



EQUILIBRIUM

Newsletter of the Seattle Chapter
Structural Engineers Association of Washington

NOVEMBER 2007

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**No Meeting in
December**

Coming In January:

Lunch Meeting

Tuesday, January 22

Instead of our usual dinner, we'll try a lunch format for our last meeting at the College Club before it closes its doors.

November Meeting to Feature Third Annual Younger Members/Students

On Tuesday November 27th the SEAW Seattle Chapter will hold its third annual Student/Young Member Forum meeting at the University of Washington Waterfront Activities Center. Although our focus will be on university students and the Seattle Chapter's Young Member Forum, the meeting is open and should be of interest to all members.

Thanks to a generous grant by Degenkolb Engineers and DCI Engineers, Students with current ID are invited to attend the dinner at no charge.

Firms Showcase

In place of the pre-meeting mini-seminar, the Student/YMF meeting will begin with a networking event tailored to provide information to the attendees on a variety of structural design firms in the Seattle area. Representatives will be on hand from ten Puget Sound structural design firms to showcase their work on various types of projects and answer any questions the students may have on what it's like to work for a Seattle area structural design consultant.

Student Project Showcase

After an Italian buffet dinner, the evening's main program will feature presentations from students at Seattle University and the

University of Washington. Seattle University students Edward DeBroeck, Brandon Estrella, Matthew Hennessey and Ryan Tilley will present their work on a bridge replacement project in Snohomish County. University of Washington graduate student Wayne Brown will present his research on bar buckling in reinforced concrete columns. Dave Brown, University of Washington graduate student, will present his research project on testing of fiber reinforced polymer bridge decks.

Directions and Parking

The Waterfront Activities Center (WAC) is located on

the north side of the Montlake Cut and just to the south of Husky Stadium. Parking is available for a \$5.00 fee in lot E-12 adjacent to the Waterfront Activities Center. The availability of parking in that lot cannot be guaranteed. Citations may be issued to vehicles without parking permits.

If you plan on parking on campus while attending this event at the WAC please stop and purchase a parking permit from the campus gatehouse located in front of the football stadium or contact the Parking Services Special Events Office at 206-616-8710.

Meeting Information

Date:	Tuesday, November 27, 2007
Place:	UW Waterfront Activities Center Behind Husky Stadium off of Montlake Boulevard
Time:	5:00—6:30 Firms Showcase 6:30—7:30 Italian Buffet dinner 7:30—9:00 Student Project Showcase
Menu:	Galiano's Italian Buffet. One beer/wine or non-alcoholic beverage included. Additional beverages by donation.
Cost:	General admission: \$15.00 Students (with ID) *Free *courtesy of DCI Engineers Inc and Degenkolb Engineers.

Reservation deadline: 5:00 PM Friday, November 23rd
Register Online at www.seaw.org

(Prepayment is appreciated, but not required.)

Reservations may also be made by email to seaw@seaw.org or by phoning 206.682.6026

I hope all of you had a chance to read Shelley Clarks's From the Board article in October's Equilibrium. If you haven't, you might want to take a couple minutes from your hectic schedule, dig it out from under your calculations and drawings (or go to seaw.org), and read it. If you're like me, several things in her article will hit home, especially the increased sophistication of our practice and the unrelentingly fast pace of our projects.

Shelley bullet-points several challenges we are all facing in achieving quality and sanity in our design practice. Her first bullet point in particular caught my eye:

- **How is your firm developing engineers? What continuing education opportunities do they have? Are they really learning engineering or are they relying solely on analysis programs (GIGO – Garbage In Garbage Out)?** Today the utilization of computer software is essential for efficiency and speed to meet deadlines and stay on budget. An engineer's dependence on and unquestioning faith in computer results impedes their ability to develop good engineering judgment and a feel for the art of engineering – i.e. a structural design that is not only safe but is economical and constructible. Some believe an engineer's reliance on analysis programs without learning the

This first bullet poses four very good questions in order for us to maintain the high standards and respect of our profession into the future.

How is your firm developing engineers? Before AutoCAD I remember one Seattle area firm

developing new engineers by having them draft in their first year. Their new engineers were able to see first-hand everything that went into a complete set of drawings. With today's demanding schedules, firms have little choice now but to throw their new hires immediately into the pool and see if they sink or swim. Some new engineers are natural swimmers, but many cling constantly to a flotation device called design analysis software. They are afraid or refuse to let go of this flotation device and learn to swim. The constant deadlines interfere with many firms' abilities to find enough time to develop and mentor these new engineers into adequate or good swimmers.

