

WELCOME . . .

... to the seventh issue of "The Gregg Geo News". The Geo News is being published to provide current information on the services we offer, equipment & technologies we utilize and project experience.

The Geo News is distributed in electronic form which is emailed directly to you. If you wish to become a subscriber and are not currently on our mailing list simply visit our web site and register to receive email updates. You can also access this newsletter as well as previous issues of the Geo News through our web site at: www.greggdrilling.com.

PROJECT SPOTLIGHT

- Gregg is Part of Award Winning Project -

Gregg Drilling & Testing, Inc. participated on the team involved in a project that has been selected to receive *The Building of America Award*. The award names and honors the project managers and owners for their contributions in helping design and build one of the region's 50 most important, innovative or unique new construction or renovation projects and is presented by Construction Communications publisher of "Real Estate and Construction Review" magazine. The project selected for recognition was an affordable housing development in the San Diego area. Gregg Drilling is proud to have been able to contribute toward the completion of this innovative project.

CPT SHORT COURSES SCHEDULED



The CPT short courses will be presented in both Northern and Southern California in 2009. Cone penetration testing applications will be illustrated through discussions covering various case histories and worked examples of both geotechnical and environmental investigations. Dr. Peter Robertson will be the instructor for the geotechnical short course.

COURSE SCHEDULE:

FRIDAY - FEBRUARY 27, 2009

Hyatt Regency

HUNTINGTON BEACH, CALIFORNIA

FRIDAY - MARCH 6, 2009

Hilton Concord

CONCORD, CALIFORNIA

Geotechnical & environmental sessions are available at both locations.

COURSE TUITION:

Early Registration:

\$195.00 per course

Late Registration:

\$270.00 per course

ON-LINE REGISTRATION IS NOW AVAILABLE!

For complete course details or to register on-line visit: www.greggdrilling.com/seminars.htm

ROBERTSON'S REMARKS

- Estimating Shear Wave Velocity, V_s from CPT -

The shear wave velocity (V_s) is a very useful parameter since it links directly to the small strain shear stiffness of the soil (G_0). Although direct measurement of V_s is preferred over estimates, relationships with cone resistance, q_t can be useful for smaller low risk projects, where V_s measurements are not always taken. There are many existing relationships between q_t and V_s (or G_0), but most were developed for either sands or clays and generally relatively young deposits. Although strong relationships between V_s and q_t exist, some variability should be expected due to factors such as age and cementation. The accumulated 20 years of experience with seismic CPT results has produced an updated relationship between cone resistance and V_s for a wide range of soils, using the CPT Normalized Soil Behavior Charts (SBT), based on Q_{tn} and F . **(Continued on following page)**



Dr. P.K. Robertson



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QUICK FACT

- Student Outreach Program -

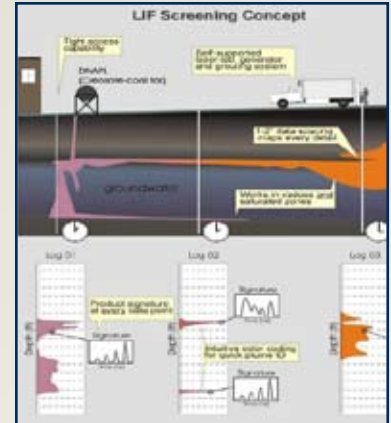
Gregg Drilling offers a Student Outreach Program for educational institutions interested in keeping abreast of the latest industry developments. The Student Outreach Program provides demonstrations designed to illustrate the technical methodologies and equipment utilized in geotechnical and environmental site investigations. The content can be tailored to suit the specific needs and interests of your group and can be held at your location or a convenient public venue.

A Gregg representative will work with you to determine the content and format of a demonstration to best meet your needs. If you are interested in finding out more about our Student Outreach Program please contact our Signal Hill office at (562) 427-6899 and ask for Kelly Cabal.

