



# SEABC NEWSLETTER

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May 2012

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- SEABC's Newsletter is both edited and managed by The Communications Committee. [newsletter@seabc.ca](mailto:newsletter@seabc.ca)
- Submissions to the newsletter are encouraged and all members of the SEABC are asked to actively participate in contributing to our newsletter. Submissions letters to the Editor, questions and comments can be sent to: [newsletter@seabc.ca](mailto:newsletter@seabc.ca)
- SEABC editing staff reserve the right to include or exclude submitted material and in some cases edit submitted material to suit overall space requirements. If submittals are not to be edited, please advise editor at submission time.

## Message from the President

May 2012

By Cameron Kemp, P.Eng.;  
SEABC President



Since our last newsletter the SEABC hosted its AGM on March 8, 2012 at the Sutton Place Hotel. This sellout event featured, as its keynote speaker, Mr. Bill Baker of Skidmore Owings and Merrill (SOM) who spoke about the design and construction of the world's tallest structure, the Burj Khalifa in Dubai [see *Bill Baker in Vancouver in this issue*].

Bill's talk was both fascinating with respect to the technical problems that had to be overcome as well as inspiring with respect to the scale of the challenges successfully undertaken by all involved in the project. At both the keynote speech as well as at a breakfast meeting earlier the same day both audiences got a sense of not only Bill the world-class structural engineer but also Bill the person and philosopher.

A question that Bill posed to each audience was "Just because we can, should we?" The question was posed in the context of a new wave of high-rise buildings being built that involve very complex geometries which often do not lend themselves to materially or structurally efficient solutions. Bill, a self-confessed minimalist, says he struggles with this question frequently in his work.

One aspect of his breakfast speech that I found particularly fascinating was the way Bill used simple engineering fundamental principles (e.g., "energy methods" which I had all but forgotten) to conceptually design his current projects which he then sketches in a small hard-backed notebook using a pencil and plastic ruler (usually on a plane en route to his next project). He said that only after he had roughed out the design of a particular project this way did he hand the project over to the "young computer jockeys" in his office to confirm his preliminary design. He indicated that his designs were usually within 15% of the results coming back from the much more involved and complex computer runs. His thematic messages resonated with me as we see more and more complex structures

being proposed that a few short years ago would have been impossible to analyze and build without complex analysis, design and graphics software.

The other thing I see in our younger engineers is the predilection to jump immediately to the computer to begin developing structural solutions when often a simple free-body diagram (remember those?) and some quick and dirty hand calculations would suffice.

Many of us involved with the preparation and planning of the AGM and the breakfast meeting received many favorable verbal and written comments about the day. Personally I came away from the day spent with Bill reinvigorated about our profession and contemplative about the broad questions he asked.

I hope those of you that were able to hear Bill speak felt the same way.

Cameron Kemp

**P.S.** Having had such a positive response to our world-class speaker the Board has challenged itself to find similar keynote speakers that have been involved in world-class or leading edge projects for our future AGM's. Stay tuned for our AGM next March!

## IStructE News

By Bill Alcock, P.Eng. Struct.Eng. MStructE.  
Director SEABC



The Institution's Chartered and  
Associate-Membership Examinations,  
Friday 13 April 2012

A total of 791 candidates attempted the Institution's examination at 65 centres around the world on Friday 13 April.

There were 776 Chartered Member candidates and 15 Associate-Member candidates.

The Hong Kong centre was the largest, hosting just short of 250 candidates. The trial marking meetings will be held in May before the marking cycle begins in the first week of June.

Results are expected to be announced during the week commencing Monday 20 August 2012.

## Vibration Issues with Timber Frame Buildings:

BC structural engineers specializing in wood frame construction may be interested in the following:

The inappropriate use of timber framing for multi-storey buildings has been underlined by the need for house builder, 'Bellway', to call in an independent structural consultant to assess resident complaints of excessive vibration at one of its major developments. Information on this issue can be found on the IStructE web-site:

[www.istructe.org/news-articles](http://www.istructe.org/news-articles)

## Regional Groups - explaining the name change



The term 'Regional Groups' has been cropping up when referring to Branches, Sections and Divisions of the Institution. Whilst undertaking the website redevelopment, it was considered rather confusing to a member of the public, or indeed a new member of the Institution, to try to understand the distinction between 'Branch', 'Section' and 'Division', in fact even some staff members were baffled! So, with the intention of making the website as user-friendly and straightforward as possible, it was decided that the term 'Regional Group' adequately covered all of these terms. The Institute hopes it will be a step in the right direction in breaking down the distinctions between members in the UK and those outside of the UK.

## Next Council Meeting:

The next Council meetings will be held in Edinburgh on July 19 and 20, 2012.

## Vancouver Island Branch

By Thor A. Tandy, P. Eng, Struct.Eng.



### Mission:

To provide a focal point for SEABC members on the Island to meet, discuss SEABC issues and to take benefit in the form of exchange items of technical interest.

## 2012 Branch Delegates:

Thor Tandy will steer the Branch with assistance from Brian McClure and Sharlie Huffman.

## Branch Demographic:

- 1) A group of approximately 15 members in the local Victoria, Gulf Islands area.
- 2) A central Island group centered on the Nanaimo, Port Alberni area.
- 3) A small North Island group.

## ASCE Membership:

The Chapter has renewed membership with ASCE for 2012 and we are monitoring webinars of interest.

## Successful Events:

- 1) **February 22:** Seminar on the Christchurch EQ – Steel/Concrete focus. Co-ordinated by Rob Johns, City of Victoria Emergency Co-ordinator, presented by Dr Ken Elwood.
- 2) **March 20:** ATC 20 Presentation, by Ed Houston PE, MStructE. An excellent presentation picking up from start of the assessment program in the early 1990's to the present.

3) **May 16:** Changes in Part 4 and Part 9 of the 2012 BCBC (2010 NBCC), presented by Steven Kuan, P.Eng., Building and Safety Standards Branch, Province of BC, and Grant Newfield, P.Eng., Struct.Eng., Read Jones Christoffersen.

