



# GRL NEWSLETTER

Information Gathered by the Engineers of  
Goble Rausche Likins and Associates, Inc.

No. 22

DECEMBER 1993



## AS THE YEAR ENDS

Thanks to you, our clients, friends and newsletter readers, for a most eventful 1993. During the past year, we have been in contact with you through a record number of seminars and workshops (approximately 25), disseminating the know-how of our dynamic testing technology. We also performed a great number of individual training programs and in-house seminars. Last but not least, all GRL engineers continuously provided support via fax and phone to PDA®, P.I.T.™, GRLWEAP™ and CAPWAP® users.

We would like to thank you for the trust that you have placed in us during the past year and hope that you will have a peaceful, healthy and successful New Year. We also look forward to further, mutually beneficial cooperation.



## GRL RECEIVES GRANT

The Federal Highway Administration awarded GRL a research project entitled "Design and Construction of Pile Foundations". Principal investigator *Pat Hannigan* (GRL Chicago) and co-principal investigator *Dr. George Goble* will update the FHWA Manual (bearing the same title as the study) and then conduct an ambitious workshop series. The manual includes pile design guides for both axial and lateral loads, including geotechnical exploration and construction control. Expert advisors in the study are: Prof. *Joe Caliendo*, Utah State University; Dr. *C. Michael Holloway*, InSituTech; *Bob Lucas*, Ground Engineering Consultants; Prof. *Frank Townsend*, University of Florida.

## NEWS FROM PILE DYNAMICS, INC. (PDI)

The Pile Driving Analyzer® (PDA) standard hardware has recently been upgraded to the model PAK with a 486SLC processor, 8 channels of special purpose signal conditioning, VGA graphics and an environmentally rugged membrane keyboard, all housed in a single "briefcase" package. New units are now equipped with 8 MB RAM and a 240-MB hard disk. The PDA/PAK can be ordered with either external or built-in floppy drive.

PDI also developed an easy to use program called "PITPLOT". The program reads data files created by the P.I.T. Collector. It reprocesses the data and plots final records on HP plotters or laser printers.

## PDA USERS DAYS - PAST

PDA Users Days are regularly held for the continuing support, education and benefit of PDA Users worldwide and for sharing of experiences. GRL/PDI has just completed a series of Far East Users Days. After presenting basic lectures on dynamic pile testing to civil engineers in Miri and Kuching, Sarawak, East Malaysia (cooperating with *Richard Yu* of Soil Dynamics Ltd., Malaysia), *Garland Likins* (PDI) met *Pat Hannigan* (GRL Chicago) in Singapore where they together presented in-depth PDA Users Days lectures and workshops. The event was organized by Messrs. *Bertil Nord* and *K.L. Cheong* of PDI representative ABV Technology. *Garland Likins* then traveled to Hangchow, People's Republic of China, and conducted PDA Users Days at Zhejiang University in cooperation with Mr. *Frank Ko* of PDI representative Earth Products China Ltd. *Pat Hannigan* then demonstrated P.I.T. in Japan with PDI representative *Charles Heidengren*.



*Garland Likins* (left) lectures and *Professor Li* interprets under a banner reading "China-American PDA 93 Users and Pile Dynamic Technical Seminar"

## PDA USERS DAYS - FUTURE

Orlando, FL has been chosen as the site of the 1994 PDA Users Days. First, a **general seminar for all persons interested** in pile dynamic methods has been scheduled for February 17, 1994. The actual Users Days (February 18 and 19) will be of interest to operators of software and equipment made by both GRL and PDI. However, those contracting or specifying pile testing might want to attend. For registration information, contact GRL Cleveland (Phone: 216-831-6131, Fax: 216-831-0916).

## GRLWEAP NEWS

At this time the 1993 GRLWEAP update is being shipped to clients with current support. Many obvious changes have been made, such as pull-down menus, the combining of the input, analysis and output into one single program; also the file handling capability has been greatly enhanced. Equally important are extensive technical changes to the diesel hammer analysis and major additions to hammer and driving system parameter files.

## CALENDAR OF EVENTS WITH GRL PARTICIPATION 1994

### U.S.A.

- Jan 94 Washington, D.C., **Transportation Research Board (TRB) Annual Meeting.**
- Feb 17 Orlando, FL, **Introduction to Wave Equation Analysis and Dynamic Testing**, organized by GRL Cleveland and Orlando (Ph: 216-831-6131, Fax: 216-831-0916).
- Feb 18-19 Orlando, FL, **PDA Users Days. ALL PDA AND CAPWAP USERS ARE CORDIALLY INVITED.** Organized and staffed by GRL and PDI. (Ph: 216-831-6131, Fax: 216-831-0916 Cleveland).
- Feb 24-25 Boulder, CO, **Seminar on Integration of Dynamic Testing into Pile Driving Practice and Workshop on Wave Equation Analysis**, organized by Jay Berger, GRL Colorado (Ph: 303-494-0702, Fax: 303-494-5027).
- Mar 14-18 Cocoa Beach, FL, **18th Annual Deep Foundations Short Course**, contact Dr. Norbert Schmidt (Fax: 904-392-6950).
- Dec 6-8 Orlando, FL, **FHWA International Conference on Design and Construction of Deep Foundations**, All American Soils, Inc. (Ph: 714-547-7178, Fax: 714-668-1050).
- ### INTERNATIONAL
- Jan 5-10 New Delhi, India, **XIII International Conference on Soil Mechanics and Foundation Engineering.**
- Jan 94 Cairo University, Egypt, **Second Geotechnical Engineering Conference**, contact Dr. Magda Abdel-Rahman (Fax: 20 272 3486).
- Jun 13-15 Burges, Belgium, **Fifth International Conference and Exhibition on Piling and Deep Foundation**, organized by DFI (Fax: 201-729-0732).
- May 27 British Columbia, Canada, **Vancouver Geotechnical Society 8th Annual One-Day Symposium on Deep Foundations**, contact Alex Sy, Klohn-Crippen Consultants Ltd. (Ph: 604-273-0311, Fax: 604-279-4300)

