CONNECTIONS

January 2012 Volume 12 Issue 5

Newsletter of the Structural Engineers Association of Oregon

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Upcoming SEAO Meetings and Events:

January 19, 2012: Young Member Forum Gathering
Location: Mellow Mushroom, 1411 NW Flanders St, Portland, OR
Time: After 5:30 pm
See page 10 for additional information.

January 25, 2012: SEAO Lunch Meeting
Speaker: Ed Huston, PE, SE. Principal at Smith & Huston Consulting Engineers in Seattle, WA & former President of the Board of Directors of NCSEA.
Topic: Specifying Wood & Cold-Formed Steel Trusses—Avoiding Pitfalls & Unnecessary Liability.
Location/Time: Governor Hotel, Portland / 11:30 am check-in, 12:00 pm lunch and program.
Sponsors: Trus Joist Corp. & Pacific Panel and Steel Truss, Inc.

February 10 - 11, 2012: NCSEA Winter Institute
Location: Hotel Monteleone, New Orleans, LA.
Topics featured: Soft Soil – Water and Wind
Visit www.ncsea.com for additional information and registration.

February 22, 2012: 48th Annual Engineers Week High School Banquet Dinner
Keynote Speaker: Perry Solmonson, Director of Flight Standards & Training at Horizon Air
Topic: Horizon's advanced use of GPS for navigation, safe flying & landing.
Location: Lloyd Center DoubleTree Hotel, 1000 NE Multnomah Street, Portland, OR
Time: 6:00 pm
Students/Teachers Register before February 3, 2012; Hosts Register before February 8, 2012.
Visit the website to register: http://www.asceor.org/eweek/

February 23, 2012: SEAOSF Tradeshow & Seminars
Location: Monarch Hotel & Conference Center, 12566 SE 93rd Ave., Clackamas, OR
Seminars: 11:30 pm to 5:30 pm
Tradeshow: 5:00 pm to 8:00 pm
Dinner: Served at 6:00 pm
Life member presentation—Bruce Holliday
Cost: Complimentary dinner & beverage for SEAO members; $25 per person for non-members
RSVP for tradeshow only to Jane at jane@seao.org or (503)753-3075. RSVP not required for seminars.
PDH Credits: 6 hours available (1 for tradeshow attendance + 1 hour for each seminar attended).
More information is to follow in next month's newsletter.

March 1, 2012: SEAO Spring Seminar
Location: Embassy Suites, 9000 SW Washington Square Road, Tigard, OR
Time: 8:30 am to 4:30 pm; Reg. opens at 7:30 am
Topic featured: Seismic Design Manual III
PDH Credits: 6 hours
See attachment for more info. and registration form.

City of Portland email Change

Please send all inspection correspondence and special inspection (final) summary reports to: Specialinspectionsfinals@portlandoregon.gov

April 25, 2012: SEAO Dinner Meeting
Speaker: Dr. W. Gene Corley, PE, Senior Vice President, CTL Group
Topic: Forensic Structural Investigations of the Murrah Building Bombing & 9/11 WTC Collapse.
Location: Governor Hotel, Portland / 5:30 am check-in & social, 6:15 pm dinner; 6:45 pm program.
Sponsors: Carlson Testing, Inc. & In Line Commercial Construction, Inc.

July 26-28, 2012: SEA NW Conference
Location: Kah-Nee-Ta Resort & Casino, Warm Springs, OR.
Theme: Shake It Up Again: Gambling with Seismic Vulnerability

CONNECTIONS is a monthly publication of the Structural Engineers Association of Oregon, published to disseminate current news to our membership and others involved in the profession of structural engineering. The opinions expressed reflect those of the author and, except where noted, do not represent a position of SEAO.

Send membership inquires to:

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BOARD OF DIRECTORS

PRESIDENT'S MESSAGE:
THANK THE ROMANS

By: Ed Quesenberry, P.E., S.E.

Happy New Year, all! The coming of the New Year has got me thinking about resolutions. Who came up with the tradition of having to make a resolution on New Year's Eve anyway? Along with domes, arches, wine and concrete, the Romans are credited for the invention of the New Year's Resolution. The Roman god Janus was said to have two faces (no, he was not an attorney), and could look both back on past events and forward to the future. According to EzineArticles.com, the month of January was named after Janus, and at midnight on December 31, the Romans imagined Janus looking back at the old year and forward to the new as they made their own resolutions. As with domes, arches, wine and concrete, if resolutions are done well, they can have a lasting impact on people's lives.

We have all probably made resolutions that we have diligently followed until about March, when the memory of the massive amounts of holiday candy and cookies has faded. We hit that point, and for some reason, the resolution is just not that important anymore. The amount of bikes on the road returns to normal, you can actually find an unoccupied treadmill at the gym, and the line at the Starbucks is back to being annoyingly long. When I cop out on a resolution, as I have many times, I always feel a bit guilty—but rarely enough to pick up my resolution again! Thanks for nothing Janus!

This year, SEAO has made some resolutions that it is going to work hard to keep. These aren't your everyday "I am only going to eat lettuce for lunch" type resolutions; these are resolutions that are going to require the diligence, hard work and willingness of many of our members from now to December 31, 2012 and beyond.

Perhaps the most significant SEAO resolution is in response to Oregon House of Representative's Resolution HR 3. HR 3, adopted on April 18, 2011, resolved to establish a Seismic Safety Policy Advisory Commission that tasked with the development of a statewide plan to improve Oregon's resiliency to survive a major earthquake and tsunami. The full text of HR 3 can be found at the back of this newsletter. SEAO has pledged its support to the commission and will be providing volunteers to serve on the subcommittees that will be developing the resiliency plan over the next year. SEAO sees this as a unique opportunity to leverage the extensive intellectual resources of its membership and apply them to a vital, timely undertaking that needs to be led by Structural Engineers. The commission is being chaired by one of our members, Kent Yu, and volunteer SEs from many firms and agencies throughout the state have stepped forward to join the effort. As practicing engineers, we all probably have a sense of what damage a large magnitude earthquake will do to the majority of the buildings and infrastructure in our communities, and it is not pretty. In the wake of the Japan and New Zealand earthquakes, we Oregonians have to take action today to help improve the seismic resiliency of our state tomorrow because we could be next. If you would like to learn more about this commission, or if you are interested in volunteering to participate in it, contact me (edq@equilibriumllc.com).

