OREGON SECTION OF THE ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

May 2010

Volume 10, Number 9

The Official

OREGON SECTION AEG NEWSLETTER

The May (June) Meeting is 2010 Jahns Distinguished Lecturer, Paul Marinos-Ongoing Challenges in Engineering Geology for Tunneling in Difficult Ground

Meeting is June 1st !

May Meeting Details

Date: Tuesday June 1

Location: Ernesto's

8544 Southwest Apple Way

Portland/Beaverton, OR

6:00 pm Social

7:00 pm Dinner

8:00 pm Presentation

Dinner: Pasta and Salad

$20 Dinner ($5 Students)

Reservations: mwegner@cornforthconsultants.com with "AEG Reservation" in the subject line or 971-222-2047 by 4pm May 27th

There is a $2 surcharge for those who do not reserve by the deadline.

Other Meetings:

June 2*-(2pm)-Paul Marinos

June 2*-(5pm)-Paul Marinos

June 2*-(6pm)-Jason Hinkle

*Meeting at the PSU Geology Department
1721 SW Broadway, Portland, Cramer Hall

The growth of infrastructure needs has increased demands for the excavation of tunnels in poor ground or varying geological conditions. This development includes site investigation techniques, analytical design method (notably numerical), risk analysis, techniques of construction, and monitoring.

The assessment of ground for design has to be based on a sound understanding of the regional geological rules and the establishment of a geological model where data and conditions are translated into an engineering geology description. Examples of geological models and cases from both mountain and urban tunnels under complex or difficult geological conditions are presented. These include the base tunnels in the Alps in a variety of conditions at great depth, tunnels through heavily folded formations with shear zones and cataclasites, Metro works in heterogeneous and weak ground and the selection of the appropriate TBM, and the project for the Gibraltar strait tunnel.

Tunnel design requires knowledge on the quality of the material in which the tunnel will be constructed. Engineering design requires numbers and the lecture explores and discusses methods that can be used by Engineering Geologists to assess the geological factors that have an impact on the design. Since the attempt of Terzaghi (1946) to describe the characteristics of rock masses, a number of rock mass classifications have been developed and play an important role in tunnel design, providing input data on strength and deformation properties of the ground for numerical models. Together with the rock mass properties, the in situ stresses field has to be estimated or measured and this is one of the most difficult tasks.

Although the role of engineering geology has been extended into the area of defining the design parameters, the idealization process, in the form of numerical analysis, should be driven by sound geologic reasoning together with the engineering logic.

The understanding of real behavior is indeed absolutely necessary before any calculation is attempted. Thus, the engineering geological "I.D" of the geomaterial and the stress environment define this ground behavior such us:

• Brittle failure of strong massive rock under high stress level.

• Gravitational falling or sliding of blocks or wedges defined by intersecting structural features or "chimney" type failure, or ravelling in disintegrated and heavily broken and loose masses.

• Formation of a "plastic" zone by shear failure under high stress relative to the strength of the rock mass with deformation problems or even squeezing.

• Swelling, in case of appropriate mineralogical constitution.

Comments on the methods for design for each of those cases are discussed and the presentation concludes with a discussion on excavation methods in conventional tunneling construction with special attention to support devices in order to deal with squeezing ground. Examples from a number of tunnels from around the world illustrate the design and construction procedures discussed.

Related Talks Open to the AEG Community:

June 2nd @ 2pm- Paul Marinos - PSU Geology Department - Geology in dam engineering. An evolving contribution of Engineering Geology for safety and efficiency

June 2nd @ 5pm—Paul Marinos—PSU Geology Department - Rock mass characterization; a vehicle to translate Geology into the design of Engineering Structures

June 2nd @ 6pm—Jason Hinkle—PSU Geology Department—Woodson Debris Flow

"Keen observation is at least as necessary as penetrating analysis"

