

Serving Professionals in Engineering, Environmental,
and Ground Water Geology

OREGON SECTION

NEWSLETTER

The Official Newsletter of the Oregon Section Association of Engineering Geologists

Sep. 1996

VOLUME 96, NUMBER 9

SEPTEMBER MEETING:

Topic: ***“Fluvial Geomorphology: Theory and Application”***

Speaker: **Frank Reckendorf**
Reckendorf and Associates, Salem

Date: **Thursday Sep. 19, 1996**

Time: 6:00 Attitude Adjustment
7:00 Dinner
8:00 Program

Location: ***McMenamins on Broadway***
1504 NE Broadway
Portland, Oregon
Corner of 15th & Broadway

menu:

Pizza Bread -

P.J.'s Famous (cheddar, mozzarella)

Cold Sandwiches -

Roast Beef
Pastrami & Swiss
Turkey & Swiss
Tuna

On sourdough roll, sliced sourdough, whole wheat, or rye (please specify).

Burgers -

Garden Burger
Hamburger
Cheeseburger
Bacon Cheeseburger
Captain Neon Burger (blue cheese dressing, bacon)
Dungeon Burger (mushrooms, Swiss)
Communication Breakdown Burger
(cheddar, grilled onions, peppers, and mushrooms).

Specials-

Black Bean Pasta (sour cream, salsa, cilantro, peanuts)
Chicken extravaganza (grilled chicken burger).
House Special (steak, cheddar, onions, peppers, mushrooms).

Cost:

\$10.00 for members, and \$5.00 for students

Reservations:

Please call Dave Michael 359 - 7448 by Tues Sep 17
(Leave message on "voice mail")

Background on speaker:

Frank has been one of our most steady members in the Oregon section of AEG over the years. For over 30 years he was an engineering geologist with the Soil Conservation Service based in Portland at the regional offices. He is now retired from SCS and has his own consulting business which has kept him very busy. He is one of the top experts in not only the northwest, but the United States in the application of geomorphic principles to the solution of engineering geology problems. He specializes in coastal and fluvial systems and is in demand nationally for putting on workshops on applied geomorphology. It is a real treat having Frank come and talk to us on his specialty

ABSTRACT

Stream systems are very important in the Pacific Northwest and have become the focus of extensive work in the past twenty years to maintain their ecology. Wetlands are now the focus of extensive research and a lot of the business of consultants. Restoration of stream systems to their "natural" state has been a buzzword in the consulting realm. Maintaining the habitat in streams for our salmon has been a priority. What to do with flooding is another problem. Geomorphologists have been asked to take part in many projects related to building of roads, dams, housing projects, building projects, etc. Using case histories that he has worked on Frank will be discussing ways that we can use fluvial geomorphic principles to do a good job in our work. We encourage all of you to come out to this excellent meeting!

Message from the Chair:

Welcome to a new year. I know that everyone has had a very busy summer working on projects that resulted from the storm of February. It seems that every business has lots of work and lots of good stories of different jobs. I am excited about our new year - it will be a busy one!

First, I would like to thank Sue D'Agnese for a job well done for the past two years as chair of the Oregon Section. There is a lot of work involved in running the section and she did a superb job! She still will be busy as she will be treasurer for our national meeting next year. I would also like to welcome Diane Murbach as our new treasurer. For years she was very active in the southern California section of AEG and other geology groups and we welcome her enthusiasm to the Oregon section! I move up to become chair, Dave Michael becomes chair elect and will continue to do the newsletter, and Charlie Hammond will be secretary and will be in charge of writing the national column for AEG news.

Please see the calendar that is later in the newsletter. We have dates for all of our meetings coming up and speakers arranged for the first four. Mark them on your calendars! The book on case histories is going well, but we only have about 20 of the 64 papers turned in to begin the review process. People have been so busy, but now is the time to deliver. The different chapter editors will be in touch with you soon if you have volunteered to write.

I would also like to thank Charlie Hammond for a super field trip up the Barney Reservoir in June. Weather, geology, food and drinks were super!

We invite you to our first meeting which is September 19th. We have changed sites as the McMenamins in Cedar Hills has been booked for every third Thursday of the month by another group. We are trying another McMenamins - this time on Broadway near the Lloyd Center. I know that you will enjoy Frank Reckendorf's presentation on fluvial geomorphology.

