



Certified Installers/Exclusive Dealers - CA, NV, AZ

Introduction to Helical Anchors

Helical anchors have been in use for more than 170 years. In 1838 a lighthouse was built upon helical piers designed by an Irish engineer, Alexander Mitchell. Sporadic use of helical piers has been documented throughout the 19th and early 20th centuries mainly for supporting structures and bridges built upon weak or wet soil.

When hydraulic motors became readily available in the 1960's, which allowed for easy and fast installation of helical piers, their popularity flourished. Electric utility companies began to use helical piers for tie down anchors on transmission towers and for guy wires on utility poles.

Helical piers are ideal for applications where there is a need to resist both tension and axial compression forces. Some examples of structures having combination forces are metal buildings, canopies and monopole telecommunication tower foundations.

Current uses for helical piers include underpinning foundations for commercial and residential structures, foundation repair, light standards, retaining walls tieback anchors, pipeline and pumping equipment supports, elevated walkways, bridge abutments, and numerous uses in the electric utility industry. Many times helical anchors are the best solution for your foundation repair project due to one of the following factors:

- Ease of Installation
- Little to No Vibration
- Immediate Load Transfer upon Installation
- Installed Torque Correlates to Capacity
- Easily Load Tested to Verify Capacity
- Installs Below Active Soils
- All Weather Installation
- Little to No Disturbance to Jobsite

Torque Anchors

ECP Helical Torque Anchors™ are a part of the complete product line of helical piers, steel piers and foundation repair products manufactured by Earth Contact Products, LLC, based in Olathe , Kansas . Our 85,000 square foot state of the art manufacturing facility produces all components and steel assemblies. The only processes not done in our facility are galvanization and hot forge upsetting of couplings. Because of this we are able to custom configure products to fit engineered specific applications. Earth Contact Products uses only certified welders and robotics for quality fabrication.



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Torque Anchor Components

The ECP Torque Anchor™ consists of a shaft fabricated from either solid square steel bar or tubular steel. Welded to the shaft are one or more helical plates. The plates can vary in diameter from 6” to 16” and have a thickness of 3/8” or 1/2” depending upon the soil and the application. Typically the plate diameters increase from the bottom of the shaft upward and are spaced a distance of three times the diameter of the plate directly below, unless specified otherwise by the engineer. The standard thickness for all helical plates diameters is 3/8 inch, except the 16” diameter which is manufactured only in 1/2” thickness. In high load applications plate thickness of 1/2” may be specified for all plates. The pitch of the helical plate is three inches, which means that the anchor advances into the soil a distance of three inches during one revolution of the shaft.

The available lead shaft lengths are 10”, 60”, 84” and 120”, however, other lengths may be specially fabricated. Because Helical piers are considered deep foundation elements; they are usually installed into the soil to a depth greater than just the length of the typical lead section. Extensions of various lengths are available and are supplied with couplings and hardware for attachment to the lead or other extensions allowing the Helical piers assembly to reach the desired depth.