Are they really learning engineering or are they relying solely on analysis programs (GIGO – Garbage In Garbage Out)? Today the utilization of computer software is essential for efficiency and speed to meet deadlines and stay on budget. An engineer's dependence on and unquestioning faith in computer results impedes their ability to develop good engineering judgment and a feel for the art of engineering – i.e. a structural design that is not only safe but is economical and constructible. Some believe an engineer's reliance on analysis programs without learning the

engineering concepts behind the software is a major cause for many not being able to pass the SE exam.

What continuing education opportunities do they have?

Typically a few ASCE, ACI, and AISC seminars come through town every year. Some of these are good; most are overpriced. Recently some firms have discovered the webinars by ASCE, NCSEA and others as affordable education opportunities. Our SEAW chapter is at the forefront of offering practical, affordable, and worthwhile seminars, the recent SEA Northwest Conference and the 2006 IBC Seismic Seminar being two excellent examples. SEAW's education committee is tentatively planning seminars on serviceability (vibrations, deflections, etc.) and seismic retrofit for next year. Sponsoring seminars in the Puget Sound Area presented by other SEA chapters is another idea. We should also be encouraging the universities in the area to offer evening continuing education classes in structural engineering.

If you are a young engineer, are you pro-actively seeking training and education opportunities? Many years ago I remember a government agency that had recently upgraded to a new version of AutoCAD. Asking how they liked it, the



response was: "Gee, we haven't tried it out yet, our training class isn't until next month". I had to do everything to keep from rolling my eyes; most of the consulting engineers and architects were spending whatever additional hours they needed to set it up and use it. Young engineers need to recognize that in order to become professionals they need to seek opportunities to learn on their own outside of the workplace.

Through our individual firms and SEAW we must continue to find ways to offer continuing education opportunities for young and old engineers alike. This is essential if we are to maintain the high standards and respect that distinguishes our profession.

Have a great Thanksgiving.
-Scott Douglas

R. Scott Douglas is a Senior Project Manager with DCI Engineers. A member of SEAW for over 25 years, he is currently Vice President, and program chair of the Seattle Chapter.

The SEAW Seattle Chapter *Equilibrium* is printed monthly from September through May and is available online at www.seaw.org. Circulation by mail: approximately 550 copies. Articles, letters, and announcements are accepted by e-mail to seaw@seaw.org.

Advertising rates (prepaid, please): Help Wanted/Job wanted, \$50; Display ads: Quarter page, \$90; Half Page, \$120; Full Page \$150; inserts, pre-printed 8 1/2 X 11 inch flat, \$150. 10% discount for ads running two or more months. Deadline is the fourth Friday of the month. Contact SEAW for an Advertising Order Form.

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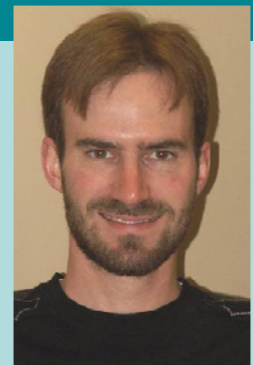
YMF Corner: From the Chair

This has been an exciting year for the YMF. We had great success this spring at our second annual university outreach lunches with well-attended events at both the University of Washington and Seattle University. Each of these outreach efforts resulted in several new SEAW student members. We welcome these new members and look forward to their continued involvement in YMF and SEAW. Our regular social hours have been well attended with both new and familiar faces at each event. We look forward to

Welcome to the YMF Corner. This new section of the newsletter is designed to keep the Seattle Chapter updated on Younger Member Forum activities. It will recap recent meetings, feature YMF members, and advertise upcoming events. Make sure to check back monthly for updates.

continuing these events and adding a regular social hour on the Eastside this year.

At their September meeting, the Seattle Chapter Board voted to establish a YMF presence on the board. In doing so, the board is recognizing the importance of an active younger membership in continuing the vitality of the Seattle Chapter. This is a wonderful opportunity for direct collaboration between the YMF and the board.



Cale Ash

-continued page 4

Project Profile

New Energy Efficient Approach to Steel Stud Framing Used to Build Gig Harbor Home