Another resolution SEAO has made is to become more visible and involved in the communities in which we live. This is part of the effort towards raising the general public's awareness of our profession and its importance to public safety, as well as promoting structural engineering as a profession. One of the specific steps we have taken is to have Jason Thompson, Seismic Committee Chairman, attend the discussions that have been taking place about improving the facilities of Portland Public Schools and the preparation of a Long Range Facilities Plan. The Long Range Facilities Plan will form the template upon which capital investment in PPS facilities (e.g. via future bond proposals) will be prioritized. Nearly all PPS facilities were constructed prior to recognition of the need for seismic-resistant design, and are therefore at severe risk – the creation and subsequent implementation of the Plan must incorporate cohesive measures to address seismic safety. Jason, along with representatives from AIA Portland, are availing themselves to PPS as advisors in the planning discussions that will be taking place over the next few months. On another front, some volunteers from our Young Member Forum (YMF) will be receiving training from the NCSEA Education Committee so that they can administer presentations on structural engineering at local high schools. SEAO is lucky to be part of this NCSEA pilot program, and resolves to give presenta-

(Continued on page 10)

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JANUARY LUNCH MEETING ANNOUNCEMENT

Sponsored by: Trus Joist Corp. & Pacific Panel and Steel Truss Inc.

Wednesday, January 25, 2012

Topic: Specifying Wood & Cold Formed Steel Trusses – Avoiding Pitfalls & Unnecessary Liability

One of the systems structural engineers specify most commonly is pre-manufactured trusses. The majority of small, light-weight structures use them to frame roofs, awnings, mansards, canopies and similar architectural elements. The 2009 IBC has specific code sections devoted to both of these systems. There are however, very different expectations of "who is responsible for what" on the parts of the structural engineer of record, the truss industry, contractors, and the building department. This seminar will explore some of the pitfalls of specifying pre-manufactured trusses, including:

- Definitions – part of the problem we have is that we define the same things differently.
- Loads -- range of loads, concurrent storage loads, loads likely to be in place.
- The three types of bracing and who is responsible for each. The answer may surprise you!
- Roof uplift and load path considerations.
- Typical truss failures and field problems.
- Codes and Standards; are your drawings in compliance?
- Truss inspections -- who is responsible, are these systems even being inspected?
- Special considerations – long trusses adjacent to walls, suspended ceilings, and attachments to trusses.

Ed recently made this presentation at the 2011 NCSEA Winter Institute, and got great reviews on it. Come hear it without the cost of going to Florida!

Location and Times:
Governor Hotel, 2nd Floor
614 SW 11th Ave, Portland OR
The MAX Light Rail System stops just a block away from the hotel (The Galleria stop) and Portland's Streetcar stops right outside the hotel. Smart Park is located at SW 10th and Yamhill about two blocks from the hotel.

Check-in: 11:30 am
Lunch and Program: Noon, webcast begins at noon

Cost: Dinner & Program
$32 – Pre-paid Members
$40 – Pre-paid Non-members
$18 – Students

Cost: Videocast Locations
$20 – Members
$33 – Non-members
$13 – Students

Videocast Venues:
Corvallis: CH2M Hill, 1100 NE Circle Blvd., Suite 300, (541)752-4271
Medford: Marquess & Associates, 1120 East Jackson Street, (541)772-7115
Bend: Eclipse Engineering, 155 NE Revere Avenue, Suite A, (541)389-9659
Eugene: Artisan Engineering, 325 West 13th Avenue, (541)338-9488

Reservations:
Pre-registration required. **You can register and pay online at** www.seao.org **before noon, Friday, January 20.** You can also register with Jane Ellsworth via phone at (503) 753-3075 or via Email: jane@seao.org. Note: No-shows will be billed.

PDH Credit: One PDH has been recommended for this program

(Continued on page 4)

JANUARY LUNCH MEETING ANNOUNCEMENT

(Continued from pate 3)

About the Speaker: Ed Huston, PE, SE

Ed Huston is a 1971 civil engineering graduate of the University of Washington. Ed is a licensed civil and structural engineer in Washington, and is licensed in seven other states. He is a principal in the firm of Smith & Huston, Inc., Consulting Engineers in Seattle, Washington. Ed has over 38 years of experience in structural design, evaluation, investigation and code and standards development. He has been very active in the Structural Engineers Association of Washington, (SEAW).

Ed is a former President of the Board of Directors of NCSEA. He is chair of the Code Advisory Committee – General Requirements Subcommittee and serves on the Licensing Committee.

Ed has served on the board of directors and as President of the Applied Technology Council (ATC), a national organization whose goal is the research into the effects of earthquakes and other natural forces and the dissemination of the results of that research. Ed was the Lead Technical Consultant on *ATC 45*--A *Field Manual for Safety Evaluations of Buildings after Windstorms and Floods*. He is a co-author of the *ATC Design Guide 2: Basic Wind Engineering of Low-Rise Buildings.*

Ed is a co-author of the *Wind Commentary to the Uniform Building Code - 1991 Edition & 1994 Editions,* ATC-60, *SEAW Commentary on Wind Code Provisions*, as well as the SEAW RSM-03, *SEAW's Handbook of a Rapid Solution Methodology™ for Wind Design* and *The Masonry Designers' Guide to the ACI/ASCE 530 Code*, *First through Sixth Editions*.

