SEAC GENERAL NOTES
Structural Engineers Association of Colorado Newsletter

MAY GENERAL MEETING

Schedule

Mark Your Calendar
(2007)

General Membership Meetings
(Breakfast 7:30 a.m.)
January 25
March 15
May 17
July 19
September 20

Business Practice Committee Meetings
(Breakfast 7:30 a.m.)
February 8
April 12
June 14
August 9
October 11

SEAC Board of Directors Meetings
(7:30 a.m.)
January 11
February 7
April 4
June 6
August 1
October 3

Annual Dinner Banquet
November 15
6 - 9 p.m.

EARTH RETENTION SYSTEMS

John H. Hart, P.E. with Coggins and Sons, Inc. will speak on Earth Retention. John will discuss the different types of earth retention systems that can be used and how to select the most appropriate earth retention system for a particular project. He will provide some insight on how the earth retention system should interface with the future structure as well as talk about situations that structural engineers should be aware of with below grade construction based on his past experience. The City of Denver Building Department adopted new requirements for excavation and shoring procedures for permitting and inspections for one and two family dwellings in April of 2006. John will discuss what is specifically required by The City and County of Denver to satisfy these requirements.

Mr. Hart is an Engineer with Coggins and Sons, Inc. He received his Bachelors of Science and Masters of Science degrees in Civil Engineering from West Virginia University. John is a Registered Professional Engineer in Colorado and four adjoining states. He has designed a wide variety of specialty geotechnical projects including: landslide stabilization, permanent and temporary earth retention, and foundation support. John is an active member of CAGE (Colorado Association of Geotechnical Engineers) where he serves as a Board of Director. In addition, he is actively involved in ADSC and DFI.

Don't Miss Out - May General Meeting

Date: Thurs. May 17, 2007
Speaker(s): John H. Hart, P.E.
Location: Renaissance Denver Hotel
3801 Quebec Street (South of the I-70 Quebec Intersection)

Please e-mail your reservations to Caryn at: ***seac@martinmartin.com***.
Reservations MUST be made By 12:00 pm - Monday, May 14, 2007.

Officers & Board Members

Stan Neujahr
President
Neujahr & Gorman, Inc.
303-377-2732
stanneujahr@neujahrgorman.com

Rodd Merchant, P.E.
VP/Treasurer
JE Dunn Construction
303.691-7632
rodd.merchant@jedunn.com

Elizabeth Jones
Secretary
KPFF Consulting Engineers
303-865-5800
elizabeth.jones@kpff.com

J.R. Barker
Past - President
Structural Consultants, Inc.
303-399-5154
jr@sci-denver.com

John Malcom
Director
Peak Engineering, Inc.
303-274-0707
jmalcolm@peakengr.com

J.D. Schafer
Director
Stresscon Corporation
303-777-0977
jdschafer@stresscon.com

Jim Royston
Director
Western Engineering &
Research Corp
303.757.4747
jim@werc.com

Submit comments/articles to:
Ben Nelson
Newsletter Editor
Structural Engineers
Association of Colorado
c/o **Martin/Martin, Inc.**
12499 West Colfax Avenue
P.O. Box 151500
(303) 431-6100 x400
(303) 431-6866 fax
bnelson@martinmartin.com
WWW.SEAColorado.org
Information for inclusion in the newsletter must be received one month prior to the next general

Caryn L. Bauer
SEAC Executive Assistant
seac@martinmartin.com

President's Message

EMAIL MANIA

Can anyone get any work done anymore or is all our time taken up by reading and responding to e-mails, that, for the most part, are not necessary? No sooner do I read and print out an e-mail than another one shows up with all of the previous comments plus one additional comment like 'Does this mean that the shop drawings will be ready on the 24th ?' and this sets off another round of e-mails.

A Corporate Management Service Company sent an architect I work with an e-mail requesting that the structural engineer review the specs on a UPS that was being purchased. This e-mail was copied to five other people. Without even understanding what the e-mail was about, the architect forwarded the e-mail on to me for my review. I had no idea what a UPS was or where it might be located. We had designed additional support for some roof top mechanical units on the project but after reviewing the specs for the UPS it appeared to be some kind of electrical equipment. I responded to the e-mail explaining that I did not know what the piece of equipment was or where it was located. The architect then e-mailed me a response that made no sense. All of these e-mails were copied to all five of the other people that were copied on the original e-mail. I finally picked up the phone and called the architect and found out that the piece of equipment went on a raised floor that we had nothing to do with and in a couple of minutes the issue was resolved.