We look forward to a great year with nine great meetings, a super book on the case histories in engineering geology, and a wonderful national meeting next fall.

Scott Burns

Local News:

Lots has happened lately to our members. Congratulations to Charlie Hammond who got married at the end of August. We wish Charlie and his beautiful bride years of happiness and lots of landslides to keep Charlie busy. Their wedding was quite an affair - even had a golf tournament as part of the festivities! Congratulations also to Squier Associates - they will be celebrating their 25th anniversary of September 20th! Congratulations also to Geo-Tech Explorations as they celebrate their 15th anniversary on September 13th. John Mohney also received the "Regional Engineer of the Year Award" from the US Forest Service. John has been a geotechnical engineer with the USFS for 30 years. His son, Curran, has been our program chair for the past two years. Curran recently left ODOT and is working for Squier Associates. His dad's love of soil and rock mechanics has rubbed off onto Curran!

Calendar:

September 19:	Frank Reckendorf, "Fluvial Geomorphology: Theory & Application"
September 12:	5:30 - 6:30 PM - meeting of book editors at PSU in geology office
October 17:	Audrey Eldridge, DEQ and the State Board, "Should there be certification of hydrogeologists?"
November 21:	Doyle Wilson, PHD student, PSU, "Geology of the Tualatin Valley" (tentative)
December 21:	Scott Burns, PSU & Tom and Dorian Kuper, David Newton and Associates, "Landslides in Spain - they are not in the plain!"
January 16:	TBA
February	Date to be announced - combined meeting with ASCE
March 20:	TBA
April 17	TBA
May 15:	TBA

ASCE NEWS ITEMS:

1) ASCE seminar:

On November 6 and 7, ASCE Oregon Section Geotechnical Group will be hosting the "Ground Stabilization and Seismic Mitigation-- Theory and Practice" seminar. Call Wesley Spang at (503) 639-3400 for information."First Announcement attached"

2) ASCE Geotech Group:

Date: Wednesday, Oct. 2, 1996

Place : **Sweetbrier Inn**
7125 SW Nyberg Road
Tualatin, Oregon 97062
(503) 692-5800

Program: **"LIFELINE EARTHQUAKE ENGINEERING"**

Speaker: **PAUL GRANT**
Shannon & Wilson Inc., Seattle

Reservations: Call Phil Rice at Parsons Brinckerhoff's
Westside Light Rail Project Office
(503) 797-2335

Note from AEG Newsletter Editor:

As many of you know my beloved wife "Angie Michael" passed away in May from Malignant Melanoma. I would like to thank the officers and members of AEG for all of the kind thoughts, sympathy and support during my grief. I am glad to be back as "Newsletter Editor" and Chair Elect for 1996 - 1998. I am looking forward to continued stimulating interaction with you all. Thanks so much for caring.

Dave Michael

California Institute of Technology

Dept. of Civil Engineering, MC 104-44
1200 E. California Blvd.
Pasadena, CA 91125
FAX 818-568-2719

August 28, 1996

Joseph Brewer, Administrator
Building Codes Division
Dept. of Consumer and Business Services
1535 Edgewater NW
Salem, OR 97310

COPY

Dear Mr. Brewer:

