



SEAU NEWS

The Newsletter of the Structural Engineers Association of Utah

Volume X- Issue 1 September 2005

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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*St. John's Episcopal Church in Logan, Utah
see page 3.*

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SEPTEMBER EVENT

SEAU FALL SOCIAL
Held on Aug. 27th - See page 7

OCTOBER EVENTS

AISC SEMINAR
Seismic Braced Frames – Design Concepts and Connections
October 6, 2005 8:00AM
EMCB Room 105

SEAU MEETING
Seismic Load on Below Grade Structures
October 21, 2005 5:30PM
EMCB Room 105

MESSAGE FROM THE BOARD

HURRICANE KATRINA SUPPORT



By Julie Ott,
SEAU President

Twenty-five years ago a group of 37 visionary men founded the Structural Engineers Association of Utah. Today the organization has grown to approximately 300 members. The vitality of the

organization has clearly shown thru this past week as many members have contacted the Structural Emergency Response Committee (SEER) and the Board of Directors in regards to SEAU providing assistance in the aftermath of Hurricane Katrina.

SEAU has been contacted by the National Council of Structural Engineers Associations in regards to putting together a response team. All of you who have volunteered to be part of SEAU's SEER response team have received a phone call by now in regards to your availability.

If you have interest in being part of the national response team please contact Blake Hoskinson, SEER committee chairman, a member of the SEER committee, or a member of the SEAU Board of Directors. Time is critical in submitting a complete list.

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Opinions expressed in the SEAU Newsletter are not necessarily those of the Structural Engineers Association of Utah. Technical information contained herein shall not be used without independent verification by an engineer. Advertising rates and information sent upon request. Acceptance of advertising and informational brochures in the SEAU Newsletter does not constitute endorsement or approval by SEAU of the products or services advertised. SEAU reserves the right to refuse any advertising or editorial comment.

SEAU OFFICERS FOR 2004-2005

SEAU Board Members for the 2004-2005 Year

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Julie Ott



Jeff Miller



Jake Watson



Mike Buehner



Don Barfuss



Don Barker

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 of our 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:



*St. John's Episcopal Church
in
Logan, Utah*

Article provided by Jeremy Actor
Edited by Cameron Empey

The St. John's Episcopal Church project consisted of a two-story wood and masonry addition to an existing century old, multi-wythe clay brick chapel that is currently registered on the Utah State Historical Register. The new addition provides offices, classrooms, a choir room, a kitchen, a Fellowship Hall, and a sizeable addition to the existing chapel. To facilitate the addition, an existing home had to be demolished and another had to be relocated on the site. The total building area is 16,125 square feet including the existing chapel.

The existing chapel measures 21 feet by 59 feet inside. The addition was to be connected to the existing chapel by removing approximately 60% (35 feet) of the side wall of the chapel. The new chapel addition is a reinforced concrete masonry structure that supports several tube steel trusses and wood rafters. The existing roof is composed of wood rafters

with steel angle trusses. Four steel angle trusses were bearing on the brick wall that was to be removed.



Both, the ceiling in the original chapel and the ceiling in the addition are vaulted ceilings. The architect wanted to remove a portion of the original roof structure to allow the two vaults to merge together as one.

To make the addition a success, several structural concerns had to be addressed. First, because such a large portion of the existing wall was being removed, the lateral force resisting capabilities of the structure were significantly reduced; Second, the existing roof structure had to be reconfigured and supported by the addition at the vault intersection; Third, the foundation had to be modified in order to accommodate the new concentrated loads induced by the jamb columns at either side of the new opening.

Two methods of mitigating the removal of the lateral force resisting system were considered. The first method involved adding pneumatically applied concrete to the remaining portions of the walls on either side of the opening. The second option made use of a moment frame to replace the wall that was removed. Three main factors were used to evaluate the two options; the historical significance of the structure, the economic impact of each method, and the deformation compatibility between the existing structure and the retrofit. The pneumatically applied

FOCUS (cont.)

concrete alternative was adopted as the most desirable option. The moment frame was rejected due to the large deformations required in order to engage the system.

