at 5 different levels so as to cater for the different basement slab layouts and configurations.

A diabase dyke was detected along a portion of the face adjacent to the Gautrain Station for about 50m and resulted in additional anchors having to be installed. In total, 3 additional rows of anchors were provided along this face culminating in a total of 8 rows. This was also the highest face on the project as well as the area required first by the building contractor for access to the lift cores. Construction emphasis was given to this area resulting in the time constraints being met.

A total excavation volume of 130000m<sup>3</sup> was carried out by the end date, of which 8000m<sup>3</sup> was hard rock.

## Project facts

### Owner(s)

Eris Properties

### Keller business unit(s)

Keller South Africa

### Main contractor(s)

Eris Properties

### Engineer(s)

Aurecon

### Solutions

Excavation support  
Heavy foundations

### Markets

Commercial

### Techniques

Anchors  
Shotcrete / Gunite  
Bored piles

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