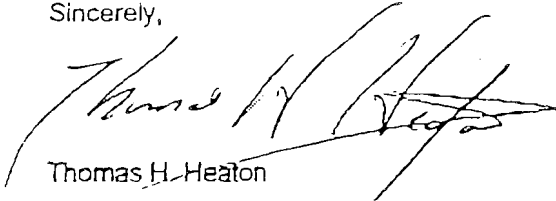
It has come to my attention that there is currently some discussion of the appropriate seismic zone level for coastal regions of Oregon. While western Oregon has not experienced strong earthquake shaking during the relatively brief period of written history (perhaps 200 years), it lies directly above the largest fault system of any of the 48 contiguous states. There is abundant scientific evidence that the oceanic plates are subducting beneath the North American continental plate at a rate of about $3\frac{1}{2}$ to $4\frac{1}{2}$ cm per year. Furthermore other subduction zones that have physical characteristics that are similar to the Cascadia subduction zone (southern Chile, Colombia, and southwestern Japan) have experienced infrequent large earthquakes. The 1960 M 9.5 earthquake in southern Chile occurred on a zone that has remarkable similarities to the Cascadia subduction zone. Furthermore, there is abundant evidence that prehistoric subduction earthquakes in Oregon have been preserved in the geologic record. In particular, there is clear evidence that coastal areas of southwestern Washington were submerged and inundated by a tsunami from a Cascadian earthquake in 1700 AD (tree ring dates). Professors Shimizaki (Univ. of Tokyo) and Dr. Satake (Geological Survey of Japan) concluded that this event is the most likely source of a tsunami that damaged coastal Japan in the same year. They concluded that the magnitude of a Cascadia earthquake would have been about 9 in order to explain the tsunami observed in Japan. Although there are still many unresolved questions about the nature of earthquakes in coastal Oregon, it is clear that it is a major active plate boundary and that the occurrence of a future giant subduction earthquake should not come as a surprise to the structural engineering community.

In my mind, there are two serious hazards to mitigate against. The first hazard is the eventuality of large tsunamis. Again there is abundant geologic evidence that large tsunamis have struck several times in the past several thousand years, and it seems inevitable that there will be more in the future. Zoning laws, education, and warning systems (with routine drills) can help to effectively mitigate tsunami hazards. The second hazard is ground shaking that occurs during large subduction earthquakes. Unfortunately, there are no recordings of the ground shaking from any earthquake larger than M 8.2, so we don't have a clear idea of what shaking buildings should be designed to withstand. However, it is clear that such earthquakes cause shaking to occur for a very long duration (up to 5 minutes). The intensity of the shaking is not well understood, but a number of records have been obtained from Japan, Mexico, and Chile for earthquakes as large as M 8.2. Peak ground velocities and accelerations in these cases have not exceeded those encountered in recent shallow crustal earthquakes (e.g. the Northridge earthquake). However, long-period waves from these large subduction earthquakes may be far larger than anything yet recorded by strong motion accelerometers. Therefore, I would urge you to consider requiring structures that are stiff and strong. That is, structures with short natural periods of vibration and that performed with little damage in the near-source region of the Northridge earthquake may also perform well during the minutes of shaking from a giant subduction earthquake. However, I consider the response of long-period structures to such earthquakes as highly questionable, given our current knowledge. Furthermore, structures that

are significantly damaged by seconds of moderately strong shaking, could be expected to suffer potential collapse if comparable levels of shaking persist for minutes.

So what should be done about the situation? You could do nothing and wait for further research to clarify the situation. The potential outcomes of doing nothing are: 1) the current code is adequate and you saved everyone some irritation and money, 2) the current code is inadequate, and once this is fully documented, many structures must be retrofitted, and 3) a giant earthquake occurs with the ensuing loss of function or life safety of many buildings. While outcome 1 would be nice, I don't know of any scientific basis for expecting the current code to be adequate in this case. With regard to outcome 2, our experience with retrofitting buildings in California is that the cost and irritation is high, and the effectiveness is limited, when compared with increasing strength and ductility in the initial design. In my opinion the simplest step is to upgrade coastal Oregon to zone 4. However, because of the special nature of potential earthquakes in this region, I would urge you to support further research into ground motions and appropriate building designs. If I were to invest in a building in this region, I would insist on strong shear walls that would at least meet the standards of zone 4.

Sincerely,



Thomas H. Heaton

Prof. of Engineering Seismology
cc: Dr. Donald Hull

This Letter was provide by Jim Bela for circulation to AEG Members.

