



The Deep Foundations Institute Helical Foundations and Tiebacks Committee



Presents

Helical Foundations & Tiebacks Seminar

Adaptive Solutions for Changed Project Conditions

A one day event to discuss the proper design, application and installation of Helical Foundations with a focus on the state of the art in design and use of helical foundations and tiebacks.



Las Vegas Hilton

**February 1, 2010
Las Vegas, Nevada**

"EXCELLENT INFORMATION."
"GOOD COMBINATION OF DESIGN AND PRACTICE."
"LOTS OF LEARNING IN A SHORT TIME."
"GOOD REVIEW OF APPLICATIONS AND DESIGN CASES."
"EXCEEDED EXPECTATIONS AND MORE."
"EXCELLENT SEMINAR... BEST EVER."
- 2009 HELICAL & TIEBACKS SEMINAR ATTENDEES

Benefitting:
Design Engineers,
Geotechnical Engineers,
Structural Engineers,
Foundation Contractors,
Project Managers,
Material/Equipment
Suppliers, Professors and
Foundation Specialists.

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Seminar Program*

7:30-8:00 am	Speakers' Preparation	1:30-2:00 pm	Helical Tension Anchors at the Shady Hill School in Cambridge, MA – Lessons Learned <i>Gary Seider, P.E., AB Chance/Hubbell Power Systems</i>
7:30-9:00 am	Exhibitor Set-up	2:00-2:30 pm	Cyclic Behavior of Fiber Reinforced Polymer Grouted Helical Screw Piles under Lateral Loading <i>Yasser Abdelghany, Ph.D., P.E., Highway Department, Ministry of Transportation and Infrastructure</i>
8:00 – 9:45 am	Helical Foundations and Tiebacks Committee Meeting	2:30-3:00 pm	Helical Piles with Lateral Restraining Devices <i>John Maier, Purcell Rhoades and Associates</i>
9:00-10:00 am	Seminar Registration / Continental Breakfast / Exhibits	3:00-3:30 pm	Break and Exhibits
10:00-10:30 am	Welcome and Introduction to Helical Piles and Helical Anchors <i>Steve Petres, MacLean-Dixie, LLC</i>	3:30-4:00 pm	High Capacity Helical Piles – A New Dimension for Deep Foundations <i>Mohammed Sakr, Ph.D., P.E., Almita Manufacturing, Ltd.</i>
10:30-11:00 am	Impact of 2009 IBC Helical Pile Design Requirements and AC308 on Historical Helical Pile Capacities <i>James Cherry, P.E., CTL Thompson, Inc.</i>	4:00-4:30 pm	Panel Discussion
11:00-11:30 am	NYC Chance Helical Pile Design Guidelines and Project Case Histories <i>Michael Perlow, Jr., P.E., Danbro Distributors</i>	4:30-5:00 pm	Meet and Greet Reception in Exhibit Area
11:30-12:00 pm	MacLean-Dixie Tieback vs. NYC Aging Clay Sewer Pipe <i>Ron Melworm, Premium Technical Services</i>	5:00- 5:30 pm	Exhibitor Breakdown
12:00-1:00 pm	Lunch and Exhibits		
1:00-1:30 pm	Failures of Helical Piles and Helical Anchors and Associated Lessons Learned <i>Howard Perko, Ph.D., P.E., Magnum Piering, Inc.</i>		

Professional Development Hours: Attendees will receive a certificate verifying Professional Development Hours (PDH)*

*New York State approval pending | *Florida State provider #4072

**Program and speakers are subject to change.*

Seminar Details

Venue and Accommodations

The Las Vegas Hilton
3000 Paradise Road
Las Vegas, NV 89109
Tel: 702-732-5111
Toll Free: 800-732-7117
Fax: 702-732-5778
www.lvhilton.com

A limited number of rooms have been reserved at a rate of \$129 per night. Specify "DFI Helical Seminar" or code "SGDF10" for this rate.

**Please make reservations early. Space and rate are subject to availability with a cut-off date of Monday, January 11, 2010.*

Parking

Self-parking and valet parking is free of charge.

