ASSOCIATION OF ENGINEERING GEOLOGISTS

Southern California Section

"Serving Professionals in Engineering, Environmental and Groundwater Geology Since 1957"

NEWSLETTER - DECEMBER 1997

CHAIRMAN'S COLUMN

By Dave Ebersold

Members, it is with regret that I inform you that Norm Tilford, AEG's Executive Director, is missing in Texas. He departed from College Station for Van Horn, Texas piloting his plane alone at 8:00 pm on Thursday, November 13, 1997. He failed to arrive at Van Horn as scheduled and was reported missing by his students at the end of Friday, November 14, 1997. He is presumed to be down somewhere within a 9,000 square mile area of central and west Texas. The Civil Air Patrol has initiated an extensive air and ground search but has not yet found any sign of Norm or his aircraft. As of November 22, 1997, the Civil Air Patrol had completed over 600 flight hours and searched over more than 8,000 square miles of Texas in the most extensive search in Texas history. I will provide more information as it becomes available.

At the last meeting, I mentioned the June 1998 ballot initiative which, if passed, is expected to result in the State of California becoming the largest engineering "firm" in the world. This initiative is being sponsored by Professional Engineers in California Government (PECG), the union that represents State engineers. Owing to mandatory payroll deductions which have been in effect for these employees for the past couple of years, it is expected that a war chest on the order of $5 million has been collected to fight for passage of this initiative.

What can you do? Educate your friends, neighbors and coworkers about this issue. Tell them the truth, that it is bad for business, bad for public health and safety and bad for the economy. In addition, please send money to fight this initiative. How do you do this? Check out CELSOC's web page at www.celsoc.org. It has all the info, including a link to PECG's homepage so that you can get the full story! This is no joke, people!

Please see the article on FIELDS OF EXPERTISE - ANOTHER THREAT TO GEOLOGIC PRACTICE. You need to write letters NOW! Addresses are contained in the article. THIS IS IMPORTANT! See you at the December meeting!

REVIEW OF DR. BISHOP'S PRESENTATION

NOVEMBER 1997

SOUTHERN CALIFORNIA SECTION MEETING

Analysis of Translational Landslides Slip-surface Using Balanced Cross-sectional Analysis

Dr. Kim Bishop was the AEG's Southern Section's Guest Speaker at the November Dinner Meeting held at the Airtel Plaza Hotel in Van Nuys, California. Dr. Bishop discussed the distortion and movement of the cross-sectional area associated with a rotational and/or translational landslide and how this could be used to evaluate the probable depth to the slide plane. Dr. Bishop noted that it was not always feasible to put in downhole borings during landslide investigations or to define the slide plane depth from boring samples alone. As a result, other methods to investigate the depth of the landslide had to be found.

Dr. Bishop's methods included field measurements of the change of vertical and horizontal elevations of segments of the slide-mass from their original positions to their new positions downslope. He used vertical slip shear (no distortion of segments) analysis and simple shear analyses (with distortion) to present examples of the cross-sectional analyses that he had performed. The equation given was: H = Area A/X, where H = the change in vertical elevation (drop) of the landslide; X = the downslope shift (angular translation and/or rotation) of the slide-block segments; and A = the calculated cross-sectional area of each shifted slide-block from its original position. The area of the segments should remain nearly the same after sliding as they were before the slide, thus making the calculation of the slide plane depth possible. This analysis is similar to that of A. W. Bishop (1955), "The use of the slope circle in the stability analysis of slope failure" (see references at end of article.)

Dr. Bishop acknowledged that analyses using three different methods on a particular landslide site resulted in calculated depths of 115, 129 and 151 feet. The slide plane was found to be approximately located between the 129 and 151 foot depth. This amount of discrepancy, he said, could be significant during subsequent remediation efforts (i.e., setbacks, cut and fill, etc.).

This method could be combined with the procedures usually employed by geologists, to give a clearer picture of the conditions present in the complex system created by the landslide. The method presented was used to illustrate its effect on the "ideal 2-D" translational landslide, and some real-life situations such as perched water, deflation and friction were not discussed for the sake of time and complexity.

A hearty Thank You to Dr. Bishop for his timely talk. Winter is upon us and the possibility of heavy rains could give rise to the need for this method of analysis.