MEETING SPONSORS

Weyerhaeuser Wood Products provides the building industry's most comprehensive and innovative collection of structural framing products, support and software for residential, multi-family and light commercial construction. As an industry leader, Weyerhaeuser develops solutions to help Design Professionals, Builders, and Dealers improve quality and reduce costs. Continuing a legacy based on more than 110 years in business, and 50 plus years of expertise from **Trus Joist®**, Weyerhaeuser manufactures **Trus Joist® Engineered Wood Products** which includes **TJI® Joists** developed 40 years ago as well as **Microllam® LVL**, **Parallam® PSL**, **TimberStrand® LSL** , and **StrandGuard® LSL** structural composite lumber. These are used for beams, headers, wall-framing, rim material, and various other applications.

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PORT OF NEWPORT - NOAA MARINE OPERATIONS CENTER - PACIFIC

By: Norm Faris, P.E., S.E.

Owner: Port of Newport, Oregon
Project Management: Day CPM Services
Architect: GLAS Architects
Geotechnical Engineer: GRI
Precast Contractor: Knife River

Lessee: NOAA (National Oceanic and Atmospheric Administration)
Contractor: Andersen-West Coast Contractors JV
Environmental Consultant: Pacific Habitat Services
Engineers: KPFF Consulting Engineers

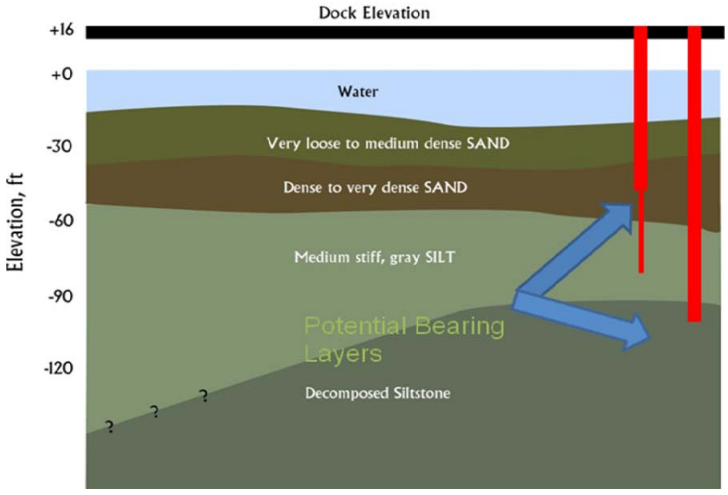
NOAA's homeport facility includes a 1,300-foot-long pier that serves six research and survey vessels, a 40,852-square-foot office and warehouse space, and a small boat dock. When NOAA awarded the project to the Port of Newport in August 2009, the team had a mere 22 months to assemble a team, design, construct and deliver the facility. In addition, to protect the sensitive marine environment all in-water work was restricted to the timeframe between November 1 and February 15. It was critical to devise a system that could be designed, gain all regulatory approvals and be constructed in the constrained in-water work window.

The office and warehouse buildings are comprised of perimeter tilt-up concrete walls with steel framing for the floor and roof. The office building is two-stories and houses general administration programs and provides office space for much of NOAA's staff. The new warehouse includes a storage area for sensitive research equipment, a boat shop, a large electronics shop and general workspace for the maintenance and crew from NOAA.

Aerial towards the south - Office, Warehouse, Main Pier, Small Boat Dock. Hatfield Science Center and Aquarium to the East and the Marina and 101 to the West.

The key piece to the entire project is the new 1,300 foot long x 35 foot wide - 64,000 square foot pier. There are two approach piers that connect to the main stretch of the pier for which ships berth. There are 6 berthing stations, with state of the art utility bunkers to support the current and projected fleets. The structure is comprised of 159 stepped main pier piles, inverted tee-shaped precast pile caps, 18" hollow core pre-stressed precast planks for the main span, and edge pieces comprised of upturned pre-stressed precast bull-rail sections. The fender system is comprised of 184 18" diameter pipe piles, fenders and continuous glu-lam whales. The floating small boat dock is 225 foot long and is supported by 24" diameter pipe piles. The precast sections and caps are all tied together with a cast-in-place topping slab that acts as both a driving surface and diaphragm to transfer lateral loads to the bent-pile frame. High-performance concrete, including a corrosion inhibiter, was specified for all precast and cast-in-place concrete on the pier. For durability and corrosion mitigation of the steel, additional clearances for the mild reinforcement was specified in all locations, particularly for those locations in the splash zones.

During the 2010 in-water work window, the team devised a test pile program to evaluate multiple foundation design options. The optimal solution for expedited construction and minimal marine disturbance was to locate the piles in a dense 10-foot sand layer 50 feet below the ocean floor that rested atop a soft silt layer. In order to hit the targeted layer without punching through, the team utilized a stepped steel pile with a 36-inch top and 20-inch stinger. There was an intermediate sand layer approximately 10-feet deep situated 50 feet below the bay's surface. This shallow layer could support the pier if piles were driven into place without punching through to the 60-foot layer of silt below. Using this intermediate layer eliminated the need to install an all-friction, 140 foot long steel pipe pile, which was time intensive and environmentally invasive. Creating bearing in such a small, sloped layer was very complicated, and the sand layer above the target zone was liquefiable in a seismic event. The team developed and tested three pile options: a pre-stressed precast hollow concrete pile with a stinger, a 140' long all-friction pipe pile, and the stepped steel pipe pile. Once installed, the options were evaluated by the team, the performance captured, capacities field measured, and then strategies identified to gain construction efficiencies. A steel stepped-pile profile was selected, with the majority of the bearing being achieved at the transition of the main pile to the stinger. The stinger was required for lateral stiffness in the event that the upper layer of soil liquefied during a major seismic event. Performance testing of the final configurations proved to save pile quantities as compared to those deter-



Soil stratum with the potential bearing layers targeted.