Along with checking all of the voice mail messages, you have to constantly check your inbox because, heaven forbid, you didn't have outlook open the exact time someone sent you an e-mail. Now along with all of the male enhancement e-mails, friends sending funny or otherwise indecent e-mails and my daughter's hockey coach e-mailing me the practice times, my wife is sending me e-mails wondering how my day is going or asking when I will be home. Employees thirty feet away are sending me e-mails. Another frustrating thing with e-mails is when you transpose two letters in the e-mail address and it comes back to you in a few minutes and then you need to spend more time figuring out what was wrong and then send it again.

E-mail management is a whole other subject. Right now I have 113 e-mails in my inbox and 668 in my sent folder. There are so many e-mails in my sent folder it would take me a couple of hours just to go through them and delete the ones that I do not want anymore. Of course when you have deleted the e-mail you then need to go to the deleted folder and delete the items you just deleted. Sometimes I just pick a date and delete all of the e-mails older than that date. I need a course on e-mail management. I am sure that my 15-year-old daughter will know how to manage her e-mail when she is my age and probably already does.

E-mail is here to stay. There are a few good things about e-mails. You don't have to talk to someone you don't want to talk to and you can just send them an e-mail. Another good thing is that I can e-mail this article to Caryn and then she can e-mail this newsletter to you.

On another note, everyone should plan on attending the May 17th breakfast meeting. John Hart with Coggins & Sons will have a presentation on excavation shoring that is both interesting and valuable.

Stan Neujahr

Welcome

Please welcome our newest members to SEAC:

James P. Horne (Professional Member)
Horne Engineering Solutions, LLC

William P. Caldwell (Professional Member)
Wiss, Janney, Elstner Associates, Inc.

Patrick Finley (Professional Member)
KPFF Consulting Engineers

Michael J. Kerker (Professional Member)
DRS Enginering Contractors

Garth Scholl (Affiliate Member)
Martin/Martin, Inc.

NUCOR
VULCRAFT GROUP

SPONSOR FOR MAY'S GENERAL MEETING
THANK YOU

Vulcraft is a division of Nucor Corporation – the largest steel producer in the United States and the world's largest recycling company. The Vulcraft division is the nation's largest manufacturer of open web steel joists and joist girders with seven manufacturing facilities. These plants have a combined capacity of 715,000 tons annually. Steel deck is manufactured in nine facilities including Verco Decking, Inc., which is a wholly owned subsidiary of Nucor Corporation. Steel deck capacity is 570,000 tons. Vulcraft obtained 99% of its steel requirements for both steel joists and deck from the 11 Nucor Steel bar mills and 4 Nucor Steel sheet mills in 2005 and 2006. Steel used for joist production contains over 99% recycled materials. Steel sheet used for steel deck production contains 70% recycled materials. With manufacturing facilities nationwide, steel joists and steel deck can be manufactured within 500 miles of almost any project site, helping to meet LEED requirements.

Vulcraft has 7 employees located in the Denver sales office including 3 engineers to assist local engineers and steel fabricators in the use of our products. The local Vulcraft office also handles estimating, project management and detailing for Colorado and most of Wyoming. All steel joists and steel deck delivered to Colorado is manufactured at the Norfolk, Nebraska manufacturing facility.

MARCH BREAKFAST MEETING

Al Claybourn, featured speaker at the March General Meeting, discussed QBS (Qualifications Based Selection). The local Colorado chapters of AIA, PEC, and ACEC formed QBS Colorado. CAGE subsequently joined, and Al, a Past-president of CAGE, currently sits on the board of QBS on behalf of CAGE. Al was responsible for soliciting the involvement of SEAC in QBS.

The program represented Al's perspective of what structural engineers might want to know about local geotechnical practices. He provided an overview of exploration techniques; fill density testing, swell-consolidation testing, and how estimated footings settlement is calculated.

Thank you, Al for speaking at the March General Meeting.

