



Structural Engineers Association of Idaho

P.O. Box 8733, Boise, ID 83707

www.seaidaho.org

BOARD OF DIRECTORS & AND COMMITTEE CHAIRS

Congratulations to our new board members and committee chairs!!! Let's make this next year a great one and help make SEAI an organization that truly makes a difference in the engineering community.

Please feel free to contact our board members with ideas or suggestions for program/speaker topics or how SEAI can better represent the Structural Engineers of Idaho.

President

Sarah McClendon – McMillen Engineering
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NEXT SEAI MEETING — SEPT 19TH

SEAI does not have meetings over the summer months, but we will continue our regular meeting schedule of every third Tuesday of the month on September 19th, 2006.

HAVE A SUGGESTION FOR A MEETING?

If you have any suggestions for future speakers, items of discussion or anything else that you think would be beneficial to the structural engineers attending SEAI meetings, please send your comments/ideas to Wilson Antoniuk by email at antoniw@trusjoist.com or by phone at 395-2458.



Engineering is a great profession. There is the fascination of watching a figment of the imagination emerge through the aid of science to a plan on paper. Then it moves to realization in stone or metal or energy. Then it brings homes to men or women. Then it elevates the standard of living and adds to the comforts of life. This is the engineer's high privilege. — Herbert Hoover



AHJ Engineers, P.C.

Structural Engineers

Last year AHJ Engineers celebrated 20 years of providing quality structural engineering services in the Treasure Valley and beyond. As we grow to meet current demand, we are seeking EIT's and PE's with 2-10 years experience in consulting structural engineering.

We offer a flexible, encouraging work environment in which talented professionals can achieve their career objectives as well as pursue their personal goals. The successful candidate must be able to express their knowledge to our clients both verbally and through their work. If you are proactive, committed to excellence, can manage multiple projects and have a passion for creating quality structures, please send your resume to: ahj@ahjengineers.com or mail to AHJ Engineers, 12501 W. Explorer Dr., Ste 100, Boise, ID 83713

BY THE WAY... ENGINEERING NEWS AND GENERAL INTEREST

CHECK OUT THE NEW WEBSITE

If you haven't noticed, www.seaidaho.org recently received a 'little-bit' of a facelift. The website will continue to see minor changes, so please be patient and make sure to report any "errors" or suggestions you may have to the webmaster, Tyler Haney, at thaney@tveinc.com.

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. For more information, visit our website www.seaidaho.org and look under "Events".

MEMBERSHIP DUES TO GO OUT SOON

Dues will be going out next month for the 2006 - 2007 year. We would like to thank all of our renewing members, who make our meetings and seminars possible. If you are interested in joining SEAI, you can find a new membership application on our website at www.seaidaho.org under "Membership".

SEA NORTHWEST CONFERENCE & WCSEA MEETING – SUMMER 2008

The Structural Engineers Association Northwest Conference and Western States Roundup are to be hosted by the Idaho Chapter during the summer of 2008. This event will be a three day conference combining SEA Board Meetings, technical programs, vendor exhibits, social events, and recreational events all hosted by SEAI at a destination resort located here in Idaho.

This is a well attended event that brings in structural engineers from Idaho, Washington, Oregon, and British Columbia. That means we need to start planning for it now! SEAI is looking to fill approximately 12 committee positions to successfully coordinate and plan this major event.

Different committee positions will require different time commitments and expertise. However, all positions will provide an excellent opportunity to build networking connections with your peers and colleagues and give you the knowledge that you are actively encouraging the advancement of the structural engineering profession. If any of the open positions listed on the next page interest you, or if you have any questions, contact Sarah McClendon by phone at (342-4214) or email at sarah.mcclendon@mcm-eng.com or Chris Holladay by phone at (323-0199) or email at cholladay@ahjengineers.com, and they will sign you up.

CURRENT COMMITTEE OPENINGS*Committee Director:*

The Committee Director shall preside at all SEA Northwest Conference Committee meetings and shall have such powers as may be reasonably construed as belonging to the chief executive of an organization.

Treasurer/Secretary:

The Treasurer/Secretary shall keep all meeting notes and keep all financial records of the committee.

Delegates Dues Chair:

The Delegates Dues Chair shall be responsible for collecting dues and working closely with the Treasurer.