WHAT'S NEW @ GREGG DRILLING

- Laser Induced Fluorescence (UVOST™) -

Gregg Drilling now offers a new element of service designed for environmental in situ testing of the soil and groundwater. UVOST™ is the new generation of Laser Induced Fluorescence (LIF) technology and utilizes ultraviolet induced fluorescence to detect the presence of polycyclic aromatic hydrocarbons (PAH's) in the soil. With no need for samples and costly laboratory testing, UVOST™ can determine the type of hydrocarbon contaminant by producing a spectral product "signature" at each data point.



LIF Screening Concept

Fluorescence technology allows delineation of a contaminant plume in a very rapid and cost effective manner with no cuttings and no associated sample costs. Once determining the extent and type of contaminant, it is then possible to conduct a more selective sampling program targeted to the zones of interest.

For more information, go to:

<http://www.greggdrilling.com/Resources/Techmethodologypages/UVOST.htm>.

Robertson's Remarks continued...

Based on over 100 SCPT profiles from 22 sites in California combined with published data, a set of contours of normalized shear wave velocity, V_{s1} was developed on the normalized SBT $Q_{tn} - F_r$ chart, as shown in the attached Figure, where;

$$V_{s1} = V_s (p_a / \sigma'_{vo})^{0.25} \quad [1]$$

Since the CPT measurements are normalized in terms of Q_{tn} and F_r , the resulting shear wave velocity values are also normalized. The data used to develop the relationship were from deposits that ranged from Holocene to Pleistocene age and were predominately uncemented. Most Holocene age deposits have V_{s1} values less than 250 m/s (820 ft/s). In general, the Holocene age data tends to plot in the center-lower left portion of the SBT chart, whereas the Pleistocene age data tends to plot in the center-upper right portion of the chart.

Based on the contours shown in the Figure, V_s can be estimated using:

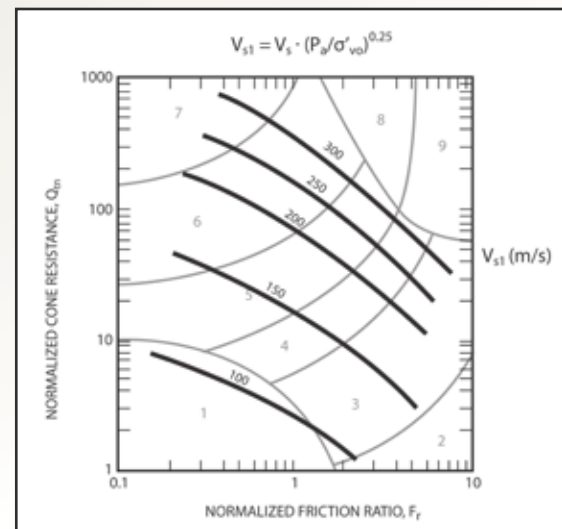
$$V_s = [\alpha_{vs} (q_t - \sigma_v) / p_a]^{0.5} \quad [2]$$

Where: p_a is atmospheric pressure in the same units as q_t and σ_v to make $(q_t - \sigma_v) / p_a$ dimensionless. Since the shape of the contours for α_{vs} is similar to those of the SBT index I_c , α_{vs} can be estimated using:

$$\alpha_{vs} = 10^{(0.55 I_c + 1.68)} \quad \text{in units of (m/s)}^2 \quad [3]$$

or

$$\alpha_{vs} = [10.76] 10^{(0.55 I_c + 1.68)} \quad \text{in units of (ft/s)}^2 \quad [4]$$



Knowledge of soil age would improve the correlations but often the age of the deposit is not always known in advance for most small low risk projects. Hence, the general relationship shown in the Figure and equation 2 is recommended for most Holocene to Pleistocene age deposits. The predicted shear wave velocity using equation 2 in Pleistocene age deposits may be somewhat under estimated.

Contact Peter with any questions or comments regarding "Robertson's Remarks" at: probertson@greggdrilling.com.

Visit www.cpt-robertson.com/links.html for previous issues of "Robertson's Remarks".