SEAU *NEWS*

The Newsletter of the Structural Engineers Association of Utah

Volume X- Issue VIII May 2006

This newsletter is a monthly publication of the Structural Engineers Association of Utah.

Articles or advertisements appearing herein may be submitted by anyone interested in expressing a viewpoint on structural engineering.

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The Church of Jesus Christ of Latter-day Saints - HEBER VALLEY CAMP

see page 2.

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MAY EVENT

SEAU MEETING

ATC-20 Training.

Wednesday May 17, 2006
3:00 PM – 7:30 PM
Held in the Theater at the
Olpin Union Building
Univerity of Utah

Presented by
Robert A. Bruce S.E.
w/ Applied Technology Council

Free for SEAU members and
$20.00 for non-members

Dinner to be provided at 5:00.
Please RSVP by May 12
to seau@seau.org

MESSAGE FROM THE BOARD

The Ball IS Rolling

By Julie Ott,
SEAU President

The focus of SEAU this past year has been to "Keep the Ball Rolling."

As SEAU's 25th Anniversary comes to an end it is very rewarding to look back at the original SEAU goals and to evaluate them compared to today. SEAU's focus remains unchanged in 25 years. The difference is the increased breadth and depth at which we work to accomplish our mission and goals.

The SEAU committees diligently accomplish a multitude of tasks. This year efforts have been made to make sure that all the SEAU members know just how much work is being conducted on your behalf. This has been accomplished through a significant increase in committee updates and reports published in the SEAU News.

Hopefully the additional information provided on committee activities has compelled you to pick up other journals, articles, codes, etcetera to do additional research for yourself. I know that thru publication of the committee

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MEMBER FORUM

FOCUS

Salt Lake City and the greater Wasatch Front are growing into a major metropolitan region with many interesting buildings that define our historical, business and cultural qualities. SEAU NEWS will highlight some most interesting and important buildings over the next several months. (If you have a particular interest in a building you would like to see highlighted in this space, please contact the Newsletter Committee). This month the focus is on:

The Church of Jesus Christ of Latter-day Saints

HEBER VALLEY CAMP

Article by: Dean Webb
Edited by: Cameron Empey

In 1999, the Church of Jesus Christ of Latter-day Saints purchased two contiguous parcels of land totaling, 8,134 acres just east of Heber City, Utah in rural Wasatch County. In 2001 a third, adjacent parcel of 279 acres was purchased for spring water protection. Also in 2001, an adjoining parcel of approximately 100 acres containing a rock quarry was acquired as a source of sand and gravel for camp development. These acquisitions, coupled with a nearby 42-acre parcel already owned by the Church resulted in approximately 8,555 acres of mountain property in this area.

The Heber Valley Camp, located approximately 9 miles east of Heber City, Utah, is being developed by The Church of Jesus Christ of Latter-day Saints to serve the needs of the Young Women Camp program. The facilities will be open to other activities such as family reunions, father/son outings, scouting, youth conferences, and leadership training, during the fringe seasons. In 2003, the initial phase of the camp became available for use, and was able to accommodate approximately 500 visitors at that time, with additional camp sites, and other facilities, anticipated each year. In 2004, the camp was able to accommodate 1,000 visitors. In 2005, the camp was able to accommodate 1,350 visitors. In 2006, it is anticipated the camp will accommodate 1,750 visitors. When completed, the camp will accommodate 7,500 visitors. The camp is being developed on land covering more than 8500 acres ranging in elevation from 6200 feet to 10,000 feet.

The camp is divided into campgrounds that can accommodate between 250-350 people each. Each campground has a large pavilion, amphitheater, restrooms with flush toilets and hot showers, and cabins for sleeping. The large pavilion can accommodate 250 people and is equipped with a commercial kitchen, walk-in refrigerator/freezer, staff quarters and a first aid room. Each campground is divided into small campsites which have three to four sleeping cabins and a small pavilion to accommodate smaller groups. Each cabin sleeps 16 people. The small pavilions are used mainly for meeting in small groups, cooking and food storage. Hiking trails and overnight back country camping are also available.

