

SEAI NEWSLETTER



Structural Engineers Association of Idaho

P.O. Box 8733, Boise, ID 83707

www.seaidaho.org

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Please feel free to contact any one of our board members with your ideas or suggestions for program/speaker topics or how you would like SEAI to better represent the Structural Engineers of Idaho.

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In the next few months, SEAI's website will be getting a new look. Please send content suggestions, links and useful files to Tyler Haney at thaney@tveinc.com

SEAI LUNCH EVENT – MARCH 21ST

WORKING WITH EXISTING BUILDINGS

Presented by Kent Soelberg, S.E.

Over 99.9% of buildings currently standing were designed prior to the adoption of IBC 2003. The challenges faced by the structural engineering community in dealing with these existing buildings can be daunting. Protecting the public can take on new meaning when existing buildings are re-used to satisfy economic, sustainability, and performance demands.

Items to be discussed in this presentation will include:

- What are the Code “triggers” for requiring structural rehabilitation?
- What guidelines and standards are available if the “triggers” don’t apply?
- What can the age of a building tell us?
- What do changes to the Code over the years mean to my project?
- When is materials testing a good idea?

Speaker’s Bio: Kent Soelburg of CH2M Hill

Education

Master of Engineering Management/Structures, Brigham Young University, 1984
B.S., Civil Engineering, Brigham Young University, 1983

Professional Registrations

Professional Engineer: Idaho
Structural Engineer: California, Utah, Washington

Distinguishing Qualifications

- Over 20 years of experience in structural engineering
Extensive project management and structural engineering experience with industrial and commercial facilities (new and existing)
- Expertise in seismic evaluations and upgrades (conventional and base isolation)
- Member the Applied Technology Council’s ATC-33 concrete team that developed FEMA 273 - Guidelines for the Seismic Rehabilitation of Buildings (which has evolved to become FEMA 356 – Prestandard for the Seismic Rehabilitation of Buildings)

Date: Tuesday, March 21, 2006

Location: Bardenay
Boiler Room
610 W. Grove St.
Boise, Idaho
(208) 426-0538

Cost Per Person:

Member:	\$15.00
Non-Member:	\$20.00
Student:	Free

Social:	11:45 am – 12:00 pm
Lunch:	11:45 am – 1:00 pm
Announcements:	12:00 pm – 12:10 pm
Program:	12:10 pm – 1:00 pm

Remember to order your menu item by number when you RSVP. If selecting a sandwich, please select one of the following sides: fries, Caesar salad, or soup.

1. Charbroiled chipotle marinated chicken breast sandwich
2. Cracked what sourdough and albacore tuna sandwich with lemon zest and cheddar
3. Charbroiled ground chuck burger with sliced tomato, sweet red onion lettuce and horseradish spiked mayonnaise (can add cheese and/or bacon)
4. Black bean and sweet potato chimichanga (no side)
5. Pear spinach salad with vinaigrette (no side)

RSVP

If you plan to attend, please contact to Wilson Antoniuk by **4 pm, Friday March 17th**.
antoniw@trusjoist.com - (208) 395-2458

It’s imperative that you RSVP by the deadline (and include your lunch choice) since we can only accept the first 30 respondents.

ARTICLE EXCERPTS

REAL ESTATE AND HOME IMPROVEMENT Q&A

Alan Heavens

Knight Ridder Newspapers

Q: We have a front-loading washing machine on the second floor; the dryer is stacked on top (a design flaw in a new house). The entire house shakes when the washer spins. I had a serviceman look at it, and he told me that front-loading washers do not belong on the second floor because of the powerful spinning – that they should be on the ground floor and on cement, which they don't tell you when you are buying the washer. I would like to keep the washer upstairs if I could. Is there any way to support it better, and do you think unstacking it would make a big difference?

A: The problem likely isn't with your washer, but it might be with your builder if he was the one who offered a second-floor laundry room. A washer can spin at speeds of 700 to 1,600 r.p.m., and your second-floor joists obviously are unable to withstand the vibration. Consult a structural engineer to see whether the joists can be reinforced to withstand that vibration.

