

Cutoff Walls



Earth Retention Systems and
Specialized Foundations

Schnabel
FOUNDATION COMPANY

Equipment & Process



Schnabel's specialized 4-auger soil mix rig used for the construction of cutoff walls.

Since 1959, Schnabel Foundation Company has been the leader in the development of earth retaining structures and cutoff walls supported by tiebacks, and braces. As a design-build contractor, Schnabel uses these structural elements to construct thousands of temporary and permanent retaining walls and earth retention systems.



This soil mix wall at Boston University required that the cutoff wall be extended beneath an existing duct bank. Jet grouting was used to complete the cutoff wall below the duct bank.



Construction of secant pile wall showing concrete guide wall and drill rig with sectional casing.

Schnabel uses jet grouting to seal leaks and extend cutoff walls below utilities and other penetrations through the wall.

Building



Clockwise from top: Secant piles and tiebacks used to construct a cutoff wall for a new Brigham Green Hospital building in Boston, MA. Sectional casing and augers were used to construct the wall down through the soil to top of rock and a down hole hammer was used to extend the wall into rock; tieback sheet piles are used to support an excavation in Chicago, IL; a braced soil mix wall supports an excavation adjacent to an existing building at the Museum of Fine Arts in Boston, MA.

Cutoff Walls

Cutoff walls are used where it is not only necessary to retain the earth, but also impede the flow of groundwater into an excavation. Schnabel Foundation Company designs and constructs cutoff walls that are the best solution for your project, such as secant/tangent pile walls, soil mix walls and sheet pile walls. These can be designed as temporary walls to allow for the construction of new structures or as part of the permanent structure itself.

Cutoff walls are designed to resist earth and water pressure as well as any other additional surcharge pressures that may be present, such as those from adjacent structures, traffic or earthquakes. Cutoff walls are constructed by first installing the vertical elements of the wall from the top of the excavation and then providing lateral support, such as tiebacks or braces, as the excavation proceeds.

Wastewater Treatment and Power



Photo courtesy of: C.O. Falter Construction / CH2M Hill, NY

Clockwise from top: Secant piles and tiebacks used in the construction of a new powerhouse adjacent to the Linville River in North Carolina; secant piles and tiebacks used for the expansion of a water treatment plant in Cedar Rapids, IA; secant piles and tiebacks used to allow the construction of new buildings and utilities adjacent to the existing Woodland Reservoir in Syracuse, NY.

Secant/Tangent Pile Walls

The vertical elements of a secant pile wall consist of overlapping drilled concrete shafts. Tangent pile walls are similar to secant pile walls except the shafts do not overlap, but are spaced close together. Construction of a secant pile wall begins by building a concrete guide wall at the ground surface. The guide wall serves as a template for the secant piles to ensure accuracy in location and verticality. Next, alternating primary holes are drilled and filled with concrete. Secondary holes are drilled between the primary holes and filled with concrete and the required steel reinforcement. The strength of the concrete may be adjusted depending on the application.

Secant/tangent pile walls may be installed in any type of soil, or even drilled into rock depending on the drilling equipment selected. The use of reinforced structural concrete results in a very stiff wall that can resist heavy surcharge loads imposed by adjacent structures, minimize movements, and may also serve as the permanent wall for new structures.

Tunneling and Environmental



Clockwise from left: Deep soil mixing equipment being used to install a cutoff wall for the new BART extension in Fremont, CA; secant piles and braces used for the removal of contaminated soil at a manufactured gas plant in Quincy, IL; soil mix wall with braces at the BART extension in Fremont, CA.

Soil Mix Walls

The vertical elements of a soil mix wall are constructed by blending soil and cement in situ to form a compound known as soilcrete. Construction of a soil mix wall begins by advancing a series of overlapping hollow stem augers equipped with mixing paddles into the soil. A cement and water slurry is pumped through the augers as they are advanced and retracted into the soil, mixing the soil and slurry together. Steel beams are placed in the soilcrete mix while it is still wet to provide reinforcement.

Soil mix walls can be installed in most ground conditions except highly organic soils, soil and rock too dense to drill with augers, and soil with numerous obstructions and boulders. A structural shotcrete facing can be constructed on the face of the soil mix wall for permanent applications.

Sheet Pile Walls

Sheet pile walls are the most common type of cutoff wall in use today. They are constructed by driving or vibrating in steel sheet pile sections from the ground surface to the desired tip elevation. Sheet piles can be installed in most ground conditions except dense soil, rock, and boulders. Sheet piles should also be avoided in vibration sensitive areas.

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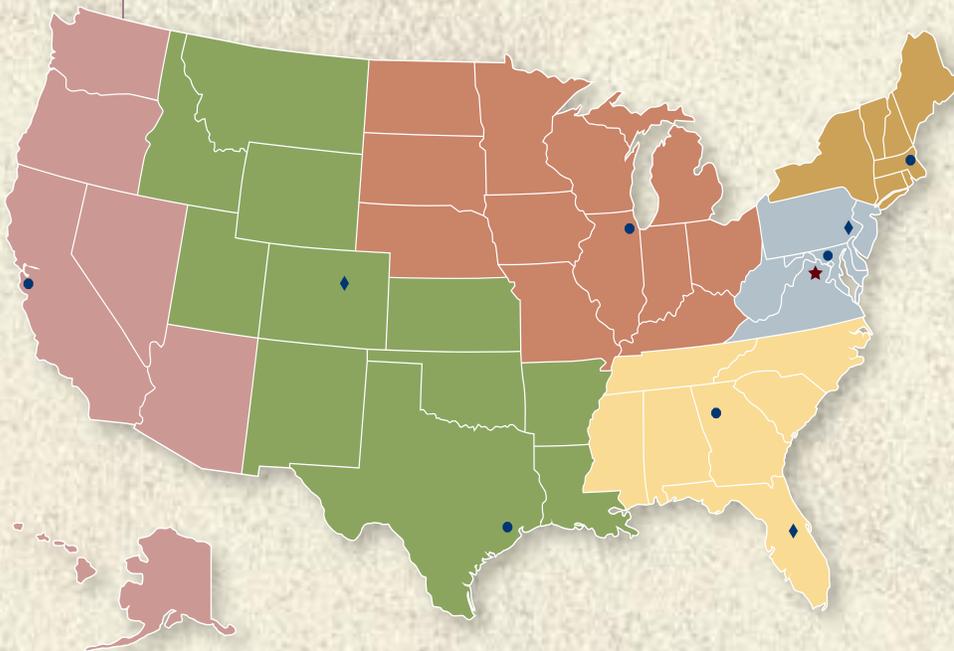
Schnabel Foundation Company is a nationwide contractor that designs and constructs earth retention systems, groundwater cutoff walls and specialized foundations. Since 1959, Schnabel has constructed over 4,800 projects in over 800 cities throughout the United States.

Schnabel has led the development of earth tiebacks and soil nails from their original application for temporary excavation support to their routine use on permanent retaining walls and other structures. Our engineering and craftsmanship have been recognized by the construction industry through numerous awards and citations for excellence.

Our unique blend of family pride, technological innovation, field experience, and engineering excellence consistently enables Schnabel Foundation Company to provide owners with economical solutions and quality work.

For more information please visit our website or contact one of our nationwide offices.

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