



GRL NEWSLETTER

No. 18

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

MAY 1992

PDA USERS DAYS HELD IN SINGAPORE AND NANJING

George Goble and *Garland Likins* spent two weeks of April in the Far East. Users Days were conducted in Singapore with about 25 attendees in cooperation with our representative ABV. A Users Days seminar was also presented in Nanjing, China to over 100 attendees in cooperation with Nanjing Hydraulic Research Institute and our representative Earth Products China. New equipment (see enclosed literature) was demonstrated, updated analysis methods presented, and experiences shared by all attendees to further the goals of making dynamic testing a more valuable tool for the engineering community. Following the Nanjing Users Days, *George Goble* attended the Soil Improvement and Deep Foundations Conference where he presented the keynote lecture. Dynamic pile testing seminars were also presented in Taipei, in Singapore at the Nanjing Institute of Technology, and in Bangkok for the Thailand Highway Department, Bangkok Transit Authority, and the Engineering Institute of Technology to a total of almost 400 engineers.

GRL PERSONNEL NEWS

During the past year, four engineers have joined the GRL team: *Mark Svinkin* has been working on the FHWA correlation study (see GRL Newsletter No. 17). *Dr. Svinkin* holds degrees in Mathematics and Structural Engineering from Kharkov State University and a Ph.D. in Technical Sciences from the Scientific-Research Institute of Bases and Underground Structures in Moscow. *Hasan Aboumatar* works both on the FHWA study and on his Ph.D. dissertation at the University of Colorado where he received his masters degree. *Hasan's* thesis subject is the dynamic analysis of pile end bearing using finite elements. *Gabriel Thendean* joined GRL in November 1991 and, after performing field tests at our Orlando office, now is involved in both routine testing and research. *Gabriel* obtained a Bachelor of Civil Engineering degree at the University of New South Wales in Sydney, Australia and a Masters of Science at Cornell University. During his work at Cornell he studied ground vibrations near a construction site. *Mark Johnson*, who received his Bachelor of Engineering degree in December 1991, at the University of Colorado in Boulder now works permanently at GRL's office in Orlando, Florida.

GRL AND PDI PARTNERS

GRL is pleased to announce *Wondem Teferra's* election to partner. *Wondem* graduated from Haile Selassie University, Ethiopia and received a Masters of Science degree in Civil Engineering from Case Western Reserve University. His thesis was entitled "Dynamic Studies of Steel Piles with High Driving Stress" and dealt with the analysis of H-piles driven to rock using PEBWAP, the Pile End Bearing Wave Analysis Program. Since then, *Wondem* has worked for Petro Dynamics of Lafayette, Louisiana primarily doing offshore pile monitoring and for GRL where he has been manager of the Philadelphia office since 1987.

David Peterman also was elected a partner of GRL and PDI. *David* graduated from the University of Akron with a degree in Electrical Engineering. Since joining PDI, *David* has been involved in development of products and now heads that activity. His involvement has been instrumental to new PDI hardware and supporting software.

20 YEARS PILE DYNAMICS, INC. (PDI)

PDI has reached another milestone. Following the successful research program at Case Western Reserve University begun in 1964 by *Professor George Goble*, Pile Dynamics was formed in 1972. This now marks PDI's 20th anniversary in serving clients worldwide. From our pioneering efforts, dynamic testing has become a routine design and quality assurance tool with over 2,500 project sites receiving tests by the Pile Driving Analyzer™ (PDA) each year, according to a recent survey of all PDA Users worldwide. ASTM 4945 and other worldwide standards recognize the value of this testing technique. PDI's success is based on a total commitment of its staff to quality instrumentation and continuous support, which not only includes seminars and Users Days, but also by daily faxing and phoning of advice to PDA and P.I.T. testers around the world.

NEWS FROM PDI

Following the blue Pile Driving Analyzer (PDA), Model GC and the digital version GCPC, PDI has developed the Model K (also called PAK), its eleventh generation PDA. The PAK offers a 386 processor in a very small briefcase size package. Powerful signal conditioning is built in for up to 8 different types of sensors including piezoresistive accelerometers for steel to steel impact hammers or SPT soil samplers. A descriptive brochure is enclosed.

PDI also announces its new Pile Integrity Tester™ (P.I.T.), a very lightweight yet powerful data collector/processor with 16 bit resolution. This state-of-the-art instrument is also further described in an enclosed brochure. Both PDA and P.I.T. have had excellent reviews following their recent product release.

GEORGE GOBLE RETIRES FROM UNIVERSITY OF COLORADO

Professor George Goble will be taking an early retirement from the University of Colorado effective in May. While he plans to continue to do some graduate student supervision at the University of Colorado, he expects to spend more time with GRL, PDI and other piling industry activities. He will also be working in the bridge testing area with Bridge Diagnostics, Inc., a new firm located in Boulder, Colorado. A retirement colloquium has been held by the Civil Engineering Department of the University of Colorado on May 9.

