

# ASSOCIATION OF ENGINEERING GEOLOGISTS

*"Serving Professionals in Engineering, Environmental, and Ground-Water Geology"*

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## THE ROCKY MOUNTAIN SECTION NEWSLETTER

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[www.aegrms.org](http://www.aegrms.org)

### MEETING DATE

**FRIDAY  
JANUARY 21<sup>st</sup>, 2005**

### TIME

5:45 p.m. Social Hour  
6:30 p.m. Dinner  
7:30 p.m. Presentation

### LOCATION

**HOLIDAY INN  
455 S. Colorado Blvd  
Denver, CO  
See map below**

### COST

\$23 Members  
\$23 Non-members  
Free for Students first  
time, \$10 then after

### RESERVATIONS

c/o AEG Reservation Line  
(303) 790-2161 x 243 or  
[meetings@aeqrms.org](mailto:meetings@aeqrms.org)  
**BY NOON, MONDAY  
JANUARY 17<sup>th</sup>**

## **Reconstruction of the Historic Virginia and Truckee Railroad, Lyon, Storey, and Carson Counties, Nevada**

Gary Luce and David Bieber  
Geocon Consultants, Inc.

Efforts are under way for the reconstruction of a 17-mile section of the historic Virginia & Truckee Railroad (V&T) between Carson City and Virginia City, Nevada. The V&T Railroad linked Reno and the silver mines and mills of the Comstock from 1870 until the tracks were pulled up in 1941. Application was made in 1993 by Carson City to the Federal Highway Administration, resulting in the granting of \$2.2 million of Intermodal Surface Transportation Efficiency Act (ISTEA) funding. Under the terms of the grant, these funds are administered by the Nevada Department of Transportation (NDOT) through an inter-local agreement with the Tri-County Railroad Commission (now the Northern Nevada Commission for the Reconstruction of the Virginia and Truckee Railroad, which includes five counties). The funds were specifically intended for an environmental assessment of the entire route (now complete) and the design and construction of the first 1.4 miles of the project.

The first 1.4-mile portion includes significant engineering geological and engineering obstacles including the crossing of an abandoned mine pit, excavation and encapsulation of acid generating mine waste rocks, stabilization of the rail bed by an abandoned mine shaft, and the installation of a monitoring system to detect earth failure for an area where a mine shaft has been buried by mine wastes.

At this time the final plans for the 1.4 mile segment have been submitted to NDOT and will go to bid this year.

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Other accomplishments on the remainder of the project include:

1. The donation of four miles of track from the Reno "Retrack Project"
2. The donation of a mainline bridge for the crossing of US Highway 50
3. The granting of much of approximately eight miles of right of way from the Bureau of Land Management.
4. The issuance of five million in bonds for the project by Carson City

Momentum for the project is now at a point that the final design for the remainder of the project is underway with completion of the project estimated as 2008. Remaining engineering tasks include taking the 50% plan set for the remaining project to the 100% level. The primary tasks to reach that level will include:

1. Development and processing of environmental permits and plans,
2. Preparing a project hydrology and wetlands assessment,
3. Geotechnical engineering evaluation of a collapsed tunnel,
4. Engineering geology assessment of slopes adjacent to the trackway,
5. Characterization of mine wastes in and adjacent to the project right-of-way,
6. Engineering geologic investigation and geotechnical design for a bridge, and
7. A project constructability analysis.

## Words from the Chair

Greetings! Thanks to all who attended Family Night, I had a great time! This month we have invited Dave Bieber, President of AEG, to present his talk on the construction of the Historic Virginia and Truckee Railroad. It will also be a great time to discuss the proposed name change. Thanks again for the responses to the proposed name change, they have been very informative.

Also, please remember Student Night, which is coming next month. It is usually very well attended and a lot of fun. Please volunteer any services you can and support the Student Section.

If anyone has interesting photos please email them to me or one of the officers for the AEG booth.

As always, please feel free to contact me about AEG. I look forward to a busy and fulfilling New Year!

Ben Arndt

## **January Meeting Date Changed!!**

Please note that the meeting this month is on Friday, January 21 to coincide with the board meeting. The location is different; the meeting will be held at the Holiday Inn at Cherry Creek on S. Colorado Blvd. A map is attached and more information is on the first page side bar.

## **Opinions on AEG Possible Name Change**

We're sure that most of you received the email from AEG, but we just wanted to encourage and remind you to cast your opinion on the issue.

From AEG President, David Bieber:

A name change requires a change in the AEG Constitution, which requires that a ballot be sent to the entire membership. Enactment of the change requires that two-thirds of the ballots returned within the voting period be cast in favor of the change. The AEG Executive Council and Board of Directors would like opinions from the membership regarding the name change issue. Please log onto the AEG website, go to the AEG Message Board in the Member Services section, and give us your thoughts. If there appears to be a consensus to adopt the modification to our name, then we will put it to a vote of the entire membership.