Design and construction of the camp facilities cover many aspects of the engineering profession. The civil engineering focuses on the environmental impact, roads, buildings, and other improvements would have on the wildlife and vegetation at this site. The mountainous terrain increased the complexity of the design and engineering because of a desire to preserve and maintain the natural and aesthetic environment. The structural engineering challenges included the severe winter conditions (6-12 feet of snow), shortened building seasons, and demand for completed structures in time for the camping season.

The anticipated camp population is the size of many small cities with the accompanying infrastructure

FOCUS (cont.)

required to support that population. The following infrastructure has been included in this project:

- an elaborate transportation (road) system including erosion control and drainage system
- campground layout and design
- design of structures that meet the needs of the camp and are environmentally compatible
- develop a new public drinking water system including source protection, source development, 0.5MG reservoir, transmission, and distribution system
- mechanical wastewater treatment facility including a new innovative underground drip disposal system
- sanitary sewer collection system
- underground propane fuel storage and delivery systems
- medium voltage power transmission and distribution system.

MESSAGE FROM THE BOARD (continued from page 1)

goals several members have been propelled to get out and join a committee and become active in YOUR organization.

The main goal of the SEAU board is to protect the health and welfare of the public. This is primarily accomplished thru continuing education in the form of monthly meetings and seminars. The multitude of other actions taken by the committees, national representation, and etcetera is a direct result of the strength of the organization.

This year many of the long and short-term goals have been completed, and include, but are but defiantly not limited too:

- All Life Professional members honored at the Fall Social
- Major overhaul of the SEAU By-Laws
- Standard of Care printed and present at the buildings officials conference in St. George
- Preparation for hosting NCSEA in September
- SEER Committee's volunteer/call tree was implement with many volunteers for the NCSEA Hurricane Katrina

I would also like to recognize and thank gentlemen who have been a great support and wonderful to work with. Barry Arnold, Jeff Miller, Don Barfus, Jake Watson, Don Barker, and Mike Buehner.

Finally the question that has been asked of me at least a 100 times this year: "What is it like to be the first female SEAU President." My standard line has been that I was more impressed to most likely have been the youngest SEAU president. The real answer – when an almost 300-member origination, comprised of your peers and mentors chooses you to be the president: Honored

Thank-you

Julie Ott

UPCOMING EVENTS

May 26-27, 2006

The **University of Utah** ASCE student chapter is hosting the **National Steel Bridge Competition** this year. The competition will be May 26-27. **Judges are needed for the event**. Judges do not need to be PE's, but do need to have a technical background and be able to commit to BOTH days.
If you are interested in being a judge for the event, please email asce.uofu@gmail.com

September 15, 2006

Ron Hamburger's presentation at the April SEAU meeting was canceled to due 'airport logistics problems.' We apologize for any inconveniences this caused you. Ron's presentation is scheduled for September 15 at the Marriott Galavian Center in conjunction with the NCSEA Conference.

SEAU MEMBERSHIP APPLICANTS

No individuals have submitted an application for approval by the SEAU membership committee this month.

NOMINATING COMMITTEE

The following members were nominated for next year's officers and board members:

Vice President/President Elect: Barry Welliver
Secretary: Russell Merrill
Board Member: Shaun Packer
USSC Representative: Jake Watson

Included on the ballot is a vote on whether to make the changes to the bylaws that were included with the February newsletter. These changes may also be found at the the "Members" area of the SEAU website.