Transportation

From the airport to the Hotel, call Ritz Transportation Inc. at 1-888-519-5466 or www.ritztransportation.com for reservations and information.

Travel Arrangements

Blue Ribbon Travel is DFI's official travel coordinator. Call Lorraine Engleman (Lorraine@blueribbon.travel) at 718-767-5455 for assistance with your travel and accommodations needs.

Exhibitor Information

Standing Exhibit: Includes one attendee registration fee and 6' x 2' table. Displays cannot exceed 8'W x 2'D x 7'H.

Table-top Exhibit: (No Standing Displays Allowed!) Includes one attendee registration fee and 6' x 2' table. A fee will apply to attendees having Standing Displays for table spaces!

- Electricity must be ordered directly through hotel if needed. Please contact Brian K. Husbands, DFI Event Coordinator for order forms at (973)-423-4030 or E-mail: bhusbands@dfi.org.
- All persons tending exhibits, for all or a portion of the seminar, must be registered as full seminar attendees.
- Exhibitor set-up 7:30-9:00 am.
- Exhibitor tear-down 5:00-5:30 pm.

Labels should be marked as follows:

Ken Ratigan
Senior Director of Convention Services and Catering
The Las Vegas Hilton
3000 Paradise Road
Las Vegas, NV 89109
Hold for [Guest Name],
DFI Helical Seminar – 2/1/10

Direct Marketing Opportunities

Any organization with an interest in the deep foundations industry is invited to participate and maximize their company's marketing efforts.

ONLY \$250 PER SEMINAR provides you with the opportunity to:

- Increase your company's visibility
- Market your products and services
- Improve your recruiting efforts
- Reach industry leaders and decision makers – your potential clients

You will be asked to provide brochures, flyers or CDs containing information on your company's products and services. They will be handed out to all seminar attendees in their registration packet. Brochures/flyers must be 8.5" x 11" or smaller and no more than 6 pages total.

DFI Corporate Member Sponsorship Opportunity

For ONLY \$350 PER SEMINAR, DFI Corporate Members have the additional opportunity to get their logo in front of key industry personnel and to be recognized as a DFI and deep foundations industry supporter. In addition to the marketing materials mentioned above, you may also provide an electronic file of your company logo which will be displayed on the seminar handout binder cover and on the session room presentation screen during breaks, as well as in emailed seminar announcements with a link to your website if received far enough in advance.

See the registration form on how to contact DFI for details.

Presentation Descriptions

Introduction to Helical Piles and Helical Anchors

By Steve Petres, MacLean-Dixie, LLC

A brief overview of the design and installation of helical piles and helical anchors will be presented. The overview will introduce basic terminology associated with helical pile technology, basic design concepts, verification of capacity by torque, and structural design of helical piles and anchors. Field production and quality control will be addressed.

Impact of 2009 IBC Helical Pile Design Requirements and AC358 on Historical Helical Pile Capacities

*By James Cherry, P.E., CTL|Thompson, Inc.
Co-author: Moncef Souissi, CTL|Thompson, Inc.*

Historical helical pile torque to capacity ratios were based upon ultimate pile capacities at or near plunging load. With the adoption of Acceptance Criteria for Helical Foundations and Devices (AC358) in July, 2007, helical pile manufacturers seeking evaluation reports are required to verify historic torque ratios using a net deflection limit of 10% of the helix diameter at ultimate load. CTL|Thompson, Inc. has performed 194 full scale load tests for several helical pile manufacturers using AC358 acceptance criteria. The results of these load tests and the possible impacts on historical helical pile torque to capacity ratios will be presented.

NYC Chance Helical Pile Design Guidelines and Project Case Histories

*By Michael Perlow, Jr., P.E.,
Danbro Distributors*

Due to buckling failures of helical piles in NYC, a comprehensive review of helical pile design, installation, and verification was conducted by the New York City Department of Buildings Office of Technical Certification and Research (NYCDOB OTCR). A number of Chance helical pile projects approved by the NYCDOB to aid in the OTCR helical pile evaluation and code development will be presented. Improved design, installation and verification procedures developed to address proposed NYC helical pile code requirements are presented.

