LARGE DIAMETER SEWER RE-BUILT AND RE-LINED

BRIAR HILL, HOUSTON, USA

A large diameter sewer pipe that services thousands of properties was found to be extensively corroded. Left untreated there was a real danger that raw sewage could leach into the ground and cause a major environmental incident.

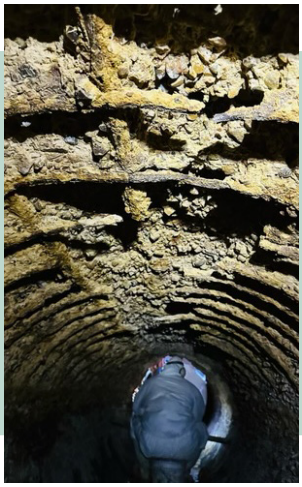
When the City of Houston identified the issue in the pipe running through the Briar Hill area, they called on contractor Puris to find a solution.

To resolve the issue there were several options available with dig and replace being the costliest, most time consuming and having the highest environmental impact. The best solution was to re-line the sewer using one of the options available on the market.

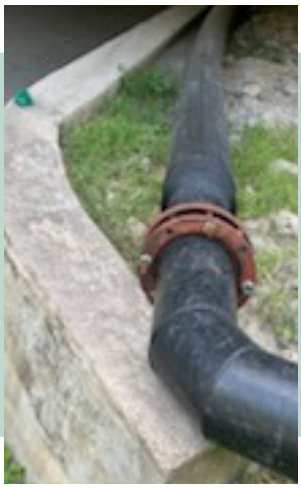
Puris initially considered using CIPP (cured in place pipe), but multiple constraints lead the company to choose GeoTree Solutions' LOCTITE GeoSpray Geopolymer, an SAPL (Spray-Applied Pipe Liner) solution instead.

The CIPP issues identified were numerous. The pipe condition was too deteriorated and, due to the lengths of some sections CIPP would be too heavy to transport. The multiple manholes on the Sam Houston Pkwy meant there was good access for SAPL which would lead to less traffic control required and a smaller preparation footprint.

LOCTITE GeoSpray HCE was chosen. It is a cementitious geopolymer material engineered to cope with highly corrosive environments (HCE), so it was the ideal solution.



A total of 3,202 linear feet of sewer needed repairing. The pipe had an original diameter of 48” but due to the extreme deterioration, much was actually 52” to 56” in diameter.



Before work could start Puris had to prepare. More than 5,000 linear feet of bypass piping was installed. This required seven temporary bypass pump stations and 15 pumps running 24 hours a day for the entire six-month duration of the project.

The sewer needed to be cleaned. A subcontractor was employer to complete this part of the project. Once finished, Puris had to remove a further one to two inches of debris that had been dislodged by the power washing of the sewer.

The sewer also exhibited many voids that needed to be filled before it could be lined – areas were as deep at five inches. Puris used another GeoTree product, LOCTITE GeoStrong Concrete Repair Mortar to resolve the issue. LOCTITE GeoStrong is a one-component, non-shrink, fast-setting geopolymer mortar designed for repairing substrate when high strength is required. It is corrosion-resistant and allows for fast application, up to three inches in one layer, with fast finishing and reduced time between lifts.

There were also extreme voids under the Sam Houston Pkwy, one measured eight foot long and one was 15' long and stretched all the way up to the street.

Once the initial remediation work was complete Puris could start the process of spraying the LOCTITE GeoSpray HCE onto the walls of the sewer. This section of the project ran smoothly and saw crews work 10-hour shifts to complete the task.

They steadily moved along the length of the sewer accessing at the already-in-place manholes. Each time they reached a new section, the staging, preparation and mixing area was moved to next to the manholes to allow for as short a distance as possible for the Geopolymer to be piped.