



**Pile Driving Contractors Association  
and  
Pile Dynamics, Inc.**

**Present**

**a Seminar and Workshop on  
Deep Foundation Dynamic Testing and Analysis**

**October 9, 10 & 11 (Wed - Fri), 2013**



**at the  
PDI Headquarters  
30725 Aurora Road  
Cleveland, Ohio 44139  
1-216-831-6131**

## **Registration starts at 8:00am**

**Wednesday, October 9, 8:30am – 5:00pm**

### **Seminar on Deep Foundation Integrity Testing and Wave Equation 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 Foundation Testing and Analysis, and includes an overview of non-destructive testing methods (integrity and load testing) and their applications.
- It is suitable also for those specifying the testing to gain basic understanding for assessing the results presented in reports.
- This seminar is suitable for those needing an understanding of wave equation analysis methods.
- **Those attending the Workshop that follows this Seminar are strongly encouraged to attend this review of wave equation background materials.**

**Learning objectives:** At the end of the seminar, attendees will be able to:

- Select an appropriate method of integrity assessment of deep foundations for a particular application.
- Review reports of integrity and dynamic load testing of deep foundations conducted by others.
- Run a basic wave equation analysis of pile driving.

#### **Program (subject to change)**

8:00 Registration  
8:30 Wave Mechanics – Basics  
9:30 Non-destructive testing – High and Low Strain  
10:15 Break  
10:15 Non-destructive testing – Crosshole Sonic Logging  
11:00 Thermal Integrity Profiling  
  
12:00 Lunch  
1:00 Wave Equation Background  
2:00 Wave Equation Hammer and Soil Models  
4:00 Break  
4:15 Wave Equation – Examples  
5:00 Adjourn

During the Wave Equation Workshop, attendees may either observe the lecture or optionally follow the examples along on their laptops. This optional use of the attendee's computer requires having a license of the GRLWEAP 2010 software installed on that computer. Prepaid registrants can request a temporary license from Pile Dynamics by contacting [stheodore@pile.com](mailto:stheodore@pile.com).

A Certificate of Participation documenting the number of hours of instruction (PDH) will be provided. Check with your engineering board of registration for their continuing education requirements.

**Thursday, October 10, 8:30am – 5:00pm**  
**High Strain Dynamic Foundation Testing Workshop part 1**

**Who should attend:**

- Users of the Pile Driving Analyzer® (PDA) system and CAPWAP® software 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.
- Professionals who desire to have a basic understanding of the dynamic test results being presented to them.
- Those interested in taking the **Dynamic Measurement and Analysis Proficiency Test\***

**Learning objectives:**

At the end of this two day 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 from impact records

**Program** (subject to change)

8:00 Registration  
8:30 Wave Mechanics – Applied  
10:30 Break  
10:45 PDA Testing – Proper Practices  
12:30 Lunch  
1:30 PDA Testing – Proper Practices (cont.)  
2:00 PDA Data Quality – Examples  
2:30 Dynamic Testing of Drilled Shafts and Augered Cast-in-place Piles  
3:15 Break  
3:30 PDA Workshop: Integrity, Stresses, Energy  
4:30 PDA Workshop: Capacity Calculation  
5:00 Adjourn

**Friday, October 11, 8:30am – 5:00pm**  
**High Strain Dynamic Foundation Testing Workshop part 2**

**Program** (subject to change)

8:30 Remote Testing with Demo  
9:30 CAPWAP<sup>®</sup> software Background  
10:15 Break  
10:30 iCAP<sup>®</sup> – Instant Signal Matching  
11:00 CAPWAP Workshop: Basic Examples  
12:00 Lunch  
1:00 CAPWAP Workshop: Advanced Examples  
3:15 Break  
3:30 **Dynamic Measurement and Analysis Proficiency Test \***  
5:00 Adjourn

A Certificate of Participation documenting the number of hours of instruction (PDH) will be provided. Check with your engineering board of registration for their continuing education requirements.

\* At the end of the High Strain Dynamic Testing Workshop participants may take a multiple choice **Dynamic Measurement and Analysis Proficiency Test** which will take less than 1-½ hours to complete. The test will cover the theory of Wave Mechanics, Case Method (PDA) equations, data quality assessment, data interpretation and basic CAPWAP analysis. The test is designed for those with experience in using the Pile Driving Analyzer<sup>®</sup> system and CAPWAP to perform High Strain Dynamic Foundation Tests. The best preparation for the test is work experience following an initial PDA training. The workshop will refresh the participant's theoretical background and be a reminder of some important points. Those taking the test are advised to study "Appendix A" and "Helpful Hints" of the PDA manual, review some of the EXAMPLE data provided with the PDA, and read the CAPWAP background material. These materials are supplied with PDA purchases. Those without access to the manuals and examples should please contact [jfox@pile.com](mailto:jfox@pile.com) in advance of the test date. For more information about the Proficiency Test website: [www.PDAProficiencyTest.com](http://www.PDAProficiencyTest.com).

A Certificate of Proficiency in High Strain Dynamic Pile Testing will be awarded to those who pass the test. The Level indicated on the Certificate is dependent on the score achieved on the test. Those who do not pass the test will receive full credit of test registration fee to be applied towards retaking the test at the next opportunity.

## **Workshop and Seminar Lecturers**

**Frank Rausche, PhD., P.E., D.GE**, is a principal of Pile Dynamics, Inc. He has been involved in the research and development of dynamic testing and analysis methods since the mid-1960s first as a researcher at Case Western Reserve University, where he derived the Case Method equations for dynamic pile testing and developed the CAPWAP® and GRLWEAP software and where he worked as a consultant both onshore and offshore.

**Garland Likins, P.E.**, Garland is the president of PDI and a principal of GRL. During his 40 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.

**Brent Robinson, P.E.**, is a partner in PDI and GRL. He oversees civil engineering and research and development activities and trains users of PDI equipment. Since joining GRL in 1999, he has performed measurement and analysis for foundation projects around the world. Brent is a PhD candidate at North Carolina State University, chair of the Geotechnical Committee of the Cleveland Section of the American Society of Civil Engineers and the recipient of the TRB Best Paper Award in Soil Mechanics in 2010.

**Ryan C. Allin, P.E.**, Ryan has been a project engineer with GRL since his graduation from Cleveland State University in 2004. Prior to that he interned for GRL and for its sister company Pile Dynamics, Inc. Ryan is a lecturer on foundation testing and has co-authored papers on the subject. He is a member of the American Society of Civil Engineers. He has achieved Expert level on the PDCA/PDI Dynamic Measurement and Analysis Proficiency Test. Ryan is a registered professional engineer in the State of Ohio and various other states.

## **Hotel Reservations**

**Attendees should make their own hotel reservations.**

**The Hampton Inn** - Special group rate of US \$115 plus tax including breakfast, hotel transportation, evening manager's reception and wireless high speed internet. Must reserve by September 30<sup>th</sup>, call +1 440-542-0400 or visit [www.solonhamptoninn.com](http://www.solonhamptoninn.com) and use the group code **PDI**.

