



Polymer Technologies USA, Inc

mike@polymertechnologiesus.com

CGC1510936

December 10, 2020

Case Study

The City of Sarasota Lift Station 87 Structure Sewer Pipe Encapsulation Project





Polymer Technologies USA, Inc

mike@polymertechologiesus.com

CGC1510936

December 10, 2020



Background

The City of Sarasota is committed to improving its wastewater system and providing reliable service for its utility customers. The new lift station and sewer mains will handle about one-third of the city's wastewater flow. In July 2015, the City Commission approved the Lift Station 87 project for final design and construction. To protect the City's investment and minimize risks, construction will be completed in three phases. Schedules for the three phases overlap to maintain an aggressive schedule and minimize the overall construction duration.

The following dates are estimated and subject to change based on weather or **unforeseen conditions**:

Phase 1: Lift Station 87 Micro tunneling

This critical project element began in January 2017 and was completed in June 2017.

Phase 2: Lift Station 87 Structure

Pre-construction work began in October 2017. Lift Station 87 became operational on October 20, 2020

Phase 3: Open Cut Pipeline Installation Sequencing & Scheduling

- Completion scheduled for November 2020. *Date Updated: October 9, 2020*
- **October 8 – October 31:** Osprey Ave. from Lincoln Park Dr. south to 963 Osprey Ave (24-inch sewer, water main and intersection)
- **November 6 – December 19:** Osprey Ave. from Bahia Vista to Alta Vista (8-inch water)
- **November 1 – December 3:** Osprey Ave. from 963 Osprey Ave. to Alta Vista (24-inch sewer)
- **December 4 – December 19:** Alta Vista from Osprey Ave. to 1753 Alta Vista (24-inch sewer)
- **December 20 – January 3:** No Work Scheduled – Holiday Break.



Polymer Technologies USA, Inc

mike@polymertechnologiesus.com

CGC1510936

December 10, 2020



Unforeseeable Condition

According to the City of Sarasota Utility Engineer Mgr., intensive monitoring of the flowable fill system was implemented at inception. Since bringing the system online, the city identified a significant discrepancy in the flowable fill return which was measuring an average 120 gallons for every 100 gallons introduced. The industry standards for reclamation range from 65-75 gallons per 100. It was concluded that there was significant ground water intrusion introduced in the line over several damaged seals.

The Problem

Water entering the wastewater system through holes, breaks and joint failures can significantly tax your treatment facilities, especially during storm events. The pipe is buried 35 feet below grade, laid within a 10-foot barrier of tunneled bedrock, contained with 10 feet of gravel, and covered with 25 feet of compacted soil creating the foundation for the with the structure. During this time, phase 2 of the project continued unknowingly of the dilemma that was developing. Years of groundwater seepage throughout various locations towards the pipe was creating a questionable loose soil conditions.





Polymer Technologies USA, Inc

mike@polymertechnologiesus.com

CGC1510936

December 10, 2020

The Proposed Solution(s)

The Project Engineers, City of Sarasota Utility Engineers, and Prime Contractor concluded there were three (3) known methods of remediation. 1. Seal the interior of the pipe utilizing a Liner System. 2. Seal the exterior of the pipe using polymer foam. 3. **Totally excavate the entire section of pipe leading to the structure.**

1. Seal the pipe from the interior

PCL hires Insituform® CIPP to rehabilitate the sewer line with the use of their patented tube/resin system specifically developed and tested for tube wet out. Then a serial vacuum impregnation process enables the resin to fully saturate tubes of any length or thickness, thereby ensuring the long-term reliability of our cured-in-place pipe.

Finally, enough resin is placed in the tube during wet out process to completely impregnate the felt in the Insituform® CIPP tube to create the desired thickness. Enough resin is applied to compensate for irregularities in the host pipe. This process creates a pipe which fits tightly against the host pipe to maximize buckling resistance and minimize infiltration. After repeated attempts, the solution failed to seal any leaks.





Polymer Technologies USA, Inc

mike@polymertechnologiesus.com

CGC1510936

December 10, 2020

2. Seal the pipe from the exterior

Insituform then hired Foundation Professionals of Florida to inject two (2) component, fast reaction polyurethane foam in order to seal the leaks from the exterior. This method had the potential of foam intrusion to the sewer system rendering it completely useless. Bio-flow sewer camera company was hired to monitor the intrusion sites to ensure further damaged was prevented and to provide a quality Pre and Post Video. After repeated attempts, the system failed to seal any leaks. This material has never been successfully delivered pasts the depths of 10-15 feet. **Prior to total excavation, and as a LAST RESORT; Polymer Technologies U.S. was called in to utilize its patented technologies.**



2A. Seal the pipe from the exterior; Displace all the Groundwater Channels leading to the pipe; and Stabilize the existing eroded Soil from collapsing the entire existing structure.





Polymer Technologies USA, Inc

mike@polymertechnologiesus.com

CGC1510936

December 10, 2020

At present, our Patented System and Method of injecting expandable materials [9,790,655] and our Mixing Device for Silt Fine Soil [10,538,894 B1] HAS SEALED ALL THE LEAKS IN THE SEWER PIPE FOR THE CITY OF SARASOTA, THEREFORE AVOIDING AN APPROXIMATE \$1,245,000 FOR EXCAVATION, A MINIMUM SIX (6) MONTH CONSTRUCTION DELAY, THE COST AND STRESS ON THE EXISTING LIFT STATION 7 DUE TO THE REQUIRED BYPASSING OF STATION 87; DISPLACED ALL GROUNDWATER CHANNELS; and SECURED FURTHER UNFORESEEABLE CONDITIONS BY STABILIZING THE ENTIRE FOUNDATION FOR THE LIFT STATION BUILDING STRUCTURE.

Who Are We:

We are a Minority Woman Owned, Small Business/A Service Disabled Veteran Owned Business; and a State Certified CGC with patented intellectual properties; **designed to deliver single or multi component polyurethane foam; in excess of 100 feet; at the source; from the BOTTOM UP; simultaneously permeating loose or wet soils both Vertically AND Horizontally!**

Nothing stays in the ground except the NSF approved materials, excellence in EPA protocols.

With over 15 years' experience in the polyurethane industry, Mr. Dominguez has analyzed, addressed, and solved the inability to mix multiple component polymers, below grade, in excess of 15 feet, which was controlled by Uretek USA for many years. Since then, many companies have "re-engineered" that patent with little success as it is still a Top-Down method of delivery.

Our system has been successfully tested on five (5) residential projects (One of the six was completed for a totally collapsed and condemned structure owned by the City of Apopka and now has a new home built on its foundation), monitored and verified by a Structural & Geotechnical PE. Proof of Concept is evident and demonstrated with the pre- and post-Geotechnical reports.

References:

Anthony Centurione. City of Sarasota Utilities Engineer Manager

Anthony.centurione@sarasotafl.gov

Cory Westphal. PCL Prime Contractors Project Manager

CDWestphal@pcl.com

David Brown. President of Foundation Professionals of Florida

dbrown@foundationprosfl.com