



# Experience counts

Ninety-five-year-old Knight Piésold is a Level 2 BBBEE company that places emphasis on staff training, which has helped it to secure several lucrative tenders.

**K**night Piésold has been involved with numerous large-scale projects, many of which have been for the South African Roads Agency Limited (Sanral). In fact, Sanral projects account for about 70% of the work the company has done.

With a focus predominantly in the northern parts of the country, the company has completed several projects for the provincial governments of Mpumalanga, Gauteng and Limpopo.

## UPGRADE IN CITY DEEP

In terms of municipal infrastructure, Knight Piésold has also been responsible for the upgrading of the Rosherville Road in City Deep, which is an important part of the city's inland port, as it accommodates large volumes of heavy trucks.

Knight Piésold was tasked with widening the 1.6 km road, which is owned by the Johannesburg Roads Agency (JRA). Sanral, however, was appointed as the implementing agent and brought in to carry out the project. Work on the road involved in situ recycling of the existing road to a depth of 180 mm, placing a bitumen-treated base over it and incorporating a 45 mm asphalt wearing course. Rosherville Road's lighting had to be moved and service relocations had to be performed. Full access management was also provided at the properties.

Knight Piésold also worked on the rehabilitation of the railway bridge that goes over the road. Non-motorised transport facilities were also incorporated. The road and its shoulders were widened to accommodate cyclists, while pedestrian walkways were also constructed along the entire length of the road.

Knight Piésold made use of New Jersey concrete barriers to ensure trucks'

compliance with traffic calming measures. The project started in August 2015 and is scheduled to finish at the end of October this year.



**Wayne Hunt, director: Transport, Knight Piésold**

Several earth-retaining loffelsteins had to be placed on an embankment, for aesthetic enhancement and to provide the necessary geofabric support.

Knight Piésold also built a new intersection from Bonsmara Road on to Heidelberg Road – a result of the traffic engineering work that it did on the project to increase the permeability in the road network.

## SERVICING SOL PLAATJE

Another project the company was involved with was at Sol Plaatje, an informal settlement in Johannesburg's Durban Deep, which was established in 1999 when hundreds of people from informal settlements around Maraisburg were relocated to the mining compound.

The road leading to Sol Plaatje is bumpy, potholed and almost impassable. The client was the Johannesburg Development Agency (JDA) on behalf of the JRA, and Knight Piésold was responsible for upgrading the gravel road to a surfaced one, as well as relocating services and stormwater infrastructure.

The JDA was appointed as the implementing agent to facilitate the design and construction of internal roads and stormwater for areas 3 and 4 in the township.

In October 2013, Knight Piésold was appointed for the detailed design, contracts administration and supervision of the construction of 3.5 km of internal roads, from gravel to surfaced, and 2.5 km of stormwater.

Rosherville Road in City Deep

**PROJECT PURPOSE**

Unable to be accommodated in the blocks of mining hostels, residents haphazardly erected row upon row of tin, wood and plastic shacks on the uneven ground. Soon, an informal settlement of mostly unemployed people and far from social amenities – with no electricity, running water or municipal services – developed.

When more displaced residents from Wilgespruit informal settlement moved into the already crowded settlement, creating an accommodation crisis, the township soon filled up with shacks between the mining hostels.

Eight years after the first settlers, the Johannesburg Social Housing Company started converting Sol Plaatje into a formalised township, building new roads, providing street lighting and facilitating connections to electricity and water grids.

The JDA thus identified the need to upgrade the internal roads from gravel to surfaced roads, provide stormwater infrastructure and to create a link between the Sol Plaatje and Braamfischerville townships.

The route served as a major link between the two townships because it was a short alternative route into Roodepoort and Soweto. During construction, access to properties had to be made available at all times, with construction activities required to minimally impact residents. Blasting of the hard rock had to be performed with chemical powder in order to prevent the damage to property that would've occurred from conventional blasting techniques.

The township was built on landfill-mine-dumped material, which was of very poor quality. The material had to be removed and spoiled during excavation. The catchment sloped from south to north, creating drainage problems to property lying on the downstream side, and the cross-fall of the road sloped in the opposite direction, channeling the flow of water away from the housing.

**UNFORESEEN PROBLEMS**

During the excavation of the box cut, the contractor encountered a sinkhole at chainage 0+080. Work was stopped immediately and Knight Piésold informed the JDA of the findings.

The Department of Mineral Resources (DMR) was also informed and an inspector was sent to site to investigate further. It was concluded that the cavity/

stope developed as a result of illegal mining activities in the area. DMR and the Johannesburg Metropolitan Police instructed Knight Piésold to proceed with corrective measures to close up the cavity.

Knight Piésold carried out further geotechnical investigations to determine the extent and depth of the cavity. Nine boreholes were drilled to depths varying between 8 m and 15 m. The extent of the stope was from chainage 0+080 to chainage 0+100 across the width of the road reserve at a depth of 10 m deep.

**ENGINEERING INGENUITY**

After the extent of the stope was determined, Knight Piésold commenced with detailed designs. It was recommended that the contractor clean out all loose material to ensure safe working conditions.

The design had to ensure that the cavity was sealed off permanently and to prevent further failure and/or collapse of the road. Therefore, permanent steel shutters were placed on the excavation floor and on the sides of the cavity openings to form a stopper.

A 500 mm thick mass concrete base was constructed on the excavation floor.

Y25 steel bars were dowelled into the base slab at 1 m c/c. This formed the reinforcing for the reinforced concrete wall. The dowels also prevent future movement of the mass concrete slab due to settlement.

Upon completion of all concrete work, G7 material was imported to fill the open excavation. The fill material was placed and compacted in layers of 150 mm up to roadbed level. The contractor then commenced with the road layer works, stormwater, curbing, sidewalks and surfacing.

The Sol Plaatjie project is just one of many examples of the exceptional engineering feats that Knight Piésold has undertaken across the country, improving the lives of South Africa's citizens and the effectiveness of our national infrastructure. **3S**



Sol Plaatje, Durban Deep

**Knight Piésold**  
CONSULTING

+27 (0)11 806 7111  
www.knightpiesold.com