

# Groundhog

---

## From the Chair

The ASCE Seattle Section Geotechnical Group has successfully started the 1999-2000 season. The new officers as well as the planning committee have been busy organizing this year's activities. In addition to the traditional dinner meetings and spring seminar, the planning committee has been busy continuing the community landslide education program and supporting research at local universities.

One of the main activities of the Geotech Group is to provide technical programs for the monthly dinner meetings. Typically, the programs presented at the dinner meetings include summaries of local case histories, current research, and presentations by recognized experts in geotechnical engineering. Programs for this year's dinner meetings cover topics such as the behavior of pile foundations in liquefiable soils, local landslide case histories, the 1999 Terzaghi Lecture, the 1999 Casagrande Lecture, the life of Karl Terzaghi, geotechnical work on a local Super-Fund site, and local geology.

Last year, the Geotech Group initiated a program with the City of Seattle to provide general guidance to homeowners in an effort to reduce the frequency of landslides on their properties. This program was carried out in three community meetings that were attended by about 220 people. This year, the Geotech Group plans to build on last year's success by extending the Landslide Community Education Program to other agencies as well as continuing the program in Seattle. The Geotech Group is looking for volunteers to present information to the public for this year's meetings. If you or someone you know is interested, please contact Rick Smith at Shannon & Wilson.

The Geotech Group is actively planning this year's annual spring seminar. Recently, the Geotech Group voted to have Geotechnical Instrumentation as this year's spring seminar

**Matt Smith, P.E. Chair**  
425/861-6000  
GeoEngineers, Inc.  
8410 154<sup>th</sup> Ave. N.E.  
Redmond, WA 98052  
msmith@geoengineers.com

**Rick Smith, P.E. Vice Chair**  
206/695-6747  
Shannon & Wilson, Inc.  
400 North 34<sup>th</sup> St., Suite 100  
P.O. Box 300303  
Seattle, WA 98103  
rs@shanwil.com

**Bob Metcalfe, P.E. Secretary**  
425/861-6000  
GeoEngineers, Inc.  
8410 154<sup>th</sup> Ave. N.E.  
Redmond, WA 98052  
rmetcalfe@geoengineers.com

topic. The spring seminar planning committee is currently developing the seminar program and identifying potential speakers. If you are interested in helping out with this year's spring seminar planning committee, please contact Bob Metcalfe at GeoEngineers. The date of the spring seminar has tentatively been set for April 1, 2000 (no foolin'!). The spring seminar is the Geotech Group's biggest and most time-consuming event, thus all help is greatly appreciated.

The Geotech Group is continuing its tradition of supporting local universities. For a number of years, we have made donations to the UW Geotechnical program and the Seattle University Civil Engineering program, and we plan to continue the tradition this year. In addition, we will provide financial support for two research projects in geotechnical engineering at the UW. The focus of these two research projects is on the capacity of small diameter pin piles and the bond strength of soil nails in local geologic units.

As you can see, the upcoming year holds much promise for the Geotech Group. In order to continue to provide quality programs and seminars as well as provide community outreach, it is important for a diverse group of individuals to be active in the planning committee. I encourage all of the Seattle area geotechnical firms/agencies to have a representative at the monthly Geotech Group planning committee meetings. Please contact me, or one of the other officers, and volunteer to help bring the Geotech Group into the new millennium.

**-- Matt Smith**

---

### Research at the University of Washington

The Geotechnical Group is sponsoring research at the University of Washington. Group-sponsored research for the 1999-2000 academic year includes pin-pile and soil nail capacity. Through these research projects, we are able to provide support for two graduate students. Kristina Haggard is researching the capacity and driving criteria for pin piles. Jeff Johnson is researching the capacity of soil nails.

As the use of small diameter piles (pin piles) becomes more widespread, it will be increasingly important to have reliable and economical methods for predicting the bearing capacity of these supports without having to rely exclusively on load testing of individual piles. Current standards require testing of piles to 2X their working load. The research objective is to develop a more accurate method of estimating bearing capacity of pin piles based on pile diameter, depth of penetration, local/site soil conditions and refusal requirements. A critical aspect of this study involves a retrospective analysis of load test data from local sites where pin piles have been used. Several local firms (Geotech Consultants, AGRA, and McDowell) have assisted in this study by providing crucial soil profile and load test data. Kristina hopes to expand this data set and welcomes the assistance of other geotechnical firms willing to share their load test results. If you have load-test data you are willing to provide to the research project, please e-mail Kristina Haggard (khaggard@u.washington.edu).