## Member Participation:

Feel free to send in comments, even if it's criticism, about the Branch. Although I get the ASCE notices, I don't always register webinars of interest so do email me if you find one that might be of use/benefit. The caveat is that there needs to be 10 people or more interested to organize venues etc.

## Contacts:

Victoria/Gulf Islands: Thor A. Tandy, Brian McClure,  
Sharlie Huffman  
Central Island: Dan Fell  
North Island: Ralph Watts

## Young Members Group

By Ilana Danzig, EIT, LEED AP, Director SEABC



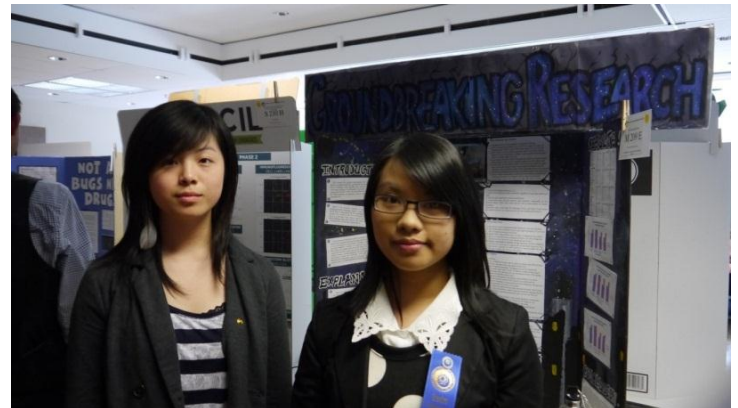
In April, five members of the YMG attended the Greater Vancouver Regional Science Fair at UBC to judge exhibits pertaining to structural engineering. The event was impressive not only in size, but in the number and diversity of

exhibits on display and the knowledge and passion that many of the students conveyed during their presentations. We were pleased to see a fantastic array of projects investigating various concepts with structural engineering applications.

A number of exhibits stood out, including one exploring the stress-strain relationships of various metals, another researching the dynamic effects of sloshing water dampers, and another investigating beam strengthening with various types of FRP, all of which were created and presented by junior students.

Although the final decision was a difficult one, we ultimately awarded a \$250 prize to Crystal Man and

Sharon Zhao, two intermediate students from Killarney Secondary. Their project, titled "Groundbreaking Research", was inspired by the recent earthquake in Japan and investigated the advanced topic of base isolation and how it can change the seismic response of buildings. Their model consisted of a two-storey cardboard structure with cups of water on each floor, the relative amount of water lost representing level of damage. The model was then shaken on various base conditions representing rollers, ball-bearings and elastomeric bearings to compare different types of isolation systems and their effectiveness at reducing damage. Not only were we impressed with their simple yet effective model to capture the essence of such a complicated topic, they were both well articulated with their presentation and managed to effectively explain many of their observations, including why they observed more damage on the upper floor than the lower floor. Congratulations to Crystal and Sharon for their hard work!



*Crystal Man and Sharon Zhao, winners of the SEABC award*

In May we gathered at the Hilti shop in Burnaby to hold a hands-on seminar. We learned all about some of the commonly-specified Hilti anchors and had the opportunity to install both mechanical and chemical anchors in concrete. The Hilti representatives did an excellent job of instructing us and answering our many questions.





Many of the attendees agreed that learning proper installation technique by installing the anchors was invaluable knowledge as a structural engineer or EIT.

We took note of the positive response to this event, and look forward to providing more hands-on seminars in the future.



We have some fun and exciting events planned for the next few months, and we need your help to make some of them happen:

## Do you want to get involved, but are concerned about the time commitment?

We are looking for young members throughout BC to act as a YMG Representative for their companies. As a YMG Rep:

- You will rally the troops at your office. Post the YMG events on the bulletin board and speak to other coworkers (not necessarily young members) about the events.
- We may email you directly on occasion to ask for feedback on an event we are planning
- If we are short on volunteers for a particular event we may contact you, but you are under no obligation to volunteer.
- You will keep an eye out for projects at your company that would make good tour events

## Why get involved?

This is a great, low-commitment way to help the YMG hold events that are better attended and more attuned to the needs of the young members. You will have the opportunity to network and get to know other young members. You will have your voice heard and your suggestions tabled.

If you are interested or would like further information please email us at: [ymg@seabc.ca](mailto:ymg@seabc.ca)

Finally, I would like to welcome John Deenihan, Yury Kulikov, and Victoria Janssens to the YMG committee. It is great to have some fresh faces helping out! A big thank you goes out to all the volunteers on the YMG Committee for their hard work and their enthusiasm. Whether helping with brainstorming, planning the year ahead, or putting on an event, these volunteers ensure that the YMG stays fun and relevant. Thank you all for your dedication!

## Haiti Reconstruction

By Joel Alexander Hampson, MSc, PEng, LEED AP

### Building Damage Patterns



On January 12, 2010, Haiti experienced an estimated Mw 7.0 event. I am currently here as a structural engineering consultant and my work focuses on the

repairs of the building damaged by the event. I arrived over two months ago. What follows are some salient observations from the aggregate of my work so far.

The majority of the buildings in Port-au-Prince are made with lightly reinforced concrete columns, hollow clay block (HCB) infill panels and a Haitian style waffle slab: the voids in the slab are created with HCB laid flat between the steel. The older buildings seem to be brick-masonry/rubble-infill walls with light steel or wood roofs. In observing the patterns of damage, I can imagine the building being “thrown” one way as a whole and then suddenly yanked back by the base; and I can see how the “top” and “bottom” go in opposite directions, separate and manifest the damage.



I see many in-plane failures of the HCB infill walls. Generally, there is a horizontal crack at the top of the wall with a diagonal dip at the end. If there is an architectural penetration in the wall, then I might find diagonal cracks extending out from the re-entrant corners. Cracks correlate with height above the floor, so I don't find much at the bottom of the wall; that is independent of the number of building stories. Also, the majority of overall damage is located further down in the building, so the ground floor will suffer the most.

