



## CASE STUDY

<b>Project:</b> Typical Tieback Wall Placements.	<b>Geotechnical Engineering:</b> Necessary.	<b>Structural Engineering:</b> Necessary.	<b>Contractor:</b> A.B.Chance approved installers. Necessary.
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### Projects:

Tieback wall construction along side an active highway allows widening of the road, but without significant interference with road use during the construction phase. Similarly, excavations alongside existing buildings allow placement of newer deeper foundations often with underground parkades, allowing cost effective construction of new buildings alongside older ones. Such Underpinning and Tieback Wall construction is often necessary to allow safe excavations below existing foundations of occupied buildings alongside new construction sites.

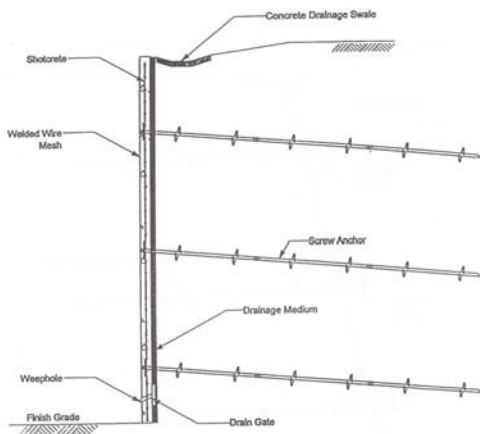
With the use of soil screws come the advantages of: verifiable installation capacities, instant loading ,consistent high capacities, speed of installation, smaller equipment and shorter anchors in most soils. As a group these advantages typically allow the most cost effective earth stabilization schemes for a wide variety of soil profiles and construction needs.

Since helical ground anchors or piles easily hold loads in either tension or compression, they are ideal for holding up, holding back or holding down the almost limitless earth stabilization schemes imaginable, which can therefore become capable of being constructed under the widest variety of soils and site specific conditions.

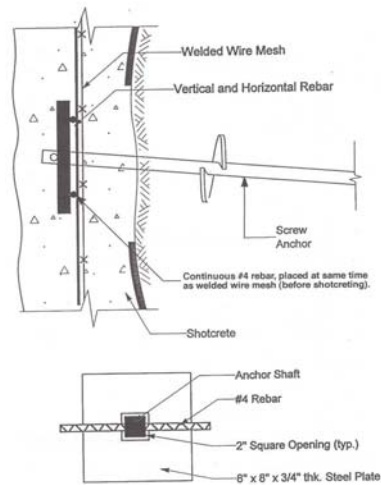
### Production Anchors and Installation:

Typically round corner square shaft anchors are utilized employing a wide variety of helical leads. The shaft size and helical plate sizes are chosen for site specific soil and construction needs. Anchors are placed typically using small hydraulic excavators to which is mounted a rotary drive head. Pressure monitoring of the drive head during installation coupled with site anchor tests, allows control of installation torques. Anchors placed to the defined depths and installation torques give excellent repeatability of verifiable anchor capacity at each installation point , a huge advantage over grouted bar anchors. Ultimate Helical anchor load capacities using the A.B. Chance square shaft anchors is between 70 -200 kips (315- 900 kN) .

The photographs shown on the next few pages demonstrate a wide variety of possible retaining wall structures or tiebacks that can be easily done utilizing helical anchors.



Temporary facing detail using Shot Crete and welded wire mesh.



Typical anchor attachment reinforcing detail for the wall face.



Bank is excavated in first lift ready for first row of anchors.



Placement of screw anchors and details on face reinforcing and anchor plates with tension nuts on thread-bar.



Screw installations revealing lead helical square shaft anchors ready for installation.



Installation of tieback anchors alongside helical pilings capped with galvanized steel underpinning brackets used to temporarily underpin the footings of the overpass alongside the excavations for the new roadway.





Whole face of initial stage of excavation readied with anchors, attachments and steel reinforcing with drains, for concrete application.



Shot Crete pump and concrete supply truck used during typical concrete applications to tieback walls.



Shot Crete spray placed on readied wall.



Second stage of excavation and anchoring continuing. First stage is completed and holding above the deeper excavation and ongoing anchor installation.



Second stage completed.



Installation of screw anchors through failing foundation wall to ensure long term stability easily and quickly.



After sheet pile installation, the top of the sheets are tied back using helical anchors which allows safe removal of soils at the sheet pile wall face so formed.



Use of helical tieback anchors allows cost effective deep staged excavations to begin the foundation construction phase of the project. The wall in this case is made of vertical lagging held back by screw anchors with timber infill.