Caulks Creek

St. Louis, Missouri

Keller's design of hydraulically pressed sheet piles with a jet grout bottom seal eliminated concern over vibrations damaging existing utilities and reduced groundwater infiltration.

The project

The St. Louis Metropolitan Sewer District (MSD) required upgrades to its existing combined sewer overflow (CSO) system to mitigate overflows during heavy rain events. The scope of the project included the installation of a new pipeline from a 25-ft deep jacking pit.

The challenge

The new utility pipe was to be jacked beneath five active utilities through saturated loose sands and soft silts along the banks of the Missouri River. Settlement of, or damage to, the existing utilities resulting from dewatering activities, installation of the jacking pit earth retention system, and the jacking operation itself was a major concern to the owner.

The solution

In lieu of driven sheet piles, Keller installed a hydraulically pressed sheet pile earth retention system, eliminating vibration-induced damage to the utilities. A jet grout bottom seal was then installed within the sheeting to reduce water flow into the excavation, allowing for better working conditions during the jacking operation and avoiding the need for groundwater drawdown. Jet grouting was also used to create a 150-ft by 60-ft zone of reinforced soil between the underside of existing utilities and the new sewer pipe alignment to protect against settlement during pipe jacking. Keller monitored all existing utilities during jetting operations, with minimal movement of existing utilities observed.

Project facts

Owner(s)
St. Louis Metropolitan Sewer District

Keller business unit(s)
Keller

Main contractor(s)
Bates Utility Company, Inc.

Engineer(s)
Crawford, Murphy & Tilly

Solutions
Ground improvement
Support of excavation

Markets
Infrastructure
Water, sewage and waste disposal

Techniques
Jet grouting
Sheet piles

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