



GRL NEWSLETTER No. 14

INFORMATION GATHERED BY THE ENGINEERS OF
GOBLE RAUSCHE LIKINS AND ASSOCIATES, INC. AUGUST 1990

1990 PDA USERS DAYS HELD IN EUROPE, USA

On June 14, 15 and 28, 29 more than 80 PDA users converged in Gothenburg, Sweden and in Cleveland, Ohio for lectures on new developments, exchange of ideas and presentation of case studies. **Pile Dynamics Europe's** managing director Carl-John Gravare organized the European event and invited the attendees to a memorable evening at his house where wife Britt-Marie welcomed the hard working pile testers and treated them to a tasty dinner. Swedish drinking songs assured the continuation of a tradition. The entertainment in Cleveland included a dinner party at the Crawford Auto Museum. Live musical entertainment and the vintage cars surrounding the dinner tables made for a light atmosphere after a hard day.

GRL's new CAPWAPC, GRLWEAP and P.I.T. software and PDI's new GCPC PDA and Saximeter hardware occupied a major portion of the lecture and workshop time (see **GRL Newsletter** No. 13). However, users' contributions stimulated the most lively discussions. Noteworthy titles included:

"**Static Testing**", (Steven Abe, GRL Cleveland) discussed measurement problems with static tests and therefore subsequent correlation problems with the dynamic testing.

"**Capacity of Refusal Piles**", (Luc Bériault, ANNA Geodynamics, Ottawa) showed the advantage of an inexpensive drop hammer in capacity pile testing because of its practically unlimited energy.

"**Drilled Shaft Dynamic Test Results in California**", (Jay Berger, GRL Colorado) reported on the FHWA and ADSC sponsored research (see **GRL Newsletter** No. 13).

"**Static vs CAPWAP**", (Robert Edde, Anna Geodynamics, Ottawa) demonstrated correlation cases.

"**Static and Dynamic Bearing Capacity on Small Piles**", (Hakan Ericksson, Hercules Grundläggning, Stockholm) were investigated as part of a dissertation work.

"**The Unified Pile Design Method**", (Bengt Fellenius, Anna Geodynamics, Ottawa) added some static design know-how to the dynamic happening.

"**Thick Bitumen Coating Effects**", (Pat Hannigan, STS Consultants, Chicago) indicated wave speed changes of steel piles due to bitumen coating against negative friction effects.

"**Dynamic Uplift Tests**", (D. Michael Holloway, InsituTech, Oakland) were conducted when an impact extractor was used to pull a pile. PDI supplied appropriate special instrumentation.

"**High Case Damping Factors in Sand**", (Antonio Mendez, PDPSA, Mexico City) were noted on a Bridge Construction Site in Topolobampo, Mexico.

"**Monotube Pile Testing**", (Cory Rice, Braun Engineering and Testing, Minneapolis) indicated good correlations.

"**P.I.T. Results**", (Wondem Teferra, GRL Philadelphia) were obtained and interpreted under difficult circumstances.

"**Bitumen Coated Piles**", (John Wagstaff, John Wagstaff Construction, and Julian Seidel, PileTest, Brisbane) experienced damaging driving stresses. Uncoated piles at the same site drove totally different.



P.I.T. Workshop: Listening to GRL's Jay Berger are Katie Helm, Insitutech, at right: Jerry DiMaggio, FHWA, and Nariman Abar, North Carolina DOT. (The tent was later blown away by a thunderstorm).

Anyone who would like to know more about one of these titles, please write to us for further information.

NEXT EVENT: 1990 PDA USERS DAY- -FAR EAST

The Far-East Users Day will be held at three different locations:

October 18, 19	Hong Kong at the Excelsior Hotel
October 22-24	Shanghai
October 26	Guangzhou

The topics covered will be similar or the same as in the US and European events. However, we expect that substantially different experiences and case studies will be presented by the attendance.

NEWS FROM PILE DYNAMICS, INC. (PDI)

PDI introduced it to attendants of the Users Days: **The new Memory Saximeter!** The new unit does not include a printer but instead has a huge memory. The records of a whole day or week (stroke for open end diesels, blows per minute, blow count, penetration) are recorded in this memory. At the users convenience, the data is either directly output to a printer or connected to a PC (maybe through modem and phone) and plotted quickly and neatly. The necessary software also has been prepared for the PC output.

GRL Personnel News

John Wargelin has joined our firms in June. John now handles client contacts, PDI sales, shipping, quotations and other related matter.

C. Michael Morgano interrupted his graduate studies in geotechnical engineering at the University of Akron during the summer months to help GRL with testing and analysis work. GRL's summer would have been much hotter without Michael's help.

