Sound Transit Light Rail - Northgate Link Extension (Contract N125)

Seattle, Washington

By accepting an alternate design concept by means of slurry walls, the project team saved on schedule.

The project

The Northgate Link Extension Contract N125 is a 3.5 mile long, twin-bored TBM tunnel project that will expand light rail service between the Maple Leaf Portal and the University of Washington Station. When finished by late 2021, the new route will provide an alternate transportation option to congested surface traffic.

The challenge

Soil conditions included engineered fill and non-engineered fill, till and till-like deposits, cohesionless sand & gravel, cohesionless silt, and fine sand, cohesive clay, and silt. Challenges included city work in a residential area, a tight schedule (slurry walls were constructed in 89 days), a sloped site with 25 feet of elevation difference along the site, and excavation through boulders and glacial till.

The solution

Keller constructed the reinforced slurry walls as support of excavation (SOE) for the Roosevelt Station. The SOE was originally designed as a complex secant pile system, which required a longer schedule. Keller proposed an alternate design concept using slurry walls, which was accepted. The Engineer of Record redesigned the SOE for the station using our concept.

Keller utilized hydromills and a hydraulic clam bucket to excavate through well-graded sand and gravel with silt, interspersed with hard granite boulders. A total of 76 panels, reinforced with steel cages, were installed to depths of 155 feet and a combined wall thickness of 32 inches and 36 inches with an overbite of 9 inches. The total excavation surface area was 165,000 square feet. The slope of 5% of the platform was a big challenge and required continuous fill movements. Verticality was successfully maintained by using hydromill technology.

Project facts

Owner(s)
Central Puget Sound Transit Authority

Keller business unit(s)
Keller

Main contractor(s)
JCM Northlink LLC (a joint venture of Jay Dee Contractors, Frank Coluccio Construction Co., and Michels Corp.)

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Support of excavation

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Email address
info@keller-na.com

Phone number
1 (800) 456-6548