



## DID YOU **KNOW?**

**The Golden Gate Bridge south pier was the first bridge support ever built in the open ocean.**



NEWSLETTER No. 78 - May 2015

### **PDI AND GRL AT IFCEE 2015**

When four major technical organizations (The International Association of Foundation Drilling - ADSC, Deep Foundations Institute - DFI, The Geo-Institute of the American Society of Civil Engineers - GI-ASCE, and the Pile Driving Contractors Association - PDCA) join efforts, the result is IFCEE!!! The International Foundation Conference and Equipment Expo was a gigantic geo-event, with over 3500 attendees, an impressive multi-million dollar equipment expo, numerous technical sessions, committee meetings, special lectures and short courses. PDI and GRL were both there in San Antonio, Texas, this past March.

Dr. Frank Rausche (PDI) was honored with the Osterberg Lecture Award. In his outstanding talk, Frank discussed the four major full scale load test methods: the conventional static top loaded test, the bi-directional test, the dynamic test, and the force pulse test. He described recent developments, cost, benefits and data interpretation methods. Case studies highlighted the sensitivity of the load test results to how and when tests are performed and how combinations of tests can be used for a most economical yet safe deep foundation design.

Mohamad Hussein (GRL) and Garland Likins (PDI) offered two full day short courses. Garland and Van Komurka (Wagner Komurka Geotechnical Group) presented "Cost Effective Driven Pile Design", an innovative, practical, and pragmatic approach to cost-effective driven-pile design, testing, and installation. Garland and Van discussed how testing is an integral part of the design process since it results in less risk and therefore higher allowable loads per pile, resulting in significant overall savings to foundation design. Mohamad Hussein and Michael Justason (McMaster University/Birmingham Foundation Solutions) presented "Deep Foundations QA/QC for Engineers, Contractors, and Inspectors" on Quality Assurance and Quality Control (QA/QC) methods for driven piles, drilled shafts and augered cast-in-place (ACIP) piles, including deep foundations design principles, installation methods and equipment, inspection aspects, testing methods with applications, advantages and disadvantages, and the importance of QA/QC to the success of deep foundations projects.

Garland Likins presented a paper by Allin, Likins and Honeycutt entitled "Pile Driving Formulas Revisited": Formulas have been widely used in pile driving in spite of their gross assumptions and therefore gross inaccuracies. These formulas were developed for drop hammers on timber piles, conditions far removed from today's common practice, and their correlation with static load tests is very poor. The recommendations of an esteemed 1930's task group (including Karl Terzhagi) to avoid the use of formulas remains the best advice for today.

George Piscalko (PDI) presented a paper on Thermal Integrity Profiling (TIP) theory as well as a case history where TIP, crosshole sonic logging (CSL) and pile integrity testing by the pulse echo method (PIT) were all used on a test shaft. TIP revealed a defect in the upper portion of the shaft while PIT and CSL did not. Later excavation confirmed the TIP findings.

Brandon Phetteplace (GRL) presented the paper "Thermal Integrity Profiling of ACIP Piles" by his colleagues Becker, Coleman and Belardo, which describes a case study where Thermal Wire<sup>®</sup> cables (cables with temperature sensors) were installed on 18 in (0.46 m) diameter ACIP piles. A cable was attached to the center rebar of each and measured temperatures during the cement hydration process. These measurements were processed to assess overall pile integrity and calculate an effective pile radius. The calculated effective radius was consistent with areas estimated from CAPWAP<sup>®</sup> impedance results (from dynamic load tests) and with pulse echo tests.

IFCEE also included a Federal Highway Administration (FHWA) - sponsored "virtual conference" during which Mohamad Hussein, Van Komurka, and PDCA Technical Committee chairman Dale Biggers led a panel discussion on pile driving that had more than 80 participants from over 30 US Departments of Transportation.

Numerous committee meetings of DFI, PDCA, ADSC and GI took place daily from 8 am to midnight. At the International Building Code (IBC) meeting, a Geo-coalition force including designers, contactors, consultants and other professionals from various deep foundation groups worked diligently and intensively to develop a consensus on suggested changes for the 2018 version of the IBC code.

