



GRL Engineers, Inc., Pile Dynamics, Inc. and the Pile Driving Contractors Association

present a

Workshop and Seminar Series on



Bridge of Lions, St. Augustine, Florida

Deep Foundations Testing and Analysis

March 17, 18 and 19, 2010

Renaissance Orlando Airport Hotel

**GRL Engineers / Pile Dynamics are authorized by IACET to offer 0.7
CEUs per day for these programs.**



**GRL Engineers, Inc. is a Florida Board of Professional Engineers Continuing Education
Exempt Provider offering Area of Practice**

Wednesday, March 17, 8:00 – 17:00

General Seminar on Deep Foundations Testing and Analysis

Who Should Attend

Geotechnical, structural and construction engineers; owners, contractors and other professionals involved in the design, construction and specification of deep foundations.

This seminar is suitable for those new to the field of Dynamic Foundation Testing and Analysis, and is a general overview of the methods and their applications (suitable also for those specifying the testing to gain basic understanding for assessing the results presented in reports). Those attending the second and third days of this event are strongly encouraged to also attend this first day for basic background materials.

Learning Objectives

At the end of the seminar attendees will be able to:

- Describe the elements of high and low strain dynamic foundation testing
- Recognize situations where it is appropriate and beneficial to perform:
 - wave equation analysis of pile driving;
 - pile driving monitoring;
 - dynamic load testing of deep foundations;
 - cross hole-sonic logging;
 - pulse echo integrity testing;
 - monitoring of augered cast-in-place/CFA piles

Program (subject to change)

- 8:00 Registration
- 8:30 Introduction to Dynamic Pile Testing
- 10:00 Break
- 10:15 Applications of the Pile Driving Analyzer[®] and CAPWAP[®]
- 11:15 Drilled Shaft Testing with the PDA
- 12:00 Remote Pile Driving Analyzer Testing
- 12:30 Lunch
- 13:30 Wave Equation Analysis Background
- 14:00 Offshore Applications of GRLWEAP, PDA and CAPWAP
- 14:45 Integrity Testing by Pulse Echo
- 15:30 Break
- 15:45 Cross-hole Sonic Logging (CSL)
- 16:30 Monitoring ACIP/CFA Pile Installation
- 17:00 Adjourn

Thursday, March 18, 8:00 – 17:00

Deep Foundation Integrity Testing and Wave Equation Workshop

Who Should Attend

Geotechnical, structural and construction engineers; owners, contractors and other professionals involved in the design, construction and specification of deep foundations. **Foundation testing professionals performing these tests are strongly encouraged to attend and gain additional knowledge of the proper methods to use the software and its various features.**

Learning Objectives

At the end of the workshop attendees will be able to:

- Summarize the fundamentals of wave mechanics for piles
- Use PIT-S and PIT-W software
- Use Cross-hole Sonic Logging (CSL) and Tomography software
- Describe GRLWEAP's hammer-pile-soil-model
- Prepare the input for GRLWEAP wave equation analyses;
- Select options for GRLWEAP analysis and output;
- Interpret GRLWEAP results
- Refine wave equation analysis based on dynamic testing results

Program (subject to change)

8:00 Registration
8:30 Wave Mechanics
9:30 PIT-S Software
10:00 Break
10:15 Basic PIT-W Software, with Examples
11:15 Professional PIT-W Software, with Examples
12:30 Lunch
13:30 Cross-Hole Sonic Logging (CSL) Software, with Examples
14:15 CSL Tomography
14:45 Wave Equation Workshop
15:30 Break
15:45 Wave Equation Workshop (continued)
17:00 Adjourn

Attendees who have a GRLWEAP 2005 license are encouraged to bring laptop computers loaded with it to follow along with the workshop examples.

Friday March 19, 8:00 – 17:00

High Strain Dynamic Foundation Testing Workshop

Who Should Attend: Pile Driving Analyzer® (PDA) and CAPWAP® users interested in sharpening their skills, engineers, foundation testing professionals, students and professors already familiar with the basic concepts of deep foundation dynamic testing and analysis. **This workshop offers a good opportunity for experienced practitioners to review theoretical material and prepare for the Foundation QA HSDPT Examination.**

Learning Objectives

At the end of the workshop attendees will be able to:

- Operate the PDA in a manner conducive to acquiring good quality data
- Assess pile bearing capacity, pile driving stresses, hammer performance and pile integrity by various methods
- Avoid pitfalls when analyzing PDA data with the CAPWAP software
- Interpret PDA testing and CAPWAP software results
- Describe the soil-model used in CAPWAP
- Prepare the input for CAPWAP
- Review options for CAPWAP analysis and output
- Calculate bearing capacity and its distribution for driven piles and drilled shafts from impact records
- Review residual stress analysis and radiation damping solutions

Program (subject to change)

8:00 Registration
8:30 PDA Testing – How To Do It Right
10:00 Break
10:15 PDA Testing – How To Do It Right (continued)
11:15 PDA Workshop: Capacity Calculation
12:30 Lunch
13:30 PDA Workshop: Integrity, Stresses, Energy
14:15 CAPWAP Background
14:45 CAPWAP Workshop: Calculation of Soil Resistance including its Distribution
15:30 Break
15:45 CAPWAP Workshop: Examples
17:00 Adjourn

Attendees who have a CAPWAP 2006 license are encouraged to bring laptop computers loaded with it to follow along with the workshop examples.