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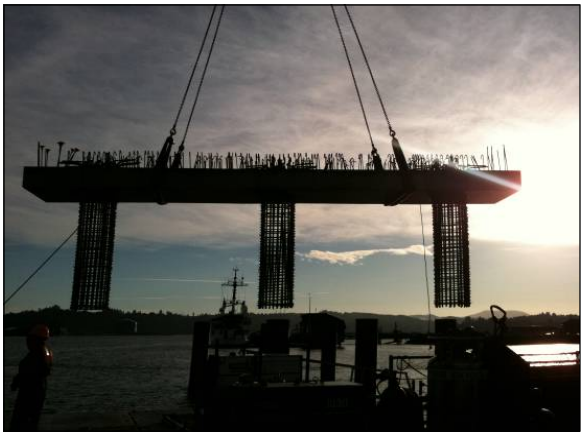
mined based upon the initial Geotechnical report values. The verified in-place values were slightly higher than anticipated and yielded approximately 10% savings in main pier piles and 15% savings in fender piles as compared with the original design prior to enacting the test pile program. Rather than sacrificing the test piles, they were coordinated with the final geometry of the pier, and were left in place through the following year and used for support in the design.

Acoustic disturbance for marine life posed an additional dilemma. The team monitored acoustic levels and evaluated mitigation options such as a bubble curtain during pile driving, a vibratory hammer, impact hammer, jetting system and different types of cushioning on top of piles. The solution used a jetting system and a combination of hammers to land the piles in the target area without punching through and minimizing bay disruption. Five feet from the final location, the jetting system was stopped and a vibratory hammer drove the pile another 2 feet. Then, a slightly oversized impact hammer drove the pile 3 more feet to the target. The team confirmed the piles' bearing capacity and gave them added strength with a combination of rebar inserts, concrete fill and concrete bents so they could support moored vessels during storm events. The engineers involved resource agencies (U.S. Corps of Engineers, National Marine Fisheries Service, U.S. Environmental Protective Agency, U.S. Fish and Wildlife, Oregon Department of Environmental Quality, Division of State Lands, Oregon Department of Fish and Wildlife) in numerous meetings throughout the program to address concerns, earn confidence in the chosen system, and secure all required permits.



Precast pile bent with rebar cage inserts being lifted into place.

The large unbraced piles were relatively flexible, and to stiffen them against the large dynamic berthing and mooring forces, the hollow piles were reinforced by inserting a rebar cage inside, welding the pile to the bent beam and filling upper portion of the pile with concrete. Precast concrete bents also created a nearly fixed-end condition at the top of the piles. This system reduced the amount of material in the piles and rebar in the bents, while providing the strength and the optimum connection for seismic performance.

The pier was designed as an all precast superstructure that provided light reflectivity in the water to protect native species. Typically, piers are cast in place to accommodate the tolerance of piles driven in tidal conditions and uneven subsurface soils, but this was not practical given the extremely aggressive construction schedule. Piles were installed with a strict 2-inch tolerance. Pile caps perfectly fit to accommodate the precast concrete deck spans. To address concerns regarding shading of shallow water salmon habitat, the team evaluated multiple options, including skylights in the pier, side solar tubes, pier grating, and below pier lighting, but these options proved unfeasible. In the end, an epoxy coating with glass beads was used below the deck to create a reflective surface on the water below.

The project posed intense complications thanks to an extraordinarily tight deadline with a 15-week in-water construction window and accompanying environmental imperatives. Demolition of an existing dock, all dredging work, pile installation, and bank grading and stabilization had to occur in the 15-week window. The in-water work occurred in cold, windy conditions when tides fluctuate by up to 10 feet. The design team had to engage numerous agency representatives, team members and the Port's CMGC contractor very early in the test-pile program and throughout the process to ensure all regulatory concerns were proactively addressed, obtain needed permits in time, and craft solutions that met the aggressive schedule.

The team built a digital template for the piles and aligned the hydraulic system with the template. GPS equipment helped coordinate the placement for each pile. The contractor set three piles in place at one time, and no pile was found to be more than 2 inches out of tolerance. Unique cap-to-pile connections helped ensure that the deck slabs fit perfectly. These bent caps were cast off site across the bay and barged over to the site and lifted into place. The inverted-tee section, with the rebar inserts and embed plate, allowed for a quick, relatively smooth installation which facilitated the immediate installation of the precast hollow-core planks and bull rails. Once all planks and bull rails were in place, an almost immediate driving/working surface was created. The contractor was able to access the deck to begin filling the top of the piles and also provide the mobility for other construction equipment, materials and vehicles. Once all utilities in the deck were in place and the remaining reinforcement was installed, the cast-in-place topping slab was poured. There were no concerns with contamination, as the all precast solid structure provided the solid membrane to mitigate any concrete from dropping into the bay.

View from the underside of the approach pier with the white reflective epoxy coating. Dredger in the distance.

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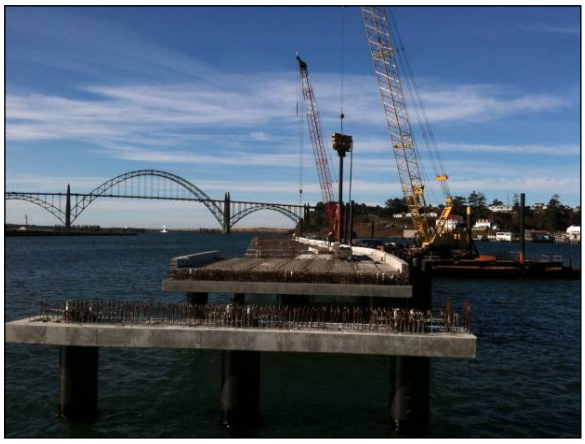
PORT OF NEWPORT - NOAA MARINE OPERATIONS CENTER - PACIFIC

(Continued from page 6)

Once the edge rails were in place, the fender system was placed. The upturned precast bull rail acted as a template for which the fender piles could be accurately vibrated into place. The remaining portions of the fender system, including the fenders, chains, connections and whales, were then all placed off the top of the deck.