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This review was prepared by Linda Tandy, Editor, and Terry Allen Jones. Mr. Jones is an AEG Member who has recently completed his Master Degree in Interdisciplinary studies in Geophysics at CSUN. His Thesis is; "Seismicity of the Western Transverse Ranges of Southern California: January 1981 to January 1995".

References

Lee, T. C., and Sadler, P. M., 1989, *A review of the basic mechanics of slope failure*: Landslides in a semi-arid environment, with emphasis on the inland valleys of Southern California, Publications of the Inland Geologic Society v. 2, pp. 150-160.

Bishop, A. W., 1955, *The use of the slip circle in the stability analysis of slopes*: Geotechnique, v. 5, pp. 7-17

FIELDS OF EXPERTISE

ANOTHER THREAT TO THE PRACTICE OF GEOLOGY

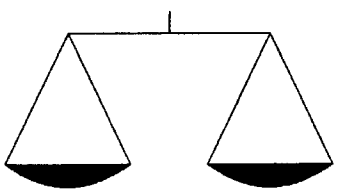
The Spring 1997 Bulletin of the State Board of Registration for Professional Engineers and Land Surveyors (BORPELS) printed a "Fields of Expertise Document," which was originally developed for in-house use by the geology and engineering boards to decide jurisdiction in cases of unlicensed practice. Much to the surprise of the State Board of Registration for Geologists and Geophysicists (BRGG), the document is now being used in circumstances never intended by its original authors.

Cindi Christenson, Executive Officer of BORPELS, wrote in an October 8, 1997, letter to Dalton Pollard, Executive Officer of BRGG: "... the document is not being used for jurisdiction over unlicensed practice. However, the document is frequently referred to at outreach meetings and when answering inquiries received by phone or in writing. In general, it has become a resource guide and an outreach tool used to assist staff, local government officials, practitioners and consumers differentiate between the practices of civil engineering and geology. The need for such a document is evidenced by some of the correspondence received regarding this issue where the practitioners themselves are confused over their own limitations of practice as imposed by statute."

The document is dangerous. For example, it states that in ground and water contamination investigations, "design of site characterization studies" CANNOT BE PERFORMED BY A GEOLOGIST. Last month the BRGG decided to "non-adopt" the "Fields of Expertise" document. In the meantime, BORPELS and other entities continue to use the document. The result is increasing restrictions on the practice of geology. The document as it appeared in the Spring 1997 BORPELS Newsletter is included on the following pages.

Send letters TODAY to both boards at the following addresses:

Board of Registration for Professional Engineers and Land Surveyors
2535 Capitol Oaks Drive, Suite 300, Sacramento, CA 95833-2926
MAILING ADDRESS: P.O. Box 349002, Sacramento, CA 95834-9002
Telephone: (916) 263-2222 Calnet: 8-435-2222
Fax: (916) 263-2246 or (916) 263-2221



State Board of Registration for Geologists and Geophysicists
2535 Capitol Oaks Drive, Suite 300A
Sacramento, CA 95833-2926
Telephone: (916) 263-2113
Fax: (916) 263-2099

Here is the document as it appeared in the Spring 1997 BORPELS Newsletter.

The following memorandum was prepared to assist the Board of Registration for Professional Engineers and Land Surveyors and the Board of Registration for Geologists and Geophysicists to clarify and differentiate between the responsibilities and duties of registered civil engineers and geologists. This document reviews the "gray" areas where civil engineering and geology overlap and lists activities that are normally performed by both professions. This document also identifies activities within the scope of professional practice of civil engineering and geology. As such, this memorandum is a statement of both respective boards' philosophy, intent, and general collective opinion.

The following tables may be used to assist either boards' staff when a dispute or complaint is filed, and can be used or modified depending on the circumstances. Individual professionals in each discipline should only practice in the field of expertise in which they are competent. This document does not refer to the practice of geophysics.

CLASSIFICATION AND PHYSICAL PROPERTIES
Registered Geologist
Rock description and classification
Origins of rock
Source area
Both (RG and CE)
Visual soil description
Wentworth - Unified soil classification system and testing
Registered Civil Engineer
Testing of earth materials for physical properties

ROCK MECHANICS
Registered Geologist
Description
Rock structure
Qualitative performance of rock masses
Both
In-situ testing
Regional-Local

The terms qualitative and quantitative, as used in several places in the following table, should be understood in the following sense: Quantitative is defined as concerned with the measurement of phenomena; Qualitative is defined as the assessment of a phenomena without measurement.