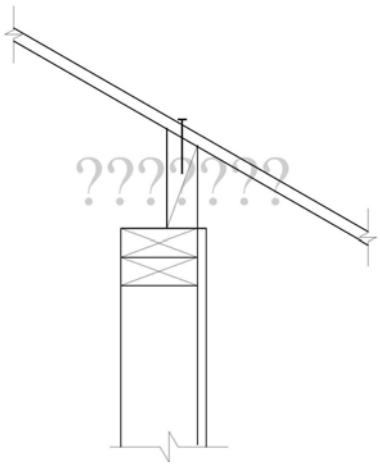
Ballots have been mailed to voting grade members. Please take this opportunity to vote.

We would also like to thank the members of the 2006 Nominating Committee; Steve Cohen, David Pierson, J.R. Richards, Leon Tanner, & Jeff Miller.

FULL HEIGHT BLOCKING **by JEROD JOHNSON**

Full Height Blocking – Pick your battle

Having recently undertaken the painstaking process of home construction, my awareness of one particular code issue has been heightened. I have looked at dozens of homes under construction and I found that not a single one of these homes appropriately addressed the full height blocking issue prescribed by R802.2 and R606.10(1) of the 2003 International Residential Code . So, why is this provision ignored to such a degree? Possible answers include lack of understanding and probably more than anything else, economics.



In my constant strivings to be a responsible and conscientious engineer, I felt it necessary to enforce this code provision for my own home, lest I be hypocritical. To that end, I first sought clarification from the building official. His response, "*…the engineer who stamped the drawings is the one who should say whether blocking is required…"* I was both amused and concerned by this response. I was amused because it gave me the impression that as engineers, we are at liberty to pick and choose those provisions of the code that we believe are applicable to our project. I then became concerned as I considered the possibility that there are engineers (certainly not within the body of SEAU…) who would do exactly that…pick and chose the code provisions that they would like to follow. I also found it interesting that a building official, whose job it is to interpret and enforce the code, would simply say that the engineer can do as he pleases. The response from this particular building official is not unique. In the past several months I have heard much anecdotal evidence of building officials throughout the state having this same mentality.

My next step was to follow the building official's logic and contact the engineer who was responsible for the preparation of the structural portion of my home plans. The engineer was very qualified and addressed my concerns satisfactorily. It was clear that the design intent of this engineer was for full height blocking and diaphragm boundary nailing between the truss bearing points. The drawings even showed the full height blocking and called for the appropriate roof diaphragm nailing. Having received this clarification from the engineer I informed him of my intentions to clarify this issue in the minds of those performing the work. The engineer warned me of the arguments that possibly awaited me which included the need for adequate attic ventilation which the blocking would prevent, the difficulty of shaping and installing the blocking, and of course the classic argument "*We've never done it that way*!.... *I've been building houses for 30 years*!" Of course any of these issues are easily overcome with a little creativity and persistence.

After adequate preparation, I presented this issue to those swinging the hammers at my future home. My request was met surprisingly well, much better than I expected. Only time will now tell whether this fight is over or whether it has just begun.

After discussing this issue with many other engineers, the consensus is clear; full height blocking is required in order to adequately collect lateral loads from a roof (or floor) diaphragm and distribute them to the shear walls below. Hence, the aforementioned code provisions have merit…at least in the design community. But, does the installation of these blocking elements ever follow the prescriptive code requirement? I think not often. As a rule, rather than the exception, this provision is widely overlooked. Fortunately, the loads that the blocking assemblies are meant to address are so transient in that they rarely constitute a serious concern. But, the results of such ignorance of this particular code provision can be catastrophic, as witnessed following large earthquakes at other areas and large windstorms (or tornadoes) right here in Utah.

As an association, what can we do to enforce such code provisions? Perhaps we can begin by policing ourselves. In my own opinion, any engineer who would willfully neglect a code provision such as this should lose his license. At the very least such an individual should not be afforded membership in our fine organization. Second, I believe it is a matter of scope of services that engineers offer. I'm told that an engineer makes about $300 dollars for reviewing and stamping the typical set of house plans. Though the plans may contain sufficient information for addressing this issue, how can the engineer be assured that the builder is following his design intent unless his budget is sufficient for him to also perform at least one site observation? Certainly, incorporating a visit and identifying non-compliant issues would go a long way toward closing the window of risk and liability for the designers should an extreme event (wind or seismic) occur. Third, the building officials need to become educated. They need to understand what their roles are as the 'enforcers' of the code. Inspectors need to be well trained in all aspects of construction, rather than just choosing their favorite issues to pursue.