In addition to the lateral modifications, the gravity system also required significant adaptation to the new system. A new tube steel truss was added in the plane of the removed wall to support the existing roof structure. There are four existing steel angle trusses that were supported by the wall which had to be supported by the new truss when the wall was demolished. Two of the trusses had to be strengthened with additional angles and steel plates to carry the new roof configuration. The two vaulted ceilings were merged with the use of wood framing and custom fabricated steel support brackets connected to the upgraded trusses.

In addition to the project structural design scope, structural consulting was provided to the contractor to design the shoring system to be used to support the existing roof during demolition and construction. The design of the shoring for the existing roof during demolition and construction was complex in that it had to function as a shoring element however could not impede the work for the new addition. Steel columns were installed at one-third points of the existing trusses and wood kicker braces were installed at the ends of the truss that angled back to the floor slab near the other end of the truss. The existing

trusses had to be analyzed to ensure the stress concentrations at the new bearing condition did not exceed capacity.

Because the new support truss occurs in the same plane as the remaining existing wall, new steel columns were required at each end of the truss placed adjacent to the clay brick. Due to project constraints, conventional spread footings were not possible. A concrete grade beam was used to transfer the heavy column loads to the ground.

As noted previously, to make room for the new addition, an existing early 1900's era clay brick home had to be relocated on the site. The home could not be demolished by order of Logan City. The site study determined that the home had to be relocated approximately 30-40 feet to the west and supported on a new foundation. The design team was responsible for the new foundation design for the existing building. Careful coordination between the engineer and the transportation contractor was required in order to ensure that the foundation could accommodate both the existing building and the transportation system used by the contractor. The footings and foundation was constructed in part and could only be completed once the building was in place and to proper elevation.

SEAU COMMITTEES

Looking for a way to make a difference? Contact any of the 2004-05 SEAU Committee Chairpersons listed below and get involved!

| | |
|---|--|
| Programs | Larry Reavealey (801) 581-6931 |
| Seismic | Stephen Cohen (801) 328-2726 |
| Codes | Mark Harris (801) 486-3883 |
| Legislative | David Brown (801) 943-5555 |
| Newsletter | Richard Seelos (801) 486-3883 |
| Technical | Scott Pettit (801) 355-5656 |
| By-Laws | Brent Maxfield (801) 240-1529 |
| Professional Practices & Ethics/Standard of Care Str. Licensing | Ron Dunn (801) 575-8877 Kelly Calder (801) 328-2726 |
| BSSC | Parry Brown (801) 486-3883 |

| | |
|--------------------|------------------------------------|
| UEC Delegate | Jake Watson (801) 328-2726 |
| USSC | Barry Welliver (801) 553-0162 |
| Audit | Jeremy Achter (801) 782-6008 |
| Membership | Jessica Chappell (801) 486-3883 |
| NCSEA | Craig Cartwright (435) 753-2850 |
| PR-Web Page | Jake Watson (801) 328-2726 |
| Emergency Response | Barry Welliver (801) 553-0162 |
| Residential Design | Scott Wilson (801) 466-1699 |

SEAU MEMBERSHIP APPLICANT

The following individual has submitted an application for approval by the SEAU membership committee for new members:

Jeffery B. Hale

Associate

MESSAGE FROM THE BOARD (continued from page 1)

Information needed is:

- Name
- e-mail
- Phone (all)
- Is volunteer trained in ATC-20
- Is volunteer trained in ATC-45
- Experienced in Disaster Assessments
- Willing to go as volunteer
- Date available
- Number of days available

FEMA and the Corps of Engineers have indicated that the need for personal to conduct structural evaluations could start in 2-4 weeks in outlying areas and 4-? weeks in heavily damaged areas. Structural evaluation personal will not be need until areas are secure and continual flooding damage has ceased.

This event has spiraled beyond the level of normal emergency management response. FEMA is under a great deal of pressure from the White House and the press. Everyone who volunteers and provides assistance should realize this is a long and hard commitment that is greatly rewarding. This will be an event of a lifetime and volunteers will have a great sense of personal satisfaction in the work they will be doing. You should also realize that conditions might be a little rough at first – power outages, potential nights in tent cities, potential meals ready to eat. Things are bad – they need everyone's assistance.

