

Sealing lateral connections



by Ian Bateman, Director, Interflow Pty Ltd

As lateral sealing technology improves, there is a growing opportunity for pipes in excess of 300 mm to benefit from the technology too.

IT IS NOW well accepted that in order to completely seal a sewer, the lateral connections also need to be sealed. Over the last ten years water authorities have steadily adopted short-form liners, such as Interfit™, as a means of obtaining a long-lasting seal.

It is estimated that over 100,000 seals have been installed in Australia over the last decade. The vast majority of the seals have been installed in reticulation sewers (150–300 mm) and the trend has generally been for water authorities to call for seals to be installed in the smaller diameters initially, and then move on to sealing the larger diameter carriers secondarily or not at all.

Over recent years, the technology and installation expertise associated with sealing large-diameter laterals has advanced significantly and the point has been reached where cost-effective, high quality, long lasting seals are capable of being installed in diameters of up to 750 mm. This has led to a significant increase in the number of large-diameter seals being installed, and if this trend continues it will soon be as common in the larger diameters as it is in the reticulation sizes.

CHALLENGES INVOLVED WITH SEALING LARGE DIAMETER LATERALS

There are some key differences that affect the technical and installation aspects of large-diameter lateral seals. Carrier lines tend to have significantly higher flows and therefore the management of flows are an additional consideration.

In the case of reticulation lines, plug and release techniques and flow-through packers have proven to be very effective. In a carrier line the consequence of

a failure or blockage is much greater. It is therefore advantageous that the technology is fool-proof or inherently does not require the pipeline to be completely obstructed.

In reticulation sewers the most commonly installed seals are T-shaped (i.e. full wrap in the main pipe). This is desirable from a client perspective and also has proven to be more reliably installed using devices such as inflatable packers.

In pipes greater than 300 mm in diameter, the sheer size of the main and quantity of material that is needed to line the full 360 degrees of the main makes this type of seal too expensive and unnecessarily complex. As such it is more common to install top hats in larger pipes.

VALUE PROPOSITION FOR SEALING LATERALS IN CARRIER SEWERS

Sealing the connection at the lateral is an essential step in sealing the system. Having a fully sealed system is important for the following reasons:

- Prevents infiltration of groundwater into the sewer
- Prevents exfiltration of sewerage into the soil
- Prevents surrounding soil being washed into the pipe.

Large diameter pipes tend to be deeper and are more susceptible to having embedment carried by groundwater into an unsealed pipe. This in turn can lead to subsidence and, in the worst case, collapse of the ground above the pipeline.

As the diameter of the main increases, typically the junction count per metre decreases and the cost of lining the main will increase. Therefore proportionally the percentage of additional expenditure to seal the laterals reduces as the diameter



Top hat shaped seals used for carrier sewers (375–750 mm).

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increases. It is very good value to consider sealing the junctions now that reliable solutions exist, i.e. for less than an extra 10 per cent a fully sealed carrier sewer can be obtained.

INTERFIT TOP HATS

The patented Interfit lateral sealing system has been used extensively in Australia and New Zealand to seal 150–300 mm laterals for almost a decade.

The unique patented packer design and patented sock shape ensures rapid and wrinkle free installations. The proprietary Interfit silicate resin is a rapid setting material that has a relatively long pot life (20 minutes) and a short cure time (additional 30 minutes). This allows sufficient time to get the product in place and then minimises the length of time the installation apparatus is in place.

Interflow has extended this technology to larger, carrier-size pipes and can now offer Interfit in top hat configuration. The system still uses the same Interfit resin and hence yields all the benefits of the rapid installation – an even greater benefit in high flow sewers. The top material is also a glass fibre composite ensuring that the lateral portion of the seal is a fully structural pipe. Interflow has installed over 1,000 top hats over the last two years in main sizes from 375–750 mm.

The installation technique involves



T shaped seal used for Reticulation sewers (150–300 mm).

pushing an installation device along the pipe with a robot and then pressing the seal into place. The robot and installation device are relatively ‘hollow’ and as such do not completely obstruct the flow.

As the Australian sewer renewal industry matures, more of the sewer

network is capable of being renewed reliably and cost effectively. Interflow has a proud history of delivering solutions that meet the needs of its clients. Large-diameter lateral sealing is one of the latest solutions it is bringing to the industry. **i**