-By David Jeter PE, SE

Steeler Inc. was recently contacted by Debra Kay, a real estate professional who drew up plans for her own home using steel stud framing, to see if we could design her home. Steeler Inc. is a manufacturer and supplier of steel studs, and designing steel framed homes is not part of our business. However, an architect from Tacoma, Randy Hedgebeth, was involved in convincing Debra Kay to use a different framing method that is energy efficient and solves the moisture problem that has been plaguing the Real Estate community. Mold growth within the wall cavity is a big problem. *(This topic was discussed at the last SEAW mini-seminar on 23 Oct. 2007)* Randy Hedgebeth's ideas were very simple and easy to understand: allow the wall to breathe to the outside by providing a path for the moisture vapor to exit the wall system. His framing method uses simple conventional steel framing components. I decided to design this home so Steeler could gain knowledge and experience of this framing method, and I hoped this would lead to future sales of steel stud framing for homes. Debra Kay used her brother Russ Kay, an experienced contractor, to construct the home. I remember Russ Kay coming into the Steeler's office and not knowing anything about SSMA (Steel Stud Manufacturers Association) steel stud nomenclature. However, using his knowledge and experience in construction, he quickly educated himself on the stud nomenclatures and the new framing method as proposed by Randy Hedgebeth. You can see Russ Kay's excellent work on his web site www.seattlesteelhomes.com

Randy Hedgebeth's framing method spaces the steel studs from 48 to 72 inches on center

according to the design requirements. At the roofline for a single story house, a continuous horizontal member is screwed to the outside face of the steel studs. This member acts in multiple ways. It acts as a chord member, a shear collector and a ledger or header beam. Because of this member, the roof trusses or rafters now do not have to align with the studs and no headers are required over windows or doors because this member acts as a header beam. The flange width of this member is limited to 2 inches because horizontal or diagonal 2" Zee girts connected to the outside face of the studs are the secondary member for cladding. On the inside face of the stud, horizontal hat channels are installed for attaching the interior gypsum board. The only steel-to-steel contact occurs at the intersection where zee and hat channels cross the studs. At these locations, 1/8-inch thermal isolators are added. Now there is no thermo short through the wall system. The zee girts are turned down, so if any water gets into the wall system it is channeled to the outside. Time-tested, old-fashioned building felt is recommended as it "breathes" and is water vapor permeable. The 6-inch studs can be placed so the outside face is on the concrete or building line. The 2-inch zee girts and cladding are outboard of the building, so the inside room is only reduced by the depth of the hat channel. Thus, wall cavity moisture has an escape path. Plywood or other sheathing is deliberately left out of this framing system for better moisture control and less weight. Finally, the complete wall system is filled 100% with blown-in-blanket (BIBS) insulation, a spun and chopped glass that looks like

cotton batting but does not burn. When exposed to a flame it turns back into normal glass. BIBS does not settle, and it qualifies as a fire stop.

The lateral bracing is accomplished by simple strap X-bracing, which can be installed on both sides of the studs away from the cladding or gypsum board. The exterior cladding can be wood board, cement board, stucco, brick, or just about any siding product. Standard windows fit within the two-inch zee girt and siding envelope, allowing the wall system to be panelized; this method also increases the thermal efficiency of the windows significantly.

Steeler decided to test this framing method, and the results for thermo resistance were a R38.1 confirming Randy Hedgebeth's ideas.

This innovative but simple framing system has many advantages, and goes a long way towards using the full potential of cold-formed steel for green and sustainable buildings design. Engineers should consider such new types of framing systems for rational, energy-efficient cold-formed steel buildings that utilize steel's full LEED (Leadership in Energy and Environmental Design) engineering potential.

David Jeter, PE, SE, of Steeler Inc., is a new member of SEAW. Steeler Inc. is a light gauge steel framing and drywall supplier currently serving the West Coast with twelve branches from San Diego, CA to Vancouver, B.C., and corporate offices in Seattle at 10023 Martin Luther King Jr. Way S. David Jeter can be reached at 206.276.2744 or jeterd@steeler.com.



*Photos courtesy
seattlesteelhomes.com*

Meeting Recaps

SEAW October Mini Seminar Summary

By Peter Somers

The October 27th mini seminar featured a presentation on weather proofing and building envelope systems presented by Stéphane Hoffman, M. Eng, M. Arch., of Morrison Hershfield. The presentation began with a summary of the Washington State Condominium Act, which is intended to improve the quality of the exterior wall systems in multifamily buildings. Specifically, the act requires a licensed design professional to design the envelope system, construction observation by an envelope specialist, field testing of windows, and a letter of assurance that the final system satisfies all the design requirements.

Stéphane continued by summarizing the purpose of the building envelope – it separates the controlled indoor climate from the exterior. Its many functions

include the following: resisting loads and accommodating building movements; controlling rain, heat, air and vapor; providing fire protection, security, and sound control.

Some important concepts in thinking about envelope design include minimizing penetrations through the envelope, avoiding extending structural elements past the thermal barrier (thermal bridge), and documenting and accommodating the expected movements of the supporting structure.