At the time of writing (9/2) it has not been determined of funding for volunteers can/will be provided by FEMA, NCSEA, State of Utah, or SEAU. Sources

will be evaluated and volunteers will be keep apprised of time frames, conditions, funding, and duties. All volunteers and those considering volunteering should review ATC-45, download and print the manual and evaluation forms.

<http://www.atcouncil.org/ATC45.shtml>

SEAU would like to thank all of those who have volunteered.

On a local level – SEAU is comprised of a small Board of Directors with a thriving group of committees. It is a tribute to the members of the organization that the SEER committee has been able to respond with calling trees and collecting information so quickly.

In addition to all the great information already provided in the SEAU News, you can look forward to seeing monthly articles from the various SEAU committees on goals, meeting, and agenda's. The various committees work diligently towards common goals and we want to make sure all the members know what is going on and perhaps (hopefully) compel those of you not actively participating to join a committee.

As SEAU celebrates it's 25th Anniversary we look forward to a very exciting and busy year that includes outstanding programs, public education, continued calibration with DOPL, and the preparation for hosting the National Council of Structural Engineers Associations Conference in September of 2006.

BULLETIN BOARD**SEAU – SEISMIC COMMITTEE by STEVEN COHEN**

As many of you are aware the Seismic Committee has been an active committee for the past decade. Some of the accomplishments over the years have been to:

1. Review seismic portions of the various codes and provide recommendations on adoption and changes.
2. Provide newsletter articles for SEAU.
3. Serve as a resource to answer questions for SEAU members.
4. And help increase public awareness of seismic hazards here in the State of Utah.

This past year the seismic committee began searching for a target group to help them focus on seismic safety. Three groups came to the top, namely, K-12 schools, hospitals, and essential facilities. With the recent publication of FEMA 395 (Incremental

Seismic Rehabilitation of School Buildings, K-12) it was decided that school facilities should become our target group.

As a result of several committee meetings earlier in the year it was decided to put on an educational seminar. On October 4th we will be presenting FEMA 395 as part of the UFOMA Conference in Richfield, Utah.

UFOMA (Utah Facilities, Operations and Maintenance Association) consists of employees of K-12 public and private schools in the State of Utah who are responsible for the construction, maintenance, safety, and facility management of school facilities. As part of their mission statement, the following statements come from UFOMA's bylaws:

SEAU – SEISMIC COMMITTEE by STEVEN COHEN

- Work to ensure the facilities are safe, secure, functional, and healthy environments.
- Strive to improve serviceability, control, maintenance, and operational costs of school facilities.

The presentation in this conference will be given by members of the seismic committee and several school district members. Below is a condensed version of our agenda for the meeting:

- Introduction (Stephen Cohen)
- History Behind Development of FEMA 395
- Critical Decisions for Earthquake Safety in Schools (Barry Welliver)
- Planning and Managing the Process for Earthquake Risk Reduction (Stephen Cohen)

- Tools for Implementing Incremental Seismic Rehabilitation (Justin Naser)
- Current Utah Laws Regarding Rehabilitation (Don Barfuss)
- Presentation by School Districts on past and current seismic issues and upgrading programs. (Jim Day, Greg Smith, Randy Haslam)
- Roadblocks to Seismic Upgrades of K-12 Schools / Wrap-up (Barry Arnold)
- Open discussion with UFOMA members

We are looking forward to this conference and are hoping to use this opportunity to open up continuing discussions on seismic safety.

Please note that the seismic committee has had several members move out of state and others retire so we are in need of new members. If you'd like to be involved with an active committee, please join up.

SEAU – STANDARD OF CARE COMMITTEE by RON DUNN

The Board of Directors has informed me that “the summer is over!” In support of the Board’s request; this article is for informational purposes only with the promise of an accountability of our committee’s actions to follow. First of all I appreciate the newly appointed SEAU Board. I believe that most of us know of the time commitment they each volunteer.

