

TOYOTA, NEW LOGISTICS WAREHOUSE, MOTORVIA Isipingo, Gauteng, South Africa



Project Facts

Product

Rigid Inclusions

Market

Commercial

Client

Toyota South Africa Motors

Engineers

Royal Haskoning DHV

Scope of Works

Installation of rigid inclusions across a 30,000 m² footprint for a new logistics warehouse.

About the project

This project, located south of Durban, required a robust foundation solution due to complex and variable ground conditions. The subsoil consisted of sands, silty sands, and problematic black soft clays known as "hippo muds," which are notorious for causing settlement issues. The development aimed to ensure long-term structural performance through innovative geotechnical design and execution.

Challenges

Highly variable soil profile included granular fill, stiff silty clay, and randomly distributed pockets of very soft, compressible materials.

Significant potential for differential settlement due to the presence of "hippo muds" and time-dependent clay layers.

Limited initial data - Required additional cone penetration tests (CPTu) to better characterize subsurface variability.

Foundation depths ranged from 16m to 34m, demanding specialized equipment and adaptable techniques.



• Solution

Rigid Inclusions (RIs) was selected as the optimal ground improvement method, involving concrete columns installed through weak soils to reach competent layers.

A Vibro technique was used to bypass soft soils and adapt column depths to site variability, ensuring reliable load transfer.

Load Transfer Platform (LTP) constructed above RIs to distribute structural loads efficiently, simplifying foundation and floor construction.

Achieved a 20% reduction in carbon footprint compared to conventional piling, aligning with Franki Africa's environmental goals.

A flat, clean working platform with minimal excavation and no pile trimming led to cost and programme savings.