



The Florence, Kentucky Public Service Department's sewer maintenance crew includes, from left, Jacob Carpenter, Jeremy Gruelle, Mark Teremi, Brandon Black, Pete Biggs, Bryce Meier, Greg Ferguson, George Caldwell and Brent Scudder.

“We are trying to stay in our lane, to be really, really good at what we do.”

Eric Hall

STAYING IN FRONT OF PROBLEMS

Proactive approach to inspection and maintenance limits collections system risks

STORY Jim Force | PHOTOS David Sorcher

The Public Services Department in Florence, Kentucky, keeps a close eye on its pipes, and it's paying dividends.

The city's wastewater collections system totals 132 miles of pipe with nearly 3,500 manholes. That includes 64 miles of clay pipe laid in the 1960s and another 68 miles of PVC pipe dating from the 1990s and early 2000s. The balance is concrete piping.

Nine department employees constitute the wastewater work crew — one supervisor and eight maintenance personnel. They're able to handle it all because they are supported and guided by the tools and technologies that help them stay ahead of collections system problems instead of reacting to them.

SYSTEM MONITORING

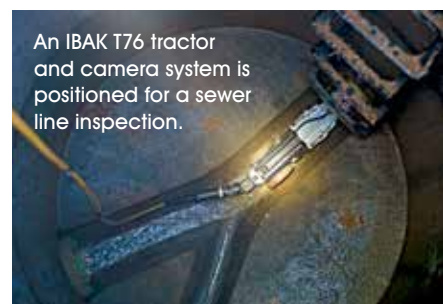
Consider those 3,500 manholes. Some of them are inspected every day for evidence of infiltration, the presence of hydrogen sulfide gas, or ill-fitting covers. Urgent findings are addressed immediately, while routine findings are documented, photographed, and entered into the department's Lucy software system. That record lets Adam Duncan, operations superintendent, and his staff filter the information, rank the condition of each manhole, and systematically service it.

To keep tabs on 132 miles of pipe, the Florence sewer division has a dedicated CCTV crew inspecting mainlines from 6 inches to 30 inches in diameter, along with the connecting lateral lines using a CUES LAMP system. Over a five-year cycle, the inspection crew documents infiltration problems, solids buildup, incursive roots, and the general condition of the entire system.

Eric Hall, Florence's public services director, says having a dedicated inspection crew is a fiscally responsible way to pre-emptively avoid costly pipe failures and to monitor what is happening underground. “The management software lets us go in and grade a pipe and put out a plan to fix or maintain it. Performance measurements drive the process and, at the end of the day, it is cost-effective.”

Fifteen years ago, the department started a flow monitoring program to keep tabs on inflow and infiltration in the sewer system. The program has accumulated information over the years that serve as benchmarks for normal and abnormal flow rates. With assistance from an engineering consultant service, the city constantly monitors data, looking for elevated levels of infiltration. Duncan says the filtered data guides pipe relining decisions — with up to 3 miles of pipe relined each year.

Software and associated hardware are keys to Florence staying on top of its underground responsibilities. Hall traces the city's reliance on new technologies and better asset management practices back to 2005 when, he says, “we really got into problem management. Now, within 15 minutes, I can run a filter through our documented information and prepare a list of responses. We do this regularly so that every year we know what we are going to undertake and how we are going to spend our money — all because we keep these records.”



An IBAK T76 tractor and camera system is positioned for a sewer line inspection.



Bryce Meier receives a pipe patch in a manhole for a sewer line repair.



Maintenance workers Jeremy Gruelle (left) and Bryce Meier prepare a pipe patch for a sewer line repair.

STAYING IN FRONT

The department’s repair and rehabilitation work requires a small fleet of heavy equipment along with a new Vactor hydroexcavation unit and two water jetters. The jetters are routinely scheduled to clean out areas where FOG, roots or other impediments are recurring problems. The rated severity of each area, which is tabulated through inspections and monitoring, determines how often an area is cleaned.

The department recently began doing point repairs on lines using a CIPP patching system from Source One Environmental. The system involves remotely sliding a patch from a manhole to where a crack or hole in the pipe has developed and then holding it in place with a packer until it has cured. “We can do repairs on anything from a 6-inch line to a 26-inch pipe and do it all without having to dig up and then restore a site,” Duncan says. More than 20 point-repair patches were made in 2017.

However, significant rehabilitation or replacement projects are contracted. Mainlines and manholes that need structural relining and pipes or manholes that have deteriorated beyond a point of feasible repair are bid out.

“We are trying to stay in our lane, to be really, really good at what we do,” Hall says. “At this point, getting into the relining business or full replacement business just doesn’t make sense and would not be cost-effective.”

Hall says wastewater employees don’t encounter a lot of sewer pipe needing replacement. “We try to get to pipelines before they collapse. We try to stay in front of it. We feel like our system is in really great shape.” **I&I**



Florence Public Service Department maintenance worker Mark Teremi takes a depth measurement of a storm sewer.

SMOKING OUT SUMP PROBLEMS

Not all inflow and infiltration issues stem from condition problems in mainlines. The Public Services Department in Florence, Kentucky, has found an issue with sump pumps in homes and businesses that aren’t set up properly. When they’re connected to the wastewater system, the extra flow they contribute can cause problems.

The department’s annual sump pump amnesty program is not unlike programs in other municipalities. Adam Duncan, operations superintendent, says smoke and dye testing are utilized to identify likely emission points of sump pump water. Once an illicit site is smoked out, contact is made with the resident at the address.

The assumption always is that the errant connection of the sump pump to the sewer was an honest mistake or that it once was in compliance with regulations. Hence, the amnesty approach. Regardless of intent, however, the resident is offered help with correcting the matter.

“Once we have made contact,” Duncan says, “we offer to reimburse the resident the first \$1,000 of expense incurred to hook the sump pump to the stormwater system. The city also will match half of the total remaining cost of connection, up to \$2,000. I think this is an especially proactive approach. We essentially are offering to share the cost of what is their violation.”

Fewer than 10 residents are cited each year for illicit sump pump connections.