Soil nail research is being conducted by Jeff Johnson in cooperation with Condon-Johnson Associates, DBM Contractors, and the Malcolm Drilling Company. This research consists of establishing the ultimate pullout resistance of soil nails for the most common soils and installation methods in the Seattle area. Soils of interest include glacial till, outwash sands and gravels, and possibly the Lawton clay. Installation methods will depend on soil type, but will include down-the-hole hammer percussive drilling and hollow stem auger with grouted nail diameters of 6 to 8 inches. Analysis will include possible correlations with overburden pressure; installation and grouting methods; and soil properties, including soil type and SPT blow counts. From this research, we hope to establish whether current assumptions of nail capacity are appropriate and how they may be adjusted in the future.

One successful pair of tests has been completed in the dense glacial till of northeast Bellevue. Two 6-inch diameter nails were pulled to the maximum capacity of the hydraulic jack at approximately 235 kips. The nails had bond lengths of

10 and 15 feet and unbonded lengths of 5 feet. For the shorter nail this corresponds to a strength of 23.5 kips per lineal foot and an adhesion of approximately 15 kips per square foot. The ultimate pullout design value given by the geotechnical engineer was 6.2 kips per lineal foot, which is a typical value given dense glacial till soils. If you have load-test data you are willing to provide to the research project or are planning on testing soil nails, please e-mail Jeff Johnson (jmjohnsn@u.washington.edu).

---

### GROUP MEETINGS

The Geotechnical Group generally meets the fourth Thursday of each month, unless conflicts with holidays occur. The next group meeting will be held **January 27, 2000**. At that meeting, **Kyle Rollins** of Brigham Young University will be making a presentation on Liquefaction Research. Be sure to mark your calendars.

The Geotechnical Group Planning Committee meets at noon on the Thursday preceding each group dinner meeting. Check the meeting announcement for the next group dinner meeting for the time and location of the next planning committee meeting. Participation on the planning committee by local geotechnical engineers and firms is encouraged.

---

### CALENDAR OF EVENTS

#### December 1999

- 3** Planning Committee Meeting, Noon, GeoEngineers.  
RSVP: Matt Smith, msmith@geoengineers.com

#### January 2000

- 20** Geotechnical Group Planning Committee Meeting, Noon, Shannon & Wilson, Inc. RSVP: Rick Smith, rs@shanwil.com
- 27** **Liquefaction Research**, presented by **Dr. Kyle Rollins**, Brigham Young University. Location: Bellevue Hilton, 100 112<sup>th</sup> Avenue NE, Bellevue

#### February 2000

- 17** Geotechnical Group Planning Committee Meeting, Noon, GeoEngineers. RSVP: Matt Smith, msmith@geoengineers.com
- 24** **Western Processing Case History**, presented by **Bill Enkebol**, Landau Associates. Location: Rock Salt Steak House, (formerly Latitude 47) Westlake Avenue, Seattle

**March 2000**

- 16 Geotechnical Group Planning Committee Meeting, Noon, Shannon & Wilson, Inc. RSVP: Rick Smith, rs@shanwil.com.
- 23 **1999 Terzaghi Lecture: Soil Mechanics and the U.S. National Defense – A Mutually Beneficial Relationship**, presented by **Dr. Bill Marcuson**, U.S. Army Corps of Engineers Waterways Experiment Station. Location: Bellevue Hilton, 100 112<sup>th</sup> Avenue NE, Bellevue

**April 2000**

- 1 **SPRING SEMINAR, Geotechnical Instrumentation**, University of Washington, HUB Auditorium.
- 13 Geotechnical Group Planning Committee Meeting, Noon. RSVP: Matt Smith, msmith@geoengineers.com
- 25 **Geology of the Sound Transit Alignment**, presented by **Red Robinson and Bill Laprade**, Shannon & Wilson, Inc. Location: Rock Salt Steak House, (formerly Latitude 47) Westlake Avenue, Seattle

**May 2000**

- 11 Geotechnical Group Planning Committee Meeting, Noon, Shannon & Wilson, Inc., RSVP: Rick Smith, rs@shanwil.com.
- 17 **Factors of Safety and Reliability in Geotechnical Engineering**, presented by **J. Michael Duncan**, Virginia Tech. Location: TBA, Bellevue

**July 2000**

- 31– August 3  
**Pacific Rocks 2000: Rock Around the Rim**, Seattle, Washington

**August 2000**

- 5–8 **GeoDenver 2000**, Denver Colorado

**October 2000**

- 18-21 **ASCE National Convention**, Seattle, Washington

**ASCE GEOTECHNICAL GROUP AND AEG TO EDUCATE PUBLIC ON LANDSLIDE PREVENTION**

The Geotechnical Group and AEG are preparing for a series of public meetings to answer questions and provide guidance on landslide prevention to property owners. Last year, these meetings were co-sponsored by the City of Seattle. This year, we are looking to expand the program to other communities in the central Puget Sound area.

