



Knoxville, TN chose HDPE pipe to replace aged and leaking sewer infrastructure

WL Plastics HDPE pipe found to be quicker, cheaper and more practical to install with minimal disruption and disturbance

The project

Knoxville, TN has an aged and leaking sewer infrastructure that needs replacing. There are hundreds of thousands liner feet of gravity sewer lines that need to be replaced. The bulk of the pipe needing replacement is old clay and concrete with some steel and asbestos concrete as well.



Since 2004, the City of Knoxville in conjunction with the Knoxville Utility Board (KUB) has had initiatives to replace or repair the Knoxville's gravity sewer infrastructure. With critical downtimes for the system being relatively short (1–2 days), trenching would not be practical for resident users or the city. Repairing with CIPP lining was tried but eventually the “bursting method” with HDPE was found to be quicker, cheaper and more practical to install with minimal disruption and disturbance.

There are sewer lines that go down the middle of streets, in private back yards, throughout residential communities, businesses, forested areas, and parks, which are leaking and are too costly to continually repair. Therefore the city decided the best viable answer was bursting.

With typical runs of 300–400 feet in length and connecting to existing manholes this rehabilitation project is well suited for bursting with HDPE pipe. The challenges were to ensure the replacement pipe connects well with existing manholes, the down time for the sewer operation was minimized, and costs were kept on budget.

With each average burst taking about 1–3 hours, pending soil conditions, this technique was a perfect fit for what the KUB was trying to accomplish in Knoxville. As of 2015, the project is still has great momentum with a huge degree of success. With the cooperation of Consolidated Pipe (pipe and fitting distributor) and contractors like Morgan Construction the successful installations continue today.

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The specifications

Sewer lines in Knoxville range in sizes but typically DIPS 12" through to 4". This particular job in a residential area was replacing a 6" existing clay line with an 8" DIPS DR17 HDPE Camcore™ line. The line was upsized to accommodate the growth in the area and any future growth as well. All existing manholes were assessed to ensure future integrity was acceptable for the new lines. If not they were replaced or relined/reconditioned.

Specifications required AWWA C906 with ASTM F714, and the interior wall having a light grey color for camera inspections. The connections to the manholes must be sealed and grouted with minimal extension into the manhole once installations is complete.

The benefits

The benefits of utilizing HDPE Camcore™ pipe is that it has superior video inspection with the light interior surface (grey). It is UV protected for outdoor exposure indefinitely because of the black exterior. Although a gravity system the pipe is pressure rated if needed in force mains. It can be installed using any installation technique that exists today. Extended lengths 40 or 50 foot lengths reduce fusion and save time. No leakage due to fusion joining. Exterior stripes available for pipe identification. Excellent slow crack growth resistance and excellent resistance chemicals or sewer effluents.

The benefits from an installation perspective is fast compared to open trenching. The ability to upsize and increase capacities is priceless. Smaller equipment is be used because of light weight and flexible characteristics, so maneuvering in tight places is not considered a burden. It took hours to install and only a day or so to put the system back into full service. In some cases, service was restored the same day. This benefit allowed for better scheduling and reduced install time. The City, residence and businesses that were affected by the installation did not see a lot of destructive construction and minimal disruption. This makes bursting with HDPE pipe a viable solution to repair depleting infrastructures.



Contact

Contact WL Plastics for more information

SALES: wlsales@wlplastics.com

TECHNICAL: wltechnical@wlplastics.com

www.wlplastics.com