By assignment I have accepted the position to surround myself with 4 other well respected, diversified, and seasoned Structural Engineers. Each member of this committee has earned the title of Structural Engineer, which title we will defend and within the law, regulate. Our profession should be reserved for only those individuals who have demonstrated by education, competence and supervised experience their ability to satisfy the minimum standards of the profession. Our committee will attempt to clarify and enforce those minimum standards. When we share our “title” with those who do not meet this criteria, we loose our power. The first “heads up” would include warning those engineers who use any means of advertising as a “Structural Engineer” without the formal professional designation. If this applies to you, do not re-new your yellow pages advertisement!

If you gathered 100 experienced managers together and asked for their advise, they wouldn’t say much about “competing values models” or “temporal rhythms.” Instead, this is a good idea of what you’d hear: “*Don’t be afraid of the phrase, ‘I don’t know.’*”

“*Never Gossip.*” “*Ask for help.*” “*Let it go.*” (Wisdom of the ages) These phrases can lead to trouble and may cause us to violate our professional ethics. Practice only within your experience areas.

Our committee will act as a panel of “your peers” with the charge from the SEAU Board to review ethics cases. This may include the review of engineering documents, investigating misrepresentation or any other un-ethical practice. Should any member of the committee be closely associated with an individual or particular firm under investigation that committee member will not be a part of the investigation. Findings must be unanimous and then presented to the SEAU Board for further study or investigation. Part of our ethics will be privacy concerning all investigations.

We (Leon Tanner, Brent White, Erik Kankainen, Jeff Miller, Ron Dunn) accept this responsibility from the Board and offer ourselves as resources to you as we “elevate the bar” and help define the organization in which we belong.

Press Release

The Applied Technology Council (ATC) and the Structural Engineers Association of Washington (SEAW) are pleased to announce the immediate availability of the SEAW/ATC-60 Report, *SEAW Commentary on Wind Code Provisions*, and SEAW RSM-03 Report, *SEAW’s Handbook of a Rapid-Solutions Methodology™ for Wind Design*. Cost are \$95.00 for the SEAW/ATC-60, and \$60 for the SEAW Wind Handbook (plus shipping and tax)

The documents are available from the Applied Technology Council
201 Redwood Shore Parkway, Suite 240
Redwood City, California 94065

or contact

Bernadette Mosby
(650) 595-1542
bmosby@ATCouncil.org

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OCTOBER MEETING

**Seismic Load on
Below Grade Structures**

October 21, 2005

5:30 PM

**Engineers & Mines Classroom Building
EMCB Room 105
University of Utah Campus**

Bill Gordon, Steve Bartlett, and other panelist will discuss the seismic lateral forces that are applied to below grade structures.

This promises to be a very educational evening

SEPTEMBER MEETING – FALL SOCIAL – HELD AUGUST 27, 2005

FALL SOCIAL

We would like to thank everyone for making the fall social a successful event.



SEAU Presents:

AISC: SEISMIC BRACED FRAMES

Design Concepts and Connections

October 6, 2005

8:00 AM

Engineers & Mines Classroom Building

EMCB Room 105

University of Utah Campus

AISC will present a program that focuses on the design requirements in the AISC *Seismic Provisions for Structural Steel Buildings*. For those of you that are proficient with the 2002 AISC *Seismic Provisions*, the seminar will highlight the differences between the 2002 and the 2005 editions, and the implications of these changes in your design.

Presenter: **Rafael Sabelli, S.E.**, is Director of Technical Development of DASSE Design in San Francisco. He is a member of the AISC Task Committee on the *Seismic Provisions for Structural Steel Buildings*, and is the author of numerous publications on concentrically braced frames, including analytical studies and design guides on buckling-restrained braced frames. He was the 2000 NEHRP Professional Fellow in Earthquake Hazard Reduction, and is currently the Chair of the Seismology Committee of the Structural Engineers Association of California.

You should have already received an email announcement with information on registration and cost for this seminar. You may also check SEAU's website at www.SEAU.org

This seminar has partial funding provided by the Division of Occupational & Professional Licensing from the 1% surcharge funds on all building permits. SEAU and AISC gratefully acknowledge DOPL's kind contribution for the education of engineers in the State of Utah.

STRUCTURAL ENGINEERS ASSOCIATION OF UTAH

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