### GRUELING SCHEDULES

There was no family life for *Dr. George Goble* last fall (not counting the family of pile drivers and pile testers) when he divided his time among the DFI Conferences in California (on the results of the CALTRANS pile test series) and Pittsburgh, PA (where he acted as chairman of a very successful conference program), and four GRL seminars and workshops. Two of the latter were organized by *Bert Miner* (GRL Seattle) in Portland, OR and Seattle, WA with *Alex Sy*, Klohn-Crippen Cons. Ltd.; one was coordinated by *Jay Berger* (GRL Colorado) in New Orleans, to include Prof. *Roy Olson*, Univ. of Texas. The fourth was jointly arranged by Prof. *Bengt Fellenius* and *Mohamad Hussein* (GRL Florida).

### PHILIPPINES

GRL Florida engineers *Al Stegkamper* and *Mark Johnson* showed dynamic field testing technology to Dr. *Benjamin Buensuceso, Jr.* and General Manager, *Rafael "Lito" Consunji* of the Freyssi Corporation, Philippines. *Mohamad Hussein* added background information and software applications in the office. Freyssi is a leading prestressing and posttensioning specialist in the Philippines and determined to distinguish themselves with the most advanced equipment.

### LI VISITS PDI

Prof. *Li De-Qing* from CRIBC (Central Research Institute of Building and Construction) is now in Cleveland for technical exchange on behalf of the PDI clients in China. His trip is sponsored by Mr. *Frank Ko* of Earth Products China Ltd., a PDI representative. In addition to obtaining an in depth knowledge of PDI products and methods, Prof. Li will make translations into Chinese to facilitate usage in China.

### PANAMA

*Steve Abe* (GRL Cleveland), recently completed two weeks of PDA, P.I.T. and CAPWAP training for Productos de Concreto, S.A. (PDC SA) in Panama City. He was assisted technically and with translations by *Ciro Soto*, Ph.D. candidate at Michigan State University, and formerly with INTEVEP, Venezuela, a PDA user for many years. Engineer, *Carlos E. Bieberach* of PDC SA aims at improving the quality assurance of pile foundations by incorporating PDA and P.I.T. technology into a pile design and construction package.

### SINGAPORE, THAILAND

*C. Michael Morgano* (GRL Cleveland) and *Bert Miner* (GRL Seattle) both took a trip to Singapore and/or Bangkok to support our clients TL Geotechnics and Fugro McClelland with CAPWAP analyses of driven piles and large diameter drilled shafts.

### UNITED KINGDOM

PDA user *Mike Kightley* and colleagues of Testing and Analysis, Derby, demonstrated P.I.T. and related software at a successful seminar on Sonic Integrity Testing that had been organized by Prof. *John Little*, University of Paisley and the Scottish Geotechnical Group of the Institute of Civil Engineers. Stent/Hercules, Scotland, furnished three piles with cross sectional variations allowing attendees to measure and interpret.

### NORTH AMERICA

Prof. *Bengt Fellenius*, University of Ottawa and ANNA GeoDynamics Inc. received the 1993 Distinguished Service Award from the Deep Foundations Institute at its Annual Meeting in Pittsburgh, PA. Congratulations!

The Vancouver Geotechnical Society plans a one-day symposium on deep foundations on May 27, 1994. GRL's *Dr. Frank Rausche* will be a keynote speaker; a call for papers has been issued. *Alex Sy*, Klohn-Crippen Consultants Ltd., is the organizer (for phone and fax number; see Calendar of Events).

*Mohamad Hussein* (GRL Florida) was recently elected to three national technical committees: (1) ASCE Geotechnical Engineering Division Committee on Deep Foundations, (2) TRB Committee on Foundations of Bridges and Other Structures (A2K03), and (3) DFI Driven Pile Committee.

*Shiner Mosely and Associates, Inc.*, Corpus Christi, TX asked *Jay Berger* (GRL Colorado) for a two-day in-house seminar. Upon its conclusion, *Doug Hearn*, Senior Project Manager sent a letter of appreciation to GRL concluding "... the time spent with Jay over these two days was very productive and informative and (we) look forward to working with him in the future".

At the ASCE Fall Convention in Dallas, TX, *Garland Likins* (PDI) reported on FHWA sponsored research results obtained with both PDA and P.I.T. on drilled shafts at Texas A&M University.

**Please note: As of January 1 the area code for our Philadelphia office will change to 610-459-0278 for phone and to 610-459-0279 for fax.**

## GRL

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