Lockport Pool Approach Dike

Lockport, Illinois

The construction of a concrete cutoff wall reduced seepage and increased stability at this dike structure.

The project

The USACE Rock Island District initiated a multi-phase repair program to maintain the stability of all associated structures to The Lockport Pool Approach Dike's continued retention of the navigation pool and safe operation of the controlling works. Keller was awarded Stage One, to construct a continuous concrete cutoff wall within the right-descending embankment of the approach dike.

The challenge

The Lockport Pool Approach Dike and Walls are located along a stretch of the Chicago Sanitary Ship Canal and were classified as a DSAC-II Dam within the USACE Dam Safety Program in 2005, primarily due to chronic seepage through the embankments. The embankment had a history of sinkholes and surface slumping.

The solution

Keller constructed a concrete cutoff wall to reduce seepage and increase the stability of the dike. Hydromills were utilized to excavate this barrier wall. The total wall surface was 135,300 square feet, with a width of 30 inches, and a length of 4,300 feet, and a maximum depth of 60 feet. The rock surface was 21,600 square feet, with strengths up to 17,000 psi. The wall was installed through highly variable overburden material (consisting of organic clay, sand, and gravel) and seated a minimum of 5 feet into the dolomite base rock foundation.

This project was extremely challenging due to a working platform width of just 22 feet, of which a continuous passage for vehicular traffic had to be maintained at all times.

Project facts

Owner(s)
USACE Rock Island District

Keller business unit(s)
Keller

Main contractor(s)
N/A

Solutions
Groundwater control and dewatering

Markets
Infrastructure
Dams and levees

Techniques
Diaphragm walls
Slurry cutoff walls

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