



EQUILIBRIUM

Newsletter of the Seattle Chapter
Structural Engineers Association of Washington

November 2012

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Structural Engineers of the Seattle World's Fair

As part of the celebration of the 50th anniversary of the 1962 Seattle World's Fair, the Seattle Chapter is thrilled to honor the achievements of some of our local engineers who designed many of the Fair's signature structures with a special dinner meeting at the Skyline Level of the Space Needle.

On May 30, 2012, the Structural Engineers Foundation of Washington (SEFW) assembled engineers Dick Chauner, Jack Christiansen, Gary Curtis, Victor Gray, Norm Jacobson, Tom Kane, Bob Mast, Fred Pneuman, and Einar Svensson, and recorded their memories and reflections of the World's Fair and its structures. The Fair was a landmark event for structural engineering in the Pacific Northwest, and these engineers developed cutting edge design techniques to build landmark structures like the Monorail, Space Needle, Washington State Coliseum (Key Arena), and the US Science Pavilion (Pacific Science Center).

The November dinner meeting will include a presentation of the trailer for the documentary which is in post-production. Following the screening, we will feature a panel discussion with several of the World's Fair engineers, moderated by Tyler Sprague of UW. The panel discussion, including Jack Christiansen, Gary Curtis, Norm Jacobson, Bob Mast, and Einar Svensson, will provide a behind-the-scenes account of the design of these structures and is certain to include entertaining and enlightening anecdotes. Audience participation and questions will be encouraged.

Jack Christiansen, with the firm Skilling & Helle, was the lead structural engineer for the US Science Pavilion. Gary Curtis worked as the project lead on the foundation and top house for the Space Needle while with the structural engineering firm of John Minasian. Norm Jacobson, shortly after founding his own firm, designed the World's Fair parking garage (across from the opera house). Bob Mast and Einar Svensson both worked on the Monorail; Bob's work included concrete beams and bearing pads with the firm Anderson, Birke-land, and Anderson, and Einar served as a key engineer for the Alweg Company, working on the firm's development of monorail technology and construction worldwide.

Tyler S. Sprague P.E., LEED AP, is an Acting Assistant Professor in the Department of Architecture, University of Washington. Tyler is an engineer and an architectural historian, studying the intersection of architecture and engineering through engineering research and academic scholarship.

Haven't been to the Needle in a while? Meeting attendees will have access to the Space Needle's observation deck as well.



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Meeting Information

This presentation is valued at 1.25 PDH

Register online at www.seaw.org.

Date: Tuesday, November 27, 2012

Place: Space Needle Skyline Level
203 6th Avenue North, Seattle, WA

Time: 5:00—6:00 PM Social Hour
6:00—6:30 PM Dinner
6:30—7:00 PM Welcome/Introductions
7:15—8:30 PM Program

Menu: Choose between:

Washington-grown chicken breast with wild mushrooms and creamed leeks ~or~
Vegetarian butternut squash raviolis.
New York cheesecake dessert

Price: SEAW Members \$40.00
Non-Members \$50.00
Registration After 11/21, add \$5.00

We apologize, but there will be no student/unemployed discount for this meeting.

Registrations Required. Prepayment appreciated!

Registration deadline: 5pm Wednesday, November 21

Credit Cards accepted online only; not at the door.

No-shows and cancellations after the deadline will be subject to full charge.

From the Board: Home

-by Charlene Hails

Membership in SEAW has made Seattle feel like a home to me. Like many of us, I'm a transplant here. I arrived in 1999 a few years after finishing university in Saskatoon, Saskatchewan. Before coming south I had worked in the mining industry. When commodity markets took a dive, those projects were put on hold. I and many of my colleagues had to seek opportunities elsewhere. I had taken a summer vacation in Olympic National Park and fallen in love with the Pacific Northwest. Although I didn't know anyone in Seattle, I decided to relocate here.

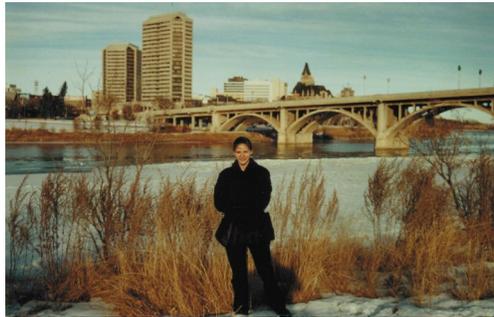
Starting over was both exhilarating and depressing, and life was an emotional rollercoaster at first. There was so much to see and do in the big city, but I missed my family and friends so much that I booked a trip home a month after leaving. I had left behind my boyfriend, our house, a big family, and friends I'd known since childhood.

This September my alma mater held a centennial celebration. When I learned that some of my oldest friends would be returning for the centennial event, I decided to go home too. I was pleased to reunite with a favorite professor, old study partners, and one of my first design office supervisors. Although I go home on a regular basis to see my family, I haven't kept in touch with my old engineering friends. I was impressed with the success of this group of engineers. With the resurgence of mining, many have risen to leadership roles in large firms, some have become partners in companies where they started their careers, and still others have founded their own companies. Things have really turned around. Saskatchewan has become a relative economic powerhouse. It has changed, but it is still my home.

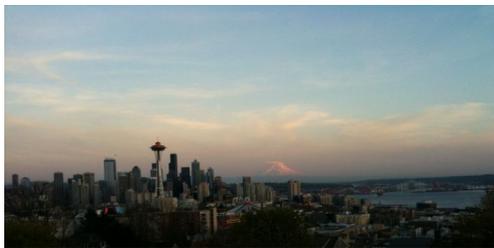
Within a few months of moving to Seattle I found the Queen Anne Masters Swimming group and Vertical World climbing gym, and a few new friends. It wasn't until joining SEAW a couple of years later, though, that I really started to feel like part of the Seattle engineering community. Seattle always seemed like such a big city to me, but I learned that the structural engineers formed a compact society of their own.