Karl Terzaghi

Bio: Dr. Paul Marinos

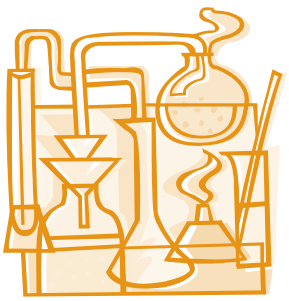
Dr Paul Marinos has been named the 2010 Jahns Distinguished Lecturer. The Association of Environmental & Engineering Geologists (AEG) and the Engineering Geology Division of the Geological Society of America (GSA) jointly established the Richard H. Jahns Distinguished Lectureship in 1988 to commemorate Jahns and to promote student awareness of engineering geology trough a series of lectures offered at various locations around the country. Richard H. Jahns (1915 – 1983) was an engineering geologist who had a diverse and distinguished career in academia, consulting and government.

Dr Paul Marinos received a Mining Engineering degree from the School of Mines of the National Technical University of Athens, Greece in 1966, a postgraduate degree in Applied Geology from the University of Grenoble, France, and his Doctorate in Engineering Geology from the same University in 1969. He worked for French and Greek design and construction companies until 1977 and then was elected as Professor at Democritus University in Northern Greece. Since 1988 Dr Marinos has been Professor of Engineering Geology in the School of Civil Engineering in the National Technical University of Athens and has served as head of the Geotechnical Section of the School for several years. From 2001 to 2004 and from 2006 to 2008 he was the Director of a Graduate Course in Tunneling and Underground Construction. He was a visiting Professor in the Geology Department of the University of Grenoble (1987) and of the School of Mines in Paris (2003).

Dr Marinos is a member of AEG and GSA and fellow of the Geological Society of London. He is a past President of the International Association of Engineering Geology and the Environment (IAEG), immediate past president of the Geological Society of Greece and honorary member of the International Association of Hydrogeologists (IAH). Dr Paul Marinos has received several awards, including the Hans Cloos medal of IAEG, and the Andre Dumont medal of the Geological Society of Belgium. He was selected for the presentation of named lectures, including the 6th Glossop Lecture in London (2002), the 19th Rocha Lecture in Lisbon (2002), the 33rd Cross Canada Lectures Tour (2005), and the Rock Mechanics annual Lecture in Madrid (2006).

Dr Marinos and his team conduct research on a variety of applications of geology to engineering, mainly rock mass characterization, weak rock properties and behavior, with special emphasis to tunnel design. His work also covers landslides, dam geology, and engineering in karstic terrain. His other significant interest is the protection of historic monuments and archeological sites. Dr Marinos has authored or co-authored over 300 papers in journals or major conference proceedings. He was a key or invited lecturer in more than 40 conferences or special events. He has given lectures to University Courses or Workshops, among them the Federal Technical University (EPFL) in Lausanne, Switzerland, the Polytecnico of Turin, Italy, the University of Durham, U.K., the University of Coimbra, Portugal, the University of Kobe, Japan, the Black Sea University Romania, the Aristotle University of Thessalonica, Greece, and the Griffiths University, Australia. He has edited proceedings published by international publishers. Dr Marinos is a member of the Editorial Board of a number of prominent journals as "Engineering Geology", "Bulletin of the International Association of Geology"," Landslides", "Environmental Geology", "Rock Mechanics" and from 2009 "Environmental and Engineering Geosciences".

Dr Paul Marinos has extensive industrial experience having served as consultant, independent reviewer and member of consulting boards or panel of experts on major civil engineering projects in Greece, France, India, Iran, Jordan, Morocco, Portugal, Saudi Arabia, South East Asia, Spain, Sweden, and Turkey.



Kleinfelder Welcomes Jeanne Niemer

Kleinfelder is pleased to announce that Jeanne Niemer, PE, GE has joined the firm's Portland office as the new Geotechnical Group Manager. In her new role, Ms. Niemer will be responsible for business development, project management and leadership of the geotechnical group. Ms. Niemer has 26 years of engineering and project management experience. Her areas of expertise include health care facilities, high-rise structures, commercial development and wind energy facilities, as well as slope stability and seismic design. Ms. Niemer earned her Bachelor and Master of Science degrees in Civil Engineering from the University of California, Berkeley. She is a licensed Professional Engineer in the states of California, Colorado, Idaho, Oregon, Utah, Washington and Wyoming, and is a licensed Geotechnical Engineer in Oregon.