A public meeting was held on Mercer Island on November 16 for a small audience. Thanks to Stan Boyle of Shannon & Wilson, Inc. and Ron Parker of Associates Earth Sciences, Inc. for their time and effort in making that presentation. Due to the low turnout, we are tentatively planning another meeting on Mercer Island after the first of the year.

We have contacted the City of Edmonds and the City of Des Moines to schedule public meetings in those communities. Tentative commitments have been made for public meetings after the first of the year. We will be co-sponsoring two meetings with the City of Seattle, also after the first of the year.

If you are interested in participating in these programs or know of communities that would be interested in participating in this program, please contact Rick Smith ([rs@shanwil.com](mailto:rs@shanwil.com)). There will be an orientation meeting in early January 2000 for anyone interested in participating.

---

**GROUNDHOG COSTS ADD UP**

Did you know it costs the Geotech Group up to \$350 for each issue of the **Groundhog**? Using e-mail to distribute the groundhog has saved a lot of time and money. You can help us reduce our costs more by receiving the **Groundhog** through e-mail. If you are still getting the **Groundhog** via "snail-mail", please provide your e-mail address to Matt Smith ([msmith@geoengineers.com](mailto:msmith@geoengineers.com)) or Rick Smith ([rs@shanwil.com](mailto:rs@shanwil.com)).

It is the policy of the Geotech Group not to distribute the e-mail list to others outside the group. The e-mail list is only used by the Geotech Group to distribute group-related information.

---

**PACIFIC ROCKS 2000: ROCK AROUND THE RIM**  
**July 31 - Aug 3, 2000**

Seattle will host the Fourth North American Rock Mechanics Symposium (NARMS) in the HUB at the University of Washington this coming summer. Building on the successes of the previous meetings in Austin, Montreal, and Cancun, Seattle will host this symposium on the rim of the Pacific to address the rock mechanics and rock engineering challenges of the new millennium. In keeping with Seattle's reputation as a center for pop music innovation, the organizing committee of Pacific Rocks has proposed the following sessions.

**Hard Rock:** Properties of massive rock, rock blocks, and rock joints

**Classic Rock:** Fundamental theories revisited

**Heavy Metal:** Rock mechanics in mining and underground construction

**Acid Rock:** Chemical effects on rock properties and rock-water interaction

**Punk Rock:** Borehole and tunnel stability and failure mechanisms

**Rock Around the Clock:** Time and scale dependent properties of rock

**Grease:** Rock mechanics in the fossil fuel industries

**Grunge Rock:** Mechanics of weak rocks, altered rocks, and poorly consolidated rocks

**Down to Earth Rock:** Practical applications in industry

**Cyber Rock:** Software development and rock engineering in the Internet era

**Pop Rock:** Blasting, excavation, and rock burst mechanics

Field trips and excursions are planned. The organizing committee will still consider Abstracts that are received in the very near future; final papers must be submitted by February 15, 2000. Case histories and presentation of examples of rock mechanics solutions are strongly encouraged.

More information may be obtained and Abstracts may be submitted through the ARMA web site ([www.ARMARocks.org](http://www.ARMARocks.org)) which also provides the names and addresses of the local organizing committee which is chaired by Tom Doe at Golder Associates.

---

**NEWS ABOUT GEO-TOWN**

The use of the **Groundhog** to inform others in the Geotechnical Community as to what is happening at your firm is encouraged. Anyone interested in announcing news

in future issues of the **Groundhog** should send articles to Rick Smith ([rs@shanwil.com](mailto:rs@shanwil.com)).

---

**GeoEngineers, Inc.**

Recently promoted geotechnical engineers include Bob Metcalfe, Senior 1 Geotechnical Engineer to the Redmond office and Doug Argo to Senior 2 Geotechnical Engineer in the Bellingham office. In the Portland office, Julio Vela was promoted to a Project 1 Geotechnical Engineer and Brett Shipton was promoted to a Staff 2 Geotechnical Engineer.

New hires in the Redmond office include Greg Andrina, Geotechnical Field Technician and Aaron McCain, Staff 1 Geotechnical Engineer. In the Spokane office Mark Storey was hired as a Senior Geotechnical Engineer and Rob Lindsay was hired as a Senior Environmental Engineer. John Oswald was hired in the Portland office as a Senior Field Technician.

