



# GRL NEWSLETTER

No. 13

INFORMATION GATHERED BY THE ENGINEERS OF  
GOBLE RAUSCHE LIKINS AND ASSOCIATES, INC.

APRIL 1990

## 1990 PDA USERS DAYS SLATED

Know-how of optimal operation of the Pile Driving Analyzer™ (PDA) plus correct interpretation of signals and processing results are the three main elements of successful dynamic pile monitoring and will be the primary themes of three PDA Users Days scheduled for 1990. One of GRL's highest priorities is the dissemination of information on new developments, past problems and recommended testing procedures to PDA owners and operators. These Users Days are being held in USA, Europe and Asia for the convenience of our PDA partners worldwide as part of our strong commitment to support and to help insure the proper application of our methods. We also invite clients who frequently specify or use PDA and CAPWAP™ results to participate. However, since the PDA Users Days are organized in the form of workshops, space restrictions apply.

- June 14, 15 PDA Users Day Gothenburg, Sweden. Please contact:  
Carl-John Gravare  
Pile Dynamics Europe Ltd.  
August Barks Gata 11, Gothenburg, Sweden  
Fax: 46-31-477533 Phone: 46-31-450260
- June 28, 29 PDA Users Day, Cleveland, OH USA. Please contact  
GRL/Cleveland
- Oct. 18, 19 PDA Users Day, Hong-Kong. Please contact:  
GRL/Cleveland

The program will include lectures on the fundamentals of wave mechanics, Case Method, CAPWAPC, GRLWEAP™ and P.I.T.™ Testing procedures will be reviewed. Informal exchanges of experiences will be held and the following new developments will be covered.

- The features of the new Model GCPC Pile Driving Analyzer™
- Residual Stresses and slack/crack data from CAPWAPC
- Composite pile analysis and stress wave branching in GRLWEAP
- Frequency and time domain presentations in P.I.T.

## GRLWEAP NEWS

GRL engineers have been working long hours on the update of the program documentation which will become a true GRLWEAP Manual. We hope that our users will bear with us until May when we will release the new GRLWEAP. In the meantime, we have added several hammers and driving systems to the data files.

## P.I.T. NEWS

The Pile Integrity Tester (P.I.T.) has been expanded to include the presentation of the pile top motion in both time and frequency domain. Of course, the velocity is generated by a light hammer impact. Using an instrumented hammer, the new P.I.T.-FV system also measures and displays the pile top force which provides additional information about the quality of the pile near its top.

## GRL JOINS ADSC

Dynamic testing of drilled shafts for both integrity and bearing capacity has been playing an ever increasing role in GRL's activities. We therefore sought the exchange of ideas and information with professionals in the drilled shaft industry and joined the International Association of Foundation Drilling. We read *FOUNDATION DRILLING* with great interest and look forward to meeting other members at frequent ADSC seminars and conferences.

## GRL CO-SPONSORS RESEARCH

GRL is pleased to report that an ADSC drilled shaft research project at the University of Florida has been conducted by Professor Frank Townsend. GRL co-sponsored the dynamic testing, providing hammer, instrumentation and analysis. The 10-ton hammer was custom built by Pileco, Houston. Mohamad Hussein of the GRL Orlando office, is in charge of measurements and analyses.

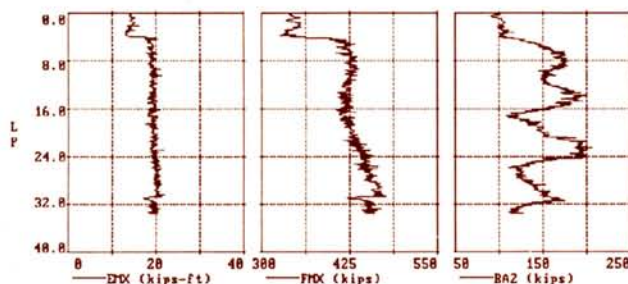
## NEWS FROM PILE DYNAMICS (PDI)

The PDA-Plot is a very convenient way of presenting monitoring results from many hammer blows. Our software is currently undergoing a major rewriting for user friendliness, speed and greater capacity. A sample plot of 3 quantities (up to 6 are possible) is shown.

PDI also reports that underwater strain transducers and accelerometers were successfully used in California by Insitutech's Dr. D. Michael Holloway. These transducers are now in stock. They have been tested to saltwater depths of 200 meters.

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GRL/PDI PDAPLOT      \*\* CONCRETE TEST FILE \*\*      4-2-98



## GRL Personnel News

*Paul Brinkerhoff* joined the staff of **PDI** in January 1990. Paul is both a systems programmer and electronics engineer. He graduated from the University of Akron. Paul's position will encompass software development and, together with *Dave Peterman* and *Beth Richardson*, he will eventually spend a significant amount of time on client support.

