

# Illinois Project Demonstrates Effectiveness Of Grout Repairs

Groundwater infiltration is the curse of every treatment facility. Whether due to cracked and corroded pipes or leaking joints, the extra water means additional expense for the facility. Reduce that inflow, and operating costs drop.

The Decatur (IL) Sanitary District realized it had a problem in the early 1990s. A short time later the district hired Bainbridge Gee Milanski & Associates (BGM), of Decatur to inspect its sanitary interceptors. BGM identified numerous problems, including corroded and cracked pipes, as well as leaking joints in the pipes and manholes.

Considering the age of the system, that wasn't surprising. The first interceptors were installed in 1954, according to Randy McEldowney, outside facilities manager for the Decatur Sanitary District. Rehabilitation work on the system, which serves approximately 90,000 people in Decatur and surrounding communities, began in 1997.

By 2005, two interceptors remained: Stevens Creek and Lost Bridge. Those were laid in the 1960s as the city grew. Consisting of concrete pipes 24- and 30-inches in diameter, they were "the worst of the worst," McEldowney said. Along with several sections of pipe, many of the original rubber gaskets used to seal the pipe joints had deteriorated.

This project was a "mixed bag of rehabilitation," said Charles Hunsinger of BGM. It involved joint grouting, National Liner's cured-in-place-pipe (CIPP), pipe replacement and manhole grading and repair. Due to the firm's extensive experience and competitive bid, Visu-Sewer Clean & Seal Inc. of Pewaukee, WI, was contracted to repair those interceptors.

### Project scope

Encompassing more than five miles of pipe, the Decatur operation was one of the largest – and challenging – grouting projects done in the Midwest, according to Doug Alexander, Visu-Sewer superintendent. Crews had to work over sensitive wetlands as well as near creeks and streams.

Visu-Sewer began on the Lost Bridge interceptor in July 2005. In a process that was repeated at Stevens Creek, a crew first lowered a televising camera and high-velocity cutter into the interceptor. Working from manhole to manhole, the crew carefully inspected each joint for mineral deposits. Some joints were clean, but others had deposits upwards of three-inches thick, Alex-

ander said. A specialized cutter was used to grind away the deposits and any roots they encountered.

After each section was ground out, the crew vacuumed out the water and debris, which was trucked to a treatment facility for disposal.

Each joint was then tested for leakage. After removing the cutter, the crew lowered a packer and camera into the line. According to Phil Romagna, Visu-Sewer's project manager, the packer was positioned at each joint for a pressure test. The crew first inflated the packer to create a seal around the joint. (A hollow tube, the packer allows sewage to flow through during testing.) The crew then forced air into a portion of the joint, starting with a base pressure of 4.0 psi and increased by 0.5 psi for every foot of depth.

Monitoring from a truck, the crew watched for a drop in pressure. When that occurred, the crew pumped in Avanti AV 100 grouting chemicals. The grout flowed through the joint and into the air pocket around the pipe. Once cured, which took about 20 seconds, the grout formed an impervious seal around the joint, Romagna said. After another air pressure test to ensure the joint was sealed, the crew moved on to the next joint.

In the two months they worked on the Lost Bridge interceptor, Visu-Sewer inspected and cleaned a total of 6,486 feet of pipe. They tested 608 joints in the 24-inch diameter line, and sealed 458 locations. They also sealed joints in 10 manholes. Several small sections of pipe required lining. Visu-Sewer turned to a specialist in short-run CIPP lining, Walden Associated Technologies Inc. of Glen Carbon, IL, for that work.

### Stevens Creek

Next up was Stevens Creek. Because that interceptor was much longer, Visu-Sewer assigned a second crew to the project. Work began in August, and was completed by December.

Visu-Sewer reviewed and cleaned 22,864 feet of pipe. Most was either 24- or 30-inch diameter pipe, but they also cleaned a section of 42-inch pipe that ran along a train trestle. Of the 2,427 joints they tested, 1,785 needed grouting. They rehabilitated 69 of the 79 manholes, and lined 425 feet of 24-inch pipe using the National liner CIPP method. Walden was used again, this

time to line about a dozen smaller sections. In addition, Burdick Plumbing & Heating Company of Decatur was contracted to install 178 feet of new 30-inch pipe, and Siciliano Inc. of Springfield, IL, brought several manholes up to grade.

Has rehabilitation worked? Precise numbers don't exist, but there are strong indications that groundwater infiltration has decreased dramatically as a result of the \$1.45 million project.

One good indicator is the number of overflows or flooding that occurred in the pump station serving Lost Bridge. They were a regular occurrence when it rained, McEldowney said. Since Visu-Sewer repaired the line, they've had only one overflow event. And that was on a day when 3½ inches of rain fell.

The Stevens Creek interceptor flows entirely by gravity, McEldowney said. It has no flow gauge, and a number of tributaries feed into the interceptor, so measuring a change is difficult. However, McEldowney said they are "really pleased" with the work that Visu-Sewer did.

While he can't say precisely how much the sanitation district is saving, McEldowney is sure they are using less electricity to run the pump at Lost Bridge and that the sanitary district is treating far less waste water as a result.

As with any municipal project, there are bound to be some complaints from residents as the project unfolds. Even here, Visu-Sewer did well. Bypass pipes had to be laid a couple of times and in some cases a two-way street temporarily became one-way. But inconvenience was kept to a minimum. "The project went well," Hunsinger said. "We had very few complaints."

What this project showed, Alexander said, is that an older, proven technology is very applicable today. Grouting is a viable option for pipes that are in good shape, and one that can save communities significant amounts of money.

### FOR MORE INFORMATION

**Utility contractor:** Visu-Sewer, (800) 876-8478, visu-sewer.com

**Grout:** Avanti International, (800) 877-2570, avantigrout.com