Ground Stabilization and Seismic Mitigation

Nov. 6, 1996, 1:00 - 6:00

Nov. 7, 1996, 1:00 - 6:00

Oregon Building, Room 120C
800 NE Oregon St. (at 7th Ave., Lloyd District)
Portland, OR

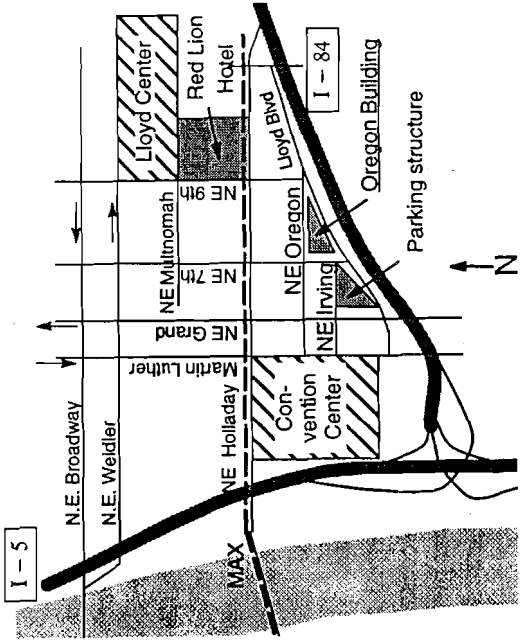
Registration Information:

1. Registration fee includes a proceedings binder, a list of attendees, and refreshments during afternoon breaks.
2. Meeting room is limited to 80 seats. Attendance is on a first registered, first served basis. Early registration is suggested.
3. Day-of-seminar registration will be accepted if space is available. An additional \$30 charge will apply to day-of-seminar registrations.
4. Cancellations received before Nov. 1 will be refunded, less \$10. If you are unable to attend, you may send another person in your place.
5. The meeting room is located near the 7th Ave. MAX stop. Parking will be available at the Metro garage at 7th and Irving for \$4 per day.
6. Overnight accommodations can be made at the nearby Red Lion Hotel/Lloyd Center, 1000 NE Multnomah. For reservations call (503) 249-3111.
7. Register by sending the form on the reverse side. For information contact:

Wesley Spang

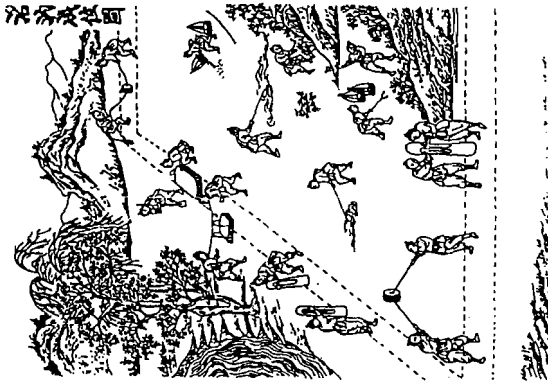
AGRA Earth & Environmental, Inc.

Phone: (503) 639-3400 Fax: (503) 620-7892



Seminar

— First Announcement —



Ground Stabilization and Seismic Mitigation Theory and Practice

Sponsored by:

Oregon Section Geotechnical Group,
American Society of Civil Engineers
and
Oregon Department of Geology and
Mineral Industries

Nov. 6 and 7, 1996
Afternoon Sessions



Oregon Section ASCE Geotechnical Group
American Society of Civil Engineers
Wesley Spang
AGRA Earth & Environmental, Inc.
1477 SW Tech Center Drive
Portland, OR 97223-8025
Address Correction Requested

Seminar Registration

Please refer to Registration Information on the reverse side.

Payment by check only, payable to: ASCE Geotechnical Group. Mail this registration form to:

Wesley Spang, ASCE Seminar
AGRA Earth & Environmental, Inc.
7477 SW Tech Center Drive
Portland, OR 97223-8025
(503) 639-3400

This individual registration is for (check one):

Two days ___ \$120 ___ \$90 (full-time student)
Nov. 6 only ___ \$90 ___ \$75 (full-time student)
Nov. 7 only ___ \$90 ___ \$75 (full-time student)

Please make copies of this form for multiple registrations.

Name _____
Company _____
Address _____
City _____
State _____ Zip Code _____
Phone _____ Fax _____



Ground Stabilization and Seismic Mitigation: Theory and Practice

The two-day engineering seminar will present the latest information on ground stabilization techniques and methods for reducing seismic liquefaction hazards. Speakers from industry and universities will present a mix of recent research and its applications to engineering problems. Numerous case histories will be presented on such techniques as wick drains, tangent piles, micropiles, stone columns, and stabilization pilings. The Wednesday series will concentrate on the control of settlements and ground movements for new and existing structures. Thursday's speakers will discuss seismic mitigation methods.

