Umjindi Municipality's water pipeline network gets a facelift

Trenchless Technologies is giving Umjindi Municipality's ageing and leaking water pipeline network a facelift through the use of its cutting-edge pipe laying techniques.

Subsurface pipeline construction and rehabilitation company Trenchless Technologies' involvement in the replacement of the Umjindi Municipality's ageing water network in the Barberton and Emjindini areas, has seen the company replace more than 30 km of water pipeline by means of a trenchless method called pipe bursting. Situated in the southern lowveld of Mpumalanga, the Umjindi Municipality area is surrounded by a number of perennial rivers. Despite this, more storage space was needed to meet the future demand that would come from serving the municipality's rural villages and farms, which were not yet supplied with water and sanitation.

The significant water losses in the existing urban water networks also posed a problem, and the Umjindi and Barberton residents were being left without water on a weekly basis. The municipality's

ABOVE FROM LEFT Bursting asbestos cement pipes, 60 t rod puller, pipe-bursting steel pipe, T135 Hammer in 160 HDPE bursting casing

old asbestos cement (AC) pipes were past their 30-year design life, causing them to continuously burst.

Trenchless Technologies managing member, Sam Efrat, explains that after the South African government implemented an initiative for all municipalities to develop a strategic water plan, in 2009 the Umjindi Municipality awarded a substantial pipe replacement project to Trenchless Technologies.

The first phase of the project, which was carried out by another contractor in 2008, involved the replacement of several kilometres of AC pipe by means of pipe bursting. In 2009, as a result of the success of Phase 1, the municipality embarked on a Municipal Infrastructure Grant-funded project to replace the remaining 41 km of the town's water network.

"Trenchless Technologies was awarded the contract to complete this R47 million project, which is now in its fourth phase and 70% complete. To date, Trenchless Technologies has replaced 30 km of pipe. Of the existing pipes, 95% were AC pipes, while 5% were cast iron or steel pipes. The existing pipes are being replaced with High-Density Polyethylene (HDPE) pipes with a pressure rating of 12.5 bar. The pipes will be replaced with pipes of the same size or one size larger," explains Efrat.

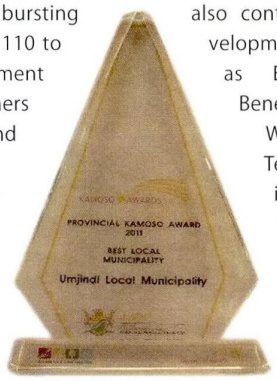
Speaking on the method of pipe bursting, Efrat says that this is a trenchless method of replacing underground pipelines and entails a new pipe being fed through an old pipe from a launching pit to a receiving pit. The old pipe is broken into small pieces and displaced into the surrounding soil.

This can be done by the static method using rod-pullers or dynamic method using percussive hammers. Typically rod-pullers are used to undertake bursting lengths of 150 m and to install 110 to 315 mm diameter HDPE replacement pipes, while percussive hammers are used for installing 160 and 200 mm diameter HDPE pipes.

While the cost of open cutting and pipe busting for water pipe replacement in the Umjindi Municipal area is very similar, depending on the extent of special surfacing required for rehabilitation, local residents and motorists receive the benefit of reduced excavation and less disruption and disturbances as a result of employing the pipe bursting methodology.

The work is efficient and cost-effective, but at the same time, requires a high degree of labour, which contributes to the development, training and employment of the local community. The project has thus far created 35 jobs in the local community. Trenchless Technologies also contributes towards the development of its subcontractors as Enterprise Development Beneficiaries.

What's more, Trenchless Technologies' involvement in the project, along with Tumber Fourie Consulting Engineers, saw the Umjindi Municipality win the prestigious Kamso Award for Best Municipality in 2011 – a superb achievement for all involved. 3S



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