---

**Shannon & Wilson, Inc.**

**Susan Chang**, Ph.D., P.E., has recently joined Shannon & Wilson as a Principal Engineer. Dr. Chang has a doctorate in Geotechnical Earthquake Engineering from the University of California at Berkeley and specializes in seismic site response. She comes to Shannon & Wilson from Washington State University, where she held a tenure-track faculty position in the Dept. Civil and Environmental Engineering. She has received several major research grants including "Repeatability of Site Response," sponsored by the Pacific Gas and Electric Company (PG&E) and the Pacific Earthquake Engineering Research Center (PEER) and "Pilot Study to Estimate Highway Live Loads on Retaining Walls," presently sponsored by the National Science Foundation.

Shortly after the Taiwan earthquake, Susan and **Bill Perkins** joined an National Science Foundation Post-Earthquake reconnaissance team. They studied ground-related damage, including landslides, retaining walls, bridge abutments, buildings, fault rupture, and strong-motion station locations. There will be a report issued through NSF in the future.

---

**HWA GeoSciences Inc.**

**Lorne Balanko** has recently been named geotechnical group manager for HWA's Lynnwood office. Lorne has over 33 years of geotechnical engineering experience including work on major transportation projects including rapid transit, rail, highways and residential street systems. He also has undertaken geotechnical investigations and design for major oil and gas pipelines, water and sewer mains, and hydro-transmission lines through urban and rural areas. Lorne was a key member of the geotechnical design team for the initial northeast portion of the Edmonton Light Rail Transit System. Innovative use of tangent piles for underground stations and some tunnel sections significantly reduced costly tunneling through the downtown core. The project was given the Association of Professional Engineers, Geologists, and Geophysicists of Alberta Achievement Award.

**Chris Holloway** has recently joined HWA as a senior inspector. Chris brings over 17 years experience in the fields of geology and construction monitoring.

**Bikas Pande** has recently joined HWA as a staff engineer. Bikas is a recent graduate of Portland State University where he received a Masters of Science in Civil Engineering and has two years of prior experience with pavement testing and inspection.

**Joe Schrank** has recently joined HWA as a staff engineer. Joe is a graduate of the University of British Columbia in Mining Engineering.

**Bryan Hawkins** has recently joined HWA as a staff engineer. Bryan is a graduate of the University of Cincinnati where he received a Masters of Science in Geotechnical Engineering.

---

#### Nelson-Couvrette & Associates

Congratulations to Doug Bath Project Engineer with Nelson-Couvrette & Associates, (NCA) on receiving his Professional Engineering License. This totals 7 geotechnical engineers of our 24 employees. NCA brings on board Steve Sharp as Staff Geologist. NCA's Marketing Department has recently expanded its capabilities with new high-tech printing and scanning equipment. Kathleen Nelson, Business Development is designing and illustrating marketing material for proposals, reports and brochure packages.

---

#### Phoenix Geometrix LLC

Phoenix Geometrix LLC was formed in January 1999 to supply geotechnical, structural and environmental instrumentation to engineers, geologists, and environmental scientists. The company does some local manufacturing but also works closely with internationally acclaimed manufacturers enabling it to offer a large range of products suitable for the North American market. The company's business philosophy is to be a single source for almost every method of monitoring soil, rock and structures.

The geotechnical and structural instrumentation product line includes: inclinometer casing and readouts, piezometers, total pressure cells, tiltmeters, strain gauges, loadcells, jointmeters, crackmeters and data loggers. The environmental product line includes: monitoring well pipe and screen, water level indicators, water quality sensors, sampling pumps and bailers, remediation systems, leachate collection systems for landfills, and consumable field supplies. The company works closely with prototype machinists to offer clients one-off specials for specific applications.

The company is also introducing several new technologies that are related to instrumentation and provide customers with unique solutions to existing problems. Phoenix Geometrix offers 60 years of experience and is well equipped to provide technical support to instrumentation specifiers, installers and users.

For further information please contact Mike Robinson or Tom Bumala.

