

Five Trenchless Rehab Projects Save Failing Large Diameter Combined Sewer Structures in Albany NY

Albany Department of Water & Water Supply maintains a combined sewer system containing many major components that are well over a hundred years old.

The Albany Water Board contracted a third-party inspection and assessment of approximately 2,600 LF of sewer within the Beaver Creek Combined Sewer District, a network that provides sanitary sewer and storm drainage for more than 13 square kilometers (five square miles) of Albany.

Many sections of large diameter brick sewers were found to be obviously failing, with visible mortar loss and cracks and, most alarmingly, longitudinal fractures at pipe crowns running continuously along entire sewer sections, with bricks starting to fall out, indicating severe risk of failure and collapse.

In affected neighborhoods, the combined sewers typically run directly under street centerlines, and right-of-ways are relatively narrow, just 18.266 meters (60 feet). These are older neighborhoods with minimal setbacks, and houses tend to be built very near property lines. This meant limited staging areas, or road closures.

Four total rehabilitation projects, all in residential neighborhoods, were let under this initial bid process, a total of 1,160 LF. Most of the sewers were 2.134 meters (84") circular brick, with one short section, just 89 LF, of 1.22m x 1.52m (48x60) oblong brick sewer. Mid-project, in response to the discovery of a large void in a 1.52m (60") circular brick line in Washington Lake Park, an additional 103.63 meters (340 feet) of sewer was added via change order.

Albany is subject to sudden storm events, causing flash floods in sewer systems. Minimizing road closures, while working within the narrow right-of-ways, minimal setbacks, and anticipated storm events, was a key factor in assessing and selecting a solution.

The stabilization and rehabilitation of these aging and failing structures was successfully completed with a centrifugally cast concrete pipe (CCCP) system, spincasting a specialized fine aggregate composite concrete (FACC).

The bypass system needed to handle daily flow, as well as sudden floods from storm events. The depth of the sewers added complexity to every aspect. Bypass pumping with submersible pumps ensured dry sewers during the 2-3 hour FACC curing windows. A collapsible weir was devised that could be deployed upstream in less than a minute during a storm event to protect new concrete layers and allow crews to evacuate.

Several storms thoroughly tested the reliability and functionality of this system.

Road closures and disruption to residents and businesses, including a hospital, were minimal.

Work was completed on schedule, including the emergency change order, despite an unusually stormy season. The cost-effectiveness and quality of the repair was a huge success for Albany, and should add 50-75 years to the lifespan of these sewers.