THANK YOU - LAM WOOD for Sponsoring the March SEAC General Meeting

GENERAL NOTES - *Keep them CLASSIFIED!*

Structural Engineers Association of Colorado Newsletter Classified Section
& Other General Announcements

Structural Frame Engineer

Weyerhaeuser's iLevel business is leading the world's structural framing market with innovative products, systems and services for use in Residential & Commercial applications.

Structural Frame Engineers are in daily contact with customers & sales team; providing engineering guidance & ensuring proper product applications. Technical services are provided to support specification of Weyerhaeuser products through a team located across the US.

We develop software applications (TJ-Xpert®, TJ-Beam®, Javelin®™) that allow our strategic partners to design & specify engineered lumber and other structural frame products.

Position is for a Registered Professional Engineer located in Henderson, Colorado.

Please submit resume online:
http://www.weyerhaeuser.com/careers/opportunity/employment/

Ref - 01001594

We seek to hire talented structural engineers with 0-10 year's related experience and BSCE, BSAE, MSCE or MSAE Degree with focus on structures. If you are highly motivated, possess strong technical and communication skills, and are passionate about your career, we offer an environment in which you can thrive.

Our employees enjoy a competitive salary, incentive bonuses, 401-k contributions and company stock ownership benefits as well as generous vacation and insurance benefits. Martin/Martin, Inc. is an Equal Opportunity Employer.

Email or fax your letter of interest and resume' to:
Martin/Martin, Inc.
12499 W. Colfax Ave.
Lakewood, CO 80215
303-431-6100 (p)/303-431-6866(f)
bnelson@martinmartin.com
www.martinmartin.com

A Guide For Consulting Structural Engineering Services: A Recommended Standard Of Practive
Price: $25 (members) and $50 (non-members)

2006 Survey of Colorado Building Departments
Price: $25.00 (If you attend Last year's Seminar)
Unit Price: $50.00
CD: $100.00

Contact Caryn Bauer at seac@martinmartin.com FOR ORDER FORMS.

Classified Adds Policy

The employment ads provided in this month's newsletter are being included unedited as they have been written by the participating firms.

To place an ad please contact Caryn Bauer at seac@martinmartin.com

Employment Ads must be kept to 100 (maximum). The cost is $100.00.

Structural Engineers Association of Colorado
RESOLUTION TO ENDORSE QBS and BECOME A MEMBER of QBS

The Structural Engineers Association of Colorado (SEAC) has resolved to endorse the tenets of Qualification Based Selection (QBS) and become a member of QBS Colorado. It is the opinion of the SEAC that following the QBS process will result not only in better quality of service and value for the structural engineer's client, but also in an overall betterment of the profession.

In the QBS process, selection of an engineering professional begins with a Request for Qualifications, followed by a process of selection of the most qualified firm based solely on their qualifications for the contract and not based on price, and then followed with a subsequent negotiation of scope and fees. A fair and reasonable fee is negotiated with the selected professional. If a reasonable fee is not negotiable with the selected professional, then the second most qualified professional is then selected for negotiation. Colorado law (SS 24-30-1401 to 24-30-1408, C.R.S. (1988 & 1991 Supp.)) requires this process to be used if state funds are involved in a project. At the federal level, the "Brooks Act" of 1988 requires that qualification based selection be used on federally funded projects.

The QBS process results in a more productive relationship between the client and the engineering professional. QBS does not use price as a selection criterion. While price is important, when professionals are faced with a bidding situation, they are put into a situation that is a conflict of interest. They are forced to concentrate on their own interests (controlling their costs) instead of the interests of their client (the best solution). They have to first "win" the contract based on lowest price and then find ways of executing the work economically, rather than concentrating on what is the best solution for their client. They are forced into providing the simplest solution for the firm instead of the most appropriate solution for their clients.

Bidding of fees sets an adversarial tone to the selection process and relationship between a client and the professional engineer. The professional selected should be part of the client's team representing their interests in the execution of a contract, and should not be an adversary. The most appropriate solution to a client's problem frequently isn't clear. A professional has to investigate, analyze, and research the problem to find that solution. The effort it takes to do this is not always predictable. If forced to low bid their fee, the effort becomes constrained by cost. Ideally, the firm selected should be considered a partner with common goals and expectations. Professionals who are committed to finding the most appropriate solution for their clients provide the best service.