MacLean-Dixie Tieback vs. NYC Aging Clay Sewer Pipe

By Ron Melworm, Premium Technical Services

An MPS certified installer was contracted to install 350 +/- 1.75" tiebacks in Brooklyn, New York. Unable to properly mark out the sewer lines due to age and construction, the city used as-built drawings to locate the pipe and mark its elevation. During the course of the tieback installation, several of the tiebacks penetrated right through the older clay sewer pipe. Thanks to the fact that the tieback could be unscrewed, the contractor unscrewed the tieback and reinstalled new anchors on a different angle.

Failures of Helical Piles and Helical Anchors and Associated Lessons Learned

*By Howard Perko, Ph.D., P.E.,
Magnum Piering, Inc.*

A variety of projects will be presented including one that resulted in a temporary moratorium on helical piles in New York City, a tie-back wall at a stadium, a sea wall with poor load test results, failure of a helical soil nail slope stabilization, excessive settlement of grouted helical piles, and a residential underpinning project where a worker was unfortunately killed. Potential design and construction flaws that may have led to the failures will be identified and discussed so participants can learn not to repeat the same mistakes.

Helical Tension Anchors at the Shady Hill School in Cambridge, MA – Lessons Learned

*By Gary Seider, P.E., AB Chance/Hubbell
Power Systems*

This case study will present the results of extensive testing, retesting, and finally testing of each and every hold-down anchor to provide assurance to the design team and owner that the installed anchors were adequate to support the design loads. Examined will be the consequences of upward seepage flow and how ground water flow can influence both the installation torque and the capacity of helical tension anchors in granular and clay soils. This case study will in detail present how the project evolved and how ultimately the design team/contractor solved the problem.

Cyclic Behavior of Fiber Reinforced Polymer Grouted Helical Screw Piles under Lateral Loading

*By Yasser Abdelghany, Ph.D., P.E., Highway
Department, Ministry of Transportation and
Infrastructure*

A new pile configuration is proposed in this study which is the fiber reinforced polymer grouted helical screw piles (FRP-G-HSP). The research methodology involved conducting twenty-four full scale field load tests on eight FRP-G-HSP helical piles with two different configurations installed in cohesive soil. A 3-D finite element modeling was established for the FRP-G-HSPs lateral load of the considered piles is established.

Helical Piles with Lateral Restraining Devices

By John Maier, Purcell Rhoades and Associates

Deflection analysis of piles under lateral live loads in various soil conditions was completed to obtain research to be presented. Field testing of lateral capacity was conducted at four test sites in California and Nevada where weak surface soil provides insufficient lateral capacity for helical piles. An alternate structural member known as a Lateral Restraint Device (LRD), has been developed which increases the lateral capacity of the helical pile foundation system by increasing the soil-structure contact bearing area of the laterally loaded soil near the ground surface. Data was compiled at four test locations during the load testing of various length and diameter Lateral Restraint Device and Helical Pile structural systems. The presentation will inform the audience on this innovative structural system which increases the lateral resistance of smaller diameter helical piles, generally 3 to 8 inches.

High Capacity Helical Piles – A New Dimension for Deep Foundations

*By Mohammed Sakr, Ph.D., P.E.,
Almita Manufacturing, Ltd.*

This presentation presents the first full-scale axial compression and tension (uplift) field testing program executed on a large capacity helical screw pile. Total of thirteen tests were carried out including nine axial compression tests and four tension (uplift) tests. The complete test setup and test procedures are described. The results of a comprehensive axial compressive and tensile pile load test program and field monitoring of helical piles with either single helix or multiple helixes installed in different soil conditions are presented in this seminar. The data presented is therefore considered valuable to other researchers and engineers considering the use of helical piles to large loads. Based on the results of this study it was found that helical piles can develop significant resistance to axial compressive loads up to 2600 kN and tensile loads up to 2000 kN.

