



Transportation

Earth Retention Systems
For Transportation Projects



Earth Retention Systems and Specialized Foundations for Transportation Applications



A rotary drill installs tiebacks to stabilize a landslide below a highway – Georgia (Top).

This tiedback wall with anchors made in soft clay has been performing perfectly for more than twenty years – Virginia (Bottom).



Typically, new development is concentrated around existing transportation corridors confining the facilities that need to be expanded. Often the most economical way to increase capacity at these sites is to use excavation support systems.

Since 1959, Schnabel Foundation Company has been the leader in the development of earth retaining structures that are supported by tiebacks, soil nails, tiedback elements, and mini-piles. As a design-build contractor, Schnabel has used these structural elements to construct thousands of temporary and permanent retaining wall and structural support systems. These structures allow excavations to be constructed in less space and provide many advantages to general contractors and owners of transportation facilities:

- *Fewer detours*
- *Lower total cost*
- *Minimized land acquisition*
- *Reduced cuts and excavation*
- *Maximum space for expanding facilities*
- *Continued access and services behind the wall*
- *Flexibility to deal with changes*

Airports



Surrounded by runways, roads, parking lots, and development, airport facilities are typically faced with the need to increase operations within property lines, with minimal disruption of aircraft operations, and with no

permanent encroachments of airside space.

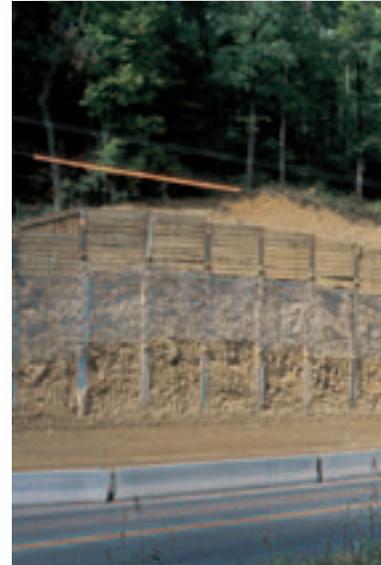
- Our engineers have decades of experience in designing earth retention systems to support structures adjacent to excavations and to extend the foundations of footings and columns to deeper elevations.
- When expanding facilities under existing structures, we have the ability to construct cost effective support systems because of design skills, specialized equipment, and construction techniques that we have developed on hundreds of underpinning, mini-piles, and column pick-up projects.
- Experienced crews and specialized equipment combined with our design-build versatility allows below-grade construction with minimal impact on airport operations.

Expanding baggage-handling facilities below Dulles International Airport – Virginia (Top and bottom).

Cut and cover tunnel – Houston Intercontinental Airport (Middle).

Highways

Historically, transportation departments have used retaining walls to build depressed highways, tunnel approaches, hillside cuts, and bridge abutments. Tiebacks and soil nails provide the most economical lateral support for these structures. An important advantage of these systems is their top-down construction sequence. When compared to MSE walls, Schnabel walls require less disruption behind the wall. In contrast to concrete retaining walls, tiedback and soil nail walls have thinner facings regardless of the wall height.



Ports

- Walls can be continuous or built with discrete elements with or without soldier beams.
- Our walls can be faced with brick, block, hand laid stone, shotcrete, pre-cast concrete, cast-in-place concrete, and cast-in-place concrete with form liners to meet aesthetic requirements.



Tiebacks installed from barges or with platform drills are two economical means for providing lateral support to the sheet piles used to construct waterfront facilities. The advantage of tiedback bulkheads and waterfront walls is that they can usually be built while existing docks remain in service.



- We design tiebacks to provide lateral support of cofferdams, secant pile walls, and soil mixed walls to construct facilities where control of water is a priority.
- By contacting Schnabel early in the design and planning stage, we will be able to design and build a wall system that will minimize cost and disruption of operations.

Crane supported leads install tieback anchors underneath a restaurant while customers have lunch – Florida (Top).

Platform drill installs rotary tiebacks with minimal use of landside and waterside space – Wisconsin (Bottom).



Specialized down-the-hole hammers were required to install soldier beams in mixed rock and soil on this project in Tennessee (Top).

A blend of experience and equipment is required to solve access problems in stabilizing large cuts in the mountains – Utah (Middle).

This soil nailing wall was finished with an attractive architectural face – North Carolina (Bottom).



Rail

For decades, we have been developing techniques and equipment to stabilize embankments above and below the tracks, to allow the roadbeds to be lowered, and to increase the number of tracks under existing bridges.

- We have developed an extensive variety of tiebacks, soil nailing, and mini-pile installation techniques that allow us to construct brace-free excavations and tunnels in a wide variety of soil conditions.
- Experience and engineering gives us the ability to design retention structures and sequence construction to avoid or minimize disruption of revenue producing traffic.

Our specialized equipment and trained crews supported by nine local offices allow us to respond to the needs of rail projects throughout the United States.



Tieback earth retention systems allowed the construction of subway tunnels and stations in very limited right-of-ways – Washington Metropolitan Area Transit Authority (Top and middle).

Tieback walls can be constructed adjacent to tracks, without disrupting traffic – Pennsylvania (Bottom).

TRANSFORMATION

Schnabel Foundation Company is a nationwide contractor that designs and constructs earth retention systems and specialized foundations. Since 1959, Schnabel has constructed more than 3,500 projects in over 750 cities. Hundreds of these projects were repeat contracts with owners and general contractors.

Concentrating on earth retention systems, we have led the development of earth tiebacks and soil nails from their original application for temporary support to their routine use on permanent projects. Our engineering and craftsmanship has been recognized by 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 contact one of our nationwide offices.



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