Registration Chair:

The registration Chair shall oversee all coordination required to register conference attendees, technical speakers, and family guests for the three day conference event.

Program/Speakers Chair:

The Program/Speakers Chair shall coordinate approximately ten different technical speakers with equal representation from Idaho, Washington, Oregon, and British Columbia. This position shall coordinate with the representatives for each of the above regional chapters to identify qualified speakers for the conference themed topic.

Social Events Coordinator:

The Social Events Coordinator shall be responsible for the Family/Spouse Lunch and Dinner events for all three conference days.

Recreation Coordinator:

The Recreation Coordinator shall be responsible for providing a scheduled Tournament event for the final day of the conference. Traditionally this has been a golf tournament.

Water Event Chair:

The Water Event Chair shall be responsible for coordinating this traditional ritual event. Creativity and enthusiasm is a must for this position!

Vendors/Displays Chair:

The Vendor/Displays Chair shall coordinate and solicit a variety of vendors that are relevant to the conference themed topic. This position will be responsible for arranging the vendor set up and exhibits.

Publicity Chair:

The Publicity Chair shall coordinate all information pertaining to the speakers, vendors, and conference location and distribute the information to any potential conference attendees.

Local Arrangements Coordinator:

The Local Arrangements Coordinator shall be responsible for finding a suitable location to hold the conference and ensuring that travel arrangements and recreation arrangements are accessible to the conference location.

Transportation Coordinator:

The Transportation Coordinator shall assist conference attendees with directions to the conference site from local airports, etc. This position shall also work with the Recreation Coordinator with transportation needs to any planned recreation activity centers.



**YOU CAN NEVER KNOW
TOO MUCH**

BY R. SHANKAR NAIR, PH.D, S.E., P.E.

ARTICLE FROM:
MODERN STEEL CONSTRUCTION
MAGAZINE – JUNE 2006

Consider the story of Christopher Columbus's Discovery of America. Contrary to what generations of schoolchildren have been taught, Columbus was not out of step with the conventional wisdom of his time in believing that the earth was round. Most European navigators and geographers in the late fifteenth century knew that. They also knew that Asia was out of reach by sea to the west: The range of a ship in those days was about 3,000 miles, and the distance to Asia was much longer than that. Columbus, however, was a bad geographer. He calculated the distance to Asia as 2,500 miles, which placed it within reach, and he persuaded a royal patron that he was right and everyone else wrong. So he sailed west to Asia and stumbled on the New World.

There may be a lesson in this for engineers. I am not suggesting that we should practice engineering by serendipity. Rather, the lesson is that being successful is not the same as being right. Columbus succeeded but he was wrong, twice over: He was wrong in that he did not know there was another continent between Europe and Asia, and he was wrong about the distance to Asia. He shared the first mistake with his

contemporaries but the second was uniquely his. The two mistakes together led to his success.

The examples of success through compensating errors in engineering are many. So it is important that we not assume that just because something works, or worked in the past, it is correct. This message came home to me recently when I was studying the evolution of the skyscraper.

The first skyscraper, the 10-story Home Insurance Building in Chicago, was built in 1885. In just 28 years, skyscraper technology progressed to the 60-story Woolworth Building in New York. And in 1931, just 46 years after the first skyscraper, we had the Empire State Building.



This upward progress, with a doubling of building height about every 15 years, was brought to a sudden halt by the Depression, which had already begun when the Empire State Building was completed (leading to jokes about the Empty State Building). The Depression was followed by war and tall building construction did not start up again in any strength until the 1950s, after a quarter-century interruption.

As it turns out, it was a good thing skyscraper construction came to a halt in 1931, for the structural design of that first generation of skyscrapers—from the Home Insurance Building to the Empire State Building—was wrong.

Most of these were “portal frame”-type structures that depended on rigid beam-to-column connections for lateral stability and

resistance to lateral load. And most or all of the columns, interior and exterior, were part of the lateral load-resisting system. There is nothing wrong with this concept, but we know now that the beam-to-column connections were actually far from rigid. And a comprehensive analysis of the structural frame of almost any first-generation skyscraper using today's technology (including accurate modeling of connection flexibility) would reveal several deficiencies: The design wind load was much too low, the frame is deficient in lateral stiffness, and column axial forces due to wind are completely different from what the designer anticipated.