An important event was the inaugural "ADSC Michael W. O'Neill Lecture Award", underwritten by ADSC. This international award will be presented triennially at future IFCEE events, and honors Dr. O'Neill, one of the world's leading experts in deep foundations, who passed away in 2003 leaving a legacy of deep foundation contributions both in academia and in practice. The establishment of ADSC O'Neill lecture is the brainchild of Dr. E. Anna Sellountou (PDI), who studied under Dr. O'Neill. The inaugural Lecture was awarded to Jerry A. DiMaggio (Applied Research Associates, Inc.). Anna's introduction that shed light on Dr. O'Neill's humanity and professional genius was followed by Jerry DiMaggio's outstanding presentation "Reflections, Changes and Grand Challenges" in deep foundations.



*Jerry DiMaggio and Anna Sellountou*

Pile Dynamics and GRL Engineers both had exhibit booths at the event. GRL's booth was staffed by Brandon Phetteplace, who opened GRL's newest office in Houston. PDI's booth, which was staffed by Bill Herman and Nicole Angie, attracted a lot of attention by displaying the new 8th generation PDA (PDA-8G) and the Thermal Integrity Profiler, and introducing the preliminary research on SQUID, (Shaft QUantitative Inspection Device) an inspection product for the drilled shafts industry.

## Highlights of the 2015 Calendar of events (May-Oct)

More events, info and registration forms at [www.pile.com/events](http://www.pile.com/events)

### PDI-organized Workshops, Seminars and Proficiency Tests:

**May 13** in Jacksonville, FL: **Garland Likins and Ryan Allin** will present a **Seminar on Deep Foundation Integrity Testing and Wave Equation Analysis** followed by **High Strain Dynamic Foundation Testing Workshop and Proficiency Test** on **May 14 and 15**. Both events in collaboration with the Pile Driving Contractors Association (PDCA). Info: [Jessica@piledrivers.org](mailto:Jessica@piledrivers.org).

**June 26-27** in São Paulo, Brazil: **Garland Likins and Jorge Beim** will present the workshop "Ensaio de Integridade (PIT e TIP) e Ensaio de Carregamento Dinâmico e Monitoração de Cravação de Estacas (Pile Driving Analyzer® e CAPWAP®)" in collaboration with Carmix do Brasil. Info: [Francesco.Fusconi@contato@carmix.com.br](mailto:Francesco.Fusconi@contato@carmix.com.br)

**September 30** Cleveland, Ohio: **Garland Likins, Brent Robinson and Ryan Allin** will present a **Seminar on Deep Foundation Integrity Testing and Wave Equation Analysis** followed by a **High Strain Dynamic Foundation Testing Workshop and Proficiency Test** on **October 1 and 2**. Both events in collaboration with PDCA. Info: [Jessica@piledrivers.org](mailto:Jessica@piledrivers.org).

### PDI Webinars - Learn without leaving your desk:

All sessions are via Internet and phone connection, last 1.5-2 hours and start at 9:00 am EST (New York Time). Info: [registration@pile.com](mailto:registration@pile.com)

**June 2, 3, 9 and 10:** (4 sessions) **Wave Equation Analysis of Piles using GRLWEAP** with Frank Rausche

**July 14 and August 11** (2 opportunities): **The new 8th generation (8G) Pile Driving Analyzer®** with Ryan Allin

**September 15:** **SPT Hammer Energy Measurements** with Brent Robinson

**GRL, PDI and/or PDI representatives will exhibit at the following events** (a good chance to learn about new developments!)

