



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

Present

**Seminar on Deep Foundation Integrity Testing and Wave Equation Analysis
September 30 (Wed), 2015**

**High Strain Dynamic Foundation Testing Workshop
October 1 and 2 (Thu - Fri), 2015**



**at the
PDI Headquarters
30725 Aurora Road
Cleveland, Ohio 44139
1-216-831-613**

Registration starts at 8:00am

Wednesday, September 30, 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 Workshop: Bearing Graph, Inspector's Chart
3:00 Break
3:15 Wave Equation Workshop: Bearing Graph, Inspector's Chart – continued
4:00 Wave Equation Workshop: Driveability
5:00 Adjourn

GRLWEAP Workshop Material: 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. **You will receive the GRLWEAP temporary license the week of training.**

Digital/ Hard copy of the Presentation:

- **All training material will be available digitally for download prior to the event.** It is suggested that attendees download this material to their laptop and bring their laptop, or print the training material and bring their own hard copy. **A black and white, 3 slide per page printout may be requested from PDCA up to two weeks prior to the seminar (nominal charge will apply).** Please contact PDCA at Holly@piledrivers.org if you want PDCA to provide the hard copy.
- Attendees are encouraged to use their own laptops for the GRLWEAP and CAPWAP® sessions; charging stations will be available.

Thursday, October 1, 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 for PDA testers
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 2, 8:30am – 5:00pm
High Strain Dynamic Foundation Testing Workshop part 2

Program (subject to change)

8:30 SiteLink® - Remote Testing with Demo
9:00 CAPWAP® software Background, iCAP®
10:30 Break
10:45 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

Digital/ Hard copy of the Presentation:

- **All training material will be available digitally for download prior to the event.** It is suggested that attendees download this material to their laptop and bring their laptop, or print the training material and bring their own hard copy. **A black and white, 3 slide per page printout may be requested from PDCA up to two weeks prior to the seminar (nominal charge will apply).** Please contact PDCA at Holly@piledrivers.org if you want PDCA to provide the hard copy.
- Attendees are encouraged to use their own laptops for the GRLWEAP and CAPWAP sessions; charging stations will be available.

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® 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 softwaresales@pile.com in advance of the test date. For more information about the Proficiency Test website: 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.

*Please note it will take up to two weeks to receive your exam results *

Workshop and Seminar Lecturers

Frank Rausche, Ph.D., P.E., D.GE. is a principal of Pile Dynamics, Inc. (PDI) and of GRL Engineers, Inc. He has been involved in the research and development of dynamic testing and analysis methods since his mid-1960s work at Case Western Reserve University, where he derived the Case Method equations for dynamic pile testing and developed the CAPWAP and GRLWEAP software. Dr. Rausche has been a consultant throughout his career applying the dynamic and testing methods to solve practical problems on construction sites. He has published numerous papers and lectures frequently both in the USA and internationally.

Garland Likins, P.E., is principal and past president of Pile Dynamics, Inc., providing quality assurance products for testing deep foundations. He is also a principal of GRL Engineers, Inc., providers of deep foundation testing services. In his over 40 years since participating in the original dynamic pile testing research at Case Western Reserve University, Garland has performed countless field tests and directed the development of a variety of field quality assurance testing products for various deep foundation types. He is active in ASCE, ASTM, ADSC, DFI, and PDCA, serves on several code committees, is an Associate Editor for both the ASCE Geotechnical Journal and the ASTM Geotechnical Journal, has authored more than 100 publications, 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 Allin, P.E., is a senior engineer and partner in GRL Engineers and Pile Dynamics. He has a BS in Civil Engineering from Cleveland State University and has achieved Expert level on the PDCA/PDI Dynamic Measurement and Analysis Proficiency Test. After several years performing the entire range of services offered by GRL throughout the United States and in international offshore projects, Ryan is currently responsible for all GRL's educational programs for foundation testing professionals. In that capacity he has lectured on numerous seminars, webinars and workshops on foundation testing and has co-authored papers on the subject. Ryan is a member of the American Society of Civil Engineers and a registered professional engineer in Ohio, Pennsylvania, West Virginia, Delaware and Kentucky.

Hotel Reservations

Attendees should make their own hotel reservations.

The Hampton Inn

Special group rate of US \$124 plus tax including breakfast, hotel transportation, evening manager's reception and wireless high speed internet. **Must reserve by September 1**, call +1 440-542-0400 or **click here** to visit The Hampton Inn's information and reservation site for PDI's Seminar/Workshop. Use the group code **PDI** when making your room reservation.

work • play • relax



Hampton Inn Cleveland / Solon

Pile Dynamics—PDI

Real value from your friends at Hampton!

- Pay for breakfast? Not on our watch! Enjoy our complimentary On the House® hot breakfast buffet or our On the Run® to-go bags daily from 6:00 AM to 10:00 AM.
- Relax and unwind after a long day during our Hampton Connect Reception featuring beverages and light snacks Monday through Thursday from 5:00 PM to 7:00 PM.
- Keep up your healthy routine by enjoying our Jump-Start® fitness center featuring Precor® equipment followed up by a refreshing plunge into our indoor heated pool.
- Have a last minute report? No worries - we got you covered. Our 24-hour business center features high-speed internet access, printer, copier and office supplies.
- Our Suite Shop® offers a variety of food and convenience items for those times when you forgot to pack an essential, or just have the munchies late at night.



1 King Bed Room

2 Double Beds Room



Each guest room is well appointed with...

- Mini refrigerator, microwave, coffee maker with ample room to spread out and relax
- Complimentary high-speed, wireless Internet access with 24-hour technical support
- Deluxe 32" LCD screen television with over seventy cable channels including HBO
- Two line telephones with fully customizable voice mail and free local calls
- Custom-designed alarm clock with MP3 player and pre-set ambiance channels
- Spacious work desk with easy to access electrical connections for all your devices

Preferred Rate

\$124

Per night plus tax

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