These policies and guidelines are not intended to be rules or standards of application rigidly adhered to without discretion. Likewise, such policies are not intended to implement, interpret, or make specific the law enforced or administered by either board, and are not intended to govern either boards' procedures. The foregoing policies are merely recommendations which incorporate the collective opinion of both boards at a particular moment in time. Consequently, the foregoing guidelines are informational and are not regulations. The guidelines have no force of law and are not intended to set standards of practice. Language used has been carefully gleaned from mandatory requirements.

Registered Civil Engineer
Quantitative performance of rock masses, e.g. rock testing, stress distribution and rebound evaluation

SOIL AND ROCK MAPPING
Registered Geologist
Geologic mapping
Geomorphology
Subsurface geology and Stratigraphy
Air photo geologic interpretations
Both
Geometric relationships
Soil type mapping
Registered Civil Engineer
Photogrammetric interpretations

SLOPE STABILITY
Registered Geologist
Interpretative stability of rock cut slopes
Geologic and geomorphic analyses
Spacial relationship

Both
Excavation in hilly terrain
Causative agents
Natural slopes
Registered Civil Engineer
Quantitative slope design and analysis

PROJECT PLANNING
Registered Geologist
Development of geologic parameters
Geologic feasibility
Both
Evaluation of effects of geologic conditions on proposed projects
Registered Civil Engineer
Engineering of effects of subsurface conditions on proposed project
Economic studies

SURFACE WATERS
Both
Stream description
Silting potential
Erosion potential
Source of base flow
Sedimentary processes
Source of material
Registered Civil Engineer
Volume and rate of runoff
Design of works for control
Coastal and river engineering
Hydrology

GROUNDWATER
Registered Geologist
Hydrogeology
Geologic structural controls
Both
Occurrence and Direction of movement
Drainage
Mathematical treatment of well systems
Well design
Well Monitoring
Subsidence
Development concepts
Field permeability; Transmissivity
Underflow studies
Specific yield
Regulation of supply
Storage computation
Water quality
Characteristics of water-bearing and non-water bearing materials
Dewatering systems
Registered Civil Engineer
Engineering hydrology
Filter Design
Economic considerations
Laboratory permeability

EARTHQUAKES AND GROUND VIBRATIONS
Registered Geologist
Location of faults
Evaluation of potential fault activity
Qualitative ground vibration analysis
Seiches and tsunamis
Qualitative evaluation of lateral spreading and liquefaction
Both
Seismicity
Historic record of earthquakes
Ground Motion: Deterministic and probabilistic analysis
Registered Civil Engineer
Ground response to seismic activity
Seismic design criteria for structures
Laboratory soil dynamics tests
Quantitative ground vibration analysis
Liquefaction mitigation
Quantitative evaluation of lateral spreading and liquefaction

SUBSURFACE EXPLORATION
Registered Geologist
Down-hole observations for structure geometry
Fault trenching
Both
Planning
Supervision
Observation
Logging of borings or trenches
Sampling
In-situ testing

CONSTRUCTION OBSERVATION
Registered Geologist
Rock grouting
Both
Chemical grouting
Excavation in rock material
Tunnel construction
Remediation of contaminated sites
Conduits
Foundation conditions
Site grading and excavations
Registered Civil Engineer
Pavements
Earthwork compaction and soil grouting

EXPANSIVE MATERIALS
Registered Geologist
Qualitative evaluation of expansion potential
Both
Visual identification
Geochemical effects
Expansive Bedrock
Registered Civil Engineer
Lab testing
Quantitative evaluation of expansion potential
Design of mitigation

REGULATORY REQUIREMENTS
Registered Geologist
Provide geology input as required
Registered Civil Engineer
Provide engineering analysis as required

EMBANKMENT FILL
Both
Visual classification
Evaluation of borrow sites
Seepage control measures
Removal of unsuitable material
Registered Civil Engineer
Design and construction
Quality
Specifications
Evaluation of potential deformations
Evaluation of stability and foundation
Evaluation of borrow material

