



20-Inch Main Installation at 40th & Blake Street

Underground Infrastructure Technologies (UIT) was awarded First Place (in a three-way tie) in NUCA's Top Jobs Awards at the 2016 Annual NUCA Convention in Fajardo, PR, having first won in the Trenchless Technologies division. The Competition recognizes outstanding projects that exhibit innovative solutions to overcome challenging obstacles and produce the highest quality results. A group of independent judges selected the finalists in each category. Convention attendees then selected the winners in each category and voted for an overall winner during the Auction & Awards Gala on March 12, 2016.

The project consisted of an approximate 400-foot undercrossing of the Union Pacific Railroad (UPRR) and Regional Transportation District (RTD) train tracks for the purpose of constructing a new 20-inch PVC water main encased in a 32-inch minimum steel casing pipe. Portions of the water main alignment approaching the tracks were open cut. The tunnel location is at a junction where several main line tracks branch off into 13 separate siding tracks. The train corridor is heavily traveled with UPRR diesel freight trains and an RTD commuter rail line, which was under construction.

UIT reviewed the benefits and risks associated with each of the three proposed methodologies — micro-tunneling, open face TBM, and hand mining — with consideration of the site location, proposed alignment and subsurface conditions. Following initial evaluations, UIT planned to lower the proposed casing invert alignment six feet into the fine alluvium and utilize slurry micro-tunneling with an armored cutting shield as the methodology to advance and complete installation of the tunnel casing pipe.

UIT selected a 36-inch MTBM so the machine could handle the maximum size boulders (typically 1/3 of the shield diameter) anticipated in the geotechnical baseline report (12 inches). Additionally, the 36-inch casing is a standard pipe size that was readily available from local suppliers. UIT completed a project that was previously attempted without success due to the complexity of the subsurface conditions.