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Ohio City Sewers

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The aging American infrastructure is in need of a major facelift and soon. The City of Ironton, Ohio, knows this and is taking action to bring its underground sewers up to par. The City is using innovative funding and new technology to extend the life of its sanitary system.



The City of Ironton has a rich and storied history. Founded in 1849, the region was one of the foremost producers of iron in the world. This boom of industry caused the region to become heavily populated and industrialized. Ironton grew rapidly, becoming the county seat of Lawrence County, in 1851. Much of the city's infrastructure was installed at this time.

When companies consider establishing a presence in a municipality, infrastructure is a critical consideration. For Mayor Rich Blankenship, infrastructure is something to feel better about in the Ohio River town.

In late 2008, the City of Ironton realized its aging infrastructure needed a major upgrade. Having paid \$100,000 as a non-compliance fine to the EPA for non-separation of its sewer and storm sewer systems, Ironton received word that its requests for \$5 million in stimulus funds had been rewarded. An opportunity to finance \$18 million of the project through Ohio EPA's revolving loan program was also available. The City is borrowing some \$5 million to match the federal stimulus grant. As a result, the City is in the midst of a \$10 million project to reline 60 miles of the city's sanitary sewers. The project is providing some 50 jobs for about a year, some of them going to a local subcontractor. Reynolds Inliner of Hilliard, Ohio, was awarded the contract for the yearlong project. Fee Corp. of Ironton, a subcontractor, also has some people working on the project.



The E. L. Robinson engineering firm was retained to plan and implement the rehabilitation project. E.L. Robinson is a multi-disciplined engineering/planning firm with a staff of more than 75 full-time professionals and support personnel located in seven offices throughout West Virginia and Ohio. With a 25-year history of providing a diverse scope of services, the firm was chosen to provide a full range of quality engineering services, from planning and analysis to design and implementation.

The design team from E.L. Robinson inspected the Ironton wastewater and storm water collection system and decided to reline the sewer mainlines, coat the interiors of all the manholes and replace the crumbling, leaking manhole chimney sections. The Mr. Manhole system met the specification for the removal and replacement of all sanitary sewer manhole chimneys. New frames and lids were also specified on all the city's manhole structures.

Doug Cade, an Ironton engineer with the firm of E.L. Robinson, stated that half of the cost for the green project is

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coming from federal stimulus funds. The other half will come from a low-interest loan.

Acquiring the federal stimulus money wasn't without difficulty. The City initially was turned down on its grant request in 2008. Blankenship didn't accept that verdict. Instead, he called Ohio Gov. Ted Strickland and went to Columbus to appeal the decision.

"I knew we had a good project," Blankenship said. "These are our needs, not our wants. This project will benefit the city for the long term. It will extend the life of the sewers by 40 years."

Minimal disruption to the ground and city streets is a benefit of the environmentally-friendly project. Traffic patterns are resumed quickly and less material is removed from existing streets than with traditional methods. Cade said, "It will eliminate a lot of the groundwater inflow." Eliminating the groundwater inflow will result in large savings from greatly reduced water treatment costs.

The cured-in-place pipe (CIPP) project will form a new sewer line inside the old brick-and-concrete sewers. The fire hose-like material is inserted into the sewers and hot steam forced through it cause it to expand and harden, rehabilitating the century old sewers.

The barrel-and-cone sections of the manhole structures are being lined with Sprayroq Green, an environmentally-friendly epoxy coating that is sprayed onto the internal surfaces of the structure, following surface preparation. This trenchless process, along with the CIPP, is being performed even in the midst of winter, due to the nature of the rehabilitation. Sewer service in the city continues uninterrupted during the rehabilitation project.

The Mr. Manhole system is being used to remove and replace the manhole chimney sections of more than 1,000 manholes in the City of Ironton. The system enables installers to perform safe, high-quality and comprehensive repairs of manhole chimneys. The Mr. Manhole system is the first high-volume manhole chimney repair system and was chosen in part for the Ironton project because it will enable crews to complete the entire project in less than a year.

The manhole chimney section is 10 percent of the manhole structure but is responsible for 50 percent of the leakage. Many products are available to reduce leakage in the chimney section but most fail due to structural deterioration. The Mr. Manhole system is based on a total redesign of the manhole chimney, making it structurally sound, leak-free and resistant to gasses in the structure. The repair has a return on investment of just over two years from treatment cost-savings.

The Mr. Manhole tools can quickly cut and remove a manhole frame and lid down to the cone level and rebuild it level with the height and slope of the road, guaranteed not to leak with a 20-year design life. The system works on a skid steer and uses a plastic, stay-in-place form to prevent water and gas from deteriorating the cast-in-place, epoxy-coated, re-rod, reinforced concrete collar. The attachment works off an auger drive to spin and cut through asphalt and concrete, removing the manhole casting and road over-cut in just minutes.

These cutting edge technologies are allowing the life of America's infrastructure to be extended in a cost effective non-disruptive fashion. Forward thinking engineering firms like E.L. Robinson are finding new funding options as well as utilizing the latest products and techniques on the market.

The average age of the typical sewer system is more than 100 years and many are in need of major innovations. The products and techniques in this article are qualified for funding under the American Recovery and Reinvestment Act.

Michael Keith is a staff writer for Critex LLC, the parent company of Mr. Manhole Systems.

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ABOUT AUTHOR

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