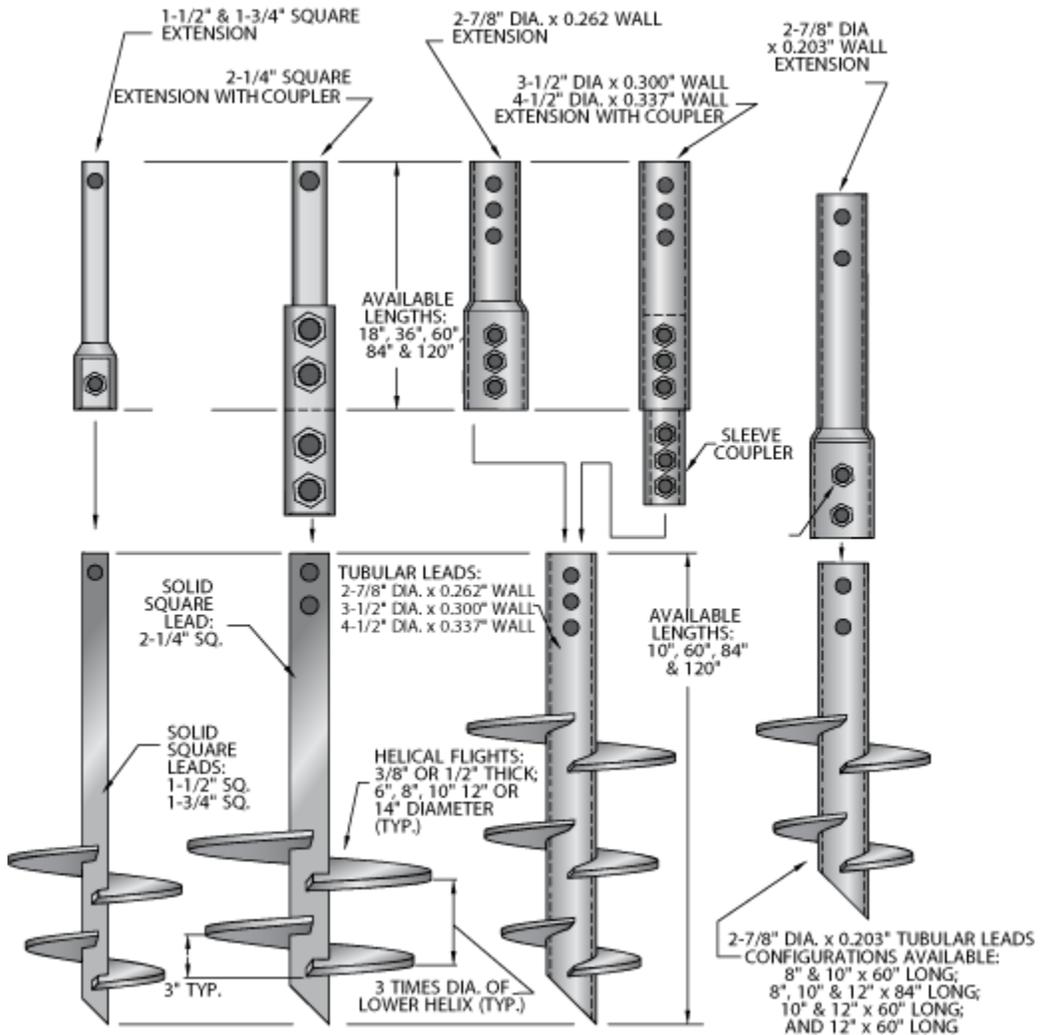
Helical plates may also be installed on the extensions where the length of the lead is not sufficient to allow for the proper interval between plates. The number of the plates per Helical Torque Anchor™ is limited only by the capacity of the shaft to transmit the torque required to advance the Helical screw anchor into the soil.

Helical piers may terminate with a pier cap that will be embedded into a concrete foundation. In other applications such as tieback anchors, a transition is made from the anchor shaft to a continuously threaded rod. Various beams, wall plates, etc. can be attached to the threaded bar for wall support, and to restore or to simply stabilize walls or other structure from overturning forces. In foundation restoration repair and stabilization applications, foundation brackets are available that attach between the Helical Anchor and the foundation beam or footing.

Earth Contact Products recommends that only a registered engineer design and oversee the design and application of helical anchors when used in foundation repair or new construction projects.



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Shaft Size	Installation Torque Factor (k)	Axial Compression Load Limit	Ultimate-Limit Tension Strength	Useable Torsional Strength	Practical Load Limit Based Torsional Strength
1-1/2" Square Bar	9 - 11	70,000 lb.	70,000 lb.	7,500 ft-lb	Load limited to the rated capacity of the attachments and the lateral soil strength against the shaft
1-3/4" Square Bar	9 - 11	100,000 lb.	100,000 lb.	11,000 ft-lb	
2-1/4" Square Bar	10 - 12	200,000 lb.	200,000 lb.	23,000 ft-lb	
2-7/8" Tubular – 0.203" Wall	8 - 9	60,000 lb.	60,000 lb.	5,500 ft-lb	44,000 lb
2-7/8" Tubular – 0.262" Wall	8 - 9	100,000 lb.	100,000 lb.	9,500 ft-lb	80,000 lb
3-1/2" Tubular – 0.300" Wall	7 - 8	115,000 lb.	120,000 lb.	13,000 ft-lb	97,000 lb
4-1/2" Tubular – 0.337" Wall	6 - 7	160,000 lb.	160,000 lb.	22,000 ft-lb	143,000 lb