

# Design Issues with Soil Mix Walls

## Client:

Schnabel Foundation  
Company

## Location:

Bethesda, MD

## Services Provided:

- Numerical analysis to evaluate design issues with load bearing soil mix walls
- Developed design charts for vertical load capacity in terms of soil mix unconfined compressive strength
- Developed design charts for soldier pile spacing versus wall thickness and soil mix unconfined strength

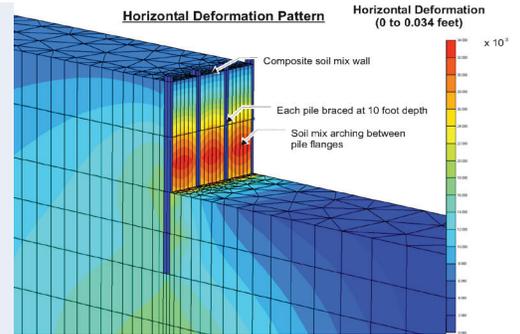
## Value Provided:

- The documentation provided by Geocomp helped the client in the design and approval of soil mix walls for excavation support and vertical load bearing.

## Background & Project Challenges

Schnabel Foundation Company was investing in equipment and design methodologies to construct soil mix walls for excavation support systems. Often the excavation support system was required to carry vertical loads.

The design used a series of overlapping vertical soil mix columns to create a secant wall. The bending forces and vertical forces are resisted by steel I-beams which are inserted in every other, or every third soil mix column. In the current design the vertical load was carried solely by the I-beams. If the soil mix could be allowed to carry a portion of the load then the amount of steel in the wall could be reduced. Schnabel was also seeking design guidelines for determining the arching capacity of the soil mix between the soldier piles. Arching would become more important for thinner walls or wider spaced I-beams.



Composite Soil Mix Wall Analysis

## Geocomp Role & Accomplishments

Geocomp developed numerical models of the composite soil mix-I beam walls. The model was used to demonstrate that the soil mix in the walls significantly adds to the vertical load carry capacity even when conservative values of strength and adhesion between the soil mix and I-beam are considered. Geocomp provided a propriety report to the client detailing the results. Geocomp also developed a detailed numerical model to demonstrate the effects of soils mix strength and wall thickness on the capacity of the soil mix to distribute loads to the I-beams. The redistribution of loads to the I-beams is critical because the soil mix has very little resistance to bending forces which are critical in the design of excavation support systems. Geocomp developed proprietary design charts for the client to assist in the design of soil mix walls.