



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

**Present a Three-Day Workshop:**

**Seminar on Deep Foundation Integrity Testing and Wave Equation Analysis  
March 13, 2019**

**High Strain Dynamic Foundation Testing Workshop  
March 14 and 15, 2019**



at the  
**DoubleTree by Hilton Orlando Airport  
5555 Hazeltine National Drive  
Orlando, Florida 32812  
407-856-0100**

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

**Wednesday, March 13, 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 and Breakfast  
8:30 Wave Mechanics – Basics  
9:30 Non-destructive testing – High and Low Strain  
10:15 Break  
10:30 Non-destructive testing – Crosshole Sonic Logging  
11:00 Thermal Integrity Profiling  
11:45 PDA Applications  
12:15 Lunch  
1:15 Wave Equation Background  
2:15 Wave Equation Workshop: Bearing Graph, Insp. Chart  
3:00 Break  
3:15 Wave Equation Workshop: Bearing Graph, Insp. Chart-cont'd  
3:45 Wave Equation Workshop: Driveability  
5:00 Adjourn

**Thursday, March 14, 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 Breakfast  
8:30 Wave Mechanics for PDA testers (90 min)  
10:00 Break  
10:15 PDA Testing – Proper Practices  
12:30 Lunch  
1:15 Dynamic Testing of Drilled Shafts and Augered Piles  
1:30 Testing Economics  
3:15 Break  
3:30 Set-up  
4:15 PDA Workshop: Integrity, Stresses, Energy  
5:00 Adjourn

**Friday, March 15, 8:30am – 5:00pm**

## **High Strain Dynamic Foundation Testing Workshop - Part 2**

**Program** (subject to change):

8:00 Breakfast  
8:30 PDA Workshop: Capacity Calculation  
9:15 CAPWAP Background  
10:45 Break  
11:00 CAPWAP Examples  
12:30 Lunch  
1:15 CAPWAP and Refined Wave Equation  
1:45 iCAP® – Instant Signal Matching  
2:15 PDA Data Quality – Examples  
3:15 Break  
3:30 Dynamic Measurement and Analysis Proficiency Test \*  
5:00 Adjourn

### **Digital/ Hard copy of the Presentations:**

- **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 colored, 3 slide per page printout may be requested from PDCA up to two weeks prior to the seminar (\$100 charge will apply) and will be provided on-site.** Please contact PDCA at [debbie@piledrivers.org](mailto:debbie@piledrivers.org) to order a hard copy.

### **GRLWEAP Demo License:**

- Attendees are encouraged to use their own GRLWEAP USB key license. If you do not have a license or cannot bring the USB key license with you to follow along, a GRLWEAP 10 demo version will be offered and emailed the week before the Workshop.

### **Certificate of Participation:**

- A Certificate of Participation, documenting the number of hours of instruction - Professional Development Hours (PDH's) will be provided. Check with your engineering board of registration for their continuing education requirements.

### **Dynamic Measurement and Analysis Proficiency Test:**

- 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 will receive the above study materials once registered. 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 only registration fee to be applied towards retaking the test at the next course.

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

## **Workshop and Seminar Lecturers**

**Garland Likins, P.E., M.ASCE**, is the senior partner and past president of Pile Dynamics, Inc., a manufacturer of quality assurance products for deep foundations. He is a licensed Professional Engineer in Ohio and a former principal of GRL Engineers, Inc., providers of deep foundation testing services. In his 45 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 several field testing devices for deep foundations. He is active in committees for ASTM, ADSC, DFI, and PDCA. He authored numerous publications and frequently lectures on deep foundations.

**Ryan Allin, P.E.**, is a senior engineer and partner in GRL Engineers and Pile Dynamics. He has a B.S. 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**

### **DoubleTree by Hilton Orlando Airport:**

Attendees are responsible for making their own hotel reservations.

A block of rooms has been reserved for March 12 – March 16, 2019. The special room rate of \$155.00 per night, plus tax, will be available until February 20, 2019 or until the group block is sold-out, whichever comes first.

**Online Reservations** can be made [HERE](#)

**Reservations by Phone** can be made by calling the hotel at 407-856-0100 and referencing the Pile Driving Contractors Group block - **Group Code: PDC**.

### **Parking Fees:**

Overnight Self-Parking: \$8.00 per day (discounted for PDCA)

Day Self-Parking: \$10.00 per day

Overnight Valet Parking: \$20.00 per day

Day Valet Parking: \$12.00 per day

The hotel provides complimentary guestroom wireless internet access, complimentary use of fitness center, complimentary shuttle for individuals to and from the Orlando International Airport (MCO), and complimentary shuttle for individuals traveling within 2 miles of the hotel.

# REGISTRATION

Online Registration: [www.piledrivers.org](http://www.piledrivers.org)

Early Bird Deadline: Friday, February 15, 2019

Mail, Fax, or Email: Registration form by Monday, February 25, 2019 to:

**Pile Driving Contractors Association**  
33 Knight Boxx Road, Suite 1, Orange Park, FL 32065  
Phone: 904-215-4771; Fax: 904-215-2977  
[debbie@piledrivers.org](mailto:debbie@piledrivers.org)

Name(s): \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State/Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_ Country: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

## REGISTRATION FEES (Includes: Breakfast, AM/PM Breaks and Lunch):

- Seminar on Deep Foundation Integrity Testing and Wave Equation Analysis: **\$300.00**
- High Strain Dynamic Foundation Testing Workshop: **\$550.00**
- Dynamic Measurement and Analysis Proficiency Test (***No Discounts***): **\$200.00**  
*\*If you do not pass the test you are allowed one (1) retake of the test at no additional charge at the next course*
- Early Bird Registration: \$50 discount on **each** Seminar and Workshop prior to February 15, 2019
- Government Employees: \$50.00 discount on **each** Seminar and Workshop

Amount sub-total: \$ \_\_\_\_\_

Discount (if applicable – subtract): \$ \_\_\_\_\_

**Grand Total:** \$ \_\_\_\_\_

## CREDIT CARD INFORMATION:

I am paying by: \_\_\_ VISA \_\_\_ MasterCard \_\_\_ American Express \_\_\_ Check

Name (as on credit card): \_\_\_\_\_

Account Number: \_\_\_\_\_ Expiration date: \_\_\_/\_\_\_ Verification code: \_\_\_\_\_

Statement Billing Address: \_\_\_\_\_

City: \_\_\_\_\_ State / Province: \_\_\_\_\_ Zip: \_\_\_\_\_ Country: \_\_\_\_\_

Signature \_\_\_\_\_

**Refund Policy:** Cancellations received by February 25, 2019 will receive a 50% refund. After this date, there will be no refunds, however name changes are permissible. There will be no transfer of funds to the next course permitted.