

Soil Nail Walls

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Know Before You Begin

Don't underestimate your costs for a geotechnical investigation study. Saving a little money up front can potentially cost you a lot in foundations. Talk to your GE!



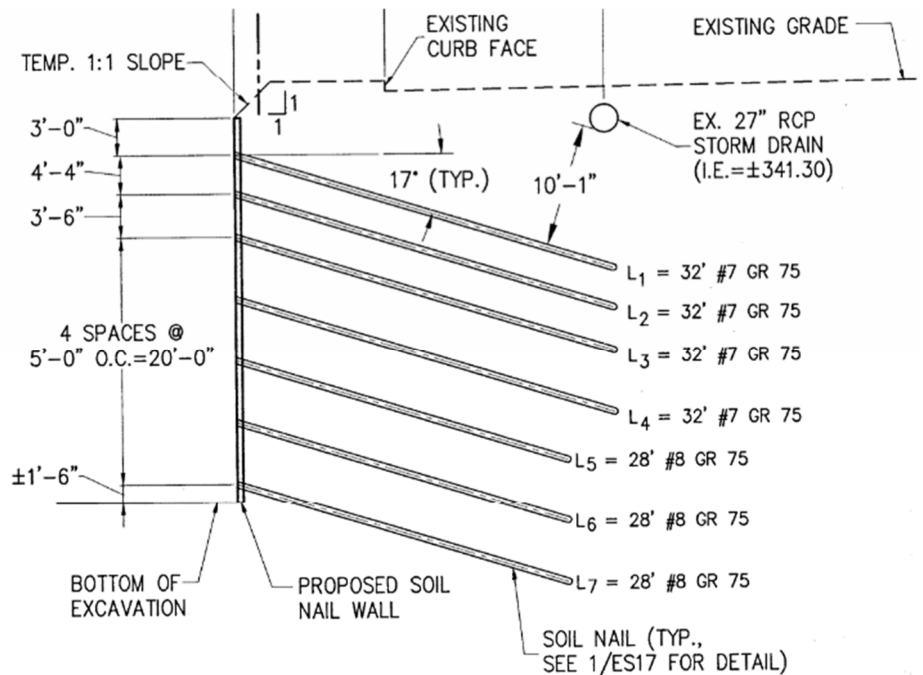
Construction of Soil Nail Walls

1. What Are Soil Nail Walls?

Soil nail walls use passive steel reinforcement in a near horizontally drilled hole to allow vertical excavations in in-situ soil. Soil nail walls are typically installed in cut areas in a top-to-bottom construction sequence. Following the nail installation, drainage, reinforcement and a shotcrete face are added to complete the wall.



Camino Del Sur and Highway 56, San Diego, California



Typical Soil Nail Wall Section

2. Installation Process

The top layer of the soil nail installation is initially vertically cut about 3 to 6 feet high and the soil nail boreholes are drilled in the vertical face. The boreholes are typically at least 15 feet long, 6 inches in diameter and angled about 15 degrees down from horizontal. It is important to confirm utility locations with the project civil engineer to help prevent damaging existing utilities during the installation process.