But these buildings are still safe, for two main reasons. First, the partition wall construction of the time added considerable stiffness and damping to the structure. Second, the weight of the walls, cladding, and floor systems was so great that column design was controlled by gravity loads—it didn't matter that the calculated wind-induced column forces were wrong.

But imagine what might have happened if the first-generation buildings had continued to double in height every 15 years, without the interruption caused by economic depression and war. It would not have been long before the errors in the design overwhelmed the compensating factors. (And when lightweight partitions and floor systems came into use, the compensating factors would have disappeared altogether.) There may not have been a collapse, but we almost certainly would have seen an unserviceable skyscraper, with grossly excessive lateral deflections and movements due to wind.

This disaster was prevented by the quarter-century hiatus in tall building construction after 1931. By the time tall building construction resumed, engineers knew of the defects in first-generation skyscraper technology and had the tools to do better. The first post-World War II building to approach half the height of the Empire State Building was the Torre Latinoamericana, completed in 1956 in Mexico City. This was a correct structural design by almost any standard, completely different from that of the first-generation buildings. The seismic design was by Nathan Newmark, and it has survived two major earthquakes with essentially no damage.

STRUCTURAL ENGINEER

**\$4,797 – 6,053 Per Month +
Generous Benefits Package**
(Go to our website for details –
www.co.clackamas.or.us)

Clackamas County's Building Codes Division, has an opening for a Structural or Civil Engineer to provide professional engineering expertise in the review and comment on plans for building projects and mechanical systems of all sizes and types. Requires State of Oregon registration as a professional Structural or Civil Engineer. Other requirements apply. See announcement for details. Applicants must possess valid driver's license and have good driving record.

COUNTY EMPLOYMENT APPLICATION REQUIRED. Apply on-line via website: www.co.clackamas.or.us, click on "jobs" or complete application on-line at Clackamas County Personnel, Public Services Building, 2051 Kaen Road, 3rd Floor, Oregon City, OR 97045, 503.655.8459. Closing date: Open until Filled. EEO Employer

The building profession was not always so fortunate as to have its march toward disaster halted by an external event. The history of construction is replete with examples of technology that “worked” for a time, though it was wrong, and then failed catastrophically.

The Gothic cathedrals of Europe are magnificent and inspiring structures, but their designers really didn’t know how they worked, even after hundreds had been built over a period of centuries. We know now that while the designs were generally very conservative, there were elements that were marginal. So when a designer stepped out of the box of what had been done before, or when conditions changed in ways that he did not understand, the result could have been disastrous. Witness the multiple, serial failures of the cathedral at Beauvais, all caused by design mistakes that no competent structural engineer would make today.

Given enough time and resources, we could use the basic principles of physics and engineering to design any structure to any required level of safety and reliability.

Of course, in the real world, time and resources are not unlimited. And so we use codes and standards and specifications that provide standardized loadings and relationships between design variables and structure capacity or behavior, all directed at attaining the required

level of safety and reliability without the engineer having to work out the entire design from first principles. And as researchers discover new modes of failure and aspects of behavior, the codes and standards and specifications get longer and more complicated. (The first AISC

specification was 13 pages long.)

The ongoing refinement of design specifications makes some engineers very unhappy. Indeed, any time a new specification provision is proposed there will be someone who asks: Where are the buildings that have fallen down for want of this provision? But that is the wrong question. Any change that reflects a better understanding of how structures behave is to be welcomed. History



teaches that ignorance masked by past success cannot be relied upon to remain dormant; it can jump up and bite someday. We cannot assume that we will always be lucky, like Columbus, and that all our mistakes will be cancelled out by other offsetting mistakes. But there is hope for those who long for shorter specifications and fewer rules. Most specification provisions today are intended to compensate for limitations in our methods of analyzing structures. Specifications grow as we learn more about structure behavior; they can shrink as more aspects of behavior are captured by our methods of analysis. At present there are only a few hints of this shrinkage (as in simpler stability design provisions applicable when more advanced analysis techniques are

employed), but it is happening, and it will accelerate. And we can all look forward to the day when we know so much and analyze structures so well that codes and specifications will merely spell out standards for safety and reliability.