Next, Stéphane discussed and provided examples for several of the common envelope failures. The most common types of failures relate to wall sheathing or finishes, or failures around window openings and flashing. Exterior soffits and decks are also potential trouble spots.

A discussion of four common rain penetration control meth-

ods was next. The first system, mass wall, is a thick material that absorbs and releases water (for example, architectural precast concrete). The second system is a face seal or barrier system in which a sealed exterior system provides the protection (EIFS is one type). A concealed barrier system consists of multiple layers of protection, such as stucco over building paper. Finally, Stéphane discussed the rain screen system, consisting of multiple layers of protection with drainage in between. A good example of this system is brick veneer, where the brick provides the water shedding, the air gap provides the drainage, and a barrier behind the air gap provides the secondary protection.

As important as rain penetration control, the exterior envelope also provides an air barrier system. The function is important in reducing the energy used to heat and cool interior

spaces, providing balanced thermal comfort, reducing the risk of condensation, and helping resist water penetration (by reducing air pressure differences that can cause water to be sucked into the building).

Given the structural engineering audience, Stéphane closed with another reminder of the importance of providing the building envelope designer a clear understanding of the primary structure. Proper design of the elements of the building envelope require the designer to accommodate deflection, creep, and lateral drift, so these aspects of the structural design must be clearly communicated.

Peter Somers, P.E., S.E., is a Senior Associate with Magnusson Klemencic Associates and has been a member of SEAW since 2001. He serves on the Seattle Chapter Board of Directors and the Earthquake Engineering Committee.

Seattle Chapter October Dinner Meeting—The New Tacoma Narrows Bridge

By Karen Damianick

Tim Moore, PE, SE, WSDOT Senior Structural Bridge Engineer spoke at the October meeting about the new Tacoma Narrows Bridge, which opened this past July. The existing Tacoma Narrows Bridge, which as everyone knows is the second bridge built on the site after the famous Galloping Gertie collapsed, is on the National Historic Register. Building a span right next to the bridge was considered an adverse effect to the historical status, and thus a book and a website had to be authored to mitigate that adverse effect. The book is called "Catastrophe to Triumph, Bridges of the Tacoma Narrows." But that's not what this presentation was about.

Mr. Moore went over in great detail the challenges of constructing this bridge including sinking the caissons, building

the steel towers with self climbing formwork, designing the anchorage, stringing the suspension system, and erecting the orthotropic bridge deck. This included a discussion on the much publicized suspension corrosion issues that caused a four month delay and required scrapping thirty-five percent of the wire. The corrosion occurred only to wire that was wrapped with a layer of kraft paper inside a layer of plastic. Wire wrapped in plastic outside and inside had no corrosion issues. In addition to delaying the suspension construction, this also caused issues for deck erection, as the deck was arriving in pre-assembled pieces from South Korea. The deck was arriving in three shipments, but the third shipment couldn't be shipped until the first boat got back to pick the pieces up.

There were many other interesting details of the bridge construction, including the 100-ton expansion joints that had to make their way across

the country from Minnesota, and the post-tower, pre-suspension cable catwalk that could deflect 85 feet in a very large wind. It was a most interesting way to

spend a Tuesday evening.

Karen Damianick, PE, is a member of the SEAW Newsletter Committee and can be reached at kld@kldengineering.com

YMF Corner, continued

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As the YMF Chair, I was elected to serve as the delegate and invited to attend the October board meeting. At this meeting we discussed several upcoming opportunities for the YMF, one of which was the creation of this newsletter space. All members are invited to contact me directly with any questions or feedback for the board.

Finally, the most exciting event on our calendar is coming up. The third annual YMF Dinner Meeting is November 27th at the University of Washington Waterfront Activities Center. Similar to last year, this meeting will include a firm showcase in lieu of the mini-seminar, and the program will feature presentations by both University of

Washington and Seattle University students. I will be giving a short presentation on the YMF, so come and learn more about our activities while meeting current engineering students.

I am looking forward to another great year for the YMF and I look forward to seeing you at our upcoming activities. Please contact me if you would like to be added to the YMF email list or have any questions.

-Cale Ash
cash@degenkolb.com

Cale Ash is a Design Engineer with Degenkolb Engineers. He joined the firm 4 years ago after earning his MSCE from the University of Illinois. He has been a SEAW member for 3 years and active with the Younger Member Forum for the past 2 years.

Meetings/Seminars

Engineering Green: Redefining What it Means to be an Engineer

December 17-18

Nike Campus, Beaverton OR

Presented by Cascadia Region
Green Building Council

The premier event for integrating green practices into all types of engineering - from the site to the systems. Equip yourself with the technical knowledge of green engineering practices, and be empowered to integrate those practices into the holistic design process. Event includes internationally recognized speakers, technical trainings, and innovative ideas to engineer a sustainable built environment.

