Serving Professionals in Engineering, Environmental, and Ground Water Geology

OREGON SECTION

NEWSLETTER

The Official Newsletter of the Oregon Section Association of Engineering Geologists

Feb. 1999 VOLUME 99, NUMBER 01

FEBRUARY MEETING:

Speaker: **Dr. Ken Stokoe II**
University of Texas

Title: ***"In Situ Characterization of Geotechnical Systems With Shear Waves"***

Date: **Thursday, February 18,1999**

Times:		
	6:00 PM	Social hour
	7:00 PM	Dinner
	8:00 PM	Talk

Where: **Doubletree Hotel Lloyd Center**
1000 NE Multnomah Portland
(503) 281-6111 (note new location)

Cost: **$20** (vegetarian dish available if requested at time of reservation)

Reservation: Please call Kathy Sugnet at WH Pacific (503)372-3555 by noon Tuesday, February 16th. Cancellations must be made by this date and time Please ***remember that ASCE must charge for all dinner reservations***. Thank You!

Abstract:

"IN SITU CHARACTERIZATION OF GEOTECHNICAL SYSTEMS WITH SHEAR WAVES"

Kenneth H. Stokoe, II
Cockrell Family Regents Professor No. 9
The University of Texas at Austin

In situ seismic testing has been used to characterize geotechnical systems for decades. Traditionally, compression waves have been employed to evaluate layering at geotechnical sites and to locate boundaries such as the soil-rock interface. In the last three decades, site investigations for problems in the areas of soil dynamics and geotechnical earthquake engineering have required measurements with shear waves. This requirement has occurred because shear wave measurements allow direct evaluation of the soil stiffness in shear, a key parameter under dynamic loads, and because these investigations generally involve measurements below the water table where compression waves are insensitive to the soil skeleton. Significant advances have occurred over the past two decades in the development of field methods for shear wave velocity measurements. These advances have made it possible to perform shear wave velocity measurements for non-dynamic, as well as, dynamic applications. These advances, which include the seismic CPT, Oyo suspension logger, and SASW method, are discussed. Example applications involving non-dynamic studies (e.g. evaluations of dynamic compaction, tunnel liners, dam foundations, solid waste landfills, offshore sites, and pavements) and dynamic studies (e.g. earthquake ground shaking and liquefaction) will be presented.

Message from the Chair:

I hope everyone enjoyed hearing Mavis Kent speak at last month's meeting. The chance to get to know Mavis was a really long awaited professional opportunity for me and I am sure many of you too. The talk was well attended and well received. We will be back at the Old Spaghetti Factory next month to hear Mei Mei Wang speak on earthquake damage and loss. I am leaving Mei Mei's paper on earthquake damage and loss in this month's newsletter to simulate interest in the March meeting. Please don't miss this talk Mei Mei is very active in both AEG and ASCE Geotech Group in Oregon. She is a ubiquitous earthquake speaker in Oregon. Her position with DOGAMI is "Director of Earthquake Programs. Her relevant experience, affiliations and publications are more that lengthy and impressive. She has been instrumental in organizing conferences and workshops in Oregon for numerous organizations over the past few years. Don't miss Mei Mei's talk.

I apologize if I mislead anyone on the location of this month's talk I was first told "The Red Lion" and the talk is actually at the Doubletree Hotel, Lloyds Center. I hope no one goes to the wrong location! This meeting is the joint meeting with ASCE (General and Geotechnical Group). The topic of using shear waves and in situ seismic testing for geotechnical applications should be very interesting. These joint meetings are always very good to attend with the general ASCE and the Geotechnical Engineering Technical Group of ASCE there are very interesting professional opportunities and the talks are always top notch. Be sure to attend this one!

I received a request from the Structural Engineering Committee of the Building Codes Division to comment on a proposal from Dr. S. Joseph Spigolon Ph.D., PE a geotechnical engineer in Coos Bay. This proposal was to modify Appendix Chapter 33 of the Uniform Building Code. The proposal was submitted to Oregon Building Codes Division, California Building Standards Commission, and the International Conference of Building Officials. The proposal appeared to be a change in the engineering geology report process for "engineered grading." The changes proposed would have made engineering geology reports part of the soils engineering report and only when the Geotechnical or Soils engineer deemed it necessary. The inspection portion of Appendix Chapter 33 was also changed to modify the role of engineering geology. I responded to this request in a short turn around time with a letter from AEG and a letter from Dr. Dave Rogers (a teacher of grading regulation) from University California Berkley. I will bring copies of the letters and a report to the March meeting. If you have interest in this subject and don't want to wait until March please feel free to call me at (503) 359-7448(W) or (503) 357-0238(H).