Reprinted with permission from The Philadelphia Inquirer. Have questions for Alan J. Heavens? E-mail him at aheavens@phillynews.com or write him at The Inquirer, Box 8263, Philadelphia 19101.

STRUCTURAL ENGINEERS' HOME WITHSTANDS HURRICANE KATRINA

Scott and Caroline Sundberg poured 1,320 tons of concrete into their Mississippi Gulf Coast home – one of few left along their beachfront in Pass Christian. The house is based on concrete columns, 25 feet above sea level.

Scott Sundberg, a structural engineer, researched historical and scientific records of Hurricane Camille in 1969. He used computer modeling to test his design against Camille's wind force and tidal surge. The house was only about 80 percent complete when Hurricane Katrina struck on Aug. 29.

Each of the columns that support the house is 12 inches thick and 30 inches deep and has eight sets of No. 6 rebar. Although he admits overbuilding, he has no regrets.

Read the article in full "Home, sweet concrete: Pass Christian house stood firm against Katrina" by Tom Wilemon at the Sun Herald.

REPORT: NEARLY 600 BRIDGES THROUGHOUT CALIFORNIA AT RISK OF QUAKE

Associated Press

The Los Angeles Times reported Sunday that nearly 600 bridges and overpasses have yet to be reinforced even though the state has made great strides in protecting its own spans from earthquakes.

The at-risk bridges include several landmarks in Los Angeles, including the Hyperion bridge in Silver Lake and the downtown Art Deco 6th Street bridge across the Los Angeles River.

Cities and counties have struggled to find the funding for the retrofitting projects, which often must compete with other projects such as the widening of roads and fixing potholes.

BY THE WAY...ENGINEERING NEWS AND GENERAL INTEREST

MEMBERSHIP UPDATE

SEAI is still growing. We would like to welcome the following new members:

<u>Name</u>	<u>Employer</u>
Jarad Keller	Lochsa Engineering
David Sansotta	EHM Engineers
David Vanairsdale	CSHQA

Welcome to all our new members!

UPCOMING SEMINAR

The 2006 SEA Northwest Conference is being hosted by SEAO. The conference is being held at the Skamania Lodge in the Columbia River Gorge July 20–22. The theme is “Engineering in the Land of Earth, Wind, and Ice” presentation topics and speakers will be announced in future newsletters.

BY THE WAY

When analyzing existing buildings the City of Boise has officially adopted the 1994 Uniform Code for Building Conservation (UCBC). However, if you do not currently own a 1994 UCBC, note that it is out of print, even the ICC publisher won’t sell you a copy...but you can find a few remaining on Amazon.com.

The 1997 UCBC and the 2003 International Existing Building Code (IEBC) have not been, and will not be, adopted by the City of Boise. The next anticipated existing building code to be adopted is the 2006 IEBC but the year of official adoption is still unknown.

NEW OFFICE

As cited in the March 12th Idaho Statesman, The Boise Metro Chamber of Commerce Ambassadors will attend a ribbon cutting for **Treasure Valley Engineers** at 4 pm Wednesday at 109 S. 4th Street, Boise.

2006 IDAHO LICENSURE EXAMS

April 21	PE and PS Examinations	Boise
April 22	FS (aka LSIT) Examination	Boise Pocatello Moscow
April 22	FE (aka EIT) Examination	Boise Pocatello Moscow
October 27	PE and PS Examinations	Boise
October 28	FS (aka LSIT) Examination	Boise Pocatello Moscow
October 28	FE (aka EIT) Examinations	Boise Pocatello Moscow

<http://www.ipels.idaho.gov/calendarofevents.htm>

FREE PROJECT MANAGEMENT CLASS

HP.com is offering “Project Management Made Simple” – a free online, self-paced course.

<http://h30187.www3.hp.com/courses/overview.jsp?courseId=3601&placementId=18825&webPageId=1000000>



“Bridges are America’s cathedrals.”