A professional engineer should be selected on the basis of their unique qualifications and capabilities, and on how their knowledge and experience can be applied to the project as a valued member of the team. If they are the most qualified, then the professional and the client should discuss each other's expectations. If a fee cannot be agreed on, the next qualified firm should then be approached.

The American Public Works Association, the Associated General Contractors, the American Council of Engineering Companies, the American Institute of Architects, and the National Society of Professional Engineers, Coalition of Geotechnical Engineers endorses QBS.

The following resolution will be put to a vote of our membership at the May breakfast meeting. Becoming a member of QBS Colorado will require the Structural Engineers Association of Colorado to appoint a representative to attend the QBS Colorado Board meetings and there is an annual membership fee of $1,200.00 for the support of QBS Colorado. You can go to the following web site to find out more about QBS Colorado www.acec-co.org/qbs/. If this resolution passes, the Board will be seeking an individual to serve as our representative.

SEAC and SEER Helps in Southeast Colorado

On January 5th, we received a call from Becky Baker, the Director of Building Safety for Jefferson County. She had been asked by the Colorado Emergency Operation Center for help evaluating the condition of buildings in southeastern Colorado. There was concern the buildings may have been damaged, or were on the verge of collapse under several days of heavy snows and blizzard conditions. She contacted *JR Barker*, who referred her to our committee. She requested our assistance in evaluating the conditions on the school buildings in Baca and Prowers Counties. The local school officials were questioning if it would be safe to open the buildings for the students and staff after Christmas break. We agreed to provide help for three days. **Mike Piper** and **Brent Norris** were the only SEER committee members available on short notice at the time requested. In addition to Mike and Brent, Tim Frazier with CDOT, and **Jim Harris** and **Ben Cook** from J.R. Harris & Company assisted in the effort. Tim is a Structure's Specialist on the FEMA Urban Search & Rescue, Colorado Taskforce team with Mike and Brent.

Jim and Ben were staged in Lamar. They were responsible for reviewing nine school buildings in the towns of Lamar, Granada, and Holly. They ran out of time and daylight to review the buildings in Granada and Holly.

Tim, Mike, and Brent were deployed to Springfield CO to review buildings in Springfield, Walsh, Pritchett, Vilas, and Campo. They also were able to make it to Holly just before sunset. They were not able to get to Granada during the daylight, so they contacted the school representative by phone.

The primary concern at most of the buildings was whether the snow on the roofs had created any reason for concern. Therefore, we needed to evaluate the weight of that snow. Many of the buildings contained hard ceilings that prevented access for us to see the roof structure. To evaluate the weight of the snow, we used sampling tubes fashioned after the system used by the U.S. Army Cold Regions Research and Engineering Lab. The 2" diameter tube is conveniently sized such that the weight of the snow in the sampling tube in grams divided by a factor of 10 equals the weight of the snow in pounds per square foot. The primary trick in the process is successfully extracting the full column of snow inside the slippery tube from the section of snow you are measuring.

Prior to leaving Denver, we checked the data listed in the 1971 SEAC Snow Load Survey for a point of reference when evaluating the loads we would be measuring. That survey indicates the recommended design snow load in that area was 20 psf. In addition to the snowfall amounts being large, there was an accumulation from several consecutive storms and blizzard winds. Generally, we found winds had cleared off the large flat, or slightly curved roofs that were built with short parapets. In zones up and downwind from higher obstructions, classic snowdrifts were found. Those became the areas we focused our attention on. Roofs were framed with various systems including early generation bar joists, riveted steel trusses, standard wood joists, wood I-joists, and wood trusses. When the framing was not accessible, we used visual observations to look for signs of excessive deflections. We never found signs of distress significant enough to warrant destructive demolition to expose the framing in those situations.

SEAC and SEER Helps in Southeast Colorado, Continued

There were a few buildings where we were not able to reach the roof.

