

## The Construction Industry Development Board and the need for a separate class for trenchless technology type contracts: request for comments by the members of SASTT

by Henk Aartsma

### Introduction

In public tenders it is commonly specified that tenderers are only eligible to have their tenders evaluated, if they are registered with the Construction Industry Development Board (cidb) in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations for a specific class of construction work.

Currently, the cidb's specific classes of construction are as follows:

Description	Designation
Civil engineering works	CE
Electrical engineering works (infrastructure)	EP
Electrical engineering works (buildings)	EB
General building works	GB
Mechanical engineering works	ME
Specialist works	SB, SC, SD, SE, SF, SG, SH SI, SJ, SK SL, SM, SN, SO, SQ

At present, there is not a specific class of construction work for trenchless technology type projects, and therefore these type of projects are commonly specified under the CE class of construction work.

### A class of work for TT?

During the meeting of the board of SASTT held on 20 November 2012 the issue arose whether or not SASTT should advocate that a class of work for trenchless technology type projects must be included in the cidb construction classes under specialist works.

The cidb's current descriptions of the specialist works appear on the next page.

The trenchless designation could be described as "the development, extension, installation, repair, renewal, renovation, alteration, maintenance or assessment of underground conduits, pipelines, ducts and sleeves, using trenchless technologies for the construction and rehabilitation of infrastructure and services".

It was resolved to seek comments from all the members of SASTT first, to assess the preference and need for such a class of construction work.

You as member of SASTT are hereby kindly requested to comment and indicate whether or not a class of work for trenchless technology type projects should to be included in the cidb construction classes.

All comments from SASTT members are to be submitted to the honorary director of SASTT by 20 February 2013.

Description	Designation	Definition	Works types	Examples
Specialist works	SB	A subset of construction works identified and defined by the Board that involves specialist capabilities for its execution	The extension, installation, repair, maintenance or renewal, or removal, of asphalt	
	SC		The development, extension, installation, removal, and dismantling, as relevant, associated with building excavations, shaft sinking and lateral earth support	
	SD		The development, extension, installation, repair, renewal, removal, or alteration of corrosion protection systems (cathodic, anodic and electrolytic)	
	SE		Demolition of buildings and engineering infrastructure and blasting	
	SF		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of fire prevention and protection infrastructure (drencher and sprinkler systems and fire installation)	
	SG		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of glazing, curtain walls and shop fronts	
	SH		The development, extension, installation, maintenance, renewal, removal, alteration or dismantling, as relevant, of landscaping, irrigation and horticultural works	
	SI		The development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or, dismantling of lifts, escalators, travellers and hoisting machinery	
	SJ		The development, installation, removal, or dismantling, as relevant, of piles and other specialized foundations for buildings and structures	
	SK		The installation, renewal, removal, alteration or dismantling, as relevant, road markings and signage	
	SL		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of structural steelwork and scaffolding	
	SM		Timber buildings and structures	
	SN		The extension, installation, repair, maintenance, renewal, removal, renovation or alteration, as relevant, of the waterproofing of basements, roofs and walls using specialist systems.	
	SO		The development, extension, installation, renewal, removal, alteration or dismantling or demolition of water installations and soil and waste water drainage associated with buildings (wet services, plumbing)	
SQ	The development, extension, installation, repair, removal, alteration, dismantling or demolition of precast concrete or steel fencing			

## **The 2012 ISTT No-Dig Award winner from South Africa**

### ***Port Elizabeth Goes Trenchless***

During the *International No-Dig 2012* conference in Sao Paulo, Brazil, it was announced that the winner of the *2012 ISTT No-Dig Award* was a project entitled *Port Elizabeth goes trenchless*, submitted by Trenchless Technologies cc.

#### **Project description**

The contract involved the rehabilitation of two parallel sewers located beneath the heavily trafficked Govan Mbeki Avenue in the heart of Port Elizabeth's central business district.

This was the second of two phases. Phase 1 was completed in 2009 and involved the rehabilitation of some 570 m of 450DN sewer as well as 560 m of 840DN sewer. The pipeline rehabilitation took place concurrent with an urban environmental upgrading project involving decorative paving and resurfacing works on the surface above the existing sewer pipes.

Further downstream the 450DN and 840DN sewers increase in capacity to 525 mm and 1000 mm dia respectively. Phase 2 involved the rehabilitation of these sewers. Here the 525DN sewer is located beneath the heavily trafficked Govan Mbeki Avenue whilst the 1050DN sewer is located underneath a newly constructed bus rapid transport (BRT) lane. Considering that the BRT and road lanes are utilised every day, only non-destructive trenchless techniques could be employed for the rehabilitation of these pipelines.