As I attended SEAW events, faces became familiar and I made some new friends.

Getting involved in activities like the Earthquake Engineering Committee and Existing Buildings Committee helped me to stay up to date on technical issues while getting to know new people. As proof-reader of the SEAW newsletter I read each and every article! Now when I show up at a meeting or a seminar I feel like I'm at home, surrounded by friends. I



On the banks of the South Saskatchewan River



Seattle's skyline from Kerry Park



Christchurch Cathedral, April 2011

was surprised to find just how small and interconnected the structural engineers here are. Most of us are within one or two degrees of separation from each other. We've worked in the same alphabet soup of offices, served on committees, or just attended a seminar or dinner meeting together. These shared experiences have now made Seattle and SEAW feel like my home. If you have a new

transplant in your office, bring him or her along to the next dinner meeting!

Being involved in SEAW has also provided exciting opportunities. The Existing Buildings Committee led me to participate in the update of ASCE 31 and 41, the documents for seismic evaluation and rehabilitation of existing buildings. I was invited to visit Christchurch, New Zealand, following the devastating M6.3 earthquake of February 22, 2011, with other members of the ASCE 31-41 update committee. Six weeks after February 22 the Central Business District (CBD) was still largely off limits. Presence of falling hazards throughout the area meant that no path through the CBD was safe. Many buildings were damaged, but even those that were unscathed were off limits due to instability of adjacent structures. Homes and businesses were still out of bounds to owners and tenants. With strict supervision, some residents were being given brief access to retrieve belongings. Safety concerns were obviously paramount. In areas outside the CBD many people were still sharing port-a-potties. A boil-water directive was in place. Progress has been made in the 18 months since my visit, but there's still a large "red zone" in the CBD with restricted access. My membership in SEAW led to this valuable learning opportunity in a real-life earthquake laboratory. SEAW has provided a framework for similar reconnaissance efforts following the 2010 M8.8 Chile earthquake and the 2011 M9.0 Great East Japan earthquake, among others.

My experience in Christchurch was so fascinating and eye-opening that at the end of November I'm returning there to work on rebuilding the city. I'll be starting over all over again, at least temporarily. I hope that the engineers in Christchurch will be as friendly and welcoming as my colleagues here in Seattle are.

Thank you for the opportunity to serve as your Director. It has been an honour to represent you if only for a short time. I regret that I will not be able to serve my full term because of my relocation. I hope before too long to return to the place and association that has become my home.

Charlene Hails is a project manager with MRP Engineering, and has been an SEAW member since 2001.

Committee News: Lifecycle Sustainability Assessment for Washington

by Owen Kohashi

Life cycle assessment (LCA) is a method for estimating the environmental and resource impacts of a building or product through its full life cycle, from material extraction to demolition and disposal. LCA provides a quantitative method to estimate the environmental impact of buildings and building products. Building codes requiring LCA or development of LCA data exist in Europe and are beginning to be implemented in the US.

With bill ESSB 5485, the Washington State Senate charged a team from the University of Washington and Washington State University to make recommendations to the State for integrating LCA into the state build-

ing codes. The UW/WSU research team issued its report on August 31, 2012; the full text can be found online at: <http://tinyurl.com/LCAforWA>

The research team recommended that the goal of increasing awareness of LCA would be the most appropriate action at this time, given the current state of LCA practice and the capabilities of the building industry. Increased awareness has the potential to motivate improvements without prescriptive requirements and helps improve industry knowledge and capabilities, setting the foundation for directly including LCA into state codes in the future.

The research team also identified two practices that merit further

study for future legislative action: whole building LCA, which would compare the environmental impacts of a proposed building against a benchmark building, and the development of Environmental Product Declarations (EPDs), which would standardize the reporting of the "environmental footprint" of building materials. The research team recommended that the state provide resources to commission LCA studies of select buildings in order to evaluate the complexity and value of integrating these methods into practice.

For LCA to be implemented as part of building code requirements, the goals of such incorporation must be clearly identified, and the LCA tools, methodologies, and tracking data must be

sufficiently developed. In the immediate future, code requirements for buildings to meet particular LCA goals are not expected in Washington; however, you may start to see requirements on projects for data collection during design, construction and the entire life cycle of the building.

The Sustainability Committee meets in downtown Seattle on the fourth Wednesday of the month. The next two meetings are at noon on November 28 and January 23 at Degenkolb Engineers, 600 University Street, Suite 720.

Owen Kohashi is a senior Civil Engineer with Seattle City Light. Owen has been a member of SEAW since 1992.

2012 NCSEA Annual Conference

The 2012 NCSEA Annual Conference was held from October 3-6 in St. Louis Missouri at the Hilton Frontenac Hotel. SEAW members in attendance were Mark D'Amato, Greg Schindler, Cale Ash, Jill Shuttleworth, Don Scott, Tom Xia, Tyler Kurz, Heath Mitchell and Chun Lau.

This year the conference technical sessions were expanded to two full days. The general theme of the conference was "Design Trends for the Future." Conference attendees had access to forty-two exhibitors throughout the duration of the conference. Technical sessions were organized around many of the key loading elements that structural engineers face in their daily practice. Approximately 200 were in attendance for the opening session focusing on upcoming code developments. These presentations highlighted recently completed or upcoming changes to the standards documents that will impact practice.