BEAVER VALLEY, PA

The Pennsylvania Turnpike Commission is building several bridges for the State Route 60 expansion near the Pennsylvania Turnpike. GRL has performed measurements at several sites. The engineering firm in charge of construction supervision is the **Dick Corporation**. Their prime concern is to provide a damage-free and reliable seating of H-piles into rock of varying hardness. The spec's therefore call for a hammer which produces pile stresses between 22 and 28 ksi (150 to 190 MPa). On one such job, the first hammer only reached 18 ksi, the second one exceeded 36 ksi (yield) according to the GCPC PDA. Thanks to GRLWEAP, the trial-and-error approach was replaced by an on-site analysis and a Vulcan No. 1 was selected which -confirmed by PDA-produced stresses between 23 and 27 ksi when rock was reached.

READER RESPONSE CARD

Please return the enclosed card if you want to receive the GRL Newsletter in the future.

1990 EVENTS WITH GRL-PDI PARTICIPATION

- Oct. 4-5 Symposium on the Dynamic Testing of Piles, Conducted at the Institut fuer Grundbau, University of Braunschweig, W-Germany
- 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
- Oct. 18-26 PDA Users Day, Hong Kong, Shanghai, Guangzhou
- Jan. 13-17 Transportation Research Board Meeting, Washington, D.C., Specialty Session on Pile Integrity Testing
- Apr. 7-12 DFI 4-th Internat'l Conf. on Piling and Deep Foundations, Stresa, Italy

THE CARRIBEAN

GRL Florida Manager *Mohamad Hussein* expanded his area of work to the Virgin Islands. Retained by Misener Marine, he conducted pile tests and analyses for a 500 ft long dock in St. Thomas.

Another project involved the construction of two seaports in Dominica, West Indies.

SPT SEMINAR PLANNED

George Goble is tentatively planning an informal meeting in Boulder, CO in October or November 1990 to discuss results of research that has been underway at the University of Colorado on the Standard Penetration Test. Those interested in attending or would like more information should write to:

Professor George G. Goble
University of Colorado at Boulder
Civil, Environmental, Architectural Eng.
Campus Box 428 Boulder, CO 80309-0428

GRLWEAP NEWS

The 1990 GRLWEAP update has been shipped to all users with active support. Probably, our users did not yet have time to try or use the new program features. Feedback, therefore, has been sparse. However, we have been alerted to an occasional numerical problem: For pile segment lengths smaller than the usual 5 ft (1.5 m), or for certain hammer models, the default IPHI = 160 value is inadequate. **We therefore urge our users to run their analyses always with at least IPHI = 200 or better 250.** (IPHI is a factor in percent; it divides the critical time increment to yield the computational time increment.) We will address this problem in the near future in direct correspondence with our users.

DOWN-UNDER

Jon Cannon reports: "**Maunsell**, Australia has just completed testing on a 1.8 km (1.1 mile) jetty in East Kalimantan, Indonesia for Kaltim Prima Coal. This job involved about 500 No. 762 and 914 mm (30 and 36") steel tube piles up to 65 m (200 ft) long. Dynamic testing was conducted after a static test program resulted in 5 failures out of 8 tests and which raised more questions than it answered. The dynamic test program was very successful and explained the reason for the static test failures. The client and designer/contractor were very impressed with the system."

P.I.T. NEWS

The Pile Integrity Tester (P.I.T.) thus far includes several devices, e.g., signal conditioning, a portable PC with expansion slot for analog-to-digital conversion and a plotter or printer.

Although this low cost approach is still feasible and convenient for many users, a fully battery powered device which can be carried to the test pile would often be desirable for single operator testing. Such a device is the P.I.T.-SC (SC for Self Contained) which has now been completed. First units have been shipped.

P.I.T.-SC supports the P.I.T.-FV software, i.e., it allows for the measurement of acceleration and force and present the results both in the time and frequency domain.

ISRAEL

Mr. Fernando Katke, Head of the Pile Testing Department of **PAMCO Engineering Services, Ltd.**, Kfar Sirkin, Israel, visited GRL/PDI and received P.I.T.-FV training. Mr. Katke conducts integrity tests on piles with typically 1 to 1.5 m (3 to 5 ft) diameter and length up to 60 m (200ft). Currently Katke uses the standard PC P.I.T. system, however, a P.I.T.-SC has now been shipped.

WAVE EQUATION SEMINAR

Dick Nelson, Pile Equipment, Inc., Jacksonville, FL, in cooperation with GRL and the AGC (Association of General Contractors), plans to arrange a seminar, probably in South Carolina, in November. If you are interested in attending, please contact Dick at 800-367-9416 (Fax: 904-268-2332).

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