Pile driving template at the front of the barge. The template was hydraulically positioned using GPS and piles were then installed three at a time.

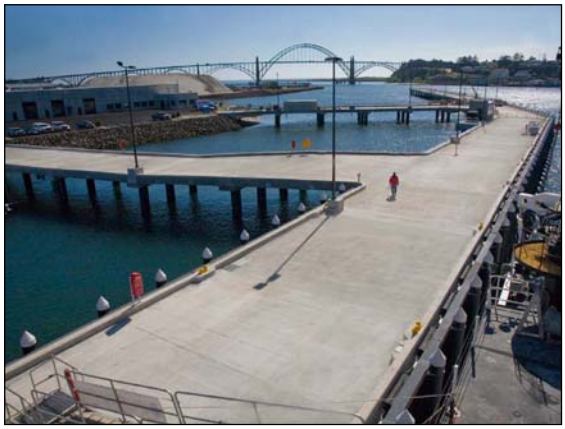
Steel piles were the best solution to hit the target and minimize environmental impacts, but salt water corrosion was an issue, so the team installed a cathodic protection system to run electric current into the steel. The electrical conduits for cathodic protection, pier lighting, vessel shore power, and communications were integrated into the precast structure and topping slabs. Coordinating conduit cast into the slabs was extremely challenging. Junction boxes are strategically placed to allow access, replacement and additions but no electrical conduits are visible. A computer-generated BIM model was used to coordinate the placement of MEP systems within the structure



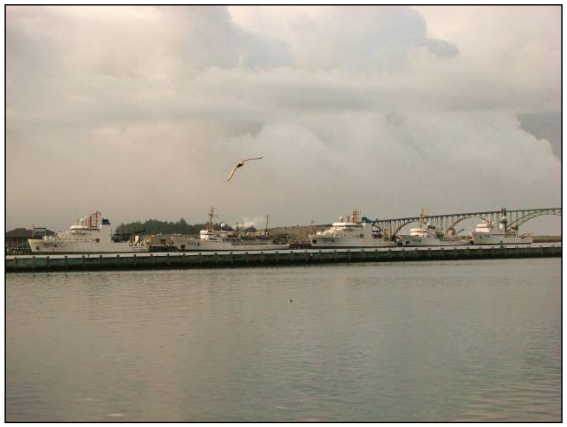
Pile bent welded and ready to accept precast planks as shown beyond. Bull rails and fender piles installed in the distance.

Cast-in electrical conduits at the bull rails. Conduits are coupled prior to installation of field rebar in the bent cap and topping slab.1

The test-pile program led to extremely cost-effective solutions that reduced construction time and materials. Steel piles were light, maneuverable, met the tight schedule and reduced environmental impacts; and the typical system allowed for a more competitive bid. The precast superstructure helped speed construction and save money. The $29-million project utilized a Construction Manager/General Contractor (CMGC) contracting method and value engineering took place throughout the job. The final cost was right on budget and schedule for the arrival of the first ship in July of 2011.



View out to the ocean from the upper deck of NOAA's first research vessel to berth at the new facility.



View from across the bay with five research and survey vessels in position.

Today, five of the six berths are occupied by NOAA vessels, as they are prepped for their next voyage to the ocean.

LIFE MEMBER - OBITUARY

Delmar L. McConnell
October 22, 1921 – June 7, 2011

Longtime Portland area resident and SEAO Life Member Delmar McConnell passed away on June 7, 2011. He attended Jefferson High School and then University of Portland. After 2 years, he transferred to Oregon State University where he received a degree in Civil Engineering. He started his own engineering firm and then went on to join Cooper, Rose and Associates in 1963.

In 1951, he married Constance, and they raised their daughter, Lynne, in SW Portland. After his wife's death in 1992, he lived in Beaverton for 18 years. He was an avid golfer and formed a group in 1973 that still meets weekly at Heron Lakes Golf Course.

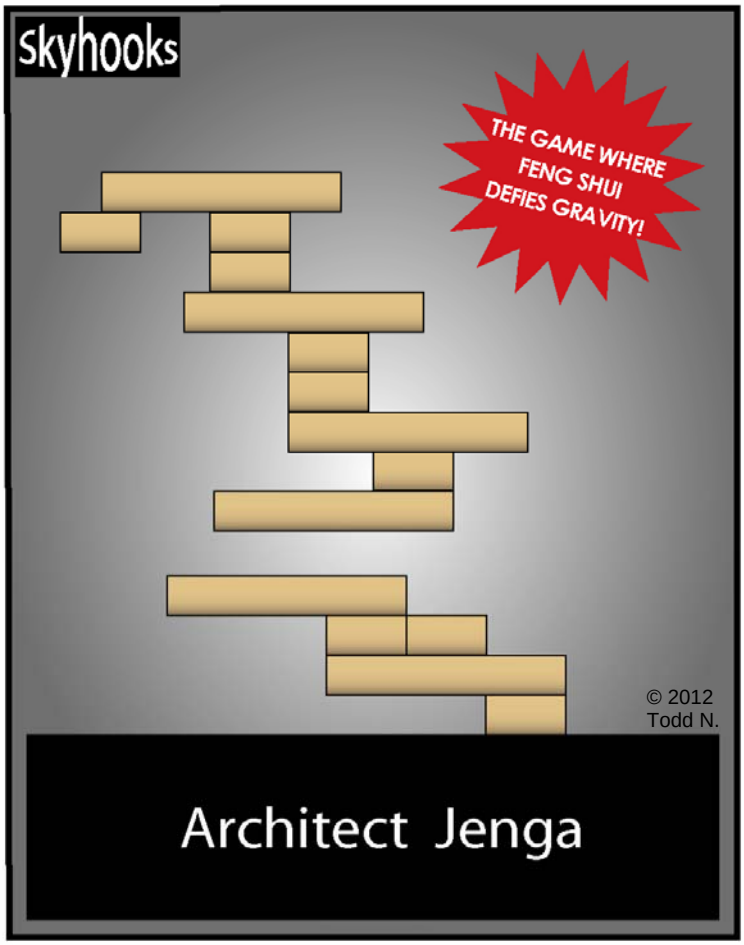
He spent the last year of his life in Gresham, close to his daughter. He is also survived by his grandson, Ryan, and granddaughter, Jessica. He was interned beside his wife at Riverview Cemetery in a private family service.