Phoenix Geometrix LLC  
22411 36<sup>th</sup> Avenue West  
Mountlake Terrace  
WA 98043  
Tel: 425-672-4246  
Fax: 425-672-3914  
Email: sales@phoenixgeometrix.com

---

#### HELP WANTED

**Golder Associates Inc.** is seeking qualified candidates for staff and project level geotechnical engineering positions for our Redmond office. Qualified candidates should have a bachelor's degree in civil/geotechnical engineering. A Master's degree in geotechnical engineering would be preferred. Responsibilities will include geotechnical investigations, landslide investigation and remediation and excavation shoring design. Golder Associates provides an excellent career path for young engineers. Please send a resume and letter of interest to:

Human Resources  
Golder Associates, Inc.  
18300 NE Union Hill road, Suite 200  
Redmond, WA 98052-3333

---

**AESI**, a 70-person consulting firm, providing geotechnical, water resources, environmental, and aquatic/fisheries services, is seeking a licensed PE with 4 to 8 years of experience to join our expanding Bainbridge Island geotechnical engineering practice. Strong computer and technical writing skills, and solid waste project experience desirable. Our on-going work includes diversified public and private projects, including landfill closure and site redevelopment. Our office offers a stimulating work environment, with a short walk to the Seattle ferry. Inquiries:

Associated Earth Sciences, Inc.  
179 Madrone Lane N  
Bainbridge Island, WA 98110

---

**HWA** is currently seeking a project level engineer with 10 plus years geotechnical engineering experience and PE. Northwest experience and strong marketing skills are a plus. HWA offers a highly competitive salary and benefits. Applicants should send resumes to Larry West, HWA GeoSciences Inc. Fax 425.774.2714, email lwest@hongwest.com.

With offices in Lynnwood, Everett, and Portland, HWA GeoSciences Inc. is a 35-employee firm, which offers consulting services in geotechnical engineering, hydrology, geoenvironmental services and inspection and testing.

---

Snohomish County Mission:  
"Enhancing the quality of life for present and future generations"

COUNTY GEOTECHNICAL ENGINEER (ENG GROUP SUPERVISOR III) \$4715 - \$5733 PER MONTH PLUS BENEFITS

The Engineering Services Division of Snohomish County Public Works Department is seeking a qualified, professional engineer with expertise in geotechnical, environmental assessment, and materials engineering to supervise a group of professional and technical staff performing engineering assignments in the maintenance, construction, and design of road, bridge and other public works projects. The individual selected will need to have a comprehensive knowledge of geotechnical engineering principles as they relate to the design and construction of public works projects, deep foundations and the stability of slopes. The individual selected will need to have a comprehensive knowledge of environmental assessment engineering as it relates to public works projects and the Model Toxic Control Act. The individual selected will need to have a comprehensive knowledge of materials engineer as it relates to the supervision of a materials testing lab, the design of asphalt pavement mix designs and pavement designs, and the design and adjustment of concrete mixes. The individual selected will need to have comprehensive knowledge of public works project construction and design management, and be able to interpret and develop modifications to design and construction plans and specifications and federal, state and local laws, and regulations associated with design and construction. The individual selected must also have the ability manage construction and design consultant contracts, supervise and evaluate the work of 5-10 full-time and temporary employees, and a familiarity with the principles, practices and procedures associated with budget and schedule preparation. Minimum requirements are a Bachelor of Science degree in civil engineering (Masters degree in geotechnical engineering is preferred) or a related field, a Professional Engineer's license, and five (5) years of professional experience in the field of geotechnical/geological engineering, including two (2) years of supervisory experience; OR, and equivalent combination of education, certification and experience which provides the required knowledge, skill and ability to perform the work. Resumes accepted.

OPEN CONTINUOUSLY UNTIL FILLED  
To request an application by mail,  
send a self-addressed stamped legal size envelope to:

COUNTY GEOTECHNICAL ENGINEER  
(ENGINEERING GROUP SUPERVISOR III)  
Attn: Pat Walter  
2930 Wetmore Avenue  
EVERETT, WA 98201-4046

EOE

---

The **Groundhog** is the official publication of the **Seattle Section Geotechnical Group of the ASCE**.

The next issue of the **Groundhog** is scheduled for February 2000.

Articles are solicited from the Seattle Section membership as well as the general engineering community. The Society and the Section are not responsible for any statement made or the opinions expressed in this publication. This issue was prepared and edited by Rick Smith.

**Advertising Rates:**

Classified: <sup>1</sup> First 35 words FREE. \$10.00 for each additional 10 words.

Business Card<sup>2</sup> \$15.00 each

Send Ads to Rick Smith at the address on page 1.

<sup>1</sup> Provide typed, double-spaced copy or electronic submittal.

<sup>2</sup> Provide 2 business cards.

SEATTLE SECTION  
GEOTECHNICAL GROUP

AMERICAN SOCIETY OF  
CIVIL ENGINEERS

**Rick Smith, P.E.** *Vice-Chair*

206/695-6747

Shannon & Wilson, Inc.

P.O. Box 300303

Seattle, WA 98103

rs@shanwil.com