The Thursday morning session wrapped up with a keynote session by Larry Griffis at Walter P. Moore. The title of Larry's presentation was "Structural Engineering Practice—Instilling a Culture of Discipline". The presentation focused on 16 recommendations that engineers should follow to help avoid problems in design. The video of Larry's presentation is available from the link under NCSEA Conferences and Institutes on the NCSEA home-

page (www.ncsea.com).

The Thursday afternoon session turned to snow and tornado loadings. Professor Mike O'Rourke of RPI provided an excellent presentation on the basis for the snow loading requirements in ASCE 7, followed by a very interesting talk by Joe Zona of SGH on observations related to the numerous roof collapses that occurred during the epic New England snow storms during the winter of 2010-2011. The day closed with a fascinating discussion of the effects of the tragic Joplin Tornado by SEAKM members Randall Bernhardt and Malcolm Carter. The SEAKM task force team generated a list long list of recommendations that will help to limit the effects of future tornadoes. These recommendations can be found on the follow link: http://www.seakm.com/uploads/Joplin_Committee_Report_0526_2012.pdf.

Friday's conference session opened with reports by the state Member Organization delegates. Each report highlighted ongoing activities and areas where the states could share information that would be mutually beneficial. The afternoon session turned to the latest developments in seismic design by Jon Heintz of the Applied Technology Council. Ron Hamburger then provided a more detailed description of the ATC 58 project which will establish the next generation of tools for Perform-

ance-Based Seismic Engineering. The final portion of the technical conference, presented by NCSEA Publications Committee chair Tim Mays, summarized the contents of two existing (Diaphragms and Wall Anchorage) and two soon-to-be completed (Serviceability and Foundation Design) NCSEA publications.

The conference dinner began with presentations of awards to individuals that made great contributions to their member organization as well as to NCSEA. Also, new this year were three conference scholarships presented to young members of member organizations. We would like to encourage our YMF members to submit for this scholarship next year. Please refer to NCSEA website for list of award recipients. A total of 16 Awards of Merit and eight Outstanding Project Awards were presented in eight categories, as part of the NCSEA annual Excellence in Structural Engineering Awards Program.

The final day of the conference was the annual business meeting of NCSEA and the member organizations. Each of the NCSEA Committee Chairs briefly summarized their activities during the year (presentations of each are posted on the committee pages on the NCSEA website), followed by reports by NCSEA Executive Director Jeanne Vogelzang which focused on how NCSEA measures up to the most success-

ful professional organizations, and the Treasurer's report by Barry Arnold which summarized the existing financial state of the organization. The highlight of the morning was the presentation by young member Heather Anesta (from FSEA) who summarized a new document on how to establish Young Member Groups. Heather's enthusiasm and passion were infectious to all in attendance. It is encouraging that our YMF has also been doing quite a few of the activities that Heather suggested; however, there are lessons that our YMF can learn from their experience and success. Immediate Past President Jim Malley wrapped up the meeting by summarizing the results of the year-long ad hoc effort on communication and collaboration, listing a number of recommendations that will soon be delivered in a final report to the 2012-2013 NCSEA Board of Directors.

Overall, the 2012 Annual Conference could be considered a success on a number of levels. Next year's annual conference will be in Atlanta, Georgia from September 18-21. We hope to see you there!

Written by Jim Malley, past president of NCSEA and Chun Lau, SEAW delegate to NCSEA. Chun can be reached at clau@comcast.net.

YMF Corner

-by Jennifer Ahlport

This year's summer picnic was a great success and a fun time had by all. On Saturday, September 29th, we met in Gasworks Park for an afternoon of good food, entertaining games, lively conversation, and surprisingly sunshine.



We had 36 people attend, which included UW and Seattle U students, young professionals just recently moved to Seattle, professionals who have been in Seattle for years, their guests and one energetic dog. For those of you who weren't able to make it, we hope that you can come next year.

Krzysztof Zaleski, our YMF social chair and chief organizer of the whole event, served as the grill master to keep all of our bellies full. A thanks also goes out to all of the others who volunteered their time to help set up and take down the picnic.

In addition to the picnic, we also have monthly happy hours if you are looking for a way to interact with other younger members in the area. Our two upcoming events include a happy hour at PF Chang's in downtown Seattle from 5-7pm on Tuesday, November 13th, and another happy hour at the Diller Room in Seattle from 5-7pm on Tuesday, December 11th. If you're looking for a way to start getting involved in SEAW, or are just looking for some people to spend a couple hours after work with, we'd love to see you there.



Grillmaster Zaleski



Created in 2007, the Younger Member Forum provides networking and social opportunities to SEAW members 35 and under, as well as new non-member engineers and students. All SEAW members are welcome to participate in YMF functions.

YMF Leadership

President:

Jennifer Ahlport
jahlport@gmail.com

Vice President:

Tyler Kurz
tkurz@dc-engineers.com

Social Representative:

Krzysztof Zaleski
kzaleski@mka.com

Past Chair:

Natalie Low
gmatann@gmail.com

Outreach Representative:

April Shen april.c.shen@gmail.com

Upcoming YMF Events

Nov 13 Happy Hour, 5:00-7:00 PM
 PF Chang's, Seattle (Westlake)

Dec 11 Happy Hour, 5:00-7:00 PM
 Diller Room, 1224 1st Ave, Seattle

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Meeting Recap

- by Brian Pavlovec

The October dinner meeting featured a timely presentation about the ongoing renovation of Husky Stadium at University of Washington (UW). Brian Dickson from Magnusson Klemencic Associates (MKA) started with a timeline for the existing structure. The original stadium was built in the early 1900's, the south stands were added in the 1950's, the north and west stands were added in the 1980's, and the south stands were refurbished in the 1990's.