As I stated last month, Charlie Hammond and I will be off to Vicksburg, to represent Oregon at the national AEG mid-year board meeting in April. Please contact either of us with any section concern or questions that you want us to take to national with us at that time. This is your association and we are your representatives, help us do a good job.

Dave Michael, Oregon Section Chair 1999

VIEWPOINT ON EARTHQUAKE LOSSES

From Yumei Wang PE
Oregon Department of Geology
and Minerals Industries

Detailed results available in Special Paper 29 from Nature of the Northwest (503-872-2750)

A recent study has improved our level of understanding of the potential damage and loss in Oregon. Two case studies were evaluated: a M8.5 Cascadia earthquake and 500-yr return interval probabilistic ground motions, which includes quakes in the entire state. A M8.5 Cascadia earthquake will injure or kill about 7,700 persons, displace some 17,300 households, wreck (i.e., unsafe to occupy and officially "red tagged") over 30,000 buildings and cause over ten billion dollars of building damage. Most of the losses are from western Oregon, where the shaking and population are concentrated.

Damage and losses have also been estimated for the 500-yr return interval probabilistic ground motions for the entire state. The 500-yr model uses about the same earthquake design level as the building code, which is 10% in 50 years. About 80,000 "red tagged" buildings and over 30 billion dollars of building losses are estimated. The top 10 counties with the highest economic losses are Multnomah, Washington, Lane, Marion, Clackamas, Coos, Jackson, Benton, Linn and Klamath. The counties expected to have the highest impact (i.e., highest loss ratios, which are losses divided by exposure and highest losses) are Multnomah, Washington, Lane, Marion, Coos, Benton, Linn and Klamath. Damage and losses from recent worldwide earthquakes have devastated communities due to the vulnerable developments in those areas. The earthquakes of Kobe, Japan (1995, M6.9); Northridge, California (1994, M6.7); and Loma Prieta, California (1989, M7.1), caused about 100, 42, and 10 billion dollars, respectively, in direct economic losses. Indirect losses, such as from long term business interruption, propel the numbers even higher.

Oregon has numerous potential earthquake sources that can produce strong ground shaking and damage to communities. Inland faults, such as the Mount Angel fault that triggered the M5.6 Scott Mills ("Spring Break") quake in 1993 and the West Klamath Lake fault zone that, during the same year, triggered the two Klamath Falls main shocks of magnitudes 5.9 and 6.0, are examples of crustal earthquake sources. About 30 and 10 million dollars in damage were inflicted by the Scotts Mills and Klamath Falls earthquakes, respectively.

Knowing that future earthquakes are inevitable, I (as an engineer for a public agency) believe that quantifying the hazard in terms that the public can relate to is necessary to improve awareness. This will also stimulate mitigation and risk reduction action (e.g., strengthening facilities and developing effective emergency response plans), and guide policy and legislation. As with any study, however, these results have uncertainties. Case in point, this study does not incorporate unreinforced masonry structures (i.e., old brick-style buildings) or tsunami inundation, both which are significant hazards and would increase the losses. These loss projections, albeit too low, make a case that Oregon can indeed shake, rattle, and break.

Short news items:

New Metro publication now available: "Landslides in the Portland, Oregon Metropolitan area resulting from the storm of February 1996: inventory map, database, and evaluation" by Scott Burns, Bill Burns, David James and Jason Hinkle of PSU.

a) To order the map and the report/database, the cost is $20 and you can pick it up at the Data Resource Center at Metro, order it over the phone (797-1725), or order it off of the homepage on the internet: www.metro-region.org.

b) The electronic GIS database (very accurate) of all 705 landslides is almost ready. You can order it on CD for $20 from Metro (797-1742) or can get an FTP file downloaded from the internet by calling Steve Erickson for further details (797-1595).

Update on the Oregon AEG book: Scott just talked with the publisher from Star Publications in Belmont, California, and he has said that our book, ***Environmental, Groundwater and Engineering Geology: Applications from Oregon,*** has now sold half of the supply. We originally printed 500 and there are still 250 left. You can purchase it for $79.95 locally at the Nature of Oregon bookstore, 800 NE Oregon Street in Portland or at the Portland State Bookstore on the PSU campus in Portland on 6th Avenue across from the Cheerful Tortoise Pub. If you don't have a copy, you need to purchase one and have it in your library!