For wall piers, as opposed to infill panels, I find the X-cracking inevitably occurs within a rectangle bounded by corners of the windows or doors.



I see many columns with pairs of plastic hinges (top and bottom). A number of buildings that remain standing and in service with these ruptured columns; I also see many buildings that have partially or totally “pancaked” where the columns lost capacity. (I do my best to have the buildings with ruptured columns be shored and/or un-occupied.)





Free-standing walls suffered badly, and I see gable-end walls with toppled triangles. But otherwise, I do not see many problems with out of plane failures despite there being no dedicated top-of-wall restraints.



I work with several local engineers who did thousands of rapid assessments after the event. I asked one what patterns of damages he observed over the course of his work; he responded somewhat dryly:-

“Any building without an engineer.” - the overwhelming majority of building structures in Haiti.



## Technical Committee Update

By Renato Camporese, , P.Eng., Struct.Eng.,  
Director SEABC



The work of the Guards Task Group is complete. A draft design guide has been prepared and is currently under review by the technical committee. It is hoped that the completed design guide

can be issued in the near future.

Now that the spring term is over, the grad student working under Professor Mahdi Tailbat is back to the analytical work for the Basement Walls Task Group.

The scope of the analytical work has been expanded to include an investigation into the effects of vertical ground accelerations as well as horizontal accelerations. It is hoped that there is little interaction and that lateral force analysis is all that will be required. Once the analysis is complete, the task group will prepare recommendations for the design of basement walls.

## Education Committee

By Cam Smith, Director SEABC



The SEABC will be co-sponsoring the upcoming Noel Nathan Memorial Lecture in Structural Engineering 2012 with the Department of Civil Engineering at UBC. The keynote address for this lecture, titled 'The Canterbury Earthquakes – Engineering Matters', will be given by Dr. David Hopkins.

Immediately following the February 22<sup>nd</sup>, 2011 earthquake, Dr. Hopkins led a team of engineers responsible for the assessment and stabilization of major buildings in Christchurch. During this lecture he will describe his experience during the Canterbury Earthquakes, examine key structural issues and speak to the implications of these events for communities in New Zealand and abroad. This event is scheduled for May 30<sup>th</sup> at UBC Robson Square, Theatre Room C300; additional details can be found on the SEABC website:

[www.seabc.ca/events](http://www.seabc.ca/events)

Additional upcoming seminar topics include "Wood Frame Moment Connections" and "The Port Mann Bridge Project" – further information will be provided as it becomes available. The annual Wine & Cheese Event will be held this year at BCIT, currently planned for early September – again, additional details will be provided closer to the event date.

On March 19<sup>th</sup> & 20<sup>th</sup> in Vancouver & Victoria, respectively, the SEABC organized the seminars titled 'ATC-20 – Post-Earthquake Safety Evaluation of Buildings'. These were day-long seminars, with the morning presentations in both Vancouver and Victoria given by Ed Huston of Smith & Huston, Inc. Consulting Engineers, Seattle WA.

The afternoon presentations were given by staff of the respective city: Pat Ryan from the City of Vancouver, and Rob Johns from the City of Victoria. The morning sessions focused on the ATC-20 training, while the afternoon sessions provided a general discussion of earthquake preparedness and planning by local, provincial and federal authorities.

The ATC-20 seminar was well attended in both locations, with excellent participation and interest from the audience.



*Ed Huston discusses rapid evaluation criteria for the ATC-20*

Other recent seminars included "Changes in Part 4 and Part 9 of the BCBC 2012 (NBCC 2010)" presented on April 25<sup>th</sup> by Grant Newfield of Read Jones Christoffersen and Steven Kuan of the BC Building Safety and Standards Branch.

For those interested in taking the BC Codes and Practices Exam, a seminar is currently being planned for October 2012. Although this will be an APEGBC organized event, SEABC is assisting with course content and program structure, as well as identifying potential speakers. More information will be provided as it becomes available. Information on the BC Codes and Practices Exam can be found on the APEGBC website:

[www.apeg.bc.ca/reg/structeng.html](http://www.apeg.bc.ca/reg/structeng.html)

Video recording and archiving of seminars and events continues to be done to better serve the SEABC Membership who are unable to attend in person. This service is available through the SEABC website (via *Member Login*, under the *Seminar Downloads* link) where presentation literature from previous seminars is also made available.

We appreciate feedback from members including comments on past events, suggestions for future topics, and proposals for presentations, so please do not hesitate to contact us at: [education@seabc.ca](mailto:education@seabc.ca).



## Communications Committee

By David Harvey, P.Eng, Struct.Eng.  
Director SEABC



The Communications Committee continues to work hard for SEABC Members. The Committee is responsible for:

- Website (see Webmaster's Report)
- Membership
- Broadcast emails
- Newsletter

Our membership continues to be very strong and we believe includes the majority of BC's structural engineers. There are also quite a few members who live and work outside of BC although for some this may be a temporary situation. Our current membership is:

<b>Active Members</b>	<b>858</b>
Individual members:	630
Associate members:	17
Retired members:	0
Student members:	208
Life members:	1
Affiliate members:	2

Our broadcast e-mail service provides advanced notice of upcoming events. We give priority to events organized or sponsored by SEABC, and where possible we include notification of events run by other organizations that we believe will be of interest to SEABC members. In particular we include many upcoming ASCE, AISC, and ATC webinars that involve structural engineering education. For a complete list and details of webinars run by outside organizations, please go to the relevant organization's website.

Our newsletter typically contains the President's Message, the committee reports, IStructE News, YMGC Report, Sustainability, event reports, articles submitted by members, and Mark Your Calendars. To keep our well-read newsletter as interesting and relevant as possible, please continue to send us your news, comments, and photographs for publication. We'll do

our best to include your article and are happy to edit it on your behalf. Thank you for your excellent contributions!

## Corporate Committee

By David Harvey, P.Eng, Struct.Eng.