A 2004 master plan found Husky Stadium needed a number of major improvements. The lower bowl, south stands, and press facility had deteriorated structurally, and the entire structure needed a seismic upgrade. ADA access, general circulation, and restrooms were also deficient.

To complete the renovations, UW held a competition for developer-led teams. The winning team was led by Wright Runstad Company (WRC), along with Turner Construction and 360 Architecture. The objectives of the renovation included:

- Renovating the main concourse
- Seismically upgrading the north stands
- Replacing the south stands and press box
- Replacing the east stands and scoreboard, while maintaining the lake view
- Creating a new team building and replacing the west stands
- Adding new clubs and suites

The structural challenges started with the new foundations on the east half of the site, which is underlain by peat



Image courtesy of 360 Architecture

and fill. To replace the fill and reduce settlement of the south stands, the WRC team added a basement and indoor parking.

For the lower bowl, the team decided to eliminate the track and lower the field by five feet, which will bring fans much closer to the field. The existing bowl was demolished and recycled, and it was replaced with a cast-in-place structure. Lateral forces are resisted by special concrete shear walls, and the new field is supported by a structural slab on grade, because of the poor soils.

For the south stands, it was essential to maintain the iconic form of the roof structure. Throughout the upper bowl, the WRC team used steel framing along with steel plate treads and risers, which will help maintain Husky Stadium's "thundering" acoustics. Given the light structure, MKA carefully studied fan-induced vibration to control comfort.

The lateral system for the upper bowl features buckling restrained braces (BRBs). In the transverse (north-south) direction, the iconic boomerang trusses on each grid line carry gravity and lateral forces above the upper concourse, and braced frames carry lateral

forces down to the lower concourse. Braced frames also resist all of the lateral forces in the longitudinal (east-west) direction. The BRB's are located at the bottom of the boomerang trusses and most of the diagonals for the braced frames. The advantages of the BRBs include higher ductility and great geometric freedom.

Peter Somers from MKA focused on the seismic evaluation of the south stands and seismic upgrade of the north stands. For the south stands, the overall lateral strength of the lower levels was also inadequate. The same was true in the longitudinal direction of the main roof structure and the upper bowl. Considering the cost of the seismic upgrades and other improvements that were required, the WRC team

decided to replace the south stands.

The north stands were designed per the 1982 UBC, and the deficiencies were more localized. The seismic upgrade includes strengthening or replacing some braces and collectors, as well as strengthening the connections for those members.

Turner started construction in November 2011, soon after the last home game, and the renovation will be complete in time for the first home game in 2013.

Brian Pavlovec is a Principal at Magnusson Klemencic Associates, which he joined in 2001. He has been a member of SEAW since 1996 and is a 2010-2013 chapter board member.

Engineering is the practice of safe and economic application of the scientific laws governing the forces and materials of nature by means of organization, design, and construction, for the general benefit of mankind.

S. E. Lindsay, 1920

In Memoriam

James Chen



June 17, 1944 - September 30, 2012

James Cheng-Hsiung Chen, born in Taipei, Taiwan, as the middle child of nine siblings, came from a humble family. Along with his brothers and

sisters, James helped run his family's neighborhood grocery store throughout his childhood. During summer vacations he did construction work to help out the family.

A strong student throughout his early learning, James entered National Taiwan University's Department of Civil Engineering, then served in Taiwan's army where he passed the Special Examination of the Taiwan Provincial Civil Engineering Staff.

After working with the Tseng-Wen Reservoir Engineering Bureau with responsibility for construction of the water conduit spillway system,

James transferred to the Expressway Engineering Bureau of the Ministry of Communications in Chilung (Keelung), Taiwan, where he worked in quality construction inspection.

Upon graduation from National Taiwan University, he met Shu-Chin Hsieh, and they married in 1972. In 1974, James came to the US in on research assistantships in mechanical and structural engineering at the University of Washington. In 1975, he received dual master's degrees in structural and mechanical engineering, and joined SEAW shortly after-

ward.

He worked at Whitely Jacobsen & Associates, followed by time at KPFF and with Lin & Associates. In 1984 he joined the City of Seattle's Department of Construction and Land Use (DCLU). According to his DCLU colleague Steve Pfeiffer, James first worked as a structural plans examiner reviewing structural plans for new commercial projects, and later as a permit leader where his technical knowledge and his excellent communication skills facilitated his work with the public. He retired in 2010.

SEFW Fall Forum Features Bill Baker

-by Cale Ash

The Structural Engineers Foundation of Washington (SEFW) featured another internationally renowned engineer at their annual public forum. Bill Baker P.E. S.E., Partner-in-Charge of Structural Engineering for Skidmore, Owings & Merrill, gave an engaging presentation on "Creating the Language of Structural Engineering" at Benaroya Hall on Thursday, October 11, 2012. Approximately 250 people attended the event.

Bill began his presentation by sharing examples of historical structures and noting that architecture conveys a story of both time and place. Early designers were limited by the materials and technologies available—as a result arches and closely-spaced columns were the predominant design elements. Bill contrasted this with the current state of the profession where technology has facilitated much advancement, particularly with respect to the design of tall buildings. While computer analysis programs can be a tool in the design of complex structures, Bill posited that this same technology can be an enabler of bad design decisions.

Bill stressed that structural engineers must be active participants in the design of iconic structures. By having their own design philosophy, structural engineers can

add to the design process and ensure their values are represented in the completed project. Bill's suggestions as to how individual engineers can establish a design philosophy included studying past engineering solutions and identifying simple concepts that describe a design (such as the bundled tube of the Sears Tower or the buttressed core of the Burj Khalifa). He also encouraged all engineers to maintain expertise in classical analytical tools such as the conjugate beam method and the principle of virtual work, as these allow for an intimate understanding of the link between design and analysis.