Wednesday, Nov. 6

12:30-1:00 Registration
1:00 Opening remarks

1:15 Robert Holtz, Univ. of Washington
Introduction to Ground Improvement Techniques and Prefabricated Vertical ("Wick") Drains: An overview of ground improvement techniques that are more or less common in geotechnical engineering practice, including a detailed discussion of wick drains. A description of wick drain development, their characteristics and specifications, design, typical costs, and installation and inspection of wick drain systems.

2:30 Donald Bruce, Nicholson Construction Company
Micropiles for Structural Support and In Situ Reinforcement: Classification, applications, and practice of small diameter cast in place grouted piles, which have been used throughout the world. Discussion of the recent State of Practice study of the FHWA.

3:30 Break

4:40 Derek Cornforth, Cornforth Consultants
Slope Stabilization using Piles: Case studies of successful pile stabilization projects and a discussion of design issues.

5:00 Phil Rice, Parsons Brinckerhoff, Inc.
Stabilization of East Tunnel Portal Excavation: Design for stabilizing the portal for twin tunnels of the Westside Light Rail Project in Portland. Modifications required due to differences in actual bedrock profiles from those used during initial design.

6:00 Closing remarks

Thursday, Nov. 7

12:30-1:00 Registration
1:00 Opening remarks

1:15 Raymond Seed, Univ. of California-Berkeley
Recent Advances in Evaluation and Mitigation of Liquefaction Hazard: Recent advances in evaluation liquefaction risk using in situ methods; recent lessons regarding post-triggering residual strength; overview of engineered mitigation of liquefaction hazards.

2:30 Ignacio Arango, Bechtel Corporation
Improving the Expected Performance of a Project on Reclaimed Ground: Analysis and selection of site remediation techniques to counter intolerable structural differential settlements under working loads and liquefaction/lateral spreading during seismic events. Current status of this major project and implementation in the field.

3:30 Break

4:00 Liam Finn, Univ. of British Columbia
Seismic Remediation with Piles at Sardis Dam, Mississippi: Design issues, design approach, construction, and lessons learned from a project to improve seismic safety and control deformation in critical areas of a dam. Considerations included estimating residual strength of clayey silt, costs and reliability of alternate methods, analysis of dam and estimating flow deformations.

5:00 Geoff Martin, Univ. of Southern California
Stone Columns in Silts: Background on vibro-replacement technology and the varied success at potentially liquefiable silty soil sites. Case history of an Oregon site with 50 ft of non-plastic silt.

6:00 Closing remarks

LOCAL NEWS Please provide input to the next national newsletter. Send to:
Dave Michael, 801 Gales Creek Road, Forest Grove, OR 97116, Telephone is 359-7448 (work).
You can also send a FAX to 357-4548 Internet: DAVE.L.MICHAEL@STATE.OR.US

Be sure to send me news from you or your firm!

MEMBERSHIP

For application forms for Membership in the National AEG, call Ed Stearns who is our membership chair at 661-0462 (h). He will also have copies at the monthly meetings. Membership is on a calendar year basis. Starting this year, 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 Charles Hammond. Note: the following form is only for people and organizations who wish to subscribe to the Oregon AEG Newsletter without being members of the national AEG.

APPLICATION FOR LOCAL MEMBERSHIP IN OREGON SECTION, AEG:

NAME _____

AFFILIATION: _____

MAILING ADDRESS: _____

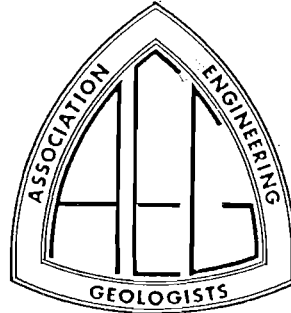
TELEPHONE: _____

Mail form and \$10 to Charles Hammond, Cornforth Consultants, Lincoln Building Suite 111, 10250 SW Greenburg Rd., Portland, OR 97223.

ANNOUNCEMENT OF OUR NEXT EXCITING MEETING

September 19, 1996

AEG



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



SEP - 9 1996

Hammond, Charles M.
Cornforth Associates
10250 SW Greenburg Rd #111
Portland, OR 97223-5460