

Trenchless TECHNOLOGY

Pipe Bursting & CIPP Used to Rehab Wastewater Line in Dallas

By: Ben Goodall

When a nearly 60-year-old wastewater main collapsed last year, the City of Dallas was faced with a difficult and potentially expensive municipal emergency.

The line had collapsed by the upstream manhole, causing a massive backup. During its initial repair of the line, the city conducted a video inspection that revealed extensive corrosion damage as a result of high levels of hydrogen sulfide gasses. The damage was deemed significant enough that city officials issued an emergency repair order.

Once it was determined that a more extensive repair and upgrade was needed, the city decided to take this opportunity to increase the current pipe size from 36 to 42 in. The larger line would not only help handle additional flow, but would also address chronic flooding issues that had been a recurring problem. The extent of line that needed to be repaired and upgraded was a 3,420-lf stretch that crossed under Fair Oaks Avenue. Fair Oaks Avenue forms the southeast boundary of Dallas' popular and highly used Harry Moss Park.

The city approached Dallas-based, general



contractor Omega Contracting Inc. (OCI) to discuss repair and upgrade methodology to mend the line and determine which firm would be the most qualified for the project. Together, OCI and the City of Dallas selected PM Construction, a division of IPR, a leading provider of underground rehabilitation solutions with offices throughout the United States. IPR has several subsidiary brands, two of which, PM Construction and RePipe Construction, are located and widely recognized in the Texas region. IPR and its family of companies provide a comprehensive portfolio of trenchless rehabilitation services and technologies to repair and maintain critical water, wastewater and industrial pipe infrastructure nationally. OCI and the city determined that IPR's status as a proven regional expert, in conjunction with the firm's demonstrated ability to provide innovative solutions, in revitalizing infrastructure, minimizing disruption

and maximizing investment for municipalities throughout the United States, made PM Construction the ideal candidate for the project.

Challenges

During the initial strategic planning and design phase of the project, PM Construction (PM) recognized a number of practical and logistical challenges and designed a construction plan accordingly. Reducing the risk of disruption was a priority, and PM would need to work closely with Dallas' Parks Department to devise an efficient and expeditious timeline for construction, while minimizing disruption to the park's baseball fields.

The project included a 700-lf section of line that ran south into a heavily wooded area and directly adjacent to a retention pond. This created a potential problem, as mobilizing heavy equipment to the downstream manhole was going to be difficult. Additionally, soil

samples revealed that the ground was heavily saturated with water, further complicating the project. The wet ground would increase the risk and the technical difficulty of the repair and upgrade. Uneven terrain—including two creek crossings—would also pose a logistical challenge. Looming over all of this was the potential for a true disaster: an ineffective or faulty repair would have a potentially enormous environmental impact and damage the park and baseball fields, causing huge upset to the community and the city. Faced with a literal and figurative landscape of technical challenges, PM would need to not only call upon its technical expertise, but would also need to implement a series of site- and project-specific creative solutions in order to execute the project successfully.

Solutions

Cured-in-place pipe (CIPP) was initially considered, but once the City of Dallas became convinced of the need to increase the pipe size to ensure adequate flow capacity, it was determined that the existing 36-in., reinforced concrete pipe would be replaced by a new 42-in. line. The solution: 2,234-lf of the project would be

replaced using pipe bursting techniques, 189-lf would use the CIPP method and 997-lf would be done using open-cut. The decision to open-cut a portion of the job, and pipe burst the remaining, was made both in order to control the cost of the project and also to facilitate additional access to the line by installing manholes along for future access. Using the trenchless method for much of the repair allowed for a faster repair time, less overall expense and minimal disruption.

IPR used strategic partnerships to cut costs on materials and labor, shorten timelines, create efficiencies and bypass pumping. PM worked with OCI in regards to the bypass, supplying two 18-in. lines to carry the bypass. The two creek crossings—one 10-ft in length and the other a 120-ft crossing—were spanned by PM-designed suspension bridges capable of carrying both the load of the bypass pipe and the heavy flow.

Collaborative work with a City of Dallas arborist and consulting engineers at Kimley-Horn and Associates enabled PM to devise a plan that would circumvent the obstacles posed by the retention pond and overcome the accessibility issues. It was determined that draining the retention pond and creek was the best solution and would allow IPR to get heavy equipment to the

downstream manhole, as well as reduce the risk of equipment getting stuck during the repair.

Results

PM was selected to do the pipe bursting largely as a result of its strong reputation, demonstrated company experience in trenchless repair and outstanding track record for success in dealing with large diameter rehabilitation. The overwhelming consensus is that the project was a technical, financial and logistical success.

Dallas officials are extremely pleased with the work, which has come in ahead of the proposed deadline and on budget. Mother Nature helped, as a lack of significant weather-related setbacks made the initial three-month timeframe more than adequate to complete the project. The repair itself not only exceeded the expectations of the city, but also those of OCI, addressing the corrosion problem, increasing the diameter of the pipe, restoring structural integrity to the line and improving drainage. Perhaps, most remarkably, the repair was implemented with no disruption to the community. As a result, local officials did not receive a single complaint on the project.

IPR's use of innovative concepts and technologies, inspired solutions to potentially thorny technical and logistical hurdles, and positive and productive collaboration with various professional partners and interested parties, made it possible to complete the repair and upgrade in an efficient and cost-effective manner. While the trenchless repair technologies used in this project are state-of-the-art, the really visionary aspect of this project was the seamless integration of those specialized technical aspects with creative thinking and inspired, real-world problem-solving. Together with an inclusive, collaborative approach that maximized the talents and proficiencies of a range of professional contributors, that problem-solving proficiency enabled IPR to achieve a successful result for Dallas.

About Inland Pipe Rehabilitation

Ben Goodall is the business development director for RePipe, a subsidiary of IPR, a national leader and provider of underground rehabilitation solutions. He can be reached at 214-675-2053 or bengoodall@repipeinc.com. For more information, please visit www.teamipr.com.