Bill is perhaps best known as the structural engineer of record for the Burj Khalifa, the reigning tallest building in the world. He took the opportunity to share some of his experiences working on the iconic project.

The project began with a design competition in 2003 and an initial height of 1,700 feet. Tall buildings are typically controlled by wind loads and the shape of the individual floor plates significantly influences the resultant wind loads on the building. Through the use of advanced analysis and wind tunnel tests, the height of the Burj Khalifa progressed to the current height of 2,717 feet—over one-half of a mile.

Despite this world-record height, the structural systems in the Burj Khalifa are relatively straightforward; it's largely a reinforced-concrete shear wall building with flat slab floors. A hexagonal concrete core is located at the center of the building; this provides the torsional resistance for the structure and houses nineteen elevator shafts. Concrete shear walls are located within each of the three wings and these serve to buttress the central core and resist overturning loads. Through the use of outrigger floors every thirty stories, both gravity loads and overturning demands are managed such that there is no net uplift demands at the foundation level. This greatly eased construction of the pile-supported concrete mat foundation.

Bill concluded his presentation by encouraging all design professionals to consider how their personal design philosophy is reflected in their current projects. He stressed that, as engineers, we each have a public obligation to add value through our designs. With a warm and lengthy round of applause, the audience thanked Bill for his thought-provoking lecture.

SEFW's Board of Directors wishes to thank the sponsors and attendees for making this year's forum another great success. In keeping with the Foundation's stated



mission of "improving public safety and enhancing the profession of structural engineering through scholarship, research, and education," future forums will be held annually.

Cale Ash is an Associate Principal with Degenkolb Engineers and the current President of the Seattle Chapter. He can be reached at cash@degenkolb.com.

Meetings, Seminars and Announcements

COSMOS Technical Session on Near Field Motions and Strong After-shocks

The Consortium of Organization for Strong Motion Observation Systems (COSMOS) will be holding its Annual Meeting and Technical Session at the Hilton Garden Inn in Emeryville, California on Friday, November 16th. The day-long technical session will focus on "Issues Associated with Adjusting NGA Ground Motion Prediction Equations for Directivity and Fling and Short Term Impacts of Serious After-shocks on Building Code Ground Motions.". This year's COSMOS Technical Session is being co-sponsored by the Pacific Earthquake Engineering Research Center (PEER) and the California Geological Survey (CGS).

This year's Technical Session will focus on two subjects. The first subject deals with issues associated with adjusting the recently developed Next Generation Attenuation ground motion prediction equations for directivity and fling when developing near fault design ground motions. The second subject deals with how those associated with developing building code design ground motion should react when serious aftershocks will likely be greater than current building code ground motions. This subject is of particular concern in moderate areas of seismicity such as Christchurch. As in years past, the last part of the Technical Session will include a lively panel session.

For complete program and registration details for the COSMOS Annual Meeting and Technical Session, visit the COSMOS website at www.cosmos-eq.org.

2013 Pacific Northwest Bridge Inspectors Conference: Maximizing your Bridge Inspection Program

Tuesday 4/23/2013 - Thursday 4/25/2013

Hilton Portland & Executive Towers, 921 Southwest 6th Avenue, Portland, Oregon

The Pacific Northwest State DOTs and FHWA are jointly hosting the 2013 Pacific Northwest Bridge Inspectors' Conference. The conference provides a forum for bridge inspectors and managers to share information, innovations, ideas, and best practices. Additional opportunity will be provided for the attendees to gain a current national perspective on bridge inspection from AASHTO and FHWA. The conference will provide continuing education for bridge inspectors.

Who Should Attend?

City, county, state, federal, and consultant bridge inspectors and bridge managers who are responsible for:

- Bridge inspection policy and procedures
- QC/QA
- Preparation and maintenance of bridge inventories
- Bridge inspections
- Load ratings
- Bridge management systems

For information, visit <http://cm.wsu.edu/ehome/45069/76270/?&>

Bridge product and engineering service exhibitors are also encouraged to participate.

University of Washington to Host 2013 National Student Steel Bridge Competition

The University of Washington is excited to announce that they have been selected to host the 2013 National Student Steel Bridge Competition (NSSBC)! The competition will be held on May 31 and June 1, 2013, and is organized by both the American Institute of Steel Construction (AISC) and the American Society of Civil Engineers (ASCE). Student teams from approximately 45 universities from across the U.S., Canada, and Mexico that have qualified for the national competition by placing in the top two in their regional competition will be descending on Seattle for the NSSBC. It is estimated that more than 650 top civil engineering students will be visiting the UW and Seattle for the event, making this a great recruitment activity for local engineering firms. The teams compete with approximately 1/5 scale steel bridges on the basis of construction speed, lightness, stiffness, construction economy, structural efficiency, and aesthetics.

The preliminary schedule includes a public display of all competing bridges and a chance to talk with the students on Friday May 31, to be held in Red Square on the UW campus, weather

permitting, or in Hec Edmundson Pavilion. The competition itself will be held on Saturday, June 1, in Alaska Airlines Arena at Hec Edmundson Pavilion and will be open to the public.

In addition to hosting the NSSBC, UW will have its own steel bridge competition team composed of dedicated and determined civil engineering students. These enthusiastic students will spend countless hours throughout the school year in preparation for the competition through weekly team meetings for design considerations, moving forward to bridge fabrication and weekend assembly practices, and concluding with the competition itself.