INTERPRETATION AND INSTALLATION OF INSTRUMENTATION
Both
Vadose zone monitoring
Water level recorders
Slope inclinometers
Rock stress and deformation devices
Piezometers and observation wells
Settlement movements
Seismometers and accelerometers
Water quality monitoring
Tiltmeters
Stream gages
Meterology stations
Registered Civil Engineer
Pore water pressure monitoring
Soil pressure devices
Pile load testing
Vibration monitoring and analysis
Tensioning tie-backs

GEOSYNTHETICS
Both
Field welding
Installation
Filtering properties
Registered Civil Engineer
Interpretation of strength
Liner design
Flexible pavement design
Soil reinforcement design

GROUND AND WATER CONTAMINATION
Both
Well logging
Water observations
Well design, installation, analysis and abandonment
Toxic pits
Toxic fluid monitoring
Underground tanks
Solid waste disposal sites
Waste discharge to land
Site characterizations
Plume characteristics
Broad studies encompassing planning, coordination of disciplines including professional engineers, analysis and findings, preparation of conclusions and recommendations
Registered Civil Engineer
Design of site characterization studies
Design of remediation systems

SOLID WASTE FACILITIES
Registered Geologist
Aquifer characterization
Faulting
Fault age dating
Landslide geometry
Geology reports required by regulation
Both
Pump testing
Flow nets
Water sampling
Contaminant transport
Air sparging
Filters
Water budget
Deterministic and probabilistic analysis
Registered Civil Engineer
Construction Quality Assurance (CQA) plan and administration
Drainage design
Plans and specifications
Slope stability analysis
Leachate and gas collection design
Contaminate design
Engineering reports required by regulation

AREAS OF JOINT PRACTICE
Site Selections
Planning investigations
Conducting field exploration
Selecting samples for testing
Interpreting data
Describing and explaining site conditions
Input to Urban Planning
Input to environmental studies
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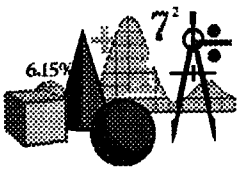
CAREER OPPORTUNITIES
Pacific Soils Engineering, Inc. is seeking entry level geologists with a B.S. in Geology.
Fax resume to (714) 220-9589.
Attention: Ted Wolfe.

Lindmark Engineering, Inc. is hiring engineers and geologists. Successful applicants must have environmental experience and excellent writing skills. Fax resume to (818) 365-0296.



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Deadline for submittals to the January 1997 Newsletter: December 12, 1997. Please submit via e-mail or on disc and via snail mail.

LETTER TO THE EDITOR

Dear Linda,

Congratulations for taking on AEG's Southern California Section's Newsletter. The MWD field trip went well under your leadership. So the newsletter should also.

Enclosed is a letter I sent to the Metropolitan Water District along with several photographs. No, I have not heard a word, and do not expect any.

Due to no fault of yours, the last three or four "National" AEG Newsletters had no Southern California Section newsy tidbits. Personally, this is shameful for the largest (500+ members) section. If you improve the track record, AEG will be indebted to you.

I had a fantastic photo of you, in hard-hat, at MWD's damsite. I was hoping you'd come to a meeting so I could give it to you personally. I lost it at one of the meetings.

Sincerely,
Howard A. "Buzz" Spellman

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Dear Buzz,

Thank you for your letter and support. It is with pleasure that I take over the Editor duties for 1997-1998. A copy of your letter to MWD is reproduced below.

I would like to take this opportunity to thank you for your years of service to AEG's Southern California Section. Without your dedication and hard work this Section would not be what it is today.

I, too, enjoyed the field trip to the Domenigoni Valley Reservoir Project (now known as the Eastside Reservoir Project). I'm looking forward to the 1998 field trip. Any field trip suggestions should be sent to this newsletter or to Kim Bishop. Phone numbers are shown on page 7.

I sure wish I had shown up for a meeting to get my picture! However, I am looking forward to seeing you at the meetings in 1998!

