

Sasol Head Office

Gauteng, South Africa

Deep basement excavation, piling and lateral support in the heart of the economic centre of South Africa, Sandton.



The project

The Sasol Building has a massive footprint of about 6500m² and a total floor area of 67000m².

The challenge

Our main challenge was to excavate 170000m³ - of which 100000m³ was decomposed granite rock to a depth ranging between 14m and 18m and to laterally support the exposed faces, within a tight programme period. The granite required drilling and blasting, which was challenging in such a densely populated area as Sandton.

The blasting of the very hard rock granitic strata was one of the main difficulties encountered on site. A controlled blasting methodology had to be implemented and maintained in an effort to remove the very hard rock Granite outcrops. The implementation of this methodology was to mitigate the effects of blasting to the lateral support system, neighbouring properties and services infrastructure.

Existing buildings had to be demolished prior to having access to the entire site footprint. Tenants in one of the buildings only vacated the premises two months after the contract commencement.

New services had to be re-laid as the position of the new basement walls clashed with positions of old services. Lateral support designs were reconfigured to accommodate these necessary changes as milestones still had to be met.

Ground water on the southern face of the site created substantial challenges to the lateral support design and installation. Anchor capacities were upgraded and special additives were incorporated into the gunitite mix to provide rapid curing. Incidentally, the ground water problem existed at the same location as the late hand-over rate to the demolition of the last building, resulting in numerous challenges in this area of the project. Despite all the obstacles, overall project completion was achieved a month before the required date.

The solution

The project entailed 6340m² of earth retention comprising of 169 no. 600mm diameter soldier piles, 550 no. strand anchors, 400 no. rock bolts, 6340m² gunitite face area and 85 no. structural piles.

Three lateral support teams and two Soilmec SR30 drill rigs were utilized, which proved to be invaluable in the speedy and efficient drilling and installation of the soldier piles, to successfully complete the project.

Project facts

Owner(s)

Alchemy

Keller business unit(s)

Keller South Africa

Main contractor(s)

Alchemy

Engineer(s)

Sotiralis

Solutions

Excavation support

Markets

Commercial

Techniques

Contiguous pile walls

Anchors

Shotcrete / Gunitite

Bored piles

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