The conference will feature keynote speaker Gary Christensen, the developer behind the landmark Banner Bank building, which received a LEED® Platinum rating. The innovative workshop topics include Integrating Energy Modeling and Architectural Design, Water Harvesting and Reuse, and Daylighting Metrics.

For the complete line-up, please visit the engineering-green07 website at <http://www.cascadiagbc.org>.

Corrosion of Metals

November 17, 2007

Fatigue Technology, Inc Tukwila, WA

ASM International Puget
Sound Chapter Short Course

This course is designed for those who must deal directly or indirectly with the surface treatment of metals: materials procurement specialists, machine shop personnel, heat treaters, design engineers, manufacturing engineers, manufacturing managers, technicians, quality control inspectors, and marketing personnel. It will benefit those who are new to the subject as well as those who need to

update their knowledge.

When: 9:00 a.m. – 4:00 p.m., Saturday, November 17th, 2007

Where: Fatigue Technology, Inc. - 401 Andover Park East, Tukwila, WA

(On the road to COSTCO near Southcenter Mall)

Course Fee:

\$125 for ASMI members, and sustaining member company employees; (Includes lunch) Full-time students \$15; All others \$150

On-site registration: \$150 for ASMI members and sustaining member company employees; Full-time students \$25, All others \$175

Course Overview:

Corrosion Introduction Definitions, Corrosion Cost to Industries, Electrical Double Layer, and Why Corrosion Occurs?

Basic Concepts in Corrosion, Active, Immune, and Passive Corrosion Behavior, Corrosion Rates, How Metallurgy and Environment Affect Corrosion Potential and Rates.

Forms of Corrosion: Ways to Identify Them, Causes, Prevention Methods, with Emphasis on Galvanic and Crevice Corrosion

Corrosion Control Methods Design, Material Selection, Environment Control, Inhibitor Application.

Instructor: Dr. Alain Adjorlolo, M&P Engineer, The Boeing Company

Registration form & information:

Gabrielle Green
9835 41st Ave NE
Seattle, WA 98115-2517
gabrielle.m.green@boeing.com
(pay at class) or

FAX: to Gabrielle Green at 425-234-1310

NCSEA Winter Institute

February 29 – March 1,
2008

Courtyard & Residence Inn by Marriott, Austin, Texas

Seismic Design for the 2006 IBC in Regions of Low and Moderate Seismicity

Speakers:

Larry Griffis: *Seismic vs. Wind – Which Controls?*

Sharon Wood: *Seismic Design Provisions in ACI 318-08*

Richard Klingner: *Update on the 2008 MSJC Code and Specification*

Richard Klingner: *Autoclaved Aerated Concrete Masonry: Technical Background, Code Implementation and Design Examples*

John Henry: *Seismic Design of Wood Structures*

Mike Englehardt: *Seismic-Resistant Design of Steel Structures and the 2005 AISC Seismic Provisions*

ALSO: Tour of the Ferguson Structural Engineering Laboratory and the NEES Equipment Site at the University of Texas.

For information and registration, visit www.nscea.com

SEAW Calendar of Events

Mark your Calendar and watch the SEAW Website for updates!

November 2007

Monday	12th	YMF Site Tour to local steel plant rsvp to Piermattei@jacobssf.com
Friday	16th	YMF Bellevue Social Hour at Parlor Billiards. ctaylor@degenkolb.com
Friday	23rd	December Newsletter Deadline
Tuesday	27th	YMF-Sponsored Dinner meeting location: UW Waterfront Activities Center preceded by Seattle Chapter Board meeting

December 2007

Monday	17	Seattle Chapter Board meeting, College Club (no dinner meeting in Dec)
Friday	28th	January Newsletter deadline

January 2008

*****		Dues Statements go out
Tuesday	22nd	Chapter LUNCH meeting, College Club *selection of nominating committee Seattle Chapter Board meeting
Friday	25th	February Newsletter deadline
Friday	25th	State Board meeting

Opportunities

Structural Engineer

Anderson-Peyton Engineers (25-year firm) is seeking junior and senior level Structural Engineers for our Federal Way office expansion. All levels of experience are being sought. Design team needs are post-tension concrete, timber, red iron steel, and cold-formed steel. Opportunities to work on a wide variety of project types will include multiple construction materials. Enjoy rapid growth potential, progressive benefit package, informal office culture, flexible work schedules, including Friday afternoons off. Email Resume to dpeyton@anderson-peyton.com

Civil/Structural Engineer

Large, International Structural Steel Corporation offers Challenging **Civil/Structural Engineer** opportunities with potential for career advancement!

