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Lateral Rehab

Part of Holistic, Total System Solution for I/I

By Sheila Joy

Infiltration and inflow (I/I), is the main cause of sewer overflows, resulting in ongoing threats to our aging underground infrastructure and big headaches for the municipalities that manage them.

Inflow occurs when water from rain and snowmelt improperly drains into the sanitary sewer system, while infiltration happens when water leaks into the system through cracked or faulty sewer pipes. While the water is typically clean, the problem is that the volume flowing through the sewer system may exceed the capacity of the pipes. The result can be diluted sewage backing up into basements or overflowing onto city streets. The prevention of I/I is essential to protecting sewer systems and wastewater treatment facilities.

"As most of us in the sewer and sanitation industry know," said Dan Pollio, capital improvement administrator for the City of Plantation, Fla., "the aging underground infrastructure is a serious problem, and staying on top of I/I issues is critical in order to avoid massive capital investments and devastating failures. Until now, attention was paid mostly to mainlines when it came to preventing I/I, but the ongoing maintenance and rehabilitation of mainlines alone is not a complete solution.

"In fact," continued Pollio, "after speaking with a number of consulting engineers to uncover the best course of action for Plantation, it appears that about 50 percent of infiltration and inflow comes from the laterals. In order to correct the global problem of I/I, we have found that both aging mainlines and laterals must be relined together."

Plantation recently relined laterals for approximately 180 homes, or an entire basin, using cured-in-place pipe (CIPP). The results are extremely impressive. In doing so, the city reduced lift station run times by about 40 percent. This major reduction in time translates into big savings for both maintenance and treatment, resulting in the healthy infrastructure that Plantation taxpayers expect.

"Plantation has always been pro-active in the repair and maintenance of its systems," explained Pollio. "Whenever we complete the rehabilitation of an entire basin, we see a huge success rate. As a result, we are going to continue executing this comprehensive approach to repair. In fact, we have rehabilitation projects slated out for the next 10 years. Our goal is to take one basin each year and line the mains, laterals, and also rehabilitate manholes, as well as lift stations to make sure we're as energy efficient as possible."

The recent growth in CIPP lateral rehabilitation among municipalities can be attributed to many things, including cities like Plantation that are concerned about the overall health of the entire system. A growing awareness and trust in CIPP technology for lateral rehabilitation has also helped. In fact, relining laterals with CIPP is considered by some to be the next frontier of rehabilitation for cities and a step

they are now taking. For years, cities have used CIPP as a viable solution for mainline rehabilitation, and over time, proof via lack of failure or major collapse has provided the confidence levels necessary for these cities to step out and include lateral lining, as well. Complete system repair using CIPP appears to be a trend that is growing considerably, with cities like Plantation looking at the health of the entire system, including mainlines, laterals, manholes and lift stations.

Jacob Trapani, vice president of BLD Services LLC, a general contractor and construction firm located in Kenner, La., agrees that the lateral relining industry is growing at such a fast pace because cities are seeing the need to treat the whole system in order to effectively address and reduce the impact of I/I.

"We are experiencing rapid growth in the demand for lateral relining, doing between 500 and 600 laterals per month," said Trapani. "In just over two years, we have expanded our lateral crews from three to nine, and we expect to have 12 crews working at full capacity by the end of March, 2012. Part of the reason we have seen this huge jump in demand is because lining laterals with CIPP is now proven. The risk has been reduced because we understand the process and capabilities. We don't have to guess how resins will react or if the installation will be a success. The resin systems continue to improve and the tubes are more flexible, allowing for greater turns and offsets."

In Kentucky, Paducah McCracken Joint Sewer Agency, which manages the operation and maintenance of Paducah and McCracken County's combined sanitary and storm-sewer systems, is already using lateral lining in conjunction with its mainline sewer rehabilitation. "We are also investigating the use of lateral tophats to help reduce the infiltration and inflow into our system," said John Hodges, executive director of the agency.

"In 2010, we performed rehabilitation on a small drainage area, including the installation of tophats on structurally sound and root-free lateral connections, which are normally restored after the CIPP mainline work, and typically left alone. We then flow-monitored this drainage basin, as well as two others. The drainage basin with the tophat installation showed a positive decrease in I/I, much more so than the other two drainage basins. Of the other two basins, one had no work performed, while the other had a portion of the mainline relined with CIPP, but no tophats where the services were restored. We are continuing to evaluate the benefits of this technology and will perform more installations and monitoring during the spring of 2012 to achieve more conclusive findings," Hodges concluded.

The fact that more and more infrastructure is failing because it is getting older also means that if cities don't maintain the collection side of the operation, then treatment issues could also arise. Issues such as overworking the facility or exceeding permit capacities are real possibilities. As a result, cities must take a high, comprehensive view of the entire system, including laterals. This is a huge undertaking, but on the bright side, as CIPP technology increases, the prices will presumably continue to come down, making the process more feasible as part of the complete rehabilitation solution in the quest to reduce I/I.

One roadblock to this holistic approach is the issue of lateral ownership. Unfortunately, this is a question and concern that can deter cities from managing rehabilitation of the entire system. Therefore, it's important for the city to a draw a line up to the property line to understand where ownership begins and ends. In this case, cities are not spending taxpayer dollars to line private laterals, but they also accomplish reduction of the most critical I/I.

According to Jacob Trapani, vice president of BLD Services LLC, there's an increased demand for lateral relining. For example, BLD Services has been doing between 500 and 600 laterals per month.

In some extreme cases, municipalities that do not own the laterals in their communities are making the decision to rehabilitate them (with owner permission, of course) even though they are not legally responsible. The reason is because in the end, these cities know that the only way to treat the overall problem is to address all of the symptoms, including infiltration and inflow from laterals.

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