The **GRL** Cleveland office welcomed *Allan Stegkamper* to its Civil Engineering staff in February. Allan, who is a graduate of Ohio State University and whose background includes construction management, has already undergone pile monitoring training on construction sites in Ohio, Pennsylvania and Florida.

### GRLWEAP Workshops

*Professor G.G. Goble* reports of successfully completing workshops in Boise, New York, Philadelphia and San Francisco.

*Jim Harmston* of **Foundations Services, Inc.**, Raleigh, N.C. contacted **GRL** and suggested that a **GRLWEAP** workshop be conducted in North Carolina. **GRL** would like to respond and contemplates a workshop in the second half of May. Anyone interested is urged to contact us immediately.

## SEATTLE

*Bert Miner* reports that he now has established an office. His phone and fax numbers are, respectively:

206-775-5785 / 206-778-6933

Bert has been busy finding a home and an office and doing measurements.

## SAN FRANCISCO

**GRL** Colorado manager, *Jay Berger*, participated in an FHWA sponsored dynamic pile test series on drilled shafts of 36 inch diameter. The tests were conducted by **PSC**, Mountain View, CA in cooperation with **Soil Testing Services**. Several shafts were constructed with defects. Both P.I.T. and PDA capacity tests were conducted. A special 10-ton drop hammer was developed by **Pileco** of Houston (also see ADSC news of first page).

## FLORIDA

*Mohamad Hussein* reports that preconstruction pile tests have allowed for economical pile installation at sites like the Edison Bridge, Ft. Myers, White City Bridge, St. Lucie Bridge, Tampa Port Authority, Disney World, Sea World and others.

Mohamad recently lectured at the 2nd Annual Prestressed Concrete Piling Seminar in Ft. Lauderdale - this included a field demonstration - and at the University of Missouri, Rolla - Continued Education Course on Pile Testing in Orlando.

## MID-WEST

*Steve Abe*, of **GRL's** Cleveland office, participated in preconstruction test programs on S.R. 26 in Lafayette. This was the first PDA used on a state project in Indiana.

## BANGLADESH

*Mr. Nurul Amin* of **Foundation Consultants, Inc.**, Bangladesh, was concerned about pile integrity at a major drilled piling project. He phoned **PDI** and within 3 weeks came to Cleveland, received training and equipment.

## CHINA

*Mr. Shen Ren-Gong* of the **Nanjing Hydraulics Research Institute** completes his training year at **GRL** in Cleveland. He was able to help by translation and demonstration with several visitors and trainees from the PRC. We wish him well as he returns to PRC to begin his PDA testing.

In January **GRL** received a delegation from the Ministry of Agriculture, Beijing. Recently, **Messrs. Fang and Sun, First Navigational Bureau**, Tianjing and **Frank Ko** and **Johnny Ling** of **PDI** representative **Earth Technologies**, Hong Kong visited.

## GERMANY

The Technische Akademie in Esslingen, conducted a Continued Education Course on Pile Installation and Testing. **DMT's D. Schau** and **Dr. O. Klingmueller** of **Bilfinger & Berger** lectured on PDA and P.I.T. testing of driven and bored piles.

## INDONESIA

Braving a temperature drop of over 100°F, **Dr. Zacheus Indrawan** of **PT Multi Ageotescon** in Jakarta arrived in December 1989 for field and laboratory training in PDA and P.I.T. testing.

## THAILAND

*Krai Tungsanga*, **Pyramid Development International Corporation**, Bangkok, Thailand, a former foundation and PDA engineer with the Ohio Dept. of Transportation, was at least mentally ready for our winter when he joined us for one week of retraining with PDA and CAPWAPC.

## JAPAN

*Garland Likins* traveled to Japan where he taught dynamic pile analysis to **Messrs. Oki and Mizutani** of **Kawasaki Steel**. The training involved the analysis of the first Japanese dynamic pile tests.

### 1990 EVENTS WITH GRL-PDI PARTICIPATION

- April 10-12 Geotechnical Engineering in Today's Environment, Hershey Lodge and Convention Center, Hershey, PA.
- April 10-12 Geotechnical Continuing Education Seminar, Nashville, TN. Organized by the US Army Corps of Engineers.
- Apr. 19, 20 Geotechnical & Materials Engineers Council Seminar, Airport Radisson, Orlando, FL. Please contact GMEC, P.O. Box 750, Tallahassee, FL 32302, 904-224-7121
- June 14, 15 PDA Users Day Gothenburg, Sweden
- June 28, 29 PDA Users Day Cleveland, OH
- Oct. 18, 19 PDA Users Day Hong Kong
- Oct. 10-12 DFI Annual Members' Seminar, Seattle, WA
- Oct. 10-12 43rd Canadian Geotechnical Conference, Prediction and Performance in Geotechnique, Sainte-Foy, Province of Quebec

## Goble Rausche Likins and Associates, Inc.

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