Positions: Sr. Design Engineer (Civil/Structural Engineer)

\$55K – \$110K/yr

Entry-level Engineer (Civil/Structural Engineer) \$40K - \$55K/yr, Salary:DOE

Locations: Seattle Metro & Central Washington

JOB SUMMARY:

- Design steel structures through the use of computer software
- Design components to ensure they meet code requirements
- Design specialty components without supervision
- Responsible for field modifications, repair sketches, and site visits
- Understand Company products and processes
- Review and validate contract documents
- Review drafting work for completeness
- Provide clear instructions to drafters
- Meet shop schedule requirements
- Participate in design meetings

REQUIREMENTS:

BS in Civil Engineering (or equivalent)

Interested parties please contact Thane Meads at (509) 340-6440 or via email at: thane@dynamicrecruiting.com

Staff Engineers



Established and growing Structural Engineering design firm seeks outstanding individuals to fill immediate openings for Staff Engineers in our Seattle/Belltown office. All experience levels considered and encouraged. We're a mid-size dynamic company recognized for our team work, creativity and innovation. Our informal studio setting facilitates collaboration and communication between all staff levels and departments. We combine a very progressive benefits package with a fun, flexible and casual office culture. Our

diverse project teams and loyal clients provide opportunities to work with a variety of materials and building types.

Benefits include medical, dental, vision, 401(k), cafeteria plan, subsidized transportation passes, three weeks vacation, paid sick leave, paid professional development opportunities, testing and licensing reimbursement, paid volunteer time off, tons of office social events and much more. We've got a desk all ready for you. Come join our team!

Email resume to bbresko@swensonsayfaget.com or fax attention Blaze Bresko at 206 443-4870.

Structural Engineer

Tyee Consulting is a small, growing engineering firm located in downtown Bellingham. We specialize exclusively in structural design. We have very interesting projects to work on and great clients to work with.

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DESK JOB IT AIN'T

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We have over 47 years of experience in the Pacific Northwest region.

We believe in encouraging personal and professional growth, and offer a flexible work environment and comprehensive benefit package. We have a variety of positions in multiple offices across the United States.

Seattle	Lacey	Sacramento	Los Angeles	Irvine	Denver
Everett	Portland	San Francisco	Long Beach	San Diego	St. Louis
Tacoma	Eugene	Walnut Creek	Pasadena	Phoenix	New York

www.kpff.com

Opportunities

We pride ourselves on having a casual, friendly, relaxed working environment in which we provide high quality, cost efficient engineering services to our clients.

If you are interested in this opportunity please fax your resume to 360-733-8936 (or email to jw@tyeeconsulting.com).

Thank you for your consideration!

Structural Engineers

BRIDGE, WATERFRONT & BUILDING STRUCTURAL ENGINEERING OPPORTUNITIES

As a leader in structural design, **KPFF CONSULTING ENGINEERS** is looking for **STRUCTURAL ENGINEERS** with experience in bridges, buildings and/or waterfront design to join our high performing team in our Seattle office.

Come work with us on a di-

verse array of projects in a team environment with a variety of clients in both the public and private sectors. Join our multidiscipline teams, expanding your overall project knowledge base and incorporate the context-sensitive design philosophy of balancing function with aesthetics.

Strong technical and organizational skills, and a minimum of 3 years of experience are required; PE preferred. Benefits include a bus pass subsidy, flexible work schedule, competitive salaries and other benefits.

Come join our team, pursue your passion and work on great projects with exceptional clients. Visit our website www.kpff.com to see the types of projects you could be working on.

Send resume and cover letter to: KPFF Consulting Engi-

neers, 1601 5th Ave., Suite 1600, Seattle, WA 98101, hrseattle@kpff.com

PAO Structural

Peter A. Opsahl Structural Engineering is a young, dynamic and growing firm located on Capitol Hill, in Seattle. We offer a collaborative, flexible work environment and a competitive compensation and benefits package. Currently, we have the following full-time positions open:

Structural Drafter

Candidate will have more than 4 years of architectural/structural drafting experience, be proficient in AutoCad and have experience in drawing standards development. Experience with Port of Seattle standards a plus.

Structural Engineer

Candidate will have 4-5 years

of experience, excellent written and oral communication skills, an excellent multi-tasking ability, an extensive experience in client communications and project management. Professional registration as a Structural Engineer in Washington preferred.

Senior Structural Engineer

Candidate will have at least 8-10 years of experience, excellent written and oral communication skills, an excellent multi-tasking ability, an extensive experience in client communications and project management. Professional registration as a Structural Engineer in Washington is required. Ownership opportunities in the Company will be available to the ideal candidate.

