

CASE STUDY

SPRAY-IN-PLACE PIPE REHABILITATION

CITY OF WYANDOTTE, MI



Project Summary

Customer:

City of Wyandotte, MI

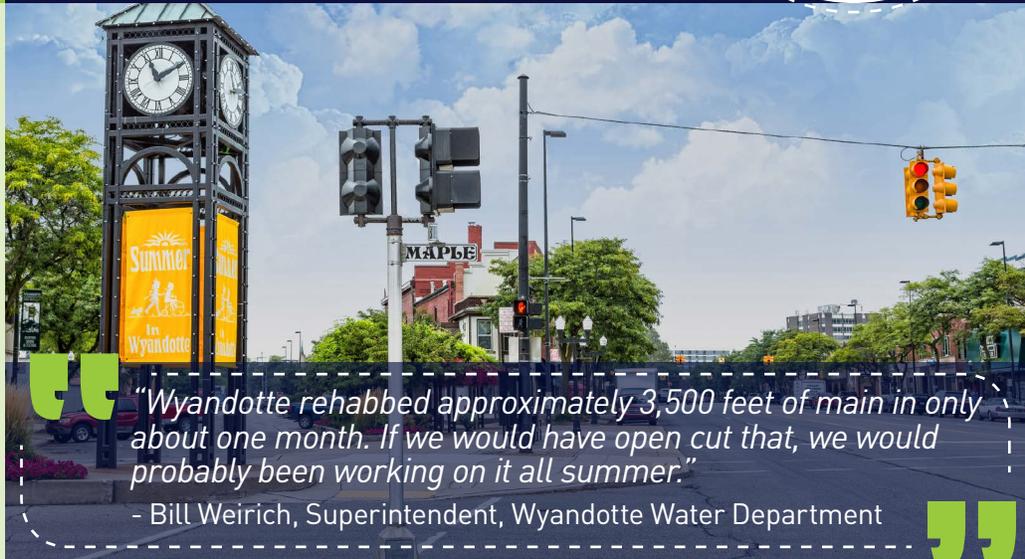
Type of Project:

Spray-in-Place Pipe Rehabilitation

Date: 2018

Results:

- Rehabbed approximately 3,500 feet of main in only one month by using SIPP rather than open cut and direct replacement, saving the city time and minimizing inconvenience for customers
- The open cut method previously used only repaired or replaced 1500-2000 feet of main, half the amount that SUEZ was able to rehab at the same cost



The city of Wyandotte is located in southeastern Michigan, approximately 11 miles south of Detroit. Situated on the Detroit River, its water source, Wyandotte is part of the collection of communities known as Downriver, and it is the only Downriver community that owns and operates a potable water filtration plant.

The Wyandotte Municipal Water Plant serves over 12,000 customers and can produce up to 15 million gallons of water per day. Its distribution system covers five square miles and consists of 110 miles of water mains ranging from 4 inches to 30 inches in diameter. The utility sells over 1.5 billion gallons of water annually.

According to Bill Weirich, Superintendent of the Wyandotte Water Department, the utility's traditional method of maintaining the water mains was open cutting and direct replacement. This entails trenching the entire length of pipe to be repaired or replaced and laying down new pipe in the trench. The downsides of this method are the high cost, the lengthy time involved in the process, and the disruption and inconvenience that customers encounter. In addition, Wyandotte's utilities are underground, complicating the open cut process.

However, Weirich had heard about a trenchless and turnkey process called spray-in-place pipe rehabilitation solution (SIPP) offered by SUEZ, with which Wyandotte already works to provide water tower maintenance through its Asset Management Program.

The SIPP solution uses a computer-controlled, robotic spray application rig to apply an NSF 61-approved, 100%-solids epoxy pipe lining in situ, requiring far less time than trenching and causing minimal disruption.

At Weirich's suggestion, Wyandotte elected to use this system for pipe maintenance in the older part of the township. With aging cast iron pipes that dated back to the 1930s through 1950s, this area had experienced numerous water main breaks and faced the potential for more. Through the SIPP process, Wyandotte intended to remediate the aging infrastructure with the goal of extending the life of the pipes by another 50-75 years.





"We started small, so we could make sure that the process was going to work. Going forward, we're going to expand on where we started and begin expanding out to the whole system from those three points."

- Bill Weirich, Superintendent, Wyandotte Water Department



SUEZ's SIPP rehabilitation process consists of five steps:

- System analysis that includes mapping, utilizing CCTV to evaluate digitally recorded findings and then diagnose and identify a restoration plan.
- Preparation of the pipe interior by drag scraping, power boring and/or hydro-jetting to create a clean, smooth dry surface. This is followed by a second CCTV inspection to determine if there are any leaks, infiltration, or repairs that are needed outside of the SIPP scope of work.
- Preparation for the application of the sprayed-on epoxy coating.
- Spray-on application of the epoxy lining using state-of-the-art robotic rigs that are computer-controlled for more refined application and curing.
- Final inspection and coating analysis.

Once cured, the spray-applied epoxy coating creates an internal seal that prevents leaks and helps protect against future corrosion and biological buildup. This extends the pipes' service life, helps reduce the frequency of maintenance, and increases the flow capacity for greater system efficiency. Because the epoxy coating bonds with the pipes, it also seals cracks and protects against the formation of future infiltration. In addition, the coating elasticity means the newly applied lining is flexible and moves with the pipe, thus reducing the risk of leaks caused by infrastructure settling.

Another benefit is that the epoxy lining eliminates leaching of lead from soldered joints, and the corrosion of copper and steel pipe, thus significantly improving water quality.

Results

According to Weirich, the SIPP program has yielded numerous benefits.

"In all, Wyandotte rehabbed approximately 3,500 feet of main in only about one month. If we would have open cut that, we would probably been working on it all summer. In addition, we were getting only about 1500-2000 feet for the same amount of money with the open cut method," he says, adding that SIPP yielded another cost saving.

According to Chad Atcheson, Product Manager, SUEZ, "When we talk about cost savings with SIPP, we compare it to traditional dig-and-replace pipe, or direct replacement, where you dig up the entire length of the pipe that needs attention and replace it all. We estimate that, on average, SIPP can yield a cost saving of around a 20 to 30% when compared to direct replacement."

Weirich also notes a benefit that transcends cost: the ability to minimize inconvenience to consumers by using SIPP rather than open cut and direct replacement. "I look at SIPP as being inobtrusive to the customer because you are not creating a major construction zone. If you can run your temporary lines without blocking off the ends of the streets, that helps, as our customers have access to their homes. We try as much as we can not to inconvenience our customers."



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Atcheson adds that, "Because SIPP generally requires only two very small access cuts, disruption is minimal. You don't need to dig up the whole length of the road. SIPP is great for applications underneath railroads, interstates, highways, buildings and so forth. That's a huge benefit."

"I believe we were the first water department in Michigan to use SIPP. That's why we started small, so we could make sure that the process was going to work. Going forward, we're going to expand on where we started and begin expanding out to the whole system from those three points," says Weirich.

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