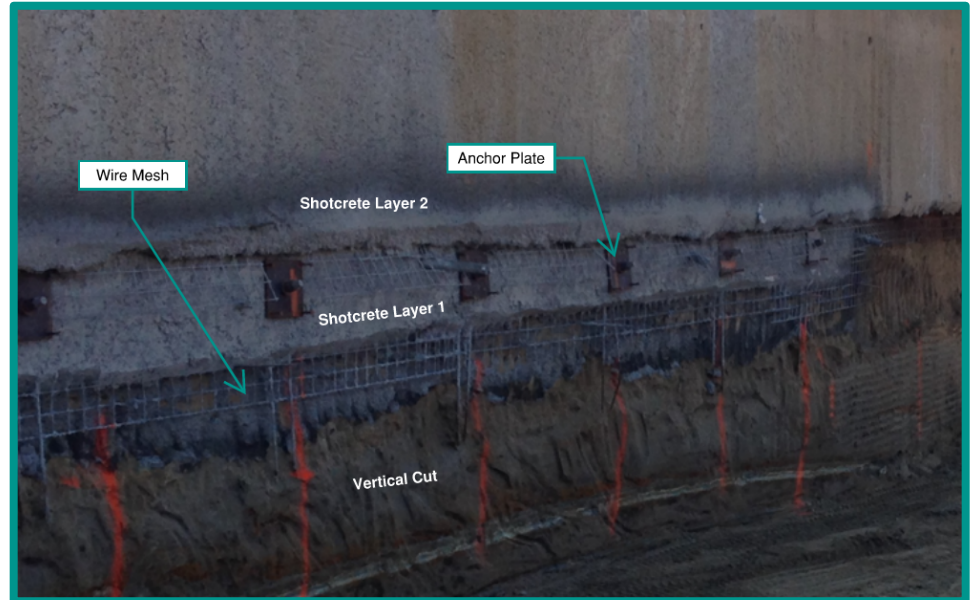
Soil Nail Wall Start of Construction

Geocon observes the excavations to check for caving, loose soil and borehole connectivity. The nail is then inserted into the drilled boreholes and the remaining annulus is grouted from the bottom of the excavation.



Soil Nail Wall installation

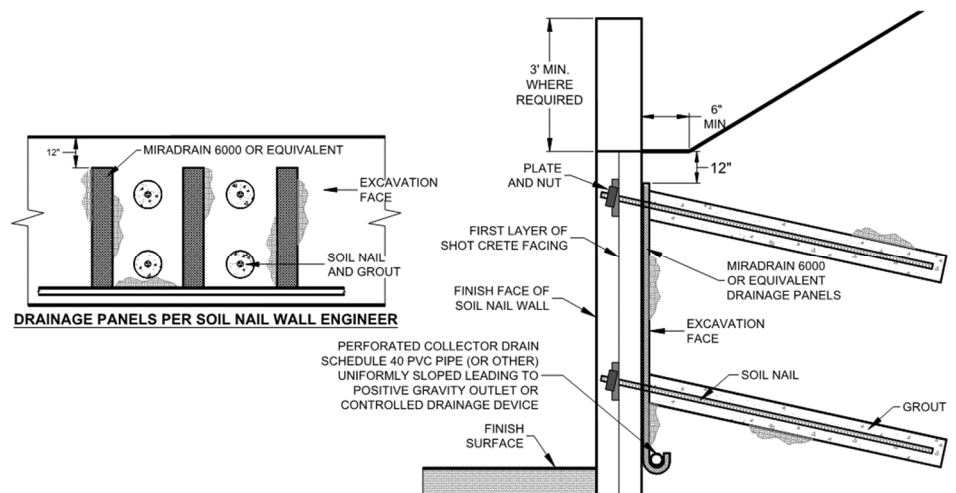
A layer of welded wire mesh is placed followed by about 2 inches of shotcrete. Once the shotcrete is set, an anchor plate is connected to the soil nails (using a nut) and a second layer of mesh and shotcrete is applied. This process is repeated in 3- to 6-foot vertical cuts until the bottom of the wall is constructed. The finished shotcrete can be flat concrete gray or colored and sculpted for aesthetics (see first photo).



Soil Nail Wall Components

3. Soil Nail Wall Drainage

A wall drain system should be incorporated into the design of the soil nail wall as shown herein. The drainage panels are installed on the soil face as the excavations occur. A drain pipe gets attached to the drainage panels at the base of the wall then connected to an appropriate storm drain management system.



Soil Nail Wall Drainage Detail

4. Corrosion Protection

Soil nails that are considered temporary normally consist of steel rebar with the annulus grout. If the soil nail wall are permanent, the steel requires double corrosion protection consisting of a protective sheeting, epoxy coating and/or the annulus grout.

5. Designer

Typically, the soil nail walls are contractor designed. This is the best situation for clients so the contractor can meet the project specifications and they are responsible for the performance of the wall. Please let us know if you need contractor contacts for your project.

Feel free to contact us so we can help your project. We strive to provide premium service and helping our client economize their project with appropriate engineering solutions. Geocon Incorporated has helped public and private clients since 1971.