Although the committee activity has reduced of late, we have continued to offer the popular breakfast meetings which cover non-technical areas of particular interest to our corporate members. Past topics have included Generation Y Employees and Insurance. Earlier this year SEABC was approached by Asia Pacific Gateway Skills Table who wanted us to host a training workshop sponsored by Human Resources and Skills Development Canada's Sector Council Program.

SEABC agreed to co-sponsor two workshop sessions in early May. Held at the Terminal City Club, the workshop was entitled *Creating a Blueprint for Supervisory Skill Development*. The presenter was Wilma Marais, a Vancouver-based Human Resource Consultant who has considerable experience with holding training sessions for local employers, including many engineering consultants.

Wilma presented the Supervisory Skill Resource Development Guide produced by APGST, a comprehensive document aimed at developing the key knowledge, skills, and abilities of supervisors and prospective supervisors. The document addresses teamwork and systems management, and assisting in identifying training needs. Comprehensive lists of available training courses; contact training providers; and online learning educators are included. Wilma introduced useful training aids to participants including a development needs checklist; a list of development activity methods and a development plan template.

Some 25 members and guests participated in the workshop sessions and significantly benefitted from Wilma exploring the Guide and unravelling its complexity. Delegates quickly realized that all engineers would find the APGST systematic approach to personal and career development extremely useful. Information on APGST is available at:

[www.apgst.ca](http://www.apgst.ca)

## **Bill Baker in Vancouver**

**By David Harvey, P.Eng, Struct.Eng.**

We were extremely fortunate that in March, Bill Baker agreed to visit Vancouver in response to an invitation from SEABC. Bill is a partner of architect-engineer Skidmore Owings and Merrill, who directs structural engineering at the firm's Chicago and London offices. Bill is a world-renowned structural engineer who is best known as the designer of the record-breaking Burj Khalifa in Dubai. His outstanding career has included just about every industry accolade available, including a rarely-awarded IStructE Gold Medal, and honorary doctorates.



Bill, who is in high demand and runs an incredibly busy practice, visits Vancouver only infrequently. On this occasion he was with us for a day and we were keen to maximize his exposure to the local engineering community. Happily, Bill agreed to make three presentations, wrapping up as keynote speaker at the Annual General meeting.

Bill greatly enjoyed his Vancouver visit during which he inspired many local engineers with his bold designs and incredible insight. Bill is also a genuinely nice person who is generous, accessible, and easy to relate to. We invited him to return at a future date and tell us more of his amazing stories.

### **Breakfast Meeting**

Bill kicked off his Vancouver visit by speaking to a group of SEABC Directors and guests at a breakfast meeting in the Pan Pacific Hotel. The excellent breakfast and spectacular waterfront views were only surpassed by the caliber of the presentation; the intriguing title was *Beyond Making It Work: The Role of the Structural Engineer in Architecture*. Bill took us through his incredible grasp of the fundamentals of structural engineering, and explored the history and achievements of the great structural engineers of the

past. He strongly encouraged us to familiarize ourselves with their work.

Speaking of the global race to build iconic structures, Bill cautioned against building unusual structural engineering forms simply because current technology makes it possible. He is clearly uncomfortable with the excessive use of materials to achieve unnatural solutions. Bill shared with us his methodology of studying the efficiency of structural forms which he routinely uses in design.



*Bill Baker Addresses the Breakfast Meeting*

While his pioneering efforts to build super-tall buildings makes the headlines, Bill is often hard at work designing creatively with building of all shapes and sizes. Bill even designs houses – he showed us his elegant framing solution for an architecturally-designed residence.

The audience listened to Bill's presentation with rapt attention; many were inspired by the depth of his understanding of structural engineering and his unique approach to design.



*Breakfast Meeting in Full Swing*

## UBC Guest Lecture

Bill's next stop was the Civil and Mechanical Engineering Building at UBC, where he spoke to a lecture theatre full of faculty members, students and guests. The guest lecture was arranged by Chris Man of the engineering students' Structures Seminar Committee. The content of Bill's 90 minute lecture drew on material from his breakfast meeting talk and his upcoming AGM keynote presentation. The students were treated to Bill's unique blend of theory and practice, and understood the critical role of laboratory testing in designing a spectacular engineered structure. Bill urged his audience to become familiar with the achievements of the great structural engineers of the past – a lesson that was readily apparent to the next generation of structural engineers present in Room 1202!

After questions, Chis thanked the speaker for his outstanding lecture. Bill then stayed on to interact with his audience who were very keen to quiz him on the design of super-tall buildings. The questioning would likely have continued all night, had not the need to move on to the AGM intervened. From the CEME Building at UBC, we whisked Bill quickly downtown from UBC for his final engagement of the day.

## Annual General Meeting

The SEABC Annual General Meeting was held at the Sutton Place Hotel in Vancouver on Thursday May 8<sup>th</sup> 2012. Approximately 120 members and guests were present, no doubt reflecting the level of interest in the keynote presentation. SEABC President Cameron Kemp ably guided us through the following business items:

- Approval of 2011 AGM minutes
- Approval of 2011 financial report
- Approval of 2011 committee reports
- Membership update
- Other Business
- Report on the Certificate Program by John Pao
- Announcement: Nick de Ridder, winner of the YMG Prize with: *So You Think You Can Give a Seminar?*
- Acclamation of Directors for 2012.



*John Pao Reporting on the Certificate Program*

With the business session successfully concluded, Cam asked me to introduce the guest speaker, Bill Baker of Skidmore Owings and Merrill. Bill's presentation, entitled *The Burj Khalifa* took us through the fascinating background to the world's tallest structure, and included many insights into why and how this amazing building, which pushed conventional technologies to record-breaking heights, was built.



*Burj Khalifa*

Bill told a fascinating story, including how the structural engineering and architecture dovetailed to enable the



design to succeed. Very quickly the design team established the essential design features that were 'off limits' as the design evolved. The building layout also had to be functional, meet market demands, and respect the privacy concerns of its residents. In particular the vertical transportation system underpins the operation of buildings with extreme height.