SEISMIC QUIZ

This seismic quiz has been put together by the Seismic Subcommittee of SEAO. This month's quiz is focused on Steel. Enjoy!

1. How many types of prequalified SMF and IMF moment frame connections are listed in AISC 358-10? What are they?
2. True or False: There are shear strength requirements for all building column splices, not just the SFRS columns.
3. What is the required strength of brace connections in tension and compression for a buckling-restrained braced frame system?
4. What is the cost to obtain AISC 341-10, Seismic Provisions for Structural Steel Building?
5. What is the required strength for special bracing adjacent to expected plastic hinge locations for structural steel beams?

See Page 10 for answers.



MEMBER OF THE MONTH

The SEAO Member of the Month is Jason Thompson, S.E., SEAO's Seismic Committee Chairman. Jason has shown a great ability for multitasking and a seemingly endless willingness to volunteer hours on behalf of SEAO. Currently, Jason is leading the Seismic Committee in their review of ASCE 7-10, is serving in the capacity of Structural Engineer and PPS Parent on the Portland Public School Long-Range Facility Planning Committee, and has volunteered to participate in the Oregon Seismic Resiliency planning effort that is starting up this month.

Jason started with KPFF Consulting Engineers in their San Francisco office and relocated to Portland in September 2002. He currently is an Associate/Structural Project Manager. Along with his work and SEAO commitments, Jason is a member of the Industry Advisory Committee for Oregon Institute of Technology. Outside of the office, Jason enjoys spending as much time as he can with his family; wife, Carrie and his two children, Ethan and Sadie, partaking in various outdoor activities. What doesn't this guy do?!

SEAO would like to thank Jason for his dedication to our organization and to our profession. His efforts are commendable and appreciated.

NOVEMBER MEETING RECAP

By: David Tarries, P.E & JoMarie Farrell, P.E.

Speaker: Ashraf Habibullah, S.E., President & CEO of CSI
Topic: Structural Engineering—The Profession, the Grandeur & the Glory

The proof is there—technology saves lives:
7.2 magnitude earthquake in Turkey = Loss of thousands of lives
7.2 magnitude earthquake in Seattle = Possible loss of one life
That is the beauty of technology and the software we use today. Computers and structural designs have become intertwined to produce the most optimum product.

With regard to what we do, the media tends to focus on the geologists words when it comes to earthquakes and damage estimates. The structural engineers are in the background. It is unknown what we do; therefore, there is a lower appreciation for our profession. As engineers we need to be public about what we do and educate the public—our clients, our co-workers, our family, our friends. We need to speak out of our own interest in what we do and how it affects every person in the community: where they live, go to school, work and recreate. The power and impact of our profession is in every monument and structure that is out there. We need to learn to sell what we produce—Public Relations should be part of our education.

An example: A realtor receives approximately 7% of the value of a building to sell it (or portions of it) and then forget about it. They can sell the same piece of property over and over. Meanwhile structural engineers receive a fee of 0.50% to 0.75% of the building's construction cost, yet are liable for the entire life of the structure. Does this seem right to you?

Our fees are always negotiable; however, do you negotiate fees at your doctor's office? This is directly related to lack of appreciation for what we are doing. To defend our work, we need to train ourselves on how to communicate our impact on the world. We build and rebuild infrastructure; we save lives. Call attention to what it is you are producing. For instance, show an animated dynamic model of a building or bridge to the client so they can see how you are analyzing the structure and how it is expected to behave. This type of visual example can produce an unforgettable image in the mind of the owner and architect. It mainstreams what we do and puts the structure's behavior into language that any person can understand. So often, we receive little credit for making a structure's vision come to fruition. If we don't take credit for what we do—someone else will. Become an active participant in your own advertising. If you are going to be a star, you have to behave as one.

The youth, from elementary through college, need to be told what we do as structural engineers in a manner that excites and interests them. Images are always the best way to help people comprehend what we do while keeping them interested. We need to instill in the youth the importance and glamour of what we do. We need them to understand that the profession is theirs, they are the future.

It would be beneficial for engineering students to take courses in human psychology in college. It is important to understand how people think and that people around the world are basically the same. If you smile, they smile back. If you treat them nasty, they will be nasty back. If you distrust them, they will distrust you back. People will want to continue working with you if they feel good about themselves when they are working with you. "A good deed is its own reward" is a statement that has scientific merit. An enzyme in your brain, serotonin, makes you feel good when good things happen. When someone sees another person happy, they get a rush and are happy too. This can work in a chain reaction. It can spread from person to person. This is an important process to understand to be a good colleague or employer. The goal is to give others a rush of serotonin. It is all based on human behavior and psychology.

When speaking to groups, for example his large seminars in India, Ashraf keeps things simple and explains his software in very understandable terms. When people understand what you are talking about, they feel empowered. They get a rush of serotonin and want to come back. They want to buy the software. This same principle can be applied to everyday life. It is the responsibility of the speaker to keep the crowd awake. When a speaker complains that a crowd was awful because they were falling asleep, he should be looking at himself. What did I do to encourage them to sleep rather than encourage them to stay alert and attentive?

Looking over the crowd reminds Ashraf of the early days when the crowds were small. He came to Portland often in the early days of his software sales--firms in the area were some of the pioneers of his products. He thanked Portland for the years of support.

