

Calumet Water Reclamation Plant

Chicago, Illinois

A temporary earth retention system was installed to support the excavation needed to construct a new wastewater pump station at the Calumet Water Reclamation Plant.



The project

A new wastewater pump station, with a design capacity of 600 million gallons per day, was planned for construction at the Calumet Wastewater Reclamation Plant on Chicago's south side.

The challenge

Construction of the new pump station required excavation of over 100,000 cubic yards of soil. A temporary earth retention system was required to be installed within an existing dense network of buried live utilities to accommodate the 62-foot-deep excavation. Site soils consisted of very stiff clay.

The solution

Keller designed a tied-back and internally braced soldier pile and lagging earth retention system, and 40-foot high soil nail walls, to provide the required earth support. The system consisted of 1,495 linear wall feet, and over 45,000 square feet of exposed earth retention, including 176 soldier piles, 280 grouted tiebacks, and 77 soil nails.

To minimize conflicts between anchors, soil nails, and existing utilities, Keller used extensive 3D computer models to locate the required earth retention system components to ensure that they did not conflict with each other or the existing utilities. The complex layout of these utilities required the installation of over 30 different soldier pile configurations and tiebacks to avoid conflicts and ensure the stability of the earth retention system.

Project facts

Owner(s)

Metropolitan Water Reclamation District of Greater Chicago

Keller business unit(s)

Keller

Main contractor(s)

IHC Construction/FHP Tectonics, JV

Engineer(s)

Metcalf & Eddy

Solutions

Support of excavation

Markets

Infrastructure

Water, sewage and waste disposal

Techniques

Soldier piles and lagging

Soil nailing

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