

# Soil conditions challenged a Pretoria contractor



*J.C. van der Linde & Venter Projects recently completed new additions to the Hazeldean Office Park development in Pretoria East.*

**T**he ability of contractor, J.C. van der Linde & Venter Projects, to adapt to unforeseen challenging conditions played a major role in the successful completion of new additions to an office park development in Pretoria.

The Pretoria-based member of Master Builders Association North recently completed two buildings at the Hazeldean Office Park development in Pretoria East for prominent local property developer, Abland. This office park, near Silver Lakes Golf Estate, is an important component of an 800-hectare nodal development that also comprises residential and retirement villages, schools, churches, clinics, colleges, retail centres and showrooms.

Thomas Joubert, director of J.C. van der Linde & Venter Projects, and his team completed the buildings in June 2016, with the contractor joined in the professional team by architects, MWLF Architects, and structural engineering consultants, SiVest.

Joubert says J.C. van der Linde & Venter Projects and its piling sub-contractor, VNA Piling, were confronted by very complex ground conditions right from the early stages, with a large portion of the site that hosts the larger three-storey structure with its 800-m<sup>2</sup> footprint overlaid with large boulders and extremely loose soil.

"The boulders restricted drilling to a depth of just one to one-and-a-half metres to sink the piles that were initially specified for the foundations of the buildings. The removal of the boulders required the extensive use of excavators. And,

in some places, when the derrick was removed, the drill hole would rapidly fill up with sand and rocks which had to then be removed by hand," he says.

This problem significantly delayed the start of building activities on the larger building while construction of the adjacent three-storey structure that was founded on ground conditions that allowed for more routine piling, forged ahead effortlessly with no hold-ups.

To avoid further delays, Joubert, in consultation with SiVest suggested that a large raft foundation to support the building should be erected on the challenging terrain. While it cost slightly more than the initial piled foundation design, a week of valuable construction time was saved and afforded J.C. van der Linde & Venter Projects the opportunity to steer the project back onto its critical path.

Designed by SiVest, the raft foundation employed was an 800-m<sup>2</sup> free-standing 600-mm-thick concrete slab. "A raft foundation is basically a concrete mat – or continuous footing – that can support an entire structure. On sites with low soil bearing conditions, the raft distributes the building's pressure over a large area so the soil is able to bear the stress," Joubert explains.

"The raft's construction called for about 420 cubic metres of concrete. We had to mobilise the entire resources of the Eastern Readymix batching plant nearby to supply our material needs, and had 13 concrete mixing trucks driving to and from the batching plant to feed two concrete pumps used to finish the 12-hour continuous concrete pour for the raft foundation," he added.

Once the raft foundation was completed, the structure rose rapidly out of the ground, with the team quickly catching up with its counterparts deployed at the other office block.

The two new office buildings each comprise five offices per floor, a communal area and elevator shafts.

The buildings have collectively brought an additional 5,600-m<sup>2</sup> of floor space to the very popular Hazeldean Office Park, with most of this already occupied by staff by the time J.C. van der Linde & Venter Projects was finalising the last phases of this very challenging project.

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*A large raft foundation was used to support one of the two new office blocks built by J.C. van der Linde & Venter Projects at*