The UW Student Steel Bridge Team will soon begin fundraising efforts to support the cost of hosting the NSSBC and SEAW Seattle Chapter has agreed to support them by providing advertising and in-kind support. There will be many opportunities for SEAW members and firms to both participate in the NSSBC and to show your support for the UW, including helping with organization, fundraising, and judging. More information will be coming later this fall and at <http://www.ce.washington.edu/students/NSSBC.html>.

To get involved with NSSBC or to donate to the effort, send email to nssbc13@u.washington.edu and make sure to mark your calendars for May 31 and June 1, 2013!

SEAW Committee Corner

Dedicated to promoting greater communication between the membership and committees, and to encourage all SEAW members to become active participants in the committee(s) of their choice. Watch the SEAW online calendar for updates.

Committee Name	Meeting Information	Topic(s)	Contact Information
Building Engineering	No information available.		Scott Beard, 253.591.5019 sbeard@cityoftacoma.com
Disaster Preparedness & Response	Meets third Tuesdays; next meeting 11/20, 12:00-1:00 (bring your lunch) at Quantum Consulting Engrs., 1511 3rd Ave, #323, Seattle	Report from the Train-the-Trainers session; review draft white paper on credentialing /deployment; upcoming trainings, local response unit development.	Joyce Lem, 425.450.6345 Joyce.Lem@hdrinc.com for remote access via GoToMeeting contact John Riley at jriley@quantumce.com
Earthquake Engineering	Watch website under "News" for meeting in early December.	EEC will start to prepare the seismic seminar for IBC 2012. Any interested person should plan to attend the October meeting or contact Tom or Andy.	Tom Xia, 206.332.1900 txia@dc-engineers.com Andy Taylor, 206.622.5822 andyt@kpff.com
Education	No meeting scheduled. Watch website for updates.	Upcoming seminars. Committee is recruiting members. Contact Mike Wright.	Mike Wright, 206.402.5156 Mwright@lwo-se.com
Existing Buildings	Thursday, November 1, noon-1:30 Coughlin Porter Lundeen, 413 Pine St Ste 300	Discussion of committee agenda.	Bryan Zagers, 206.343.0460 bryanz@cplinc.com
Legislative	No meeting planned for November.	Chair attends AELC meetings	Tim Nordstrom, 206.330.8055 timothy.nordstrom@hilti.com
Professional Practices	Tuesday, November 20, 4:00 PM Harbor Club, 801 2nd Ave, Seattle.	Selection of activities for 2012-2013 year	John Tawresey, 206.622.5822 johnhaw@aol.com
Public Information	A meeting will be scheduled in November or December to re-form the committee.	Contact Cale Ash if you'd like to assist with SEAW's outreach efforts.	Cale Ash, 206.262.9240 cash@degenkolb.com
Refresher Course	January meeting TBA; course to be held Tues-Thurs evenings Feb-March.	Instructors needed for steel, wood, cold-formed steel, and bridge design sections.	Mark Moorleghen, 206.332.1900 mmoorleghen@dc-engineers.com
Scholarship	No meeting scheduled. Scholarship applications are reviewed in March-April	Selection of SEAW Scholarship award recipients	William H Mooseker, 425.776.0646 cascade_bill@comcast.net
Seattle Users of BIM Structural (SUBS)	No meeting scheduled for November. Moving to bi-monthly format.	To be announced	Irina Wong, chair 206.262.9240 iwong@degenkolb.com
Snow Load	No scheduled meetings.	Stay tuned!	John Tate, 509.972.3079 Jatce@charter.net
Sustainability	Wednesday, 11/28, 12:00-1:00PM, Degenkolb Engineers, 600 University St Ste 720, Seattle	Committee research and education. Visit the committee blog at http://seawsustainability.blogspot.com/	Adam Slivers, 206.622.5822 Adam.slivers@kpff.com
Technology	To be scheduled.	Work is progressing on database side of SEAW website. Meetings will be scheduled for design.	Steve Dill/Lynnell Brunswig 206.622.5822/206.682.6026 steve.dill@kpff.com seaw@seaw.org
Wind Engineering	No information available.		OPEN
WABO/SEAW Liaison	Thursday, 11/6, 11:30-1:00, Bellevue City Hall, 450 110th Ave. NE.	White paper on threaded rods; new white paper topics.	Charlie Griffes, 206.285.4512 Charlie@ctengineering.com



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Invoice Date	Invoice Item
Feb 1, 2011	1020
Billing From	Billing To
Jan 15, 2011	Jan 31, 2011

Ms. Rhonda Ware
Factor Foundation
38 Bayberry Street
Futura, CA 94501

Project ID: TSL08
Project Name: Long Beach Harbor
Manager: MC

Invoice

Item	Item Description	Contract Amount	% Complete	Prev Billing	This Invoice
01.001.000	Schematic Design	\$2,000.00	75%	\$150.00	\$4,500.00
01.001.000	Design Development	\$4,000.00	50%	\$1,000.00	\$2,700.00
01.001.000	Construction Documents	\$4,000.00	10%	\$100.00	\$1,400.00
01.001.000	Construction Administration	\$2,000.00	5%	\$100.00	\$900.00
TOTAL:		\$12,000.00		\$1,650.00	\$7,500.00

Consultant Fees:

Description	Date	Rate	Code	Amount
Structural Engineer Project #1	07/2011	1.00	000000	\$1,000.00
				TOTAL: \$1,000.00

Reimbursable Expenses:

Code	Date	Rate	Code	Amount
	04/2011	1.00	0700	\$700.00
				TOTAL: \$700.00

Total Invoice Due: \$12,000.00

This invoice is due upon receipt.

Account Summary

Billed To Date	Paid To Date	Balance Due
\$11,420.00	\$0.00	\$11,420.00

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Modifications to ACI 318—Plain Concrete

SECTION 1908 MODIFICATIONS

1908.1.8 ACI 318, Section 22.10. Delete ACI 318, Section 22.10, and replace with the following:

22.10 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.

