Sewer Superhighway: Fast Track for Large Diameter Consent Decree Pipeline

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ABSTRACT

The San Antonio Metropolitan area has experienced sustained growth for decades, putting increased pressure on existing wastewater infrastructure. In June 2013, the San Antonio Water System (SAWS) approved a settlement agreement with the U.S. Environmental Protection Agency (EPA) that requires significant improvements to the SAWS wastewater system over a 10-year period to reduce Sanitary Sewer Overflows (SSOs). This work includes the targeted replacement and rehabilitation of an aging infrastructure system that consists of over 5,200 miles of sewer pipe. One such pipeline is an existing 48-inch concrete trunk sewer which currently operates at capacity during dry periods and during periods of minimal rain, routinely experiences SSOs of 50,000 to 100,000 gallons or more. SAWS has identified the replacement of this critical sewer as one of its highest priorities, initiating design of a six-mile segment of 60- to 78-inch sewer to increase the current capacity.

As a key component of the EPA Consent Order, this project was time-critical. Numerous challenges existed along this six-mile alignment, each of which had significant potential schedule impacts:

- Narrow corridor through U.S. Military Installation for over a mile;
- Pipeline depths between 30-40 feet;
- Construction under two Department of Transportation roadways and a municipal overpass; and
- Alignment adjacent to a major waterway (Salado Creek) where historic artifacts, flood plain, and tree coverage were likely to require mitigation.

In one example, a 4,000-foot tunnel was designed, over 30-feet deep, in a 25-foot easement, that was installed between transmission and distribution power lines, on a U.S. Military Installation. This 94 ½-inch tunnel was installed via micro-tunneling, for a 78-inch fiberglass reinforced pipe (FRP) sewer carrier pipe.
This paper will focus on four tunnels such as the tunnel mentioned above, each of which was designed and installed in locations that would eliminate the need for mitigation. In each location, special considerations were incorporated into the tunnel design related to depths, soil strata, reduction of time limiting impacts, and reduction of SSOs.