Please email hr@pao-structural.com with a letter of interest and a resume.

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Parker, Messana & Associates, Inc. Consulting Engineers

- Structural Design Engineer & Project Engineer
- AutoCAD Structural Designer

Parker Messana & Associates is a multi-discipline engineering firm located in Federal Way, WA. We provide engineering study and design services to industrial, manufacturing, utility and municipal clients. Recent projects include bio-diesel, ethanol, petro-chemical, titanium, power generation, pulp & paper, wood products and food products facilities.

Candidates for engineering positions should have excellent technical, design and communications skills, 6 to 10 years experience and a working knowledge of IBC06/ASCE7. Industrial experience and a Washington PE license are highly desirable.

Designers should have experience in CAD drafting of structural steel and reinforced concrete for industrial, manufacturing and utilities projects.

PMA offers a great work environment, competitive benefits & compensation, flexible hours and encourages personal growth.

E-mail resumes to mhankinson@pma-engr.com

www.pma-engr.com



It's about people
being part of the
equation.

We're hiring. Email your resume
to info@sliderule.biz

Opportunities

Engineers

Seattle Structural

Seattle Structural PS Inc is a downtown Seattle firm looking for engineering candidates at all experience levels. Share in our vision of client-based service and hard working enthusiasm on diverse and challenging projects in the US and overseas. Join our collaborative staff of 10 in one of Seattle's most vibrant office towers, specializing in public, commercial, retail, industrial and specialty projects. We offer excellent benefits and stimulating work in a casual environment. Visit our website at www.SeattleStructural.com

Send resumes to: Pete Pawlak, PE, 1420 Fifth Avenue, Suite 425, Seattle, WA 98101; 206-343-3000 phone; 206-343-3013 fax; ppawlak@SeattleStructural.com

SE or PE Wanted



Gravitec Systems, Inc. is an industry leader in the expanding field of fall protection. We are seeking a qualified structural or civil engineer to join our team of dedicated professionals. Duties will include, but not be limited to: designing fall protection systems; analysis of existing systems and structures; developing hazard assessments; drafting (AutoCAD 2005); technical writing, and; project management.

At Gravitec you will find: an opportunity to work on challenging and rewarding assignments; a chance to grow professionally in a strong stable business that is well-positioned to respond to market trends; a work environment encouraging an

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Routinely recognized as one of the best places to work, Degenkolb Engineers is actively recruiting structural engineers looking for a long-term career with a clear path to leadership and ownership. We encourage lifelong learning and support professional and community-based activities. Degenkolb engineers have the opportunity to follow their interests and develop their own book of work. And when we're not doing that, we are playing...sometimes in one of four company cabins in Tahoe, Big Bear, Monterey, and Sunriver. As renowned leaders in seismic and structural engineering, we offer a diverse, challenging mix of projects on both new and existing structures. Minimum requirements are an MS in Structural Engineering, excellent communication skills, and a desire to work in a challenging, collaborative environment. We have offices in San Francisco, Oakland, Los Angeles, San Diego, Portland and Seattle and are seeking engineers with all levels of experience. EOE

If you're interested in joining our award-winning firm, please contact: **Stacy Bartoletti, 415.354.6501**

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- **Intermediate and Senior Structural Engineers** (SE-ISSE-NOV07)
- **Construction Administrators** (SE-CA-NOV07)

If you are results oriented and looking to broaden your experience in a challenging technical environment, we'd like to hear from you! Go to www.glotmansimpson.com for more information. Please respond by email to careers@glotmansimpson.com, and *quote the above code.*

While we appreciate all interest in our firm, only applicants selected for an interview will be contacted.

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entrepreneurial spirit and a can-do attitude among employees that is built on mutual respect, honesty, and camaraderie, and; a compensation package that includes a comprehensive medical/dental/vision program, a 401(k) savings opportunity, and paid time off.

To learn more about our company, please visit our website at:
www.gravitec.com.

Applicants should be aware that we are based on Bainbridge Island, and serve a wide range of industry and government agencies throughout North America. Some travel will be required.

To apply, send resume and cover letter to
peach@gravitec.com or fax to 206.780.2893.

Structural Engineer

Casper, Phillips & Associates (CP&A), Tacoma, Washington, USA has an immediate opening for a structural engineer, MS, PhD, or equivalent, a minimum of 5 years design and CAD&D experience, and a record of being a team player and self-starter. Visit casperphillips.com for examples of our small firm's typical projects and clients. Salary open. Contact bill@casperphillips.com.