**May 18-21** Oakland, California: 40th Southwest Geotechnical Engineers Conference. **Visit PDI at Booth 17.** Info: [www.cce.csus.edu/sites/BaseOne/index.cfm?wid=153](http://www.cce.csus.edu/sites/BaseOne/index.cfm?wid=153)

**June 23-25** São Paulo, Brazil: SEFE 8, organized by ABMS, ABEF and other Brazilian organizations and DFI. **Visit PDI Representative Carmix do Brazil at booth 136.** In addition **Garland Likins will be speaking.** Info: [www.sefe8.com.br](http://www.sefe8.com.br)

**June 24-25** Lyon, France: Solscope - 11th National Exhibition of Geotechnics. **Visit the booth of PDI representative G-Octopus.** Info: [www.solscope.fr/en/](http://www.solscope.fr/en/)

**September 20-23** Quebec City, Canada: GeoQuebec 2015. **Visit PDI at Booth 23.** Info: [www.geoquebec2015.ca](http://www.geoquebec2015.ca)

**September 27-October 1** Branson, Missouri: ASCE – SEI 2015 Electrical Transmission and Substation Structures Congress. **Visit the PDI Booth and view a Thermal Integrity Profiling poster presentation.** [www.etsconference.org](http://www.etsconference.org)

### Other Learning Opportunities:

**May 12-15**, Santa Cruz, Bolivia: **Frank Rausche** will speak at the Second International Conference and Seminar on Deep Foundations Field Testing and Construction Aspects of Deep Foundations. Info: [www.cfpbolivia.com](http://www.cfpbolivia.com)

**June 8-9** North Jakarta, Indonesia: PDI representative **Geotech Efathama** presents PDA User Conference. Info: [www.geotech-indonesia.com/news.php?id=16](http://www.geotech-indonesia.com/news.php?id=16)

**November 15-18** Buenos Aires, Argentina: **Gina Beim** will present a paper on Thermal Integrity Profiling at the Panamerican Conference on Soil Mechanics and Geotechnical Engineering. Info: [www.conferencesba2015.com.ar](http://www.conferencesba2015.com.ar)

## New Book of Interest to Foundation Engineers

The third edition of *Foundation Design, Principles and Practices*, by Coduto, Kitch and Yeung, has been published by Pearson.

## Frank Rausche and Pat Hannigan Receive PDCA Awards

Pile Driving Contractors Association's (PDCA) President Mike Justason presented the Presidential Award for Distinguished Service to Frank Rausche, PhD, P.E., on Friday, March 20, during the PDCA Business and Awards Breakfast meeting at IFCEE 2015. Each year, the PDCA President selects an individual who has made on-going, long-term and significant contributions to the PDCA and the pile driving industry for the award. During the same ceremony, Pat Hannigan, P.E., President of GRL Engineers, was awarded the PDCA Professional Engineers Service. This award honors a Geotechnical, Civil or Structural engineer who has made a significant contribution to the PDCA, the driven pile industry and the engineering profession.



Mike Justason (right) presented Frank Rausche with the PDCA Award for Distinguished Service.

## TIP Receives Charles Pankow Award for Innovation

The American Society of Civil Engineers recognized the Thermal Integrity Profiler (TIP) with its Charles Pankow Award for Innovation during the 2015 OPAL Awards Gala in Arlington Virginia, USA, on March 26. The award recognizes the contributions of organizations working collaboratively to advance the design and construction industry by introducing innovation into practice. Dr. Gray Mullins, with the University of South Florida (USF) was the lead researcher of the technology behind TIP. Dr. Mullins, seen on the right, accepted the award on behalf of the team being honored that evening: USF, Foundations & Geotechnical Engineering, the Florida and Washington State Departments of Transportation and Pile Dynamics, Inc. PDI was represented at the event by Dean Cotton (seen on left), one of the inventors of the Thermal Wire® cables that are part of the TIP system, and Ryan Allin, P.E., who leads PDI's educational efforts.



## GRL Welcomes New Engineer

Andrew Meisheid, E.I., who joined GRL in 2015, has a Masters in Civil Engineering from the University of South Florida and is now an engineer with the Florida Office of GRL.



## GRL Opens Texas Office

GRL Engineers opened its 10th branch office, in the Houston metropolitan area, to serve and provide a quick response to the Texas region. It will be staffed by Brandon Phetteplace and managed by Camilo Alvarez, who together bring more than 22 years of experience in dynamic testing and quality assurance methods for deep foundations to the Texas market. Reach Brandon at 832-389-1156 or [bphetteplace@GRLengineers.com](mailto:bphetteplace@GRLengineers.com).



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**www.pile.com:** the portal for deep foundation testing services, instruments and software

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