Our measurements of the snow loads indicated the snow was considerably more dense that what we had found in the Denver area. We had measurements of snow depths ranging between 11 and 57 inches. The weights found ranged between 10 psf and 106 psf. The average depth measured was 33.5 inches and the average weight measured was 54 psf. The weight of snow per inch of depth ranged between 0.9 and 2.1 psf, with a mean value of 1.6 psf per inch of depth. In past, Denver storms, the density of the snow had been closer to 1 psf per inch of depth. The apparent densities measured here may be higher because of the wind driven snows, and because of the settlement that likely took place during the delay between when the storms ended and the time measurements were taken. We also found layers of slush immediately above the roofing membrane, which may have been due to heat from the building melting the snow.

Our observations at several of the buildings led us to recommend additional snow needed to be removed from the roofs. In many cases, the local townspeople had already been shoveling snow from the roofs prior to our arrival. Some buildings appeared to be safe as is. Another storm was being forecast for later that week, so where the current status appeared to be marginal, we recommended shoveling some of the snow off in case the storm was as heavy as being predicted. We typically cautioned them to avoid large concentrations of people in any one place while shoveling that snow. As it turned out, the forecasted storm did not materialize. We observed only one major failure that occurred in Campo. The locker room facility located at the south wall of the taller gymnasium building suffered a partial collapse when a large drift hanging off of the gymnasium fell on the roof below. People were taken from the building only moments before the collapse. They also had photographs documenting the incident. The structure of the locker room was a pre-engineered metal building.

The other building we found showing distress was the Post Office in Walsh. It was housed in an old privately owned, leased building on Main Street. The roof was framed with a series of queen post trusses spanning parallel with the street, across the width of the building. These trusses supported the 2x rafters. Prior to our visit, the local Fire and Rescue personnel had shored three of the trusses and shoveled the snow off of the roof. The tension rods

Continued on Page 9

SEAC and SEER Helps in Southeast Colorado, Continued

were spliced with turnbuckles near midspan. One of the pair of rods at two of the trusses had pulled from the turnbuckles. We estimated the age of the building to be from the early part of the 20th Century. One of the rods appeared to have been installed with less than a single thread engaged. The other rod was a 7/8 inch diameter rod that was threaded to a ¾ inch diameter. The turnbuckle was a 7/8 inch diameter. No, we're not kidding!

Although this deployment was not for the life-threatening situations the SEER Committee response is intended for, the State needed assistance in verifying the schools affected by these snow storms would be safe for the students and staff. Since there is a distinct lack of local engineers within that portion of the state, we were happy to offer our services. The charming people in those towns welcomed our assistance with open arms, and they took excellent care of us. We understand that following the storms, other engineers were called in to assist in designing the necessary repairs.

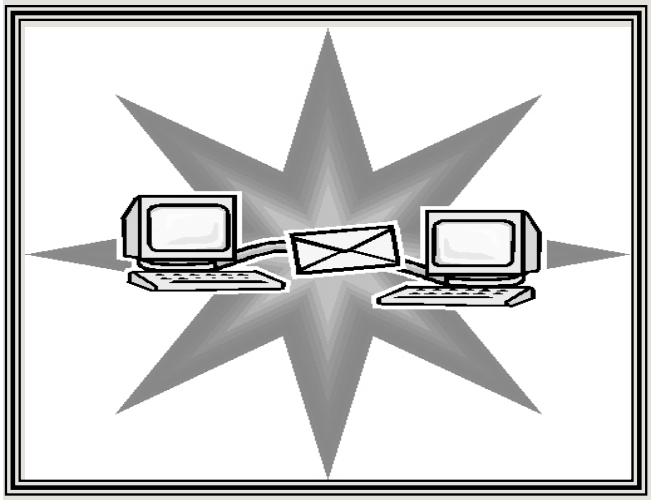
-Brent Norris-

Please be sure to check out the 2007 Membership Directory/Roster for your name and contact information.

Please send all changes to seac@martinmartin.com.

CEU CREDIT FOR SEAC

REMINDER: CEU HOURS ARE TRACKED BY MEMBERS SIGNING THE ATTENDANCE SHEET AT EACH GENERAL MEETING. SIGNING THE ATTENDANCE SHEET ASSURES YOU OF RECEIVING 0.1 CEU HOURS FOR EACH MEETING ATTENDED. CERTIFICATES ARE MAILED AT THE END OF THE YEAR.



If you have a change of address, phone, fax, or e-mail. Please e-mail Caryn Bauer at ***seac@martinmartin.com***