Sincerely,
Linda Tandy, Editor

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09 June 1997

Jim Gilmore, Eastside Reservoir Project
Metropolitan Water District
P.O. Box 54153
Los Angeles, CA 90054-0153

Subject: Association of Engineering Geologists Field Trip, April 26, 1997

Dear Jim, and Leaders All:

A belated thank you for giving about 44 "rockhounds" the cooks tour of what I recall as the Domenigoni Valley Reservoir Project. By whatever name, or cost, southern Californians applaud MWD's forethought in storing 800,000 acre-feet in case of droughts, earthquake emergency, IID and the like.

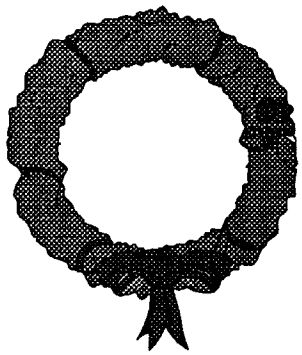
Enclosing both ends of the valley with the East Dam and West dam is unique in my dam building experience (Bechtel Hydroelectric and Converse Consultants). You are to be commended. Grouting , cutoffs, foundation geology, embankment materials and Saddle dam conditions are impressive (especially linkage of grouting electronically for daily progress report "takes").

Southern California geologists can now be your ambassadors in Sacramento. Jim, I can not speak for everyone on the bus, but those that I did enjoyed the efforts of your field staff; moreso knowing most had Saturday off.

Appreciatively,

Howard A. "Buzz" Spellman

cc: Kerry Cato



December Meeting

WEDNESDAY DECEMBER 10, 1997

Joint Meeting with ASCE Geotechnical Engineering Division
San Diego Section

- 6:00 Social Hour
- 7:00 Dinner
- 8:00 Program

Temecula Creek Inn

44501 Rainbow Canyon Road, Temecula, California
Directions: Take I-15 south to Hwy 79 South (NOT Hwy 79 north/Winchester Road) and go east, to Pala Rd (3rd light). Go right on Pala Road to Rainbow Canyon Road and turn right. The Temecula Creek Inn is about 1/4 mile down on the right.

Reservations (Reservations which are not canceled will be billed)

Call the receptionist at Geotechnics
(626) 568-6041
Space is limited so please call early! Please make reservations by Friday, December 5, 1997
Dinner: Roasted Pork Loin, Seafood Newburg or 4 Cheese Vegetable Lasagna. When making reservations, please specify choice of dinner.

Cost $25.00 per person Students $15.00 per person

PROGRAM TOPIC Slope Failures and Treatments
SPEAKER Mr. Roy Hunt, P.E., P.G., C.P.G.

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Mr. Hunt has 40 years of professional experience including senior positions with Joseph S. Ward and Associates, Woodward-Clyde Consultants, and Technosolo S.A., Rio de Janeiro, Brazil. In private practice, Mr. Hunt has provided consultation to NUCLEN for two new nuclear power plants in Brazil, as well as offshore mooring structures in the Philippines and Brazil. He has provided consultation on landslides for Louis Berger Inc. in Indonesia, Interamerican Development Bank in Bolivia and Ecuador, and the FHWA and the U.S Justice Department in Puerto Rico. Since 1989, he has been an Adjunct Professor of Engineering Geology and Rock Mechanics at the Graduate School of Civil Engineering, Drexel University, Philadelphia, PA.

He holds an M.A. in Engineering from Columbia University in New York and a B.S. in Geology and Physics from Upsala College n East Orange, NJ. He is a Registered Professional Engineer in NJ, NY, and PA, a Registered Professional Geologist in CA, DE, PA, and Brazil, and a Certified Professional Geologist. Professional affiliations include ASCE (Life Member), AEG (Member since 1971), and the AIPG. Awards include AEG's prestigious Claire P. Holdredge Award for his two books in 1984, Geotechnical Engineering Investigation Manual (1984) and in 1988, Geotechnical Engineering Techniques and Practices (1986), both published by McGraw-Hill Books Co., New York.

His presentation will cover predictions, causes, and treatments of failures in soil and rock slopes. Soil slopes will include slump slides in colluvial and residual soils, debris avalanches in residual soils over rock, and long planar slides in marine shales. Rock slopes will include a brief review of Rock Mass Rating systems to arrive at slope treatments as a function of rock quality before and after rock mass excavation. The methodology of terrestrial stereophotography will be introduced.

Association of Engineering Geologists
Southern California Section

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FIRST CLASS POSTAGE