Key to the success of super-tall buildings is the management of wind forces. Bill commented that the designers spent a lot of time with models in the NRC's boundary layer wind tunnel, a move that helped solve important decisions such as the orientation of the building, and enabled the team to develop the design through understanding the aerodynamic effects. Crucially, as they experimented with taller models, the wind response improved, which facilitated the adaption of the final building height of 828m, much higher than had been initially expected. The presentation image of the starter dowels for the building core astonishingly showed relatively light reinforcement for such a massive structure. Bill reported that the building shear walls remain in compression under maximum wind load – testament to the control of wind forces that was achieved by the design. When Bill walked down the stairs to inspect the full height of the concrete structure, he was pleasantly surprised by the general absence of cracks, even in the most heavily loaded components.

Bill's expectation was that the aerodynamic behaviour of an even taller building would have been better still, and that the maximum height of this design could have approached 1km. He also noted that with what they had learned on designing the Burj Khalifa, the design team is now equipped to push designs well over 1km high if and when the building owners demand it.

Many interesting aspects emerged during the presentation, including:

- The 6000 ton pile test conducted (believed to be the world's largest externally-reacted pile test)
- The necessity to consider the sand storms that frequently occur in Dubai
- The window-cleaning method adopted
- The record-breaking concrete pumping height of 606m
- The installation technique used for the building's steel antenna.

The Burj Khalifa has 160 habitable floors and offers a combination of retail, luxurious hotel, premium residential, and high-tech office space. Its \$1.5 billion construction cost was underwritten by pre-selling of its floor space during the buoyant market of 2005. The up-front sales softened the effects of the economic downturn in 2008 on the building's completion. Construction of the building was started in 2004 and completed in late 2009; the official launch was in January 2010. The presentation included images of the spectacular opening ceremony.



*Bill Explaining an Important Principle to Cameron Kemp at the AGM*

Following his captivating presentation, Bill fielded a series of challenging questions from the audience, including questions on the concrete used, settlement experienced, and wind-induced displacements – most of which information he could readily recall. Cameron Kemp then wrapped up the evening by thanking the speaker for visiting Vancouver and sharing with us details of his amazing project. To show SEABC's appreciation, Cameron presented Bill with a gift of native artwork as a memento of his Vancouver visit.



*Cameron Kemp with Bill Baker*

**Bill Baker's AGM presentation recording is now available for viewing by members on the SEABC website. Please log on to the Seminar Downloads page. [www.seabc.ca/seminar-downloads](http://www.seabc.ca/seminar-downloads).**

## ***New East Bay Bridge Nears Completion***

By David Harvey, P.Eng, Struct.Eng.



The photographs show the air gap between the twin steel decks of the new San Francisco Bay Bridge – East Span; and construction of the complete steel superstructure on falsework. The bridge is currently entering its last year of construction. Each of the twin decks carries five traffic lanes. The new East Bay structures are being built to replace the aging current spans which are seismically vulnerable. The new steel portion is the signature span – an asymmetric self-anchored suspension span, a unique design which is extremely challenging to construct.



The design life of the 625 m long steel structure is 150 years, and the design earthquake has a 1500 year return period. The massive steelwork sections were fabricated in China and shipped across the Pacific on ocean-going barges. Reported to be the costliest bridge in the world, the currently estimated project cost of \$6.3 billion is still climbing!

The epoxy asphalt surfacing will be placed on the steel orthotropic deck next summer, and the bridge is scheduled to open to traffic by Labour Day of 2013.

## ***Use of Professional Seal on Tender Documents***

By David Harvey, P.Eng, Struct.Eng.

SEABC recently has had discussions with APEGBC regarding the use of an engineering seal on drawings as a follow up to the article by Peter Mitchell published in *Innovation* and reprinted here. (see end of newsletter). Our members need to be aware of the regulatory requirements which may be at variance with current practice. In essence, tender drawings must be sealed when in their final form for the intended purpose as a mark of reliance when used by others. Peter Mitchell stated that APEGBC's position is clear and is similar to that of the other jurisdictions across Canada.

Members should note that the article recommends that the seal be accompanied by a statement giving any restrictions on its use, such as *"Not for Construction"*.

In discussions with APEGBC, SEABC obtained a clarification that drawings not yet in their final form for the intended purpose or not for outside use need not be sealed. In addition, restrictions on use can extend well beyond *"Not for Construction"*; for instance, areas of design not yet completed or on hold should be clearly identified by clouding and labeling prior to sealing a tender drawing. Further, sealing of specifications is required and can be appropriately carried out on a suitably worded cover sheet.

## On the Web

By Stephen Pienaar, P.Eng; Director SEABC



### On the Web

It has been "business as usual" on the SEABC website, which means a constant stream of requests for information, seminar videos, and course registrations. As engineers we like numbers, so I thought the statistics

below may be quantify the value of our website.

### The year 2011 in review

- Total number of website page views: 152,938
- Average number of website visitors per month: 3,794
- Amount of data downloaded from our website: 165 GB
- Number of times someone entered "SEABC" on a search engine and then clicked through to our website: 2516
- Number of distinct search phrases that brought visitors to our website: 10,780
- Busiest day of the week for the website: Tuesday (almost 50% busier than any other day)
- Most popular pages on the website: The member login page, followed by the course list for the Certificate in Structural Engineering Program and the Events page
- Number of listings in Directory of Structural Firms: 54
- Number of new topics on the Forum: 16
- Number of seminar recordings added to online repository: 4
- Number of tweets on Twitter: 62
- Number of email messages broadcast to members: 95
- Total number of email messages sent to members: 81,735

### Seminar Recordings

The past quarter saw the addition of the video recording of one more evening seminar:

- **Oakland Bay Bridge Construction Engineering**

Bruce Hamersley, P.Eng., Klohn Crippen Berger Ltd.

