SPR™
CASE STUDY

LARGEST SPR™ PROJECT

Peachtree Trunk Sewer Stabilization Project

PROJECT DETAILS

The City of Atlanta, Georgia, recently faced the familiar challenge of failing underground infrastructure. The problem, however, was uniquely large; the Peachtree Creek Trunk sewer. This 90-in. arched concrete sewer constructed in 1934 required nearly two miles of rehabilitation.

The sewer runs beneath a section of the city largely undeveloped at the time of construction. Today, that same pipe alignment is surrounded by a thriving residential area, including a city park, golf courses, suburban communities and Interstate 75. The numerous above-ground obstacles demanded a trenchless technology to be used for all large-scale repairs. In addition to above-ground challenges, multiple bends are present along the pipeline, creating issues in designing a rehabilitation solution. Recent events revealed a need to fix the old sewer. In September 2009, the City of Atlanta witnessed a major 500-year flood event, exposing structural failures within the Peachtree Creek Trunk.

The sewer began to show its age with cracks, failures and concrete degradation that subsequently impacted the surrounding community and environment.

In response, the City commissioned an Atlanta based contractor, Ruby-Collins, to repair the most concerning sections of pipe immediately following the flood. In addition to the repairs, planning began for a fully structural rehabilitation to address the long term needs of the entire pipeline. This meant designing a solution for over 10,500 lf of the 90-in. arched sewer.

10,500 FT
Project Length

82”
Liner Diameter

125 YRS
Age of Pipe

SPR™
- 32” - 217”
- Grouted in place
- Circular/non-circular

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SPR™ LINING SOLUTION

The pipe's location and cost to dig-and-replace made a trenchless technology necessary, however the City had other factors to consider. The sewer required a method capable of lining it's multiple sweeping bends. Additionally, the pipe's flow levels presented concern. The bypass pumping plan and associated costs had the potential to be a major obstacle. With these considerations, the City determined Spiral Wound Lining to be the best trenchless pipe rehabilitation option.

Spiral Wound is a PVC pipe lining method designed to restore sewers, storm drains and culverts from 6 in to more than 200 in. The above-ground footprint, including internal bypassing, provides minimal disturbance; an important benefit for construction within the busy Atlanta suburbs. Spiral Wound also provided the capability to line the bends within the pipeline.

The City of Atlanta's Department of Watershed Management and Ruby-Collins collaborated with SPR manufacturer, SEKISUI SPR Americas LLC, in designing an 82-in. PVC liner to be installed within the 90-in. arch sewer. Although diametric reduction occurred, PVC liners provide a manning's coefficient of .009; in many cases enhancing hydraulic characteristics post rehabilitation. This provided the City necessary flow volume while restoring the structural integrity of the sewer. The annular space was to be filled with lightweight grout to serve as load-transfer for the PVC liner. Ruby-Collins began installation in fall 2018, with the goal to complete lining within 14 months.

The steel-reinforced PVC liner was constructed using the SPR winding machine. A small crew fed a continuous strip of PVC from a spool above ground to the winding machine below. The strip would then lock and form the liner; a process performed entirely without the use of chemicals.

Once a spool ran out of PVC material, another was forklifted in and the ends of the material were connected. This process continued segment by segment, the longest reaching in excess of 1,500 lf. By only using existing manholes, Ruby-Collins was able to keep the construction footprint as minimal as possible.

Once a segment of pipe was lined, the completed section was prepared for grouting. Internal braces were set up within the liner to provide support for installing the grout. The grout injection occurred through a series of internal ports created in the liner's wall. This continuous process of lining and subsequent grouting continued for the entire length of the pipeline.

Ruby-Collin's expertise of Spiral Wound installation kept the project moving at a rapid pace. Spiral Wound technology also provided added benefits to minimize the amount of days where work could not be done. For instance, the mechanical installation allows for live flow pipe lining. With the project spanning numerous months, the construction site saw many days of storms and rain. Installation often pressed forward during/post these weather events. The Ruby-Collins installation team worked tirelessly even on days where the sewer's flow surpassed their knees.

The combination of innovative technology and efficient installers resulted in early project completion. The Peachtree Creek Trunk Stabilization sewer rehabilitation project began in October 2018. The rehabilitation of more than 10,500 lf of 90-in. arched sewer finished just 10 months later in August 2019; roughly four months ahead of schedule.

This project marks the largest Spiral Wound installation in the United States, as well as one of the largest pipe rehabilitation jobs completed by Ruby-Collins and the City of Atlanta, according to project officials.

> "The SEKISUI SPR Lining Technology was the perfect fit for the specific needs of this project. The technology was able to accommodate variable flow conditions and continuous rehabilitation through numerous curves in the pipe alignment with ease."
>
> - Scott Cline, President & COO, Ruby-Collins Inc.