Unknown

WOOD DESIGN SEMINAR REVIEW FEB. 21, 2006

By Ash Hobbs, P.E.

SEAI officers continually strive to provide highly relevant information to our membership and the Idaho engineering community through our meetings and seminars. Judging by the seminar turnout last month, it's apparent that wood remains an important building material in Idaho. There is perhaps more interest locally in Boise, due mostly from the important role that Trus Joist has in our engineering community. With that in mind, SEAI was proud to have sponsored the Wood Design Seminar last month.

The first part of the seminar dealt with the type and size of structures that can use wood as a building material per chapter 5 of the 2003 IBC. Typically, dwellings and small commercial buildings are constructed with wood; however, exceptions for larger structures may be acceptable by local jurisdictions based partly on the capabilities of the fire department, and with the safety of the building occupants in mind. IBC Table 503 prescribes the allowable building area per floor, total building height, and number of stories based on the use group (e.g., assembly, business, or education), whether the structure is fire protected (category "A") or not (category "B"), and the type of construction.

The five types of building construction are defined in IBC Section 602. Type I and II construction requires the use of predominately non-combustible materials, such as CMU and steel. Type III construction has non-combustible exterior walls, with interior walls constructed with any material. Type IV and V can be constructed of any material, but are typically wood framed structures. Type IV construction is composed of heavy timber construction, and Type V

construction is typically composed of conventional framing. Allowable building areas may be increased from the table values if larger frontage or sprinklers are provided per IBC Section 506.

For fire rated assemblies, IBC Table 720.1 provides a list of prescriptive fire rated assemblies. Alternatively, IBC Section 721 may be used to calculate the fire ratings. The upcoming 2006 IBC Sections 720 and 721 will be expanded to include more fire rated assemblies and new materials.

The second part of the seminar provided an overview of wood design per IBC Chapter 23. There are several different design methodologies that the designer may choose from: conventional construction, the Wood Frame Construction Manual (WFCM), allowable stress design (ASD), or load-resistance factored design (LRFD). IBC Section 2304 contains general construction provisions, including a fastening schedule in Table 2304.9.1 and allowable plywood spans in Table 2304.7(3). IBC Section 2305 contains provisions for the lateral force resisting system, including framing details and maximum aspect ratios. The upcoming 2006 IBC will require special inspection for wood shear walls and diaphragms.

The third part of the seminar introduced the newly released 2005 NDS & Supplement (which was given to all seminar participants). The new specification combines ASD and LRFD methodologies in a single wood specification. Three new adjustment factors have been introduced for LRFD design as follows: the format conversion factor (K_F), the resistance factor (ϕ), and the time effect factor (λ). Values for these new factors can be found in a new appendix, N.

(Continued on Page 6)

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A new material property has also been introduced for the 2005 NDS, the minimum modulus of elasticity (E_{min}), which is used in beam and column stability calculations. Also important to the 2005 NDS is a new appendix, E, which outlines a procedure for analyzing local stresses in a group of fasteners. Appendix E identifies three potentially brittle failure modes for a group of fasteners as follows: net section fracture, row tear-out, and group tear-out. These failure modes have the greatest effect in connections with closely spaced fasteners. Because this new approach to analyzing groups of fasteners can result in smaller connection capacities than under previous specifications, the AF&PA has decided to make Appendix E of the 2005 NDS retroactive to previous versions of the NDS.

Some potential benefits of using LRFD over ASD are that you can use smaller members for extreme loading events, and that you can use LRFD combinations for multiple materials, like concrete and steel. LRFD is based on statistical probabilities of loading and material properties, whereas ASD is based on service level stresses and factors of safety.

The fourth part of the seminar dealt with the design of wood connections. In designing wood connections, it's important to consider the material's strengths and weaknesses. Wood is excellent at resisting compression and tension parallel to the grain and in bending, but is very weak in resisting forces that act perpendicular to the grain. Wood connections also perform better when loads are spread out over a greater surface. It's therefore important to keep fasteners relatively small in relation to the member sizes,

and to use a lot of them, as opposed to few large fasteners.