Seminar date: February 22, 2012

Log in at: [www.seabc.ca/seminar-downloads](http://www.seabc.ca/seminar-downloads) to view this and other many other seminar recordings.

### Suggestions

We welcome your comments for improving the SEABC's website and other online services. Please send your suggestions to [webmaster@seabc.ca](mailto:webmaster@seabc.ca).

## SEABC Web Forum

By Stephen Pienaar, P.Eng.

### R.I.P. SEABC Forum

After the initial enthusiasm, activity on the SEABC Forum has been on a steady decline over the past year. The recent Members Survey also showed that interest in the Forum was lukewarm at best. A few members raised privacy concerns; all which could be addressed with some tweaking. Other members noted the stark absence of our senior engineer colleagues; the people we hoped would be sharing their knowledge and experience.

The SEABC Board recognises that our Association serves a diverse member demography: some members are comfortable using online forums, while others prefer email for discussions, and another group turns to social networking mediums such as Facebook and Twitter. There is clearly no one single medium at this time that can capture the attention of a large proportion of our members. And of course, we all lead busy lives and don't necessary have the time to interact online.

Taking into account all these factors, the Board took the decision at their meeting in May to terminate the SEABC Forum.

*"Rest in peace SEABC Forum. We thought your light would shine brightly, but it was not to be."*



## Ask Dr. Sylvie

CISC published Ask Dr. Sylvie articles in Advantage Steel up until Edition 34 available at: [www.cisc-icca.ca/content/publications/publications.aspx](http://www.cisc-icca.ca/content/publications/publications.aspx)

See also the list of CISC technical resources at: [www.cisc-icca.ca/content/technical/default.aspx](http://www.cisc-icca.ca/content/technical/default.aspx)

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## Mark Your Calendars



### Seminars, Conferences and Meetings

#### Noel Nathan Memorial Lecture in Structural Engineering 2012

**Topic:** The Canterbury Earthquakes—Engineering Matters

**Presenter:** Dr. David Hopkins, CPEng, IntPE, David Hopkins Consulting Ltd.

**Information:** Following the Canterbury Earthquakes, the speaker lead a group of professional engineers responsible for the assessment and stabilisation of major buildings. He will describe his experience, highlight some key structural issues, and comment on the implications of these events for communities in New Zealand and elsewhere.

**Venue:** Room C300, UBC Robson Square, 800 Robson Street, Vancouver.

**Date:** Wednesday, May 30, 2012

**Time:** 7.00 p.m., reception to follow.

**More information:** See flyer at end of newsletter.

**Registration:** [Online registration](#)

**This event is free to attend by all but pre-registration is required.**

### NCSEA Webinars

**June 21, 2012:** [ASCE 7-10 Significant Wind Load Provision Changes](#)

*Bill Coulbourn*

**July 24, 2012:** [Design Provisions for Lumber & Glulam Beams based on the 2012 NDS](#)

*David Pollock*

**July 31, 2012:** [Design of Bolted Connections using the 2012 NDS](#)

*David Pollock*

# Use of Professional Seal on Tender Documents

APEGBC is periodically contacted regarding the need to seal tender documents. As outlined below, APEGBC's position is that tender documents containing information involving the practice of engineering and geoscience must be sealed with signature and date by the APEGBC professional responsible. The basis for requiring that tender documents be sealed is that the documents:

- Are in a final form for the purposes intended;
- Are being relied on by others;
- Were prepared and delivered by the APEGBC professional in their professional capacity or under their direct supervision.

APEGBC professionals (professional engineers, professional geoscientists and licensees) are required to seal all engineering or geoscience documents that are prepared and delivered in their professional capacity or under their direct supervision. This requirement is set out in Section 20(9) of the *Engineers and Geoscientists Act* which states:

- (9) A member or licensee receiving a seal or stamp under this section must use it, with signature and date, to seal or stamp estimates, specifications, reports, documents, plans or things that have been prepared and delivered by the member or licensee in the member's or licensee's professional capacity or that have been prepared and delivered under the member's or licensee's direct supervision.

In order to bring clarity to which "engineering or geoscience documents" require sealing, APEGBC's position is that APEGBC professionals must seal all final documents where the content includes work involving the practice of professional engineering or geoscience. "Final" means a document that is in the final form for which it was intended and that will be relied on by others.

For example, engineering drawings submitted for the purpose of calling tenders on a project might not contain all the final details required for construction, but those drawings are considered final for tendering purposes and must be sealed, with a clear indication of any restrictions around their use (eg, not for construction).

The purpose of the proper and appropriate use of the seal is to authenticate engineering and geoscience documents prepared and delivered by APEGBC professionals in their professional capacity or under their direct supervision. The seal is considered a mark of reliance; it is not a mark of certification or warranty.

The application of the APEGBC professional's seal with the signature and date is the authentication process used to verify that an engineering or geoscience document has not been modified or tampered with and that it represents the original content for which the APEGBC professional signing the document has accepted professional responsibility.

In order to address these and other issues related to the use of the professional seal and authentication of engineering and geoscience documents, APEGBC has prepared draft *APEGBC Quality Management Guidelines – Use of the APEGBC Professional Seal* for Council approval. The new guideline would apply to all members and licensees whether documents are issued by a consultant to a client, or by APEGBC professionals who have prepared the documents for use internally by the organization that employs them. The guidelines specifically reinforce that tender documents containing professional engineering/geoscience work which are in final form and intended to be relied upon by others must be sealed by the appropriate APEGBC professional.

Members of APEGBC will be notified once the guidelines have been approved by Council. The document will then be made available and training sessions on the new guidelines will be offered.

