

Howard, KS: population 800, rebuilds its deteriorating sewer system

You've probably never been to Howard, KS. The truth is, many people have probably not even heard of it.

Incorporated in 1888, Howard is a farm town 70 miles east and 10 miles south of Wichita. It has about 800 residents, many of them widowed farm wives and many others of low to moderate income.

In truth, Howard is a lot like thousands of small towns that dot the American landscape. Its infrastructure is aging, as is its population. And, like most rural communities, it lacks the tax base needed to do much of anything about either.

What's more, it is difficult for towns like Howard to attract the talent needed to take care of problems that are often larger than a community is equipped to handle.

A sewer in crisis

In fact, it wasn't until the early 1920s, 40 years after its founding, that the Howard city fathers got around to building a sewer system. More than half of Howard's 600 homes were built "pre-sewer." The remainder were constructed primarily in the 1950s and 1960s at a rate of about a house a year.

In recent years, that sewer system was becoming increasingly deteriorated. By 2000, a significant portion of the town's 55,000 feet of sewer pipes were experiencing severe inflow and infiltration problems.

But in Howard, people often took a bootstrap approach to life, learning to get by on what they had.

Consequently, to avoid back-ups at the water treatment plant when it rained, the town relied heavily on sewer bypassing. During most rains, sewage was often discharged into the ground in different locations throughout the community. Many homes, as a result, experienced backups or a temporary loss of service.

It was only a matter of time, town officials knew, before they would need a more permanent solution. The bypassing could eventually impact their water treatment facility, putting their potable water at risk for contamination. The impending health risk was growing too great to ignore. Homeowners were also understandably upset when sewage bypassed across their property. Several became vocal with their complaints, concerns and overall displeasure.

What local officials didn't fully understand, however, was the importance of reporting its bypass sewer discharges to the State of Kansas. By documenting and establishing a record of a problem and their efforts to resolve it, a community like Howard could improve its chances of obtaining the grant money needed to make the repairs.

Then in 1998, Steve Heinen joined the town as Howard's

Utilities Superintendent. Heinen's background was in natural gas distribution. Fortunately, he was also resourceful, and became skilled in navigating the maze of governmental agencies and organizations that support rural development efforts.



Following heavy rains, it was common for many manholes to overflow in Howard.

In 1999, he went to a meeting of the Kansas Interagency Advisory Council. By this time, Heinen had learned about the importance of documenting the town's sewer bypass events. Within a year, he had compiled and submitted 33 such reports!

He took color photos of the sewage overflows to the Kansas Interagency Coordinating Committee (KIAC). He also took statistics he had compiled about wastewater discharges and the amount of bypassing required after just a one-inch rain. The KIAC committee listened to him plead the town's case and directed him to the agencies and grant programs that would best fit the town's needs.



This manhole needed to be elevated by nearly 2 feet to bring it back to grade level.

Eventually, he was connected to the South Central Kansas Economic Development District, an organization that provides technical assistance in writing and administering grants designed for community improvement. The economic development district serves towns in a 14-county region, including Elk County (where Howard was located), and would provide their services at no direct cost to the city.

Six months later, the town of Howard received a \$400,000 Community Development Block Grant from the Kansas Department of Commerce, along with a \$1 million loan from the Clean Water State Revolving Loan Fund administered by the Kansas Department of Health and Environment. That was the projected amount needed to make the repairs the town's sewer system so desperately needed.

Finding a solution

Money in hand, city officials and Heinen were faced with a new challenge: how to actually go about repairing the bulk of the town's sewers without disrupting the entire town.

The city staff went to work, locating and uncovering nearly all of the 177 manholes in the entire system. Many of these were two and three feet deep. The Kansas Rural Water Association also stepped in to

help, providing smoke-testing services on the town's entire sewer line.

The results of smoke tests and manhole checks, however, indicated that the biggest I&I problems were not in the sewer laterals, but in the mains themselves, most of which were located directly beneath the town's streets.

Unless the town wanted to add in a major street repair program, it would need a different solution than conventional dig & replace.

So again Heinen did his research, talking to engineers and attending professional conferences to get a quick education on sewage system repair. His research led him to cured-in-place technology, a method of restoring structural integrity without digging up the original sewer. With CIPP, a flexible liner is inserted inside the sewers from an existing manhole. Once in place, the liner is heated and cured into a structurally sound pipe-within-a-pipe with a life span comparable of that to a new sewer.