Question and Answer:

Q. How do we improve our image?
A. Improving our image starts with each person. We can start by working on our own image. We go through school all learning the exact same thing. It is all very methodical and left brained. The right brain, the artistic side, is resting. Look up Ashraf on youtube.com. You will find that he has developed his artistic side. The left side of the brain makes us different. Being different makes you interesting. When you are interesting, people like you. When people like you, they do what you say. When people do what you say, you get what you want. This is a logical and reasoned explanation to appeal to your left brain to develop your right.

He also suggested making committee meetings and professional gatherings more interesting and outgoing. Always remember—Structural Engineering is an incredible service to humanity.

YMF COMMUNITY INVOLVEMENT

As you may have already heard, SEAO has been given a great opportunity to help educate high school students in our area on what structural engineering is all about. By doing this, we hope to encourage students to consider pursuing a degree in the structural engineering field. While the Young Members Forum has predominately been more of a networking group within SEAO, we are excited to be leading this effort and hope to get it up and running in the next few months. The great part is that the presentation has already been provided by NCSEA. It consists of a short power point presentation followed by a hands-on activity. For this first time around, we are intentionally keeping the number of high schools we will be visiting limited, but we hope to expand the program in the years to come. If you would like to volunteer your time or know of a specific high school which you feel would benefit from this program, please contact Aaron Rudis (aaronx.v.rudis@intel.com) or Lainie Stambaugh (lainie.stambaugh@kpff.com).

This month's happy hour/YMF meeting will be Thursday, January 19, at the Mellow Mushroom (1411 NW Flanders St, Portland, OR 97209 in the Pearl District) and is in conjunction with the AIA Emerging Professional Committee. Meet up after 5:30pm. Hope to see you there!

WELCOME NEW MEMBERS!

October:
John Eggers, Vestas Americas
Peter Kahn, Portland State University
Leif Erickson, Student
Brynn Adkins, WDY Structural + Civil Engineers
Bassam Bazzi, KPFF Consulting Engineers
Aaron Wegner, KPFF Consulting Engineers
An-Yih (Ken) Su, Evergreen Engineering
Robert Shawler, Evergreen Engineering
Mathew Phelps, TerraFirma Foundation Systems
Nadia Zouyed, Nbz Consulting Engineers
Yen Hui Pan, KPFF Consulting Engineers
Matthew Bullard, Evergreen Engineering
Perumal Radhakrishnan, PacifiCorp

November:
David Linton, Student
David Leech, Fault Line Constructors
Jacob Baglien, Cascade Engineering
Steven Walker, Knife River - Prestress
Chris Anderson, Evergreen Engineering

December:
Eric Falken, Brown and Caldwell
Ian Eikanas, KPFF Consulting Engineers

THANK THE ROMANS

(continued from page 2)

tions to 2 or 3 high schools in the Portland Metro area this year. If this program is successful, it could be a regular activity for YMF volunteers for years to come.

The last major resolution SEAO has made is to enhance our educational and social offerings to our members through hosting the SEA NW Conference in July. In response to the attention that earthquakes are getting lately, Kevin McCormick and the SEAO Conference Committee are hard at work planning the *Shake It Up Again: Gambling with Seismic Vulnerability* conference, and it is shaping up to be a great event that you will not want to miss. Opportunities to hear great speakers on relevant topics, to socialize with engineers from Oregon, Washington, Idaho and Montana, and to relax in the warm Central Oregon sun will abound, so put it on your calendar for July 26-28.

As you can see, SEAO has an exciting year ahead. It is my genuine hope that each of you resolve to increase your involvement in SEAO over that of last year. Before you scoff at the idea, just look at all the Romans accomplished as a result of making resolutions!

Arch of Janus, Forum Boarium, Rome

ANSWERS TO SEISMIC QUIZ ON PAGE 8

1. Six. Reduced Beam Section, Bolted Extended End-Plate, Bolted Flange Plate, Welded Unreinforced Flange-Welded Web, Kaiser Bolted Bracket, and ConXtech ConXL.
2. True. AISC 358-10, Section D2, 5c.
3. 1.1 times the adjusted brace strength in compression per AISC 358-10, Section F4, 6c (1)
4. $0.00 - the document is available free online at AISC freePubs (note: the specification sections are free, not the full Seismic Design Manual)
5. $P_u=0.06*R_y*F_y*Z/h_0$ per AISC 358-10, Section D1, 2c (a) (2)

SEAO Seismic Design Manual III – Seminar
Building Design Examples for Steel and Concrete
Hosted by the Structural Engineers Association of Oregon (SEAO)

Date: **Thursday, March 1, 2012 – 8:30 AM to 4:30 PM**
Registration Opens at 7:30 AM (Lunch Included)

Cost: $200 SEAO Member (Includes Class Notes) $250 Non-member
$25 Late Fee (if registration received after Feb. 23, 2012)
Students $65 (Includes Notes) – Must show current student ID
No refunds after 12:00 noon Thursday, Feb. 23, 2012

Register early; Maximum 100 people **Program to be Taped by Limelight Video**

Location: **Embassy Suites Hotel and Conference Center** 9000 SW Washington Square Rd Tigard, Oregon 97223 (503) 644-4000

Continuing Education: **SEAO has recommended this seminar for 6 PDHs (4 PDHs for Viewing Video)**

Speakers: **Joe Maffei, Ph.D., SE, Principal, Rutherford & Chekene, Inc.** One of the primary authors for the SDM III – Presenting the Concrete Shear Wall

Jon Kiland, PE, SE, Principal, KPW Structural Engineers, Inc. Co-Project Manager and primary author for the SDM III – Presenting the Reinforced Concrete Special Moment Resisting Frame

Rafael Sabelli, SE, Director of Seismic Design, Walter P Moore, Inc. Co-Project Manager and primary author for the SDM III **–** Presenting the Steel Special Concentrically Braced Frame

Kevin Moore, SE, Principal, Certus Consulting, Inc. One of the primary authors for the SDM III – Presenting the Steel Special Moment Frame

The SEAOC Structural Seismic Design Manual has been the go-to source for the illustration of the building code requirements for seismic design. This seminar brings together the authors of several key design examples for an intensive, day-long seminar on seismic design. The presentations will include background, abridged design examples, and time for Q&A.