Membership Chair: Tim Blackwood is the new Membership chair. Tim works for Geo-Engineers and can be reached at (503) 603-6663 at work.

Pacific Northwest Mining and Metals Conference April 11-13, 1999 in Portland at the Oregon Convention Center (777 NE Martin Luther King Jr. Blvd). AEG will participate in this conference. We will host two sessions in environmental geology and one in aggregate mine reclamation. Our two groups combined with the GSA group of Portland State to put on a fine meeting in the spring two years ago at the same place call Dave Michael 359-7884 or David James252-3940 if you have interest and or questions.

AEG Homepage: check it out: http:// www.aegweb.org

Now available at Portland State: Graduate Certificates in Engineering Geology, Environmental Geology, Hydrogeology, and Hydrology. These certificates are between a BS and an MS degree. They take only 18 hours of graduate work in the subject matter and have no thesis with them. Most of the courses are in the evenings. Call Scott Burns for more information: 725-3389.

The Board of Geologist examiners has relocated as of January 4, 1999, the new information is as follows: **707 13th. St. SE, Suite 275 Salem, OR, 97301** Phone **(503) 566-2837**, Fax **(503) 362-6393** Please contact Administrative Assistant to the Board ***Susanna R. Knight*** for assistance with Board issues.

CALENDAR

March 18, 1999: AEG Section mtg. Yumei Wang PE "Viewpoint on Earthquake Losses"

April 15, 1999: AEG Section Mtg. "To be announced"

April 28-39, 1999: 34th Engineering Geology and Geotechnical Engineering Symposium, Utah State University, Logan, Utah

May 20, 1999: AEG Section Mtg. "To be announced"

June 6-9, 1999: Rock Mechanics for Industry Symposium, Vail, Colorado

Sept. 18-19, 1999: Friends of the Pleistocene trip in the Columbia Gorge

Sept. 26 – 29, 1999: *National Meeting in Salt Lake City M*ake plans to attend. We have had two great meetings in a row and this one will be number three!

NOTICE

The Oregon State Board
Of Geologist Examiners
has relocated

The new address:
707 13 th. Street SE, Suite 275
Salem, Oregon 97301

The new phone:
(503) 566-2837

The new Fax:
(503) 363-6393

" 1999 AEG - OFFICERS"

Position	Name	Telephone Daytime	Home	FAX
Chair Newsletter	Dave Michael "	359-7448	357-0238	357-4548
Chair-Elect	Charlie Hammond	452-1100	274-1437	452-1528
Secretary	Diane Murbach	538-8352	538-8352	538-8353
Treasurer	Monte Murbach	228-7718	538-8352	228-7781
Past Chair	Scott Burns	725-3389	692-9618	725-3025

MEMBERSHIP

*For application forms for Membership in the National AEG, call Tim Blackwood the membership chair at (503) 606-6663 (w). He will also have copies at the monthly meetings. Membership is on a calendar year basis. If you are a national member, they will collect our local dues of **$10**, which just covers our newsletter costs. If you would like to subscribe to the local newsletter (comes out 9 times a year) without being a national member, fill out the form below and mail to Monte Murbach. **Note: the following form is only for people and organizations that wish to subscribe to the Oregon AEG Newsletter without being members of the national AEG.***

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APPLICATION FOR LOCAL MEMBERSHIP IN OREGON SECTION, AEG:

NAME _____

AFFILIATION: _____

MAILING ADDRESS: _____

_____

TELEPHONE: _____

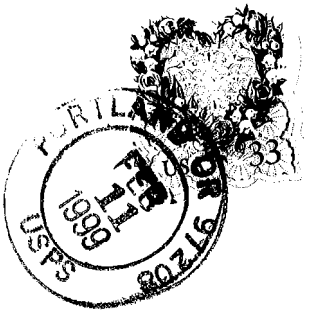
Mail form and $10 to Monte Murbach, David Newton & Associates, 1201 SW 12th. Ave. Suite 400, Portland, OR 97205.

ANNOUNCEMENT OF OUR NEXT EXCITING MEETINGS

February, 18, 1999

AEG

Dave Michael, Editor
Oregon Chapter, AEG
c/o ODF NWOA
801 Gales Creek Rd.
Forest Grove, OR 97116



FEB 13 1999

Charles M. Hammond
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