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Phone: (850) 547-0102 - Fax: (850) 547-0329 - Postal Address: PO Box 660 Bonifay, FL 32425 USA - Physical Address: 3089 Northride Lane Bonifay, FL 32425 USA

Denver Water's Renewal Project Underway

Adapted from Information by Sue Rose Public Relations, LLC

Denver Water's $80 million Conduit 16 replacement project is well underway. Recently, TerraFirma Earth Technologies completed the vacuum wellpoint dewatering services for its portion of the replacement. The 81-year-old pipeline runs more than eight miles from Ralston Reservoir to the Moffat treatment plant.

The plan for dewatering the cut-and-cover portion of the pipe alignment consisted of installing a vacuum wellpoint system to parallel one side of the trench excavation, with wellpoints installed every six feet. The wellpoints extended up to six feet below the excavation subgrade, or just into the confining shale layer located 13-17 feet belowground.

Reynolds Construction is the general contractor on this phase of Denver Water's North System renewal project. According to Josh Kuper, project manager for Reynolds Construction this section of the project consisted of five tunnel installations in addition to approximately 5494 linear feet of 84-inch-diameter pipe. The tunnels made several crossings including Highway 93, a main line railroad track, Highway 58, as well as I-70 and Applewood in Denver. "Due to TerraFirma's successful dewatering, crews were able to move forward quickly with the open-cut portion of this complex project," Kuper said.

TerraFirma utilized the Geoprobe 8150LS, operated by MW Drilling, to perform sonic drilling to reach bedrock approximately 12-17 feet belowground. Photo by Josh Peltier TerraFirma Earth Technologies.

David Giles, TerraFirma president, explained the dewatering method. "We installed vacuum wellpoints for a large section of the shallower, open-cut portion of the project, which is a lesser utilized method in the Denver area due to the higher elevation; however, under the right circumstances, vacuum wellpoints are the best option for the unique geology in Denver. Lowering the groundwater table to below the excavation meant dropping the groundwater table as close as possible to the confining bedrock. Deep well (sump) dewatering wells would have had to be placed so close together, it would have been cost prohibitive. Even then, supplemental sumping within the excavation would have been required, adding more cost, and further slowing down production."

Giles also explained the advantages of using sonic drilling for this project, "Denver's unusual geology is consistently water-bearing alluvial soils over shallow bedrock. We teamed with MW Drilling to operate the sonic drilling rig. Sonic drilling methods make it possible to efficiently drill a wide range of soil types, particularly the sand-gravel-cobble typical to Denver. While it appears to be more costly up front, it is less expensive over time, and gets the job done right," he stated.

Ryan Haas, Denver Water's Project Manager for the Conduit 16 replacement added, "Denver soils are full of cobbles and boulders - some up to 3.5 feet in diameter. The sonic drilling method used by TerraFirma made the drilling within these difficult soil conditions much more efficient."