



Dearborn CSO Contracts 7 & 8

Dearborn, Michigan

To reduce the inflow of gas and artesian water into the proposed CSO shaft excavations, Keller conducted a comprehensive drilling and grouting program. It is one of the largest acrylamide grouting projects completed in North America.



The project

Faced with the task of meeting federal water quality standards, the City of Dearborn had several contracts for the construction of combined sewer overflow (CSO) shafts. These structures are typically 120 feet in diameter by 150 feet deep and are designed to capture deluge overflows from sanitary and storm sewer systems for subsequent treatment and discharge purposes.

The challenge

Geotechnical investigations for two of these CSO contracts revealed the potential for significant artesian inflow during shaft construction, and the presence of naturally-occurring hydrocarbons, methane, and hydrogen gases within the groundwater. Special pre-treatment around the footprint of the shafts was required before the sinking of the shafts could commence.

The solution

Keller performed the pre-excavation grouting program for two 120 foot diameter by 150 foot deep shafts as part of the West Dearborn CSO Control Program – Phase B. The pre-excavation drilling and grouting program was conducted to reduce the inflow of gas and artesian water into the proposed excavation. The project consisted of two phases of grouting: the soil/rock interface and the underlying bedrock. Grouting methodologies consisted of acrylamide permeation grouting in the contact zone and a combination of acrylamide and traditional balanced cementitious grouting in the underlying bedrock. Real-time computer monitoring accompanied all grouting operations. The apparent permeability values recorded in real-time were evaluated, and based on the results, a number of different grout formulations were used for grouting the rock formation and the contact zone.

This project is one of the largest acrylamide grouting projects completed in North America. Keller designed and manufactured a sophisticated acrylamide mixing and placement system to handle the large volume capacity of the projects. The acrylamide grouting plant, tank storage farm, and grout mixing and pumping set-up were all designed to accommodate continuous operation in excessive weather conditions, such as sub-freezing temperatures, rain, and extreme heat.

Project facts

Owner(s)

The City of Dearborn

Keller business unit(s)

Keller

Main contractor(s)

Posen Construction (Contract 7)
Ric-Man Construction (Contract 8)

Engineer(s)

NTH Consultants

Solutions

Ground improvement
Groundwater control and dewatering

Markets

Infrastructure
Tunnels and shafts

Techniques

Jet grouting
Permeation (chemical) grouting

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