As a final thought; as a body, what can we as members of SEAU do to ensure enforcement widely overlooked code issues such as this? Your feedback is solicited (jjohnson@reaveley.com).

BULLETIN BOARD

SEAU – SEER COMMITTEE by BLAKE HOSKISSON

Structural Engineers play a unique role in providing assistance during and after an emergency. Their efforts need to be integrated with other emergency personnel to effectively respond to disasters which affect the built environment. The Structas4a BTffort80

MAIL TO THE EDITOR -

After reading the article published in the March 2006 SEAU newsletter (written by Chris Kimball) and discussing it with fellow colleagues, we respectfully disagree with the statement that structural engineers are misinterpreting the building code with regards to the Design Spectral Response Accelerations.

There are two topics I'd like to discuss to illustrate our reasoning, 1) Design Spectral Response Accelerations Procedures and 2) Analytical Procedures.

Design Spectral Response Accelerations

The IBC2003 and ASCE 7-02 provide two methods of determining Response Spectrums.

1. General Procedure defined in IBC2003 1615.1 or ASCE 7-02 9.4.1.2
2. Site Specific Procedure defined in IBC2003 1615.2 or ASCE 7-02 9.4.1.

The IBC2003 section 1615.1 states that the Site-Specific Procedure is only required for structures on sites classified as Site Class F. For all other site classes the General Procedure may be used. The author of the article indicates that capping the values of S_S and S_1 at 1.5 and 0.6, respectively, cannot be applied to the General Procedure since this statement is found within the Site-Specific Procedures (IBC2003 section 1615.2.2 and ASCE 7-02 section 9.4.1.3.2). We agree with this statement, but this is not the source of capping the values of S_S and S_1 at 1.5 and 0.6, respectively, when the General Procedure is used. This leads into the second topic.

Analytical Procedures

After determining that the General Procedures may be used for calculating the Response Spectrums and the building is defined as a regular structure with a short period, the next step is to decide which analytical procedure is permitted based on the Seismic Design Category and Structural Characteristics (See ASCE 7-02 Table 9.5.2.5.1). Out of the 6 possible procedures, only one allows you to cap the values of S_S and S_1 at 1.5 and 0.6, respectively. This procedure is the Equivalent Lateral Force Analysis (ASCE 7-02 section 9.5.5.2.1) with the code reading as follows…

"For regular structures 5 stories or less in height and having a period, T, of 0.5 sec or less, the seismic response coefficient, C_s, shall be permitted to be calculated using values of 1.5g and 0.6g, respectively, for the mapped maximum considered earthquake spectral response accelerations S_S and S_1."

We are of the opinion that those structural engineers using the General Procedure for calculating the Response Spectrum and the Equivalent Lateral Force Analysis Procedure to determine the base shear forces for regular structures are not misinterpreting the code when they cap the values of S_S and S_1 at 1.5 and 0.6, respectively.

We appreciate what SEAU does to create an atmosphere of learning and discussion. I hope this may clear up some confusion on the topic.

Troy M. Dye, P.E.

ON ETHICS by DEBORAH LONG

Does Ethics Pay?

On occasion when I provide workshops on ethical decision making skills, participants ask me, "Will I get what I want if I'm ethical?"

That's a tough question. "It really depends on what you want," I usually respond. "If what you want is a faster, sportier car or a bigger, more ostentatious home --then no, probably being ethical won't help you obtain those material goods." On the other hand, I also observe, being ethical allows you to look at yourself in the mirror as well as to sleep better at night.