Sr. Structural Engineer

KH₂A Engineering in Portland, Oregon is seeking a senior structural engineer. Our projects are typically industrial in nature ranging from steelmaking and wood products to chemicals production. Ongoing projects in Russia and Bolivia add an international flair to the backlog. Applicants should have a

bachelor's degree in civil engineering with structural emphasis and licensure in Washington, Oregon and California. 401(k), health insurance, competitive salaries. Please send resume and cover letter to KH₂A Engineering, 5515 SE Milwaukie Avenue, Portland, Oregon 97202 or email it to vrunyan@kh2a-engineering.com.

Structural Engineers

Peterson Strehle Martinson (www.psm-engineers.com) is looking for structural engineers with 4-10 years of experience. (Master's degree preferred.) We perform a variety of structural design work for buildings and other structures throughout the United States, from our office in Seattle's South Lake Union area. We are a team-oriented firm, well established in Seattle (over 80 years), with opportunities for professional growth. Please reply to: resume@psm-engineers.com.

Engineers:

MURPHY BURR CURRY, INC is seeking creative and talented engineers to join our San Francisco firm as full-time project engineers/managers. Projects include new construction and retrofit in residential, commercial, schools, and historical

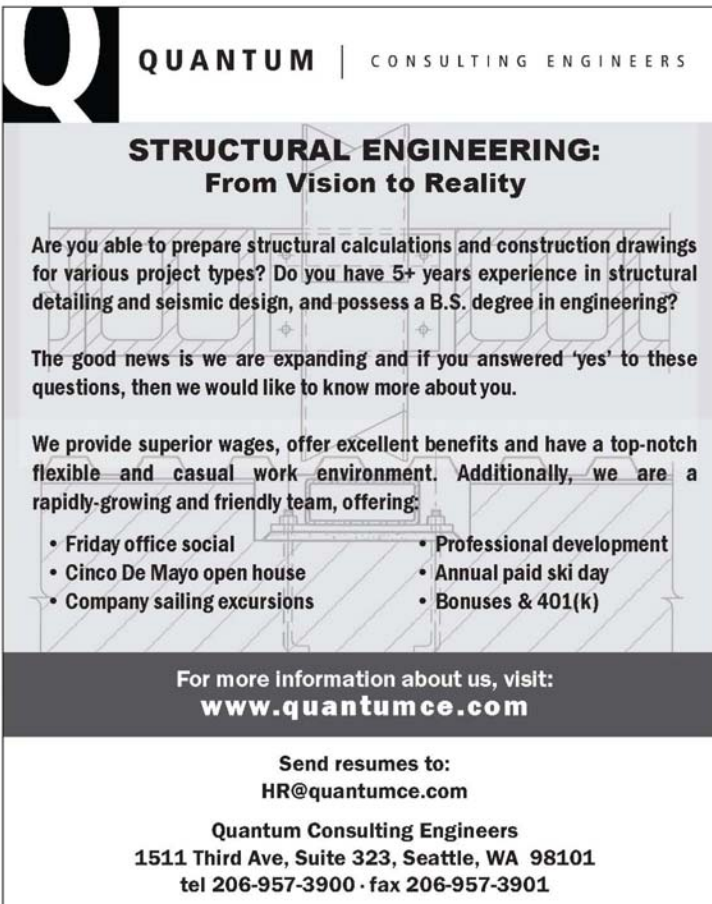
retrofit and restoration. Applicants must have 4-10 years of experience in structural design and detailing and preparing construction drawings as well as excellent communication skills. PE or SE license preferred. Excellent salary and benefits package offered. Email resumes to scurry@mbcse.com or fax to 415-882-7257. Please visit us at www.mbcse.com.

Structural Engineers

Here's your chance to join "the Resort Team" with projects located in South Florida, the Dominican Republic and Belize. Also upcoming projects in St. Maartens, Turks & Caicos, the Bahamas and the U.S. Virgin Islands. Projects include cruise ship terminals, hotels, condos, casinos and ancillary facilities. If you have an engineering degree and 1 to 2 years experience with building design, call Bob Fossatti at **(206) 615-9700** to arrange an interview or email us your resume at mfields@rfaengineers.com.

Mr. Fossatti has over 30 years experience as a structural engineering firm principal and leads a well-seasoned staff of licensed engineers and top-notch cadd technicians.

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HELP WANTED ADS are accepted through the fourth Friday preceding the publication month. The cost for text ads is \$50 per insertion **pre-paid**, with a 10% discount for ads running two or more consecutive months. Ad copy should be limited to 200 words or less and must be submitted by e-mail. Advertising order forms and information about display advertising, can be found on our website at :

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