## **EERI Sends Reconnaissance Teams to Capture Critical Perishable Data - Greatest Tsunami Disaster in History Generates Enormous Response from Earthquake Engineering Research Community.**

The Earthquake Engineering Research Institute is an Oakland based nonprofit with academic and professional members through the world with a common interest in reducing the effects of earthquakes on society. Today Craig Comartin, incoming President, announced an unprecedented

reconnaissance effort to capture technical data from the devastating tsunamis of December 26, 2004, in the Indian Basin. Comartin conveyed the sadness and frustration of those throughout the earthquake community: "Our hearts are heavy for those who have suffered such profound losses. The only solace I can offer is a commitment to redouble our efforts to improve technical knowledge and raise public awareness. It is important to know that we are not completely powerless in the face of similar risks. There are measures we can take to reduce losses in future earthquakes and tsunamis."

EERI is dispatching several teams of tsunami and earthquake engineering experts to join other international teams throughout the affected region. According to EERI Executive Director Susan Tubbesing, one team, led by Harry Yeh of Oregon State University, will survey the eastern coast of India. A second team, headed by Philip Liu of Cornell University and Costas Synolakis of University of Southern California travels to Sri Lanka and then to the Maldives. Both teams will gather data on estimated wave heights, extent of inundation, geological scouring, and other perishable information related to the physical aspects of tsunamis. They will coordinate their work with teams from Japan and Australia. Jose Borrero, University of Southern California, will shortly be returning from Sumatra where he was one of the first US researchers to gain access to this hard hit area. A thirteen-member team of engineers led by EERI member, Sudhir Jain, Indian Institute of Technology, Kanpur, will investigate structural damages and impacts on port facilities along the eastern coast of India, as well as the Adaman and Nicobar Islands.

These initial EERI teams include geotechnical, structural, and coastal engineers, geologists, geophysicists, and experts in fluid mechanics. In subsequent efforts, a joint EERI/ASCE team of engineers will travel to the area along with social scientists from the Disaster Research Center at the University of Delaware. They will focus on damages to lifelines including highways, bridges, ports and harbors, water delivery systems, sewage facilities, and other utilities. They will also begin

to document the resulting impacts on communities and the entire region. These impacts include search and rescue operations, medical response, multinational relief, organizational response, effects on children and families, shelter and housing, and social and economic impacts. Members of EERI and other earthquake engineering experts who reside in the affected countries will also contribute results of their independent investigations. These reports will be compiled on the EERI website, published by EERI as part of the Learning From Earthquakes (LFE) program, and made available internationally.

For over thirty years, EERI has conducted the LFE Program, with funding from the US National Science Foundation, paying the travel expenses of volunteer researchers and practitioners who contribute hundreds of hours to investigate and report on damaging earthquakes and tsunamis around the world. Their valuable observations have led to advanced design codes and, better engineering practices, as well as improved emergency response and warning procedures. Jay Love, of Degenkolb Engineers, chairman of the LFE Program, notes that this event poses unique challenges. "Usually we focus on a local or regional area. The geographic scope of the tsunami impact demands the best people and the best technology we can muster." Team members are traveling with the latest in digital cameras, GPS units, and current satellite imagery to guide their field investigations and data gathering. EERI also plans on using advanced techniques to coordinate and disseminate the data using a web-based virtual clearinghouse.

Contributors and those interested in reports from the field are encouraged to access the site by way of the EERI website: [www.eeri.org](http://www.eeri.org).

## **Tilford Field Studies Scholarship Application**

Applications for the 2005 undergraduate and graduate Norman R. Tilford Field Studies Scholarships are now available on the AEG web site at [www.aegweb.org](http://www.aegweb.org) (follow the AEG Foundation link to Tilford Fund information).

Field study and interpretation of the resultant data is a cornerstone of our profession, and Past-President Norman R. Tilford was an impassioned teacher of field geology. The Norman R. Tilford Field Studies Scholarships are student awards granted by the AEG and the AEG Foundation (AEGF) in support of graduate and undergraduate field studies. Tilford Scholarship awards are made to qualified student members of the AEG based upon demonstrated scholarship, ability, participation, and potential for contributions to the profession. Students who are not currently AEG members, who are interested in the scholarship, may submit membership applications with the Scholarship Application form. Membership applications can be found on the AEG web site at [www.aegweb.org](http://www.aegweb.org).

### **THE APPLICATION DEADLINE IS FEBRUARY 1, 2005**

(Applications must be RECEIVED by this date to be considered).

See the AEG web site for more information regarding applying for the scholarship, or contributing to the Tilford Scholarship Fund.