This is not a satisfactory answer for a number of my students. I realize that some of my students think that if all you get out of being ethical is a better night's sleep, they might find it more appealing to fall asleep in front of their big-screen TVs in their 10,000 square foot mansion. A recent movie--The Insider-- also made it painfully clear that being ethical can be very costly in terms of personal and professional consequences.

In order to create a more compelling argument for being ethical, I decided to find out if being ethical pays off in more tangible ways. Guess what I found out? Unethical behavior costs.

Example #1. Discriminating against employees based on race cost Texaco $176 million.
Example #2. Overstating profits to investors cost Mercury Finance $2.2 billion in stock losses virtually overnight.
Example #3. ADM paid $100 million in criminal fines--the largest in history--for price-fixing.
Example #4. A Genentech CEO lost his job for trying to obtain a $2 million loan as part of a business deal.
Example #5. Sexual harassment charges cost a W.R. Grace CEO his job.

That's the bad news. Here's the good news: Ethical behavior pays.

Example #1: In a 1994 study, researchers found that 26% of potential investors review the social responsibility of a company before investing. Corporate values and ethics matter.

ON ETHICS by DEBORAH LONG (cont.)

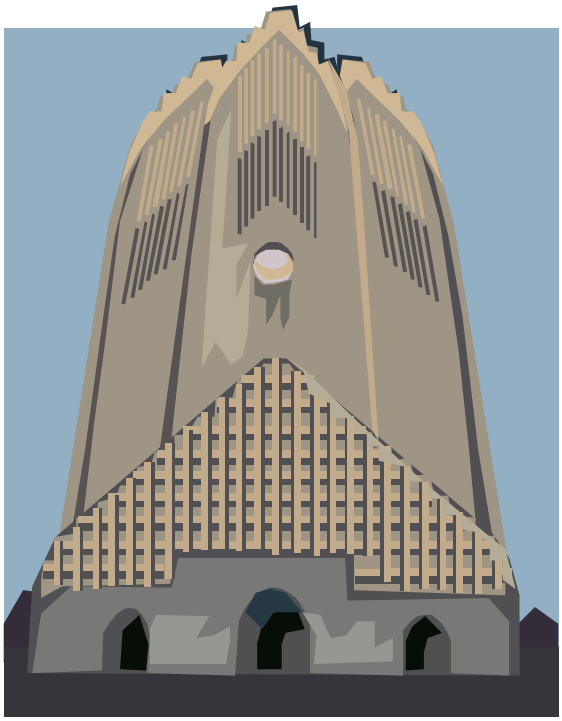
Example #2. A 1995 study indicated that companies that invest in their employees are more profitable than ones that don't invest. For example, Motorola estimated that it earned $30 for every $1 invested in training employees.

Example #3. A Vanderbilt University study demonstrated that low-polluting companies enjoyed better financial performance than high-polluting competitors in eight out of ten cases.

Example #4. A 1997 report found that 76% of consumers were likely to switch to brands associated with a good cause.

Example #5. A 1994 study indicate that 75% of consumers avoid or refuse to buy from certain business. The first reason was poor service, but the second reason was the company's business practices.

These examples and studies indicate that greedy, ruthless behavior is not the most profitable. The evidence clearly demonstrates that good ethics shows up on the bottom line. While being ethical can be challenging, it can do more personal, professional, and financial good for you than just give you a sound night's sleep. .



SEAU Presents:

Procedures for Post-Earthquake Safety Evaluation of Buildings

Wednesday May 17, 2006
3:00 PM – 7:30 PM
Olpin Union Building, Theater
University of Utah

Presented by
Robert A. Bruce S.E.
w/ Applied Technology Council

Cost: Free for SEAU members & $20.00 for non-members
Dinner will be provided at 5:00 PM

RSVP for by Friday May 12
to receive materials at the seminar.
RSVP to seau@seau.org

Parking available in Visitor Parking east of the Union Building

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