Water infiltration is also a design consideration for exposed wood connections. Consider end caps for exposed ends of beams to prevent water penetration, and holes for exposed column base seats to allow water to drain. Maintain ½" clearance between wood products and concrete or masonry.

The final topic covered in the seminar dealt with lateral bracing in conventional construction and the Wood Frame Construction Manual (WFCM). IBC Section 2308.2 outlines the limitations on the use of conventional construction, which may be used for hotels and apartments, and is not necessarily limited to residences. The WFCM is also a viable alternative to conventional and engineered designs, and can be used to rapidly design 1 and 2 family dwellings.

SEAI would like to thank Robert Taylor and James Bowman for their presentations, and all those that attended the seminar. If you have a question regarding wood as a building material, you send an email to the AF&PA at awcinfo@afandpa.org or you can call them at (800) 292-2372.

Is there a topic that you'd like to see at an upcoming meeting or seminar? Please let one of the officers (listed on page 1) know about it.

Websites mentioned:

American Wood Council: <http://www.awc.org>

Timber Framers Guild: <http://www.tfguild.org>

Timber Frame Business Council:
<http://www.timberframe.org>

Wood Truss Council of America:
<http://www.woodtruss.com>

The SEAI Newsletter is published monthly. All newsletter submissions are welcome from the SEAI community. Have a suggestion, feature, link or product review? Would you like to recommend a SEAI member for an interview in our next newsletter?

Please contact our newsletter editors, Allie Smith-Hobbs at alliesmithhobbs@yahoo.com or Tyler Haney at thaney@tveinc.com

EVENT CALENDAR

(Events are subject to change)

March 21st – “Working with Existing Buildings” presented by Kent Soelburg. Event at Bardenay.

April 18th – Lunch event at Yen Ching, downtown Boise.

April 21st – Professional Engineer Exam in Boise, Pocatello, Moscow

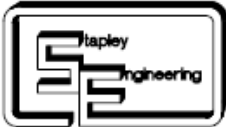
April 22nd – FE/EIT Exam in Boise

July – The 2006 SEA Northwest Conference at the Skamania Lodge in the Columbia River Gorge July 20–22. Hosted by the Structural Engineers Association of Oregon.

THE STRUCTURAL ENGINEERING COMMUNITY

American Institute of Steel Construction – <http://www.aisc.org/>
 American Society of Civil Engineers – Southern Idaho – <http://sections.asce.org/sis/>
 American Society of Civil Engineers, Olympia/Tacoma WA – <http://sections.asce.org/tacoly/tacoly.htm>
 Applied Technology Council – <http://www.atcouncil.org>
 Board of Professional Engineers and Land Surveyors – <http://www2.state.id.us/ipels/>
 Building Seismic Safety Council – <http://www.bssconline.org>
 Design Build Magazine (McGraw-Hill) – <http://www.designbuildmag.com/>
 Engineering Forum – <http://www.eng-tips.com/>
 Engineering News Record – <http://www.enr.com>
 State of Idaho Code – <http://www.ipels.idaho.gov/>
 Structural Engineering Institute (ASCE) – <http://www.seinstitute.org/>
 Structural Engineers Association International – <http://www.seaint.org/>
 Structural Engineers of Oregon – <http://www.seao.org/main.htm>
 Structural Engineers Association of Utah – <http://www.seau.org/>
 Structural Engineers Association of Washington – <http://www.seaw.org/>

EMPLOYMENT OPPORTUNITIES



We are looking for **Structural Engineers** who like a great deal of responsibility including a combination of teamwork and independent projects, time management and diverse design opportunities.

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- Executing and checking engineering calculations and drawings.
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Structural Design Engineer (E.I.T., P.E., S.E.)
CAD Operator/Designer

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(206) 624-3775 seattlehrd@coffman.com

LASTING creativity | results | relationships

As a benefit for our members, SEAI is now accepting employment advertisements in our monthly publication.

Please contact Sarah McClendon at sarah.mcclendon@mcm-eng.com or 342-4214 x306 for submission guidelines and rates.