If you have questions, please contact Deb Green, Chairman of the Norman R. Tilford Scholarship Committee, at (505) 867-0670 or [tilgreen@aol.com](mailto:tilgreen@aol.com)



We would like to take this opportunity to introduce you to Spectrum Exploration, Inc.

We offer Geotechnical and Environmental

Drilling services to Colorado (*Denver and Colorado Springs shop locations*) and surrounding states.

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**Case Histories**

The past two years, we have read about very interesting projects from Harry Siebert and Charlie Robinson. We are still looking for individuals to provide their knowledge and experience to the AEG-RMS community through case histories and articles of interest. Please contact Kristi Ainslie at [newsletter@aeqrms.org](mailto:newsletter@aeqrms.org) if you have anything you would like to share.

**Rock Cuts and Failure Along Roadways**

Press coverage on the recent Glenwood Canyon was as expected - short history of problems, a few academic interviews and how DOT will respond. Really not helpful - I have had 40 years of experience with rock falls and scaling.

In the 1960's it was clear that loose and/or unstable material above the right of way line was a problem. An example was an expressway section with lanes at different elevations. Below a 250+ foot cut, a single rounded boulder fell from 300+ feet and shattered a section of the southbound pavement with conchoidal fracture pattern and rebounded onto the northbound lane that was 40 feet in elevation below the southbound lane, damaging it also. I am sure the boulder was dislodged by work above the roadway. Upon inspection some rock at the top of the cut was reconfigured. Oblique photographs taken from a helicopter were used to define the work area. The result was obtaining an easement to maintain the slope above the right of way.

OSMRE and MESA have regulations relative to open pit slopes that relate to rock fall even after the mine closes. During mining, failure to maintain stable slopes will invite a citation from MESA staff.

Colorado DOT has an excellent snow avalanche control program during the winter months. It would seem that landslides, debris flows, and rock fall should have a similar program. The I-70 corridor will experience incidents until problem areas are corrected. It takes climbing, using platforms, precise photography, monitoring, etc to acquire the necessary data to develop a cross-section. Bench design, if considered, must have a drainage and maintenance access for cleaning the bench. New slopes must control blasting at the toe of slopes for drainage otherwise an excellent slope design can be compromised by a slope failure. A "rule of thumb" based on southern New England is - rock fall and slope unraveling seem to occur 3, 7, and 20 years after the cut was made. In Connecticut we inventoried troublesome rock cuts and addressed the top ten problems.

Two suggestions are: if talking to legislators, let them know that CDOT needs additional funds for rock slope maintenance and a one day conference on rock slope maintenance with the Highway Geologists. The latest GSA TODAY cover shows the talus accumulation from a columnar basalt outcrop difficult slope design. Columnar basalt of the Hanging Hills of Meriden, Connecticut have a name for the falling rock fragments "jingle stones" and the sound is bell like as they fall.

The issues with rock cuts and failure along roadways is a problem. On the other hand the Anasazi in Chaco Canyon stabilized Threatening Rock that lasted about 1000 years before it failed. Can we do better?

Harry Siebert

## Your Business Card Here

The section is looking for companies or individuals who would like to advertise their products or services in the section newsletter and on the website. This is anything from a business card (\$10/month), quarter page spread (\$20/month), to a half page exposition (\$40/month). If you are interested, contact Kristi Ainslie [newsletter@aeqrms.org](mailto:newsletter@aeqrms.org).

## RMS 2004-2005 Upcoming Presentations

February 10, 2005 – **Student Night!** *Student Presentations*

March 10, 2005 – **Geophysical Applications for Roadway Investigations**  
Khamis Haramy, Central Federal Lands Highway Division

April 14, 2004 – **Debris Flow Remediation**  
Erik J. Rorem, Geobrugg

May 12, 2005 – **Colorado Rockfall Program**  
Ty Ortiz, Colorado Department of Transportation

## Input Wanted – CGS Swelling Soil Booklet

Attached at the end of the newsletter is a request for input to CGS as they write the newest edition of their swelling soil booklet for homebuyers and homeowners. We know that they would appreciate your responses and input.

## Parting Words

We have been abnormally quiet the past few months, mainly due to our busy schedules, but we thought we would chime in on a few up coming items.

Student night is just around the corner (two weeks after the January meeting), we are looking for student presenters; please have your abstract to us by January 24<sup>th</sup> ([newsletter@aeqrms.org](mailto:newsletter@aeqrms.org)). We are also looking for exhibitors. If you have a booth you would like to set up or just donate to the cause it would be greatly appreciated by the future geologists and engineers that attended this meeting every year. A form is attached at the end of the newsletter.

Harry Siebert touched a hot topic this month with rock falls. As it turns out in May we will have Ty Ortiz from CDOT to discuss the Colorado rockfall program. One thing is for sure, AEG and AEG-RMS in particular has its finger on the pulse of engineering geology today!

