

OCTOBER 2011 MEETING

Wednesday, October 14, 2011 (1.0 PDH)

TECHNICAL PROGRAM

Helical Anchors and Foundations

Speaker: Josh Lindberg, FPA Member with Helical Concepts, Inc., PO Box 1238, 710 Cooper Dr, Wylie, TX 75098, Tel. No. (972) 442 - 4493

PRESENTATION SUMMARY

To an audience of about 65 at HESS, Mr. Lindberg presented information on helical piles. His presentation included topics such as:

- The history of the helical pier
- The history of A.B. Chance Company
- The manufacturing of the helical pier
- Ratings and load criteria used for helical piers
- Categories and uses of helical piles and piers
- Pros and cons of different helical pile applications
- The design aspects, soil considerations, and different applications of the helical pier.
- Installation methods and equipment



The origin of the helical pile dates to 1836 when a "Screw Pile" was used for moorings in England. It then became more widely used in the 1840's and '50's for light house foundations along the East and Gulf coasts. A. B. Chance, which was an US anchor company started using them about 1912. Chance still markets helical anchors and well as helical piles (sometimes called helical "piers", though "piles" is more accurate since they are driven) presented by Mr. Lindberg.

Mr. Lindberg's presentation covered a broad overview of topics. Some of the more interesting points presented were:

- Micro piles are commonly used for residential projects both new and repairs.
- Helical pile shafts can be either solid square shafts or round tubular shafts. Helix diameters range from 6" to 16" in 2" increments.
- Piles can be placed to a tolerance of 3" for new construction
- Pile design can be specified by the engineer using parameters such as minimum depth and design load.
- Capacity during installation can be verified by torque indicators, shear pins (empirical) or testing.
- Hand equipment can be used to install the piles where minimal work space is available such within raised floor foundations.
- Pile installation is not affected by weather or site conditions
- Installed piles may be used immediately on completion
- Helical piles do not disturb the area soils and so are ideal for sensitive areas such as wetlands or areas of dense structures where vibration is an issue
- Larger helical piers are routinely designed to carry axial loads of 80 kips. Larger loads may also be accommodated.
- Helical piers may be used as ground screws or tie-backs to resist lateral loads.
- Other modifications to the method of installation may be used to increase resistance to lateral loads

- Larger sections are typically specified for use in harsh environments to allow for some material loss (i.e., a corrosion allowance is added)
- Investigations show very little material loss at depths due to inadequate soil oxygen so little material oxidation.
- Grounding can be added to resist corrosion, lateral buckling and lateral loads on the pile.
- Pricing for a variety of jobs types was discussed which demonstrated that helical piles/piers are cost competitive with other methods. E.g., an 80-ton grouted micro pile may cost \$1000 while a regular 20 kip helical might be \$400.

Design software called HELICAP is freely available from Chance. See Chance's website at: <http://www.helicalpier.com/> for more information.

To download a copy of Mr. Lindberg's slides, click [here](#).