



A pipe is cured using Interflow's new fiberglass liner technique.

Interflow's new fibreglass liner extends solution options

by Director of Interflow, Ian Bateman

Structural rehabilitation of an ovoid-shaped sewer deep underneath the prestigious Sydney suburb of Double Bay meant that contractor Interflow had to look beyond its already leading suite of Trenchless Technology systems to deliver a solution.

ALMOST ALL OF Sydney Water's sewers and stormwater pipelines are circular in cross section. However, in the late 1800s and early 1900s several kilometres of sewers with egg-shaped or ovoid cross sections were installed. Many of these now need rehabilitation, and their shape, as well as their location in some of the older areas of the City, present some of the biggest rehabilitation challenges. Rehabilitation techniques for ovoids are limited compared to circular-shaped sewers.

Typically, ovoid shaped sewers are renewed with a polyester-felt cured-in-place pipe (CIPP) liner.

However, this particular sewer, with dimensions of 733 mm x 533 mm was up to 14 m deep in an area with a high water table. The high hydrostatic load on the liner was too great to be met by the usual polyester-felt CIPP liner.

The first part of the project for Interflow was therefore to search for a type of liner that was strong enough to meet the design requirements of this project, while still being capable of installation without excavation and with minimal community disruption.

Interflow's research led to a type of liner composed of fibreglass, installed from existing maintenance holes and

cured using UV light. It was considerably stronger than polyester-felt liners and if installation was possible, could meet the structural requirements of this project. Such liners had been used on a couple of installations in Australia previously, but never at this length, shape, thickness or depth.

Interflow's project personnel travelled to Germany to work with the liner suppliers on developing the liner and the installation methodology to meet the unique requirements of this project.

The installation process is completely different from anything Interflow had done previously. In particular, using →

the UV 'light train' is critical to successful curing of the liner and ensuring it attains its strength properties. Requiring a stronger and larger liner than had ever been installed before meant further work was required to develop suitable installation procedures.

Aside from the development needed with this type of liner, the project presented demanding challenges due to its location.

The sewer's total length was 450 m, made up of three consecutive lines that ran deep under houses and apartment blocks.

Access was from maintenance holes located in a park, in the grounds of private property and in the basement carpark of a block of apartments. Excavation to replace the sewer was unthinkable.

Inserting the liner into the sewer was only possible from the maintenance hole in the park at one end of the project. There was insufficient room at the other maintenance holes. The liner would need to be pulled in a total distance of 450 m from the maintenance hole in the park and playing fields.

Managing community issues was an essential part of the success of the project. Full sewer services needed to be

maintained to all residents at all times. This meant the installation and operation of a sewer bypass system that went below ground at road crossings and did not compromise safety to either the residents or the workers.

With the benefit of detailed planning and preparation, the work was successfully completed with no particular technical or commercial issues. Issues raised by the community were successfully managed.

The project was also a milestone for this type of liner worldwide. The 185 m lining length between maintenance holes, with a wall thickness of 12.1 mm meant that it was the largest liner of the type ever installed. Installing the liner 450 m from its insertion point was the longest this liner had ever been winched. The 14 m deep manhole also meant that this was the deepest this type of liner had ever been installed.

This project succeeded despite the product being extended beyond its previous capabilities and despite the challenging conditions. It is an advance for the international Trenchless Technology industry and has extended the boundaries for non-disruptive sewer rehabilitation.

MULTIPLE SOLUTION APPROACH

As the trenchless renewal industry has grown, companies such as Interflow, are finding that multiple lining technologies are required to meet the ever increasing breadth of challenges presented by its clients. In all cases the objective is to offer a product that complies with the requirements and represents best value for money.

Interflow has added UV lining technology to its fleet of solutions to enable a solution to be offered in circumstances like the example given above, ie non-circular, deep pipelines. When added to the existing lining systems a comprehensive range of lining options exists. These include:

- Spiral winding
- CIPP lining
- Slip Lining
- Pipe Bursting

This is a key part of Interflow's commitment to being total solution providers for the Trenchless Technology industry.

For more information about Interflow's capabilities, or to find out more about the full range of trenchless pipeline renewal services Interflow can provide, visit interflow.com.au