For article in full print, follow this link:

http://www.aisc.org/MSCTemplate.cfm?Section=Modern_Steel_Construction2&template=/ContentManagement/ContentDisplay.cfm&ContentID=32120

Thank you to Modern Steel Construction (MSC) for allowing SEAI to reprint this article originally printed in June 2006 of MSC.

SEAI MEETING RECAP — MAY

BY ASH HOBBS, P.E.

At our last SEAI meeting (May 18, 2006), David Cram, President and General Manager of Materials Testing & Inspection, gave a presentation on special inspection and the IBC. David began his presentation on the need for special inspection and the differences between special inspectors and building officials. Generally speaking, special inspectors have more in-depth technical knowledge about materials than building inspectors. In addition, building inspectors have less time to spend on each construction site than a special inspector would. People tend to cut corners when they are not being watched, and special inspection helps put another set of eyes on the contractor to keep them honest.

David gave us several examples of existing buildings that were not constructed per drawings and posed potentially unsafe conditions for occupants (they have since been upgraded to current building codes). Some of these buildings were constructed as recently as only 15 years

ago. Special inspection is intended to catch some of these conditions and provide an opportunity to fix them before buildings go into use. Some common examples of deficiencies that special inspectors catch are improper reinforcing layout or missing reinforcing, poor soil bearing materials, poor quality or missing welds, and loose or missing bolts.



The need for special inspection varies greatly based on different contractors and jurisdictions. Some contractors may require more special inspection because of the lack of skill or because they tend to cut corners. Other contractors are highly skilled and careful in their work, making the job of the special inspector much easier. In addition, there are radical differences in special inspection requirements between different building official jurisdictions.

Finally, David recommends that the engineer obtain a final affidavit from the special inspector before issuing a completed project letter.

SEAI would like to thank David Cram for his informative presentation. If you have a question regarding his presentation, you can contact David by email at cramd@mti-id.com or you may call him at (208) 376-4748.

BE INVOLVED WITH YOUR NEWSLETTER!

The SEAI Newsletter is a monthly publication. Newsletter submissions are encouraged from the SEAI community. If you have a suggestion, feature, link, product review or anything else that maybe of interest to the newsletter readers, please email them to our newsletter editor, Tyler Haney at thaney@tveinc.com

EVENT CALENDAR

(EVENTS ARE SUBJECT TO CHANGE)

- July 20-22:** The 2006 SEA Northwest Conference at the Skamania Lodge in the Columbia River Gorge.
- July 25-28:** AISC "Best of" Seminar in Chicago, IL. AISC will consecutively offer four recent successful seminars at one location with each presented by the top presenters and/or the program authors. For more information, follow this link: <http://www.aisc.org/bestofseminars>
- August 31:** New AISC Specification/Manual Seminar in Boise, ID. "Design Steel Your Way with the 2005 AISC Specification." For more information visit our website, www.seaidaho.org and look under "Events".



Engineers ... are not superhuman. They make mistakes in their assumptions, in their calculations, in their conclusions. That they make mistakes is forgivable; that they catch them is imperative. Thus it is the essence of modern engineering not only to be able to check one's own work but also to have one's work checked and to be able to check the work of others. — Henry Petroski

STRUCTURAL ENGINEERING LINKS

FEATURED LINK: Live Video Feed of Benchmark Shake Table Testing of a Full-Scale Two-Story Townhouse Woodframe Building
<http://nees.buffalo.edu/projects/NEESWood/video.asp>

Applied Technology Council - <http://www.atcouncil.org>

Board of Professional Engineers and Land Surveyors - <http://www2.state.id.us/ipels/>

City of Boise Sp. Insp. Checklist – http://www.cityofboise.org/pds/applications/Building/Special_Inspections.pdf

Design Build Magazine (McGraw-Hill) - <http://www.designbuildmag.com/>

Engineering & (Bi-Weekly Newsletter) - <http://www.engineeringand.com>

Engineering Forum - <http://www.eng-tips.com/>

Structural Engineers Association International - <http://www.seaint.org/>

Structural Engineers Association of Utah - <http://www.seau.org/>

Structural Engineers Association of Washington - <http://www.seaw.org/>

Structural Engineers of Oregon - <http://www.seao.org/main.htm>