



## Elgin mapping old infrastructure

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In late June, a neighbor pointed out something interesting to Jim Binder, a resident of Elgin's west side; remnants of a trolley line from the early part of the 20th century several feet below the surface, uncovered by construction crews replacing infrastructure in the West Highland Avenue area.

"This was about a block from La Corona restaurant" Binder said. "And the paver bricks unearthed were like the ones my neighbor's house has in its driveway."

With a city as old as Elgin, when public works projects take place, sometimes crews aren't sure what they might find underground. With advances in technology, though, the city now is able to compile detailed, easily accessible infrastructure records that should lessen the likelihood of similar surprises down the road.

A surprise happened recently during the ongoing construction of a 60-inch storm sewer on Highland Avenue. Workers discovered that a 12-inch sanitary sewer line between Crystal and Jackson streets was curved instead of straight.

So, acting on staff recommendations, city council members voted at last Wednesday's regular meeting to pay contractors more than \$77,000 to remove the existing 400-foot curved sanitary sewer and replace it with a straight piece.

Water Director Kyla Jacobsen noted that between 5 percent and 10 percent of the city's underground infrastructure is not documented, with questions existing in 40 percent to 45 percent of the area the city maintains below the surface.

"The new stuff is pretty well documented," Public Works Superintendent Dan Rich said.

By new stuff, Rich meant from the 1950s forward. Yet, with construction going on in the downtown -- where parts date back to the mid-1800s -- "there are still sometimes when we go, 'Oh my gosh, what is this?'" Rich said. "But this is not just in Elgin. If you look at any of the trade magazines we get, you'll find quite a few articles on the aging infrastructure of America."

To address Elgin's underground plumbing, Rich oversees crews that make repairs, while Jacobsen manages replacement projects.

Regarding repair work in old sewer lines, Rich and Utility Maintenance Supervisor Colby Basham mentioned cured-in-place polymer sewer liners as a relatively recent advancement that makes repairs easier and longer-lasting. The city has been using such piping for about 12 years, Rich said.

The material is piped into an existing, aging section of old clay pipe, then steamed to shape, much like an angioplasty balloon clearing an artery, at the same time serving as the new arterial wall. Public works officials budget annually for such work on up to 10,000 feet of sanitary and sewer lines.

While there are metal detectors, presently there is no tool on the market for finding underground concrete or clay construction, Basham said. Thus, new nonmetallic work typically has some sort of metal marker in it. Jacobsen noted that putting cameras down old pipes won't indicate if such piping is or has curved.

While public work officials still maintain bound map books of the city's infrastructure, such information within the last few years also has been put into a software program called Geo Blade. The product comes from North Carolina-based Geographic Technologies Group.

"It's a work in progress, but it's taking guesswork out of the game," Rich said.

Jacobsen said that includes checking the accuracy of existing records on both old parts of town and newer construction so that the computer records can be as accurate as possible.

As such, the software provides highly detailed documentation of what is both above and below ground in Elgin. Computer maps offer a photo view as well as line drawings, and they even can be used to measure distances between points. Myriad subdirectories can be used to highlight specific types of infrastructure. Such information can be accessed remotely, but changes to the data cannot be made from the field, Rich said.

The streets-and-sanitation data are part of the city's broader effort, integrated into another software system from NaviLine, a European business. Also among information readily available to certain city employees are the details of this year's tree inventory, and property reports including code violations, calls for service and foreclosure status.

One field in the public works database, colored green on a map, shows a significant part of older Elgin that still has combined storm and sanitary sewer lines.

The aforementioned Highland Avenue project is part of such work. Elgin has about 6,000 homes that still have combined storm and wastewater sewer lines.

The Clean Water Act of 1972 requires the city to separate combined lines. Finishing the work in remaining affected areas will cost about \$150 million and take about 20 to 30 years, officials have said.