**Peter Mitchell**  
**PEng**  
*Director,  
Professional  
Practice,  
Standards and  
Development*





# SEA NORTHWEST CONFERENCE

**Kah-Nee-Ta**  
**Warm Springs, OR**  
**July 26 - 28, 2012**

## REGISTRATION FORM

		No. Req'd.	Price Per Person	Amount
		<b>REGISTRATION</b>		
Name _____ (Please check as appropriate) <input type="checkbox"/> Registrant <input type="checkbox"/> Speaker <input type="checkbox"/> Vendor <input type="checkbox"/> Student		Registrant _____	\$475	\$_____
(Registrant lunches and dinners except Saturday picnic are included in price)				
Late fee if after July 1st _____		_____	\$50	\$_____
Guest _____		_____	\$40	\$_____
Student _____		_____	\$50	\$_____
Vendor, Speaker, Guest and Student registration does NOT include meals. Please add meals under the "Guest" category.				
Tee shirt sizes: (indicate number of each size for you and your guest) To accommodate tee-shirt size requests, registration forms need to be received by June 30 <sup>th</sup> .				
Guest _____				
Company _____				
Address _____ _____ _____		Ladies Fitted: ____L ____M ____S Standard: ____XXL ____XL ____L		
Telephone _____		<b>MEALS &amp; ACTIVITIES</b>		
SEA Chapter _____		<b>Thursday, July 26<sup>th</sup></b>		
Children (Y/N) _____		Lunch (All Welcome)		
How many? _____		Guest _____	\$20	\$_____
Ages _____		Children 3-12 * _____	\$10	\$_____
Special Dietary Requirements: _____		Salmon Bake Dinner & Native Entertainment (All Welcome)		
		Guest _____	\$50	\$_____
		Children 3-12 * _____	\$20	\$_____
		<b>Friday, July 27<sup>st</sup></b>		
		Lunch (Technical Session)		
		Guest (Adult only) _____	\$20	\$_____
		Dinner (All Welcome)		
		Guest _____	\$45	\$_____
		Children 3-12 * _____	\$10	\$_____
		<b>Saturday, July 22<sup>nd</sup></b>		
		Tennis Tournament _____	\$15	\$_____
		Golf Tournament _____	\$55	\$_____
		Golfers' Lunch Box _____	\$20	\$_____
		Picnic Dinner (All Welcome)		
		Registrant/Guests _____	\$22	\$_____
		Children 3-12 * _____	\$10	\$_____
		<b>TOTAL \$_____</b>		
* Ages 2 and under free				
** Includes 18 holes, cart & small bucket of balls				
Cancellations up to July 14 <sup>th</sup> subject to a \$25.00 handling charge.				
Cancellations after July 14 <sup>th</sup> will be charged \$275.				

Mail this form and check to:  
SEAO c/o Jane Ellsworth  
9220 SW Barbur Blvd #119, PMB 336  
Portland, OR 97219  
(503) 753-3075

Fax (503) 214-8142

We accept Visa/ MasterCard/AmExpress

**Make checks payable to SEAO**

Make lodging reservations directly with:

**Kah-Nee-Ta**

541-553-1112

**or online at [www.kahneeta.com](http://www.kahneeta.com)**



# Resort and Reservation Information



## Lodging Reservations

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Make lodging reservations directly with Kah-Ne-Tah. Room reservations should be made by calling (541) 553-1112, or on the website at [reservations@kahneeta.com](mailto:reservations@kahneeta.com). Reservations should be made as soon as possible to assure your desired room accommodation.

**Reservations must be made by June 25, 2012 to receive Conference Room Rates listed**

**below.** After that, rooms are on a first come basis. Check-in time is 4:30 p.m.; checkout is 11:30. There will be a charge for late departures. Be sure to mention you are with the Structural Engineers of Oregon to get group/conference rates.



## Lodge Accommodations

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### About Kah-Nee-Ta Resort

The Warm Springs Reservation was established by The Treaty of 1855 on a small reserve of land where our ancestors lived for thousands of years. In 1937 the Wasco, Paiute and Warm Springs Tribes organized as the Confederated Tribes of Warm Springs and became a sovereign, self-governing nation.

Kah-Nee-Ta Village was completed in 1964 and named for the Indian woman Xnitla, "Root Digger" who had owned the property.

Xnitla was a scout and spiritual leader who used

the natural hot springs and indigenous plants and roots for medicinal purposes and religious ceremonies. The Lodge and Convention Center opened in 1972.

6823 Hwy. 8, Post Office Box 1240, Warm Springs, OR, 97761, USA

Tel: 541-553-1112

## Conference Room Rates

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1 Bed:	\$125.00	One king or Queen sized bed.
2 Beds:	\$125.00	Two King or Queen sized beds.

Rooms feature television, DVD player, coffeepot, iron, ironing board and bath amenities  
Room rates do not include state and local tax.

# Schedule of Events

## Thursday July 26, 2012

8:00 a.m.- 1:00 p.m.  
1:00 p.m. - 6:00 p.m.  
Noon - 1:00 p.m.  
1:00 p.m. - 5:00 p.m.  
5:00 p.m. - 6:00 p.m.  
6:30 p.m. - 9:00 p.m.  
After dinner

Registration  
Vendor Exhibits  
Lunch (family)  
Technical Session I (with ½ hour break)  
Vendor Area Gathering  
Salmon Dinner with Native Dance  
Self Guided tours of Casino

## Friday July 27, 2012

8:00 a.m. - 4:00 p.m.  
8:00 a.m. - Noon  
Noon - 1:00 p.m.  
1:00 p.m. - 4:00 p.m.  
5:00 p.m. - 6:00 p.m.  
6:00 p.m. - 10:00 p.m.

Vendor Exhibits  
Technical Session II (with ½ hour break)  
Engineers Lunch  
Technical Session III (with ½ hour break)  
Pre-Dinner Reception  
Dinner

## Saturday July 22, 2006

6:00 a.m. - 7:00 a.m.  
8:00 a.m. - 1:00 p.m.  
2:00 p.m. - 5:00 p.m.

Water Event  
Golf and Tennis Tournaments  
Picnic/Barbecue Dinner (Family)

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## Technical Programs

Attendees can earn up to 9 PDH hours if all sessions are attended.

### Technical Session I

Thursday - July 26, 1:00 p.m. to 4:30 p.m.