Workshop and Seminar Lecturers

Frank Rausche, Ph.D., P.E.: Frank is the president of GRL and a principal of PDI. He has been involved in the research and development of dynamic testing and analysis methods since the mid-1960s work at Case Western Reserve University, where the Case Method of dynamic pile testing originated. He is the principal author of the GRLWEAP and CAPWAP® programs. Frank has published numerous papers, lectures frequently and continues to be actively engaged in dynamic testing.

Garland Likins, P.E.: Garland is the president of Pile Dynamics, Inc. (PDI) and a principal of GRL Engineers, Inc. (GRL). In his 39 years since participating in the original dynamic pile testing research at Case Western Reserve University, Garland has directed the development and improvement of multiple testing systems for deep foundations. He has numerous published papers, is active in several code and professional societies, and is a frequent lecturer.

Mohamad Hussein, P.E. is a Vice President of GRL and a Partner in PDI. He has been involved in deep foundations projects for more than 27 years, spanning 35 American States and numerous countries. Mohamad is the Past Chairman of the Deep Foundations Committee of the ASCE Geo-Institute, Chairman of the Education Committee of the PDCA, and is a technical committee member of ASTM, PCI, and DFI. He is a well published author and teaches deep foundation courses regularly.

Hotel Reservations

Please contact the hotel directly:

Renaissance Orlando Airport Hotel
5445 Forbes Place
Orlando, Florida, 32812 USA
Phone +1-407-240-1000, Fax +1-407-240-1000 Ext. 3100
www.marriott.com/hotels/travel/mcora-renaissance-orlando-hotel-airport

A limited number of rooms will be held at the Renaissance Orlando Airport Hotel at a reduced rate of \$119 per room for participants until February 26. Refer to the Pile Dynamics conference group.

Foundation QA Examination

Workshop attendees may take the Foundation QA (FQA) Dynamic Pile Testing Examination (also known as HSDPT Certification and Certificate in PDA Testing) on March 20th. PDCA will proctor the exam.

Because dynamic testing must be done with great care and data has to be of high quality, the industry needs assurance that testers are knowledgeable about their pile testing specialty. For that reason, Pile Dynamics endorses the FQA examination, however Pile Dynamics has no involvement in any part of the exam, including preparation, administration, grading, certification or certificate distribution.

Registration for the FQA certification exam is independent from registration for the workshop. Visit www.foundationqa.com (or contact melanie@foundationqa.com) for more information and to register for the exam.

Other Information

Attendees who have a GRLWEAP 2005 or CAPWAP 2006 license are encouraged to bring laptop computers loaded with it to follow along with the workshop examples.

Workshop participants may order GRLWEAP Version 2005 at a \$100 discount off the initial license price or 10% off the update price until April 30, 2010.

Registration Fees and Form For Workshop and Seminar Only

To register for the Foundation QA Exam, contact www.foundationqa.com

To register for the Workshop and Seminar, mail, fax or email this completed registration form to:

Pile Dynamics, Inc.
4535 Renaissance Parkway
Cleveland, OH 44128 USA
Fax: 1-216 831-0916
Email: info@pile.com

For more information contact Ms. Judy Fox at the email above or telephone: +1-216-831-6131.

Name(s): _____

Organization: _____

Address: _____

City: _____

State/Province: _____ Postal Code: _____ Country: _____

Phone: _____ Fax: _____ Email: _____

- General Seminar on Deep Foundation Testing and Analysis (March 17) _____ US\$225
- Deep Foundation Integrity Testing and Wave Equation Workshop (March 18) ____ US\$225
- High Strain Dynamic Foundation Testing Workshop (March 19) _____ US\$225

It is highly recommended that those attending March 18 and/or 19 also attend March 17

Registration fees include course notes, coffee breaks and lunches.

Amount: Program total _____

Please indicate form of payment:

__ I am enclosing a check in US Dollars payable to Pile Dynamics, Inc. (by mail only)

__ I am paying by: __ VISA __ MasterCard __ American Express

Credit Card Information:

Name (as on credit card): _____

Billing address (if different from registration): _____

Account no.: _____ Expiration date: __/ __ Verification code: _____

Signature: _____