

MEDIA RELEASE FROM FRANKI AFRICA

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**Franki's Specialist Jacking at Wentworth Station on Track**

**Introduction**

For more than 30 years Franki Africa (Franki), the most renowned geotechnical brand in Southern Africa and now part of the Keller group, has successfully provided pipe jacking and other trenchless technologies – augering, thrust boring and large diameter case boring - to a wide range of clients on the continent.

Pipe jacking, an integral part of the trenchless technology “family”, is a technique for installing underground pipelines, ducts and culverts. Powerful hydraulic jacks are used to push specially designed pipes through the ground behind a shield at the same time as excavation is taking place within the shield. This method provides a structural, watertight, finished pipeline as the tunnel is excavated.

Pipe jacking is not easy and is often fraught with significant challenges, but Franki has developed a reputation for overcoming these challenges and for delivering successful results on tough contracts time and again. This is the story of one those contracts.

**Wentworth Station**

Due to extensive flooding of the area during heavy rains, the Ethekewini Stormwater Department needed to increase the capacity of the existing storm water system at Wentworth Station in Durban.

Franki contracts manager Byron Field says this area, which is situated at the lowest point of the Bluff area, has been subject to heavy flooding for several years owing to the inadequacy of the existing drainage system there. “Flood water frequently engulfs both the railway lines at Wentworth Station and adjacent buildings and Ethekewini decided that something had to be done about it,” he says.

The pipe jacking contract, which was awarded to Franki Africa in August 2014, includes 5 No. x 100m 1473 Ø pipe jacks, to be installed beneath the Wentworth Railway Station and 20 adjacent railway lines, as well as inlet and outlet chambers, a 20m culvert extension, pipe tie-ins and associated enabling works.

“This sounds pretty straightforward,” says Field, “but this contract is one of the most difficult below-the-water-table jacking contracts our company has undertaken in recent years. The main challenge

here is that the pipes needed to be installed 6,5m below ground level, where the ground consists of running sand with a consistency of soup, all without disturbing the normal operation of the trains!!”

Field explains that the five 100m-long pipelines are installed side-by-side under the railway lines, with two large in-situ cast concrete chambers at each end to evenly distribute the storm water flow in and out of the pipes. “The construction of the chambers and of a new culvert that ties into the existing storm water system is also part of our scope of works,” he says.

Field adds that inverts of the pipe jacks are –6.5m whilst the water table is at –1,5m. “This necessitated extensive dewatering and shoring operations to facilitate the civils construction and jacking operations and these challenges were made more difficult by frequent ESKOM load shedding, which resulted in flooding on site due to the consequent failure of the dewatering system,” he says.

“Furthermore,” says Field, “the trains had to keep running above our operation, which created dynamic loading through significant vibrations which in turn caused the ground to consolidate around our pipes, thereby increasing the ground pressure”.

Preparation prior to jacking was a prolonged process, involving: the installation of the de-watering system along the full length of the jacks and sheet piling around all the new chamber and culvert works; and ensuring that the temporary works, comprising the jacking pits and reception pits, were constructed safely by being sufficiently stabilised to contain the jacking loads placed on them. “The high jacking pressures, due to the ground loads, necessitated multiple interjack stations along each crossing in order to keep the pipe jacks moving,” Field says.

### **The Right Pipes**

The right pipes were crucial to the success of the Wentworth station contract and the precast concrete jacking pipes developed especially for this project have proven to be an unmitigated success.

Having watertight joints was perhaps more critical in this contract than in any previous contract in which Franki has been involved. “The sand is so fine, it would have flowed through the joints of ordinary jacking pipes,” Field said.

Work on site was carried out on a 24hr basis. Practical completion of this project was achieved on schedule by the end of July 2015. The contract will continue for an additional 2 months primarily due to extra works.

**Franki's Capabilities**

Franki is able to install sleeves from 100mm to 3000mm diameter and offers a variety of trenchless technology solutions including augering, cased boring, pipe laying, bridge jacking and more.

Being part of the Keller Group, the world's largest independent geotechnical engineering contractor, gives Franki Africa significant advantages including access to a wide range of innovative technologies including trenchless technologies, finance for future growth and, of course, a wealth of geotechnical intellectual property and experience.

**For more information please contact Byron Field on: (031) 507 1051**

**Captions for pic:****Jacking #1 & #2**

Pipe jack #1 and #2 in progress.

**075405**

View down one of the pipe jacks from an intermediate jacking station.

**131830**

Operations above the jacking pit.

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