LAUDERTRAC

INFRASTRUCTURE UPDATE

Tracking Progress on Fort Lauderdale Commission Priorities for 2021

October 2021

INVESTING IN OUR FUTURE

Redundant Sewer Force Main Completion

Beginning in December 2019, the City of Fort Lauderdale experienced a series of breaks along its aging sewer transmission main that resulted in over 200 million gallons (MG) of sewage spilling into the City's waterways. In response to these breaks, the City immediately awarded two design-build contracts to install a new force main. The new force main measures 7.5 miles in length and crosses two canals, the Intracoastal Waterway, and several major arterial roadways. Approximately 6 miles (85%) of High Density Polyethylene (HDPE) pipe was installed using trenchless technology with 17 Horizontal Directional Drilling (HDD) operations of 48-inch and 54-inch pipeline. These HDD actions were as deep as 60-feet through the heart of downtown Fort Lauderdale. The 17 HDD operations included:

- Two runs which are among the longest drills in the world in size – 3,400 feet of 48-inch HDPE and 3,100 feet of 54-inch HDPE
- Three runs with waterway crossings
- Four runs with compound curves

Canal Crossings: Three waterway crossings were built, but not without each presenting a unique set of challenges. For example, the Tarpon River crossing was located adjacent to a bridge with just 8 feet of available right-of-way between the bridge and adjacent properties. To solve this challenge, a precise 54" diameter compound curve was designed to meet the constrained alignment and successfully installed.

Pipe Lifespan: An important aspect of the project was the lifespan of the pipe. With some sections installed at 60-feet below ground, and others crossing waterways, or near expensive to replace above ground features, the team wanted to be sure it would last many, many years. Among important factors analyzed by the team was the long-term resiliency of the pipe and its ability to provide collapse resistance. The analysis concluded the choice of HDPE pipe would provide long-term strength against collapse and resiliency to subsurface movement, to prevent future failures.

Protection of Existing Infrastructure with Soil Injection Treatment to Prevent Borehole Collapse: In some locations along the 7.5-mile route, the proximity of the buried pipeline to sensitive above ground facilities required advanced techniques to protect above ground features from any disturbance caused by below ground drilling. To protect the existing infrastructure, the team developed a soil stabilization treatment plan which required the injection of rigid structural geotechnical polymers at 68 locations. The thermo-set resin stabilized the area, preventing any soil movement or collapse of facilities and features.

Fast-tracking: With 38,000 linear feet of 54" & 48" HDPE pipe, this is one of the largest HDD projects to be installed within a downtown environment. Yet, it was quickly designed, built, and placed into operation within 18 months.

Fusing Pipe Connection

Preparing to pull the pipe back through the Horizontal Directional Drilling hole

The project team being recognized by Mayor Dean J. Trantalis at the completion ceremony of the redundant sewer force main.