22.10.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

(a) Structural plain concrete basement, foundation or other walls below the base are permitted in detached one- and two-family dwellings three stories or less in height constructed with stud-bearing walls.

In dwellings assigned to Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7 1/2 inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 22.6.6.5.

Q: An office building assigned to Seismic Design Category C that has some concrete foundation walls is being proposed. These foundation walls are supporting shear walls. The applicant does not want to have these walls engineered or reinforced and has used Table 1807.1.6.2, "Concrete Foundation Walls," to specify the construction requirements. The

plan reviewer has objected to this and is requiring an engineered design citing Section 1908.1.8, which prohibits plain concrete walls in Seismic Design Category C and higher. What is the intent of the code?

A: The plan reviewer is correct. Section 1807.1.6.2.1, item 2, indicates that the tables should not be used and Section 1908.1.8 should be consulted for plain concrete requirements. Section 1908.1.8 prohibits the use of structural plain concrete walls in Seismic Design Category C and higher unless the exception in item (a) applies. In your case the exception in item (a) does not apply because the structure is an office building. [19-43a]

Q: Section 1908.1.8 [22.10.1(a)] states that structural plain concrete walls are permitted in detached one and two-family dwellings constructed with stud-bearing walls. However, the exception goes on to specify required reinforcement. This seems to be a conflict. If the walls have reinforcement, how can they be plain concrete?

A: The following definitions are provided in Chapter 2 of ACI 318-08:

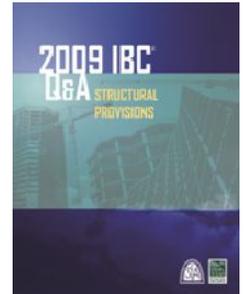
Plain Concrete: Structural concrete with no reinforcement or with less reinforcement than the minimum amount specified for reinforced concrete.

Reinforced Concrete: Structural concrete reinforced with no less than the minimum amounts of prestressing steel or nonpre-

stressed reinforcement specified in Chapters 1 through 21 and Appendices A through C. Section 22.6.6.5 of ACI 318 requires only a minimum of two No. 5 bars around window and door openings. This minimal reinforcement requirement is much less than the minimum reinforcement requirements in Section 14.3 of ACI 318 for walls. Hence, the walls described in item (a) are considered plain concrete in accordance with the definition. [19-43b]

The applications and illustrations published herein are those of the ICC staff and are not binding on the authority having jurisdiction. The authority having jurisdiction has the ultimate responsibility for rendering interpretations of the code.

The questions and answers are from the 2009 IBC Q&A Structural Provisions. The questions are commonly asked questions which arise in the application of code provisions during design and plan review. The IBC section is reprinted for easy reference, followed by the questions and answers pertaining to that section. The 2009 IBC Q&A Structural Provisions is available at iccsafe.org/store. Use ID # 4003S09.



Employment Opportunities

Applications are invited for Assistant Professor, Senior Lecturer or Lecturer in the area of structural design and analysis.

The University of Washington announces a faculty position to be appointed at the rank of assistant professor (tenure track), senior lecturer or lecturer with the Department of Architecture, an internationally recognized professional school offering B.A., M.Arch, and M.S. degrees, and participating in a college-wide Ph.D. program. Depending on the successful applicant's experience and interests, this continuing nine-month position could be Part-Time (60%) or Full-Time (100%). The expected start date is September 2013.

The Department of Architecture and the College of Built Environments recognize the critical importance of interdisciplinary collaborative teaching and faculty creative achievement. The Department of Architecture works closely with the Department of Construction Management to stress an integrated design environment that synthesizes engineering, sustainability and digital simulation technology.

The position includes instructional duties in the graduate and undergraduate levels of the Departments of Architecture and Construction Management and potentially the College's Ph.D. in the Built Environment. The successful candidate is expected to teach introductory courses in structural design and analysis for buildings, to develop new advanced courses in his/her primary area of interest, and to assist in the integration of structural technologies into the culture of design studio. Applicants must have advanced knowledge in some aspect of structural engineering and be interested in and able to teach both large lecture courses and advanced seminars. Applicants must hold a minimum of a master's degree in architecture or engineering, and show promise of excellence in teaching, research and/or practice. The level of appointment and salary will be commensurate with the successful applicant's experience.

See <http://www.washington.edu/admin/acadpers/ads/aa3270.html> for application requirements.

Review of applications begins January 7, 2013 and will continue until the position is filled.

For further information, email arcstrct@u.washington.edu. See also <http://depts.washington.edu/archdept/>

University of Washington faculty engage in teaching, research and service. The University of Washington is an affirmative action, equal opportunity employer. The University is building a culturally diverse faculty and staff and strongly encourages applications from women, minorities, individuals with disabilities and covered veterans.

Employment Opportunities, cont'd

Structural Engineer

Coughlin Porter Lundeen

is a consulting structural and civil engineering firm located in Seattle with a primary focus on building structures - both new construction and seismic renovation. We have been providing inventive solutions and outstanding design to clients throughout the Pacific Northwest since 1994, with a philosophy rooted in providing quality service to our clients. We seek a qualified, motivated structural engineer with 3+ years experience. Candidate must be proactive, exhibit excellent communication skills, and work well in a team environment. The candidate will have an opportunity to work on diverse project types and requires sound technical skills and ability to learn quickly.

