

MELROSE APARTMENTS

Johannesburg, South Africa



Project Facts

Product

Auger Piles, Lateral Support

Market

Residential

Client

Primros Property Construction

Engineers

Structural Warehouse

Scope of Works

- 1 205m² Lateral Support
- 108 No. Auger Piles

About the project

The development is located at the corner of Jellicoe Lane and Tottenham Avenue in Melrose, Johannesburg North—an area close to Rosebank Mall and the Gautrain station. It comprises a six-storey apartment block with a double basement parking garage. The project responds to the growing demand for centrally located housing near business hubs like Sandton, Rosebank, and Melrose, while adhering to strict height restrictions by placing parking underground.

Challenges

The site lies on the heterogeneous Johannesburg granite dome with intrusions of diabase, complicating foundation design.

The client required a cantilever embedded wall to avoid interference with council property, where underground services posed a risk.

Additional scope included tree felling, removal of old concrete foundations, and pile installation from elevated levels.

Initial investigations using open-hole augers lacked reliability, requiring further testing and design adjustments.

Designing a 7m high cantilever soldier pile wall in an urban environment surrounded by buildings and services posed significant challenges.



• Solution

A lateral support system was implemented using embedded cantilever soldier pile walls comprising open-hole auger and DTH piles, in combination with arched and flat shotcrete infill panels.

Advanced design methods—including limit equilibrium, beam-on-elastic, and finite element modelling—were used to predict and control displacements.

Undisturbed sample analysis and DPSH tests were conducted during construction to validate and refine the foundation design.

Weekly excavation surveys ensured lateral displacements remained below 25mm—better than predicted.

Axial loads were transferred to the lateral support to optimize space within the parking garage.

The project was completed successfully and on time, with a second phase completed the following year.