Satisfied that he'd found the best solution, the project was put out for bid.

The low-bidder, however, had specified a fold-and-form product instead of CIPP. With fold and formed technology, a hard thermoplastic pipe is "folded" during manufacturing to create a reduced cross section. After it is pulled into the host pipe, the material is softened with heat and then returned to its original round shape.

After studying fold-and-form technology, however, town officials grew concerned that water could get in between the old pipe and new pipe, creating new problems. Too, no qualified bidders had responded to part of the proposal request. To meet state bidding requirements and put their other concerns to rest,

the community chose to rebid the entire contract, again stipulating CIPP as their technology of choice.

This time, Insituform Technologies was awarded the contract with its bid of \$1,127,127.

Under this contract, Insituform was to rehabilitate 6.25 miles of sewer pipe, about two-thirds of the town's entire sewer system. The majority, more than 4.5 miles, were eight-inch pipes. Another mile was 10-inch pipe, and three-quarters of a mile was 12-inch pipe.



Insituform's inversion process bag is shown being lowered into a manhole. Howard receive a \$400,000 CDBG Grant from the KS Dept. of Commerce. The city also obtained a loan of \$1 million from the Clean Water State Revolving Loan Fund administered by KDHE.

The same thing, over and over

On June 3, 2002, Howard gave Insituform notice to proceed. Insituform would spend the next few weeks preparing for and assembling the materials it would need. By late June, a three-person crew was on site, performing the pipe-cleaning services that preceded the actual sewer rehabilitation process.

A Wichita-based Insituform crew arrived in town in late June.

"I was, frankly, surprised to see them," said Heinen. "With the holiday on the 4th, I would have thought they'd have waited till the next week. Instead, they came in and lined a sewer that very first day."



Improvements at the City of Howard's wastewater treatment plant included a new lift station.

That day, workers started at the corner of Elk and Pine near the home of Councilmember VanBuskirk. Working from manholes, they used water pressure to insert a flexible liner inside a 392-foot-long segment of a 10-inch line. Once in place, the liner was heated and cured

into a structurally sound pipe-within-a-pipe.

Workers then restored the service laterals internally with a robotically controlled cutting device. The rehabilitated sewer was then inspected by closed-circuit TV and tested for quality and flow.

For the next 90 days, the crew basically did the same thing, over and over again, literally working their way from one end of town to another, according to project engineer Karl Nowak.

"From our perspective, this project was similar to rehabilitating the sewers in a 15-square-block subdivision," said Nowak. "Just in this case, we were doing pretty much the whole town." In all, the crew completed 70 separate installations, often at a rate of two a day. Segments ranged in length from 133 to 911 feet.

Meanwhile, other subcontractors installed 2 new lift stations, isolation valves and completed multiple point repairs.

By early October, the entire 33,000 feet of sewers were repaired, with very little disruption to and very great appreciation from – the town's residents. During a big rain just weeks after the crew started, in fact, there was already a noticeable reduction in flow. By the time the project was completed, the town's I & I problem was virtually eliminated.

"There are many communities across the country struggling with deteriorating infrastructure issues," Heinen says. "Many will tell you that their communities and their states are suffering from severe budget shortfalls, and that the process to obtain grants and loans is too difficult and time-consuming."

But as Heinen says, "If we could do it, any little town should be able to do it."

Now that's a bootstrap-kind of attitude that the people of Howard can be proud of.

Watch for KRWA training calendar updates

As this issue of *The Kansas Lifeline* goes to print, KRWA is reviewing a proposed training calendar that begins after the annual conference in Wichita in March.

Watch for the training calendar update on KRWA's website at www.krwa.net and in future issues of the Association's periodic newsletter, *the clarifier* and this magazine.

KRWA welcomes your suggestions on training. If there's a topic that interests you, please let your Association know by emailing your suggestions to krwa@nvcs.com, or you may call 785.336.3760.

Online training to be offered by KRWA . . .

KRWA is working to develop a variety of new online training programs. The first focus of those will be tutorials on use of various computer software such as Excel and Word. Many people have indicated interest in such software-related topics.