Please email your cover letter and resume to humanresources@cplinc.com

Facilities-Senior Civil Engineer

Art Anderson Associates, Bremerton, WA (AAA)

is a Bremerton, WA-based engineering services firm offering a broad range of capabilities and expertise. The company successfully integrates the disciplines of landside facilities and marine vessel engineering to deliver unique and challenging projects for a diverse client base. Recent projects have included new and renovation design for military, research

and ferry vessels; industrial and residential facility improvements at sensitive military installations; and unique waterfront projects such as marinas, ferry terminals and fish passage facilities.

Required: BS or higher in Civil Engineering, WA Civil PE License, 5 - 10 years of A/E industry experience, working knowledge of IBC-IRC-ASCE7, excellent computing skills with MS Office, AutoCAD experience, ability to manage multiple simultaneous projects, excellent communication skills, selfstarter with excellent team working ability.

Desired: advanced civil engineering degrees; civil licensure in other states, especially CA & AK; computer analytical skills using RISA software; business development experience; structural licensure in WA; experience with marine and landside transportation facilities and planning; geotechnical expertise; familiarity with AutoDesk Civil 3D and MS Project software.

How to Apply: Follow this URL: <http://www.artanderson.com/jobs/current-opportunities/166-facilities-civil-engineersenior/>

Art Anderson Associates is an Equal Opportunity Employer.

Project Manager Engineers

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This is a great opportunity to work on a variety of private, institutional, healthcare, educational and commercial projects both domestically and internationally.

Candidates must have experience in all building types. Experience with mid-to-high-rise, post tensioned concrete, high-seismic lateral analysis, deep foundation, or marine construction desired. The ideal candidate will have excellent communication and technical skills, the ability to lead other engineers, manage multiple projects and a commitment to quality client service.

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Please address inquiries to: Howard Burton, President, Seattle Structural PS Inc.

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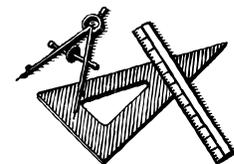
Key Qualifications:

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- Proven ability to market to contractors, develop proposals, and attend and lead client interviews
- Licensed S.E. or P.E. in Washington State (S.E. preferred)

Application Procedure

Interested applicants should submit a resume and cover letter to careers@b-t.com quoting WPL1213 - 23 in the subject line. Unfortunately due to the volume of applications received, we are unable to respond to candidates individually.

For a full job description, please visit www.b-t.com





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Refresher Course	Mark Moorlegghen
Newsletter	Lynnell Brunswig
Presentations/Awards	Cale Ash
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Governance	Howard Burton
Committee Oversight	Tom Corcoran
YMF	Jennifer Ahlport

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Building Engineering	Scott Beard
Existing Buildings	Bryan Zagers
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Wind Engineering	Don Scott (interim)
Seattle Users of BIM Structural	Irina Wong
Scholarship	Bill Mooseker

Legislation	Tim Nordstrom
Education	Mike Wright (interim)
Finance & Auditing	Ted Smith
Disaster Prep/Response	Joyce Lem
Public Information	Cale Ash
Sustainability	Adam Slivers
Snow Load	John Tate
SEAW Historian	Don Northey

For Committee contact information, visit www.seaw.org and click the Committee page

SEAW Calendar

NOVEMBER, 2012

*****		Deadline for Lifetime Service Award Nominations
Tuesday	13th	YMF Happy Hour, 5:00 PM PF Chang's, Seattle (Westlake)
Tuesday	20th	December Newsletter Deadline
Thursday	22nd	THANKSGIVING
Tuesday	27th	Seattle Chapter Dinner Meeting Space Needle, Skyline Level
Wednesday	28th	Seattle Chapter Board Meeting MKA
Friday	30th	State Board Meeting City Centre 4th Floor Conference rm

DECEMBER, 2012

*****		Scholarship Applications Solicited
Tuesday	11th	YMF Happy Hour 5:00 PM The Diller Room, 1224 1st Ave, Seattle
Thursday	20th	January Newsletter Deadline

The SEAW Seattle Chapter *Equilibrium* is published monthly from September through May and is available online at www.seaw.org.

Articles, letters, and announcements are accepted by e-mail to seaw@seaw.org.

Advertising rates (prepaid) Help Wanted/Job wanted, max 200 words, \$65; Display ads: Quarter page, \$115; Half Page, \$150; Full Page \$190. 10% discount for ads running two or more months. Deadline is the 20th of the month. Contact SEAW for an advertising order form.

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Membership

Membership Postings

In accordance with SEAW bylaws, membership applications are vetted by the Membership Committee, granted probationary status by the chapter board, and posted for membership comment. Membership is considered accepted 30 days after posting if current year's dues are paid and no member objections have been received.

Jason B Miller
JB Miller Engineering, PLLC
BSCE, Washington State University
Class: Member PE

Membership Changes

David Korpi, Member SE—Resigned due to relocation

Drew Graham—Class change from Associate to Member PE

Seattle Chapter Unpaid Members

Members whose dues are unpaid at the end of the year will be removed from membership. If you see someone you know, please remind them to bring their membership current!

John Apolis	Diana Leonard
Noel Baca	Isaac Loeb sack
Joanne Bayuga	Andrew Marks
Abdul Chahim	Daniel Munn
Laila Cohagen	Joy Naganuma
Benton Cook	Richard Oehmcke
Christopher Cornell	Craig Olson
Gerald Dorn	Myles Parrish
Lanny Flynn	Sri Rajah
Nathan Galer	Robert Schultz
William Gibb	Jean Spangler Shortreed
Louis Heaton	Luke Showalter
Wesley Isbell	Kenneth Simons
Deepali Jodh	Luke Su
Jennifer Johnson	Diana Timpson
Sean Johnson	Kathryn Warner
Pong Jongitirat	Joshua Welch
Eric Kelley	Wei Yang
Becky Lee	