No less than five different trenchless techniques were needed to facilitate successful completion of this project.

The contract was awarded based on utilising spiral wound technology; SPR EX for the 525 sewer and SPR RO for the 1050 sewer. However during the project unforeseen features were encountered, such as a 15 m long 90 degree radius bend on the 525 pipe. A 43 m length of 800 mm diameter pipe occurred where the 1000 sewer reduced in size, requiring the introduction of additional ambient cure and UV cured CIPP methods. Additionally pipe bursting of a cracked and leaking 225DN lateral clay pipe became necessary because it prevented plugging and overpumping at a critical manhole.

#### **Trenchless techniques considered on the contract**

Sliplining with PE-HD was considered, but there was limited space for launch pits and the storage of long lengths of HDPE piping. Furthermore, the internal diameter and flow capacity would be reduced.

CIPP would not have influenced the hydraulic capacity and lining could be continuous through some manholes. However, the CIPP process was more expensive and was therefore limited to lining the bend on the 525DN sewer and lining the 43 m length where the sewer reduced to 800 mm dia within the "1050 diameter" sewer.

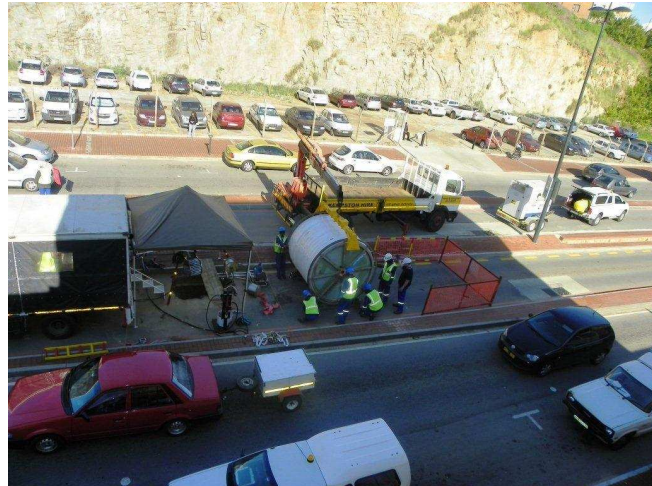
Spiral wound technology allowed for a complete no-dig lining solution through manholes. In addition to avoiding excavations, the solution was design-compliant and the risk was lower as the process could be reversed in the event of unforeseen problems.

#### **Pipeline assessment**

Condition assessment of the two sewers was undertaken using CCTV inspection and cutting of windows from the sewers for physical inspection. It was ascertained that:-

- the 525DN sewer was severely corroded around its whole circumference due to acidic effluent. The measured pH values were as low as 3,3. This sewer was very old and was cast in two sections with horizontal joints running along its full length. The mortar had corroded out of the construction joints and it was no longer watertight.

- the 1050DN sewer was severely corroded above the water line and the reinforcement was exposed and corroded away at places. Particularly severe deterioration occurred at the sides and invert of the sewer due to a combination of corrosion and erosion along sections of the sewer where the fluid velocity was high. This corrosion is typical of what occurs in a sewer downstream of a rising main where there is an accumulation of gas due to long retention times. It was estimated that sections of this sewer would collapse within 10 years.



SPR RO set up in RBT lane ready to line the 1050DN sewer

## Conclusion

- The wide range of trenchless techniques utilised on this contract including spiral wound technology, CIPP and pipe bursting allowed a complete no-dig solution that enabled rehabilitation to take place entirely through the access chambers.
- Despite the challenges encountered, the combined team managed to pull off the successful rehabilitation of the two sewer pipelines underneath the heavily trafficked Govan Mbeki Avenue without any excavation whatsoever or disruption to traffic and the public.
- This was the first time that SPR RO was utilised in Africa.
- This contract highlighted the large range of trenchless techniques available in South Africa; it was technically challenging and had a high interest level. It assisted in showcasing the benefits of trenchless technology to engineers, municipalities and the public alike.

## The project team

The client was the Mandela Bay Development Agency.

The entire project team comprised seven different entities. Apart from Trenchless Technologies cc, the following members of SASTT were also involved:

- Specialist consultant: Alaster Goyns
- Sub-contractor: Tuboseal cc.

In addition Sekisui Rib Loc Australia Pty Ltd, an ISTT-affiliated society member, contributed to the project.

Congratulations to the SASTT members who contributed to this project. They put TT in Southern Africa on the international map!

## The *International No-Dig 2013 Sydney*: Call for abstracts extended

The closing date for the submission of abstracts for *No-Dig Sydney 2013* has been extended to 31 January 2013.

For full details of this conference and exhibition, to be held at a prime spot in one of the most attractive cities in the world, see <http://nodigdownunder.com>