1992 CALENDAR OF EVENTS
PLEASE NOTE OUR 1992 PDA USERS DAYS ANNOUNCEMENTS

- Aug 12-13 **First Fair on Dynamics in Civil Engineering**, Instituto de Pesquisas Tecnológicas do Estado de São Paulo, Brazil; Jorge Beim (55) 21-433-1692.
- Aug 27 **Wave Equation Seminar and Workshop**, Cleveland, USA; 216-831-6131.
- Aug 28-29 **PDA Users Days**, Cleveland, USA. See box, this page.
- Sep 21-24 **Fourth International Conference on Application of Stress Wave Theory to Piles**; The Hague; Prof. F. Barends (31) 70-391-9890, fax (31) 70-391-9840.
- Sep 25 **PDA Users Day**, Amsterdam; Pile Dynamics, Cleveland, USA; 216-831-6131. See box, this page.
- Nov 4-6 **Deep Foundation Practice incorporating PileTalk International '92**, Hotel New Otani, Singapore.
- Jan 1994 **XIII International Conference on Soil Mechanics and Foundation Engineering**

GRLWEAP NEWS

Rick Henry, President of MKT Manufacturing, Inc., has requested that WEAP Users immediately receive an updated hammer data file. Of particular concern have been excessive compression ratios of the MKT DE 33/30/20 and DE 70/50B models. We urge those who will not be automatically updated during May to contact GRL for this information.

Pat Hannigan of STS, Chicago alerted GRL on a potential misinterpretation of the "Driving Time" printed by GRLWEAP at the end of a driveability analysis. This driving time is reasonable if (a) high blow counts or refusal do not occur within the analyzed depth and (b) if "blows per minute" were correctly printed. For diesels, "blows/min" are usually realistic. For other hammers the driving time has to be prorated if the printed 60 or 120 blows/min is incorrect.

Beth Richardson reports that GRLWEAP is now actively used in at least 24 countries. All GRLWEAP users were contacted during April 1992 and new update contracts were offered.

We gratefully acknowledge the fax of Ian Simpson of John Holland, Melbourne, Australia. He told us "... how well your software and rapid response to queries is appreciated ... As a contractor in the heavy civil and marine fields (among others), we find GRLWEAP gives us much greater confidence in selecting hammers and allows a much more wide-ranging check on options."

ED MOSS LEAVES MONOTUBE

Last December, George Goble and Frank Rausche attended a party honoring Ed Moss retirement from the Monotube Company. Ed has been a fixture in the deep foundation industry and will surely be missed by all.

RAY GROVER RETIRES

Our very best wishes also go to Rav Grover following his retirement from Burgess & Niple. Ray was foundation engineer for the Ohio Department of Transportation during our active research years at Case Western Reserve University and contributed many ideas and much encouragement.

PDE AT PILING EUROPE

On April 7-9, Carl-John Gravare and Frank Rausche of Pile Dynamics Europe exhibited the PAK, P.I.T.-Collector and Angle Analyzer at Piling Europe. Nearly 200 conference participants viewed the display with great interest. A paper entitled "The Effect of Overburden on Pile Capacity in a Calcareous Marl" authored by Billy Camp, S&ME, Charleston, S.C., and Mohamad Hussein, GRL Florida was presented.

GRL IN SINGAPORE, CHINA

In January, C. Michael Morgano's travels included a 2 week trip to the Far East which encompassed CAPWAP training with T.L. Geotechnics of Singapore and a lecture at the Building Research and Design Institute in Guangzhou, China. The lectures were given in cooperation with our Far East representative, Frank Ko of Earth Products.

SEMINAR BOULDER, COLORADO

Twenty-nine eager learners found their way to Boulder, Colorado for a seminar on the Integration of Dynamic Testing into Pile Driving Practice and a GRLWEAP workshop. Professor George Goble and GRL Colorado manager Jay Berger hosted the two-day seminar and workshop. The attendees were a broad cross-section of deep foundation professionals, geotechnical and structural engineers, foundation contractors, and geotechnical academicians. Professor Bengt Fellenius provided challenging case studies that helped bridge the gap between theory and practice.

BRAZIL WRITES CODE

Jorge Beim, PDI Engenharia informs us that dynamic testing is being included in the Brazilian Foundation Code.

GRL HOLDS ENGINEERS DAY

On February 15, GRL's and PDI's engineers from five offices gathered in Cleveland for in-house continuing education. Each participant contributed with a presentation, e.g., on signal conditioning, data processing, time and frequency analysis, software development and case histories.

PYRAMID TESTS DRILLED SHAFTS

Cob Tungsanga, Manager of Pyramid Development, Bangkok reports that he has tested drilled shafts for 10 steel bridges using a specially built, 15 ton steel ram. A 1,000 mm diameter, 38 m long pile settled 3 mm under 4 to 6 m drop heights indicating up to 865 tonnes capacity.

1992 PDA USERS DAYS CHANGED

The USA PDA Users Days will be held at the end of August. The program will include one day of general seminar and wave equation workshop. Anyone interested in dynamic testing and analysis of piles is welcome to attend. On August 28 and 29, the actual PDA Users Days follows primarily for the benefit of PDA, P.I.T. or CAPWAP users or their clients frequently involved with dynamic testing. Please contact GRL for further information. The European PDA Users Day will be held on September 25, the day following the International Conference on Stress Wave Theory in The Hague.

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