The SDM III includes building design examples for steel and concrete. These include steel concentrically braced frames, steel eccentrically braced frames and steel special moment frame solutions in addition to steel special plate shear walls. Examples for reinforced concrete walls, concrete walls with coupling beams and reinforced concrete special moment resisting frames are provided in the manual. The SDM III is available for purchase as shown on next page.

Speakers are from SEAOC **Questions: Andy Stember (503) 657-9800**

Seismic Design Manual III Seminar

Registration Form

Register Online at www.seao.org or

Send to: SEAO
PO Box 2958
Vancouver, WA 98668
(503) 753-3075 (ph.) (503) 214-8142 (fax)

Make Checks Payable to:
SEAO

Firm Name: _____

Firm Address: _____

Phone _____

Name of Attendee(s) _____

_____

_____

_____

# of Attendee(s)	_____ @ $200.00 / each = (Non-member $250.00)	$ _____
# of Late Fees	_____ @ $25.00 / each =	$ _____
# of Students	_____ @ $65.00 / each =	$ _____
# of Videos	_____ @ $175.00 / each =	$ _____
# of Books*	_____ @ $60.00 / each =	$ _____
# of Books**	_____ @ $150.00 / each =	$ _____

*Seismic Design Manual, Volume III
**SDM, Volumes I, II & III

Total Enclosed = $ _____

Visa Or Mastercard Accepted Online (go to www.seao.org to register online)

Enrolled

House Resolution 3

Sponsored by Representative BOONE; Representatives COWAN, KRIEGER, ROBLAN, WITT, Senators COURTNEY, JOHNSON, KRUSE, VERGER, WHITSETT

Whereas Oregon is known to be seismically active, with geological faults creating earthquake hazards in most of the state, including its most highly populated counties; and

Whereas the most serious risks linked to earthquakes in Oregon are associated with the Cascadia fault, recognized as one of the world's most dangerous faults and capable of generating megathrust earthquakes at least 1,000 times more powerful than the magnitude 6.8 Nisqually, Washington, earthquake of February 2001 and producing associated tsunamis capable of affecting extensive areas of the Oregon coast; and

Whereas geological evidence documents about 41 earthquakes of magnitude 8 and larger on sections of the Cascadia fault during the last 10,000 years, yielding an average interval between events of about 240 years; and

Whereas the most recent megathrust earthquake on the Cascadia fault, estimated to be about magnitude 9, occurred on January 26, 1700; and

Whereas many of the earthquakes on the Cascadia fault have been separated by intervals shorter than the time elapsed since the most recent Cascadia earthquake; and

Whereas an earthquake of magnitude 8 or larger and its associated tsunami would have devastating impacts to coastal communities and throughout western Oregon, causing thousands of casualties and premature deaths and inflicting tens of billions of dollars in physical damage that would have crippling impacts on the state's economy; and

Whereas policies now in place are insufficient to protect citizens and businesses in Oregon from the ground shaking and waves associated with a Cascadia megathrust earthquake and to ensure a smooth economic recovery after that event; now, therefore,

Be It Resolved by the House of Representatives of the State of Oregon:

That concern for the protection of life and the resumption of commerce should guide the State of Oregon in the development and implementation of resilience policies that address the risks posed by a Cascadia megathrust earthquake and tsunami; and be it further

Resolved, That Oregon's most forward-thinking policies and programs to advance resilience to earthquakes include the Seismic Rehabilitation Grant Program, fully enacted with general obligation bond funding by the 75th Legislative Assembly in 2009; and be it further

Resolved, That the strengthening of collapse-prone public structures, including, but not limited to, K-12 schools, community colleges and public safety facilities, should be recognized by the Governor and Legislative Assembly as top investment priorities in this state's capital budget; and be it further

Resolved, That seismic improvements to K-12 schools, community colleges and public safety facilities funded by Seismic Rehabilitation Grants should be recognized with placards affixed to the reinforced structures; and be it further

Resolved, That this state's investment in Seismic Rehabilitation Grants and in other programs and resources to accomplish seismic upgrades of public buildings should be expanded to the extent fiscal prudence allows; and be it further

Resolved, That this state should make investments in additional evacuation options for Oregon coastal communities that cannot ensure adequate protection of their residents and visitors from tsunamis because of distance from safe ground; and be it further

Resolved, That this state should make investments necessary to establish a Critical Transportation Infrastructure providing reliable lifelines for emergency response and economic recovery in the aftermath of a Cascadia earthquake and tsunami; and be it further

Resolved, That this state should make investments necessary to establish a Critical Energy Infrastructure comprising transmission networks for electricity, liquid fuels and natural gas hardened to withstand a Cascadia earthquake and tsunami; and be it further

Resolved, That seismic resilience should be viewed as a necessary complement to environmental sustainability and endorsed as a priority by the Governor and the Legislative Assembly; and be it further

Resolved, That the Seismic Safety Policy Advisory Commission should lead and coordinate preparation of an Oregon Resilience Plan that reviews policy options, summarizes relevant reports and studies by state agencies and makes recommendations on policy direction to protect lives and keep commerce flowing during and after a Cascadia earthquake and tsunami; and be it further

Resolved, That the commission should enlist the participation of the Governor's public safety advisor, state agencies, commissions and other advisory bodies, as needed, to assemble an integrated view of current state capabilities and gaps in resilience planning; and be it further

Resolved, That the Oregon Resilience Plan and recommendations should be delivered to the Legislative Assembly no later than February 28, 2013, so that the inevitable natural disaster of a Cascadia megathrust earthquake and tsunami does not cause an unprecedented catastrophe for the State of Oregon.

Adopted by House April 18, 2011

Ramona Kenady Line, Chief Clerk of House

Bruce Hanna, Speaker of House

Arnie Roblan, Speaker of House