- ◆ “Christchurch Earthquake – Lessons for the Pacific Northwest”  
Dr. Ken Elwood  
Sponsored by the British Columbia Chapter

“Seismic Safety, The Resilient WA State & OR State projects”  
Stacy Bartoletti, P.E., & Kent Yu, P.E.  
Sponsored by the Seattle Chapter

- ◆ “Principals of Geotechnical Analysis for Retaining Walls with an emphasis on lateral earth pressurers, Surcharge loads & pseudo-static seismic analysis”  
Dr. Stan Miller  
Sponsored by the South Central Chapter

### Technical Session II

Friday - July 27, 8:00 am to Noon

- ◆ “ASCE 31/41 updates & combination into one Standard”  
Peter Somer  
Sponsored by the Washington Chapter
- ◆ “Masonry Design Using TMS 402-11 Design Manual”

Raymond Miller, S.E., & Lane Jobe, S.E.  
Sponsored by the Oregon Chapter

- ◆ “Unified Design Approach to Buckling Restrained Braced Frames”  
Kimberley Robinson, S.E.  
Sponsored by Oregon Chapter

### Technical Session III

Friday - July 21, 1:00 p.m. to 4:30 p.m.

- ◆ “Seismic assessment of K thru College Schools in Idaho”  
Homeland Security  
Sponsored by Idaho Chapter
- ◆ “Wood Shearwall Design Methods including Perforated walls & shear transfer approach”  
Dr. J. Daniel Dolan, P.E.  
Sponsored by Spokane Chapter
- ◆ “State of the Industry: The A/E/E Toolbox for the Hardening Professional Liability Insurance Marketplace.”  
Ryan Schultz, Michael Olson  
Sponsored by Oregon Chapter

2012 SEAO NW Conference  
at Kah-Nee-ta Resort  
Warm Springs, Oregon

## ACTIVITIES

*for the whole family to enjoy!*



### Amenities at Kah-Nee-ta Lodge

**Pool**, open 8am to 10pm daily

**Fitness Center**, open daily from 8am -10pm, offers two treadmills, two stair steppers, a stationary bike, and two weight machines, as well as sauna and steam rooms for after your work-out.

**Jacuzzi**, located just outside the Fitness Center

### Fun and Sun at the Village

**Double Olympic-sized hot springs mineral pool & 2 water slides**, & children's wading pool. The bathhouse offers men's & women's locker and shower facilities. Rates are:

General Admission (11 years and older) \$10, Seniors (55+) \$6, Children (ages 3-10) \$6, Unlimited use of waterslides, \$4. Swimming lessons also available. Please note height requirement of 48" and water slides open one hour after pool opening and closes one hour prior to closure of the pool.

Other activities available at the Village include:

- o Spa, services includes massages, mineral soaks, facials, etc.  
Call 1-800-554-4SUN (4786) to book an appointment.
- o Miniature golf in the Village: 18 hole putt-putt course, equipment is included with your round of play: \$6 Adults, \$4 Children (ages 3-10), \$4 Seniors (55 years and older)
- o Basketball (\$5 ball rental)
- o Sand Volleyball court (\$5 ball rental)
- o Bike rental (single \$15 for half-day, tandem \$25 for half-day, \$20 deposit required on each bike with picture I.D.)
- o Playground with some play structures
- o Covered picnic pavilion, just steps from the Village Pool
- o Shaded grassy picnic area by the river
- o Teepee camping



## 18 Hole Championship Golf Course

The par 72 championship golf course located across the road from the lodge, measures 6,352 total yards from the blue tees; 5,828 total yards from the white tees and 5,195 yards from the red tees. Kah-Nee-Ta's warm, dry climate makes year round golf not only possible, but pleasant.



The course provides two distinctly different challenges. The front nine gives players a chance to score well right out of the chute. Fairways are ample and the green relatively flat. The back nine offers a high desert links style of play and features several doglegs and sloped greens.

Warm Weather Fees, Public rates: \$40 for 18 holes, \$30 cart fee; \$25 for 9 Holes, \$15 cart fee  
Please ask at the front desk or call the pro shop for guest rates and memberships.



**Simulated clay tennis courts** located next to the golf course (\$10 court fee, \$5 half-day racquet rental plus \$5 deposit) court reservations can be made at the Lodge front desk.

## Nearby Area



- o **Warm Springs Museum**, created by the Confederated Tribes of the Warm Springs Reservation to preserve their traditions & keep their legacy alive, 2189 Hwy 26, Warm Springs, approx. 1/2 hr drive
- o **Horseback riding** at Frank Stables at Kah-Nee-Ta, 1 hr ride \$35, 1/2 hr ride \$17.50, pony ride \$15  
Reservations recommended, call 541-553-0209 or 541-553-1112
- o **Kayaking**, through N8TV Adventures 541-553-1200, [www.n8tvadventures.com](http://www.n8tvadventures.com)
- o **Whitewater Rafting** on the Deschutes River, also through N8TV Adventures
- o **Fly Fishing**, River Bend Guide Service, offers both drift board and road accessed fly fishing trips on over 20 miles of private water on the Deschutes, call 541-553-1051 for info and reservations
- o **Hiking**, several trails can be found at the Lodge and the Village, offering breathtaking views of the snow capped Cascade Mountains, trail maps are available at the Lodge front desk, Village Gate, or the Pi-Ume Sha Recreation Building
- o **Indian Head Casino**, brand new casino with 500 slot machines and 8 blackjack tables, located on Hwy 26, located in Warm Springs, approx 8 miles from the lodge, 541-460-7777



Check the Kahneeta website at [www.kahneeta.com](http://www.kahneeta.com) for additional activities and most current information about hours and pricing.





Structural Engineers Association Oregon  
9220 SW Barbur Blvd #119, PMB #336  
Portland, OR 97219

# **SEA NORTHWEST CONFERENCE**

**Kah-Ne-Ta**

**Warm Springs, Oregon July 26 - 28, 2012**

Hosted by the  
Structural Engineers Association  
Of Oregon