Kanata West Pumping Station

Kanata, Ontario, Canada

Keller developed, designed, and constructed the optimal solution using multiple techniques to meet the project requirements.

The project

The Kanata West Pumping Station and associated force mains were identified by the City of Ottawa as requirements to service growth in the Kanata West area south of Highway 417.

The challenge

The project required the construction of a municipal pump station and force mains in very soft clay. Clay depth extends to about 21m below the existing grade. Underlying the clay is limestone of excellent quality with unconfined compressive strengths (UCS) greater than 45MPa. The proposed structure consisted of 4 sections all founded at varying elevations. Integrated support of excavation system was required to allow for the construction of the new pump station supported on rock-socketed micropiles.

The solution

To facilitate the construction, a circular interlocking secant pile shoring system was constructed. This allowed the client to have a completely open shaft for construction access. Micropiles were then installed from within the pump well by utilizing a crane-mounted lead system. Shoring for the two adjacent rooms was performed by installing cold-rolled interlocking sheet piling. The excavation was then braced using a combination of internal struts, walers, and a row of tiebacks. Micropiles were installed in each of these rooms as well. Lastly, H-piles were driven using a drop weight due to the very soft nature of the clay.

Project facts

Owner(s)
City of Ottawa

Keller business unit(s)
Keller

Main contractor(s)
Doran Contractors Limited

Engineer(s)
Stantec Consulting Ltd.

Solutions
Deep foundations
Support of excavation

Markets
Infrastructure
Water, sewage and waste disposal

Techniques
Driven piles
Micropiles
Secant or tangent (contiguous) piles
Sheet piles

Email address
info@keller-na.com

Phone number
1 (800) 456-6548