Visit www.kleinfelder.com for more information

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Karl Terzaghi

And The Winners Are…!

The 8th annual Student Poster Night was hosted by the PSU student chapter of AEG on April 20, 2010. The night was a huge success with 18 posters and a record turnout.

The winners include:

Best Graduate Award

Kate Mickelson; Landslide Differential, Inventory, and Susceptibility Mapping using LIDAR for the Panther Creek Watershed in the Oregon Coast Range

Second Best Graduate Award

Serin Duplantis, Kathryn Barnard, Tracy Ryan; Engineering Geology Properties of Soils Developed on Landslides in Clackamas County, Oregon

Best Undergraduate Award

Erin Dunbar, Carley Francis, Keith V. Olson, Matt Poole, Jon Weatherford; Bedrock Mapping and Rock Fall Hazard Evaluation of Silver Falls State Park, Oregon

Kate, Erin, and Serin Strike-A-Pose!

AEG Marliave Award

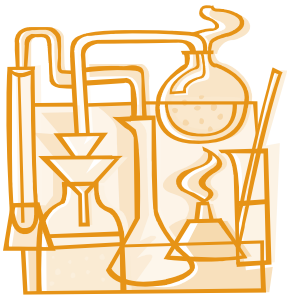
The Marliave Award of the AEG Foundation was established by the foundation (then the Engineering Geology Foundation) in 1993. AEG created its Marliave Fund to honor the memory, work, and contributions of Elmer C. Marliave (1910-1967) a founding member of the (California) Association of Engineering Geologists and a pioneering engineering geology consultant in water resources infrastructure design and construction.

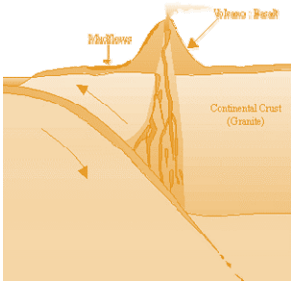
The award is presented for recognizing outstanding scholarship and professional dedication by a student in engineering geology.

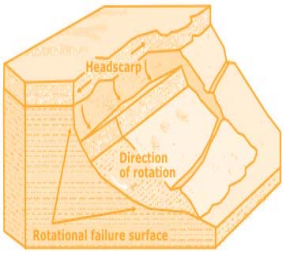
This year the Marliave Award went to PSU geology student Rachel Pirot.

"Keen observation is at least as necessary as penetrating analysis"

Karl Terzaghi







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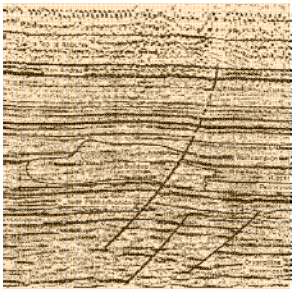

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The Oregon Section is also on the web at http://www.aegoregon.org
National AEG webpage: http://aegweb.org

The Oregon Section Newsletter

OREGON SECTION AEG NEWSLETTER is published monthly from September through May. Subscriptions are for members of AEG affiliated with the Oregon Section or other Sections, and other interested people who have requested and paid a local subscription fee of $10.00. E-mail subscriptions are free. News items are invited and should be sent to: Bill Burns, OR Section AEG Newsletter Editor, Oregon Department of Geology, 800 NE Oregon Street, Portland, OR 97232, e-mail: <bill.burns@dogami.state.or.us>, phone (971) 673-1555. Electronic media is preferred. Deadline for submittal is Friday three weeks before each meeting. Advertising: business card $100/yr; ¼ page $200/yr; ½ page $350/yr. Please notify Bill if you have a change to your email or mailing address.

The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology, and is greatly respected for its stewardship of the profession.