

Black Cove Storage Facility

Portland, Maine, USA

Keller installs remedial jet grout columns to facilitate cofferdam construction of new wastewater storage tanks.



The project

As part of its focus on reducing the use of combined sewer overflows (CSOs), the City of Portland is introducing green infrastructure on five storage tanks throughout the city, the first being Black Cove. The infrastructure will include upgrading four storage tanks with a total capacity of 3.5 million gallons. A sheet pile cofferdam was proposed as earth retention to facilitate tank installation.

The challenge

Others successfully installed three of the four tanks using a steel sheet pile earth retention system. However, unexpected ground conditions caused the sheet piling on the fourth tank to deflect significantly, requiring remediation to continue the excavation.

The solution

Jet grouting was the proposed method to remediate the cofferdam earth retention system. Initially, jet grout columns were installed below the base of the excavation to act as horizontal struts, bracing the excavation. During extensive testing and coring, the soils proved difficult to create geometry and strength consistent with what the test program had shown. Due to these concerns, additional columns were installed to line the sheet piles and widen the existing jet grout struts. In total, Keller installed 300 20-ft-long jet grout columns to provide lateral support of the cofferdam earth retention system

Project facts

Owner(s)

City of Portland, Maine

Keller business unit(s)

Keller

Main contractor(s)

Sargent Corp.

Engineer(s)

GZA

Solutions

Support of excavation

Markets

Infrastructure

Techniques

Jet grouting

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