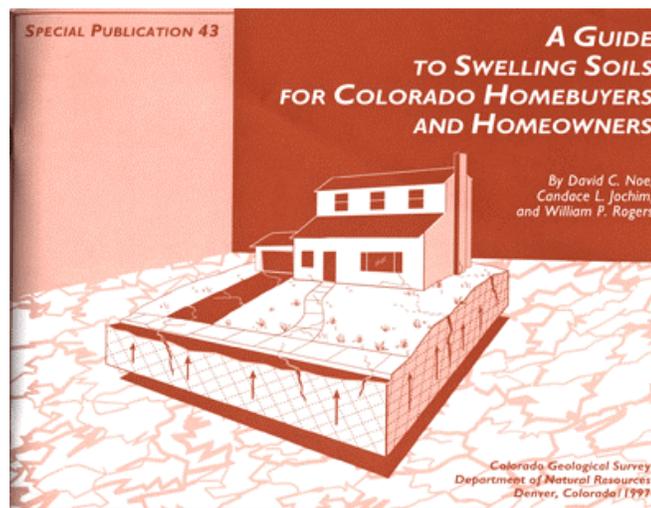
We hope to see everyone at January meeting.

The Editors  
Kristi Ainslie  
Ed Friend



## THE CGS WANTS YOU...

The CGS is writing the new Second Edition of Special Publication 43, "A Guide to Swelling Soils for Colorado Homebuyers and Homeowners." This award-winning publication has sold over 220,000 copies since it was published in 1997.



### **We Need Your Input**

We are looking for excellent photos of swelling soil-related damage and of major building design elements (floors, piers, foundation walls, etc.). Also, we are soliciting comments on the existing booklet, about changes in practice or design since 1997, and about the effects of the recent drought (i.e., shrinking soil damage).

Please contact Dave Noe at the Colorado Geological Survey: at (303) 866-2432 or [dave.noe@state.co.us](mailto:dave.noe@state.co.us). Please respond before January 31, 2004.

# AEG STUDENT / CAREER NIGHT FEBRUARY 10<sup>TH</sup> 2005

Please join us for this annual event and help support our section and the students

February 10<sup>th</sup>, 5:30pm in the Student Center at the School of Mines. \$20 for members.

## RESERVE A BOOTH

Cost for a booth is \$100. You will receive a 6-foot booth space and a dinner.

## STUDENT DINNERS

You may also sponsor a student for dinner at a cost of \$25.

Please complete below:

Company Name \_\_\_\_\_

Name \_\_\_\_\_

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Booth Reservation \_\_\_\_\_ @ \$100/each

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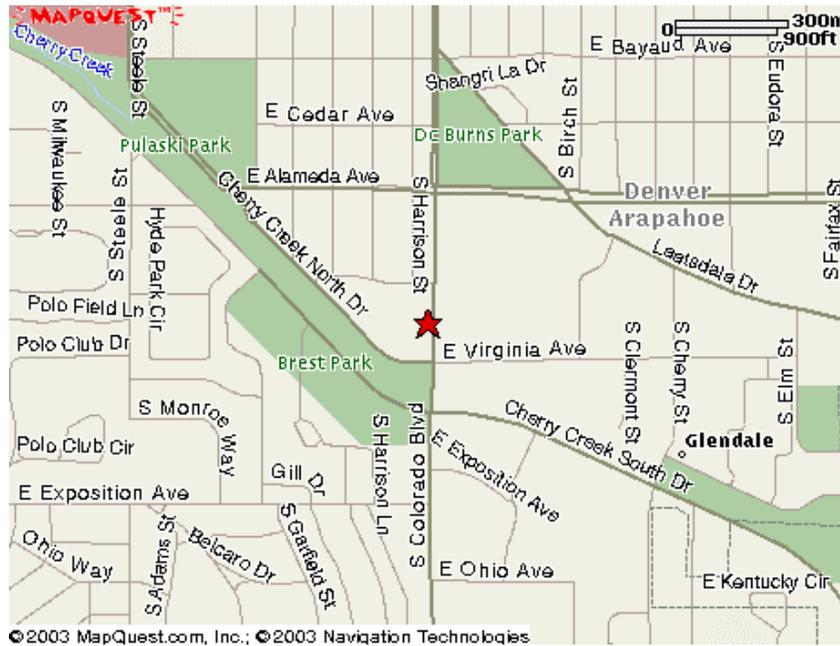
Total \_\_\_\_\_

Mail check made out to AEG, to PO Box 280663, Lakewood CO 80228-0663

For more information or to sign up by phone please contact:

Ben Arndt (303) 781-9590

Ed Friend (303) 598-5403 (cell)



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