



Newsletter

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Message from the President



Cameron Kemp, P.Eng.
SEABC President

“Lest We Forget” (in an engineering context)

As I write this Presidents message on November 10, 2014, the day before we recognize and honour all of the people, past and present, who have made sacrifices (in many cases the ultimate one) to protect us, I reflect on have just finished reading the Report of the Elliot Lake Commission of Inquiry Executive Summary by the Honourable Paul R. Bélanger, Commissioner.

It describes the events leading to the collapse of the Algo Centre Mall on June 23, 2012 in Elliot Lake, Ontario. It describes the circumstances around the design of the facility, the details of the rooftop parking deck which ultimately failed and collapsed killing two women, the long history of water leaks that went on for decades, the glossing over or denial of the seriousness of the malls condition and its potential (in fact inevitability) to create a structurally unsafe condition, (despite a number of reports expressing strong concerns) as well as the incompetence and dishonesty of a large number of design professionals, building owners and government officials.

The report reads like a made-for-TV movie in which the characters all of the actors in the movie are exaggerated in their dishonest, unsavoury and self-serving nature. The really disturbing part of this report is that all of the people involved in this avoidable disaster weren't actors in a made-for-TV movie but were real people behaving in this manner.

One particularly disreputable actor in this real-life movie was a (suspended) structural engineer who was called on multiple times to inspect and report on the condition of the mall.

Some excerpts from the Inquiry Report state the following:

“Mr. Wood’s reports require specific mention. In my view, they stand out in sharp contrast to the reports that followed other professional inspections. Those reports may have had flaws, to greater or lesser degrees, but the quality of Mr. Wood’s reports, along with his conduct, was markedly inferior. His work provided unfounded assurances that gave the mall owner a documented excuse to continue doing nothing. His reviews were similar to those of the mechanic who, while inspecting a car with a cracked engine block, pronounces the vehicle sound because of its good paint job.”

“For his 2009 report, Mr. Wood unjustifiably narrowed his mandate, averred ignorance of long-standing leakage, ignored previous documentary material, did not compare the “as-built” condition with the original plans, conducted the most rudimentary and superficial of inspections, and produced skimpy notes. He asked no one how long the leaks had been occurring, and did not investigate further when he observed rust on the steel beams. He made little or no inspection of connections, attempted no measurements, and made no mention of areas he had not inspected because they were covered by fireproofing that obstructed his casual viewing of them. His follow-up 2012 inspection was qualitatively similar. He did not recommend a more comprehensive inspection, nor did he imbue his recommendations with any sense of urgency.”

Mr. Wood’s final report was delivered to the client on May 3, 2012. The mall collapsed on June 23, 2012.

Unfortunately Mr. Wood did not conduct himself with the level of professionalism that we are obliged to meet and, seemingly, forgot where his primary responsibility lay. As a learned and self-regulating profession we are expected to conduct ourselves in accordance with a well-defined standard of care and code of ethics. Not behaving in this fashion shakes the public’s faith in us and puts at risk the privilege of self-regulation.

We must also remind ourselves that, although we may be working for someone that is paying our bills, our primary responsibility is to the public at large. The public expects and deserves us to do our jobs

professionally and with a level of care that protects them.

Unfortunately in the case of the Algo Centre Mall this did not happen. Despite repeated concerns and warnings being raised about the condition of this building, nothing was done and the corrosion of the

structural elements of the parking deck was allowed to progress to the point of collapse resulting in the loss of two lives.

“Lest we forget” our professional obligations and responsibilities.

Annual General Meeting 2015



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

The Association’s Annual General Meeting and dinner will take place on Wednesday March 4th 2015 at 6 PM. As in previous years, the event will be held at the Sutton Place Hotel, 845 Burrard Street, Vancouver, BC. The AGM will be followed by a keynote address by prominent structural engineer Chris Wise, co-founder of Expedition Engineering, and Professor of Civil Engineering Design at University College London.

Chris is a Fellow of the Royal Academy of Engineering and has been responsible for many award-winning structures, including the London Olympic Velodrome, the Infinity Footbridge, and the Barcelona Bullring.

Chris’s talk will be entitled, **“They took a dead heap of stones.....”** The intriguing title is a quote about Gothic cathedrals by Jacob Bronowski, in *The Ascent of Man*, about:-

“Man’s superb synthesis arising out of an analysis of nature.” Chris explains that the title is “a way of cueing up something about the way an engineer designs, the motivations and emotions involved (from anger through despair, heading off to joy we

hope!) and the strong feelings aroused by an engineer’s interaction with the natural world and the humans in it.”

Chris will provide us with lots of personal examples to stimulate our thoughts.

Block out the date in your diaries and watch for the event flyer in the New Year.



Chris Wis

Nelson Creek Bridge Rehabilitation: A Unique Solution for a Unique Structure



Grant Fraser, M.Eng, P.Eng.

The 214 m-long Nelson Creek Bridge carries the Trans-Canada Highway over Nelson Creek, two kilometres east of Horseshoe Bay. Figure 1 shows the general configuration of the bridge. The multi-span prestressed concrete girder bridge was constructed circa 1970, and contains half-joint bearing seats among other suspect, deterioration-sensitive details. Associated Engineering was retained by the Ministry of Transportation and Infrastructure (the Ministry) to carry out the design of rehabilitation works for this



important bridge.

Figure 1: Nelson Creek Bridge

A major focus of the rehabilitation project was to provide a seismic safety retrofit. Nelson Creek Bridge was constructed prior to modern 'capacity design' principles, and as such, contained deficient load paths and detailing for adequate seismic response. The bridge is comprised of simply-supported prestressed concrete drop-in spans, which are supported by cast-in-place multi-cell box 'table top' piers, through concrete half-joints, as shown in Figure 2. Half-joints are a deterioration-sensitive detail, and the capacity of the existing configuration

was deficient for current highway loading. Additionally, the longitudinal and transverse restraint provided at the girder bearing locations was insufficient to prevent loss-of-span in a design earthquake.



Figure 2 Pier Configuration

Each of the three intermediate piers is supported by four tall, slender columns, each of which are supported on individual spread footings upon bedrock. The east and west columns each have a height of approximately 30 m, and have reinforced concrete grade beams connecting the four columns just above the footings, thus providing frame action. The centre pier has a similar configuration to the east and west piers, although it is nearly twice as tall with a height of approximately 57 m. It also has deep link beams connecting the columns at mid-height, acting to provide frame action and increased column stability under the original design loading. Both the columns and connecting beams contain poor detailing with deficient confinement, rebar curtailment and lap-splices all within expected plastic hinge zones.

The west abutment comprises a short, highly-skewed cast-in-place reinforced concrete approach span, supported at the east approach by a monolithic grade beam and at the west by a small cast-in-place pier on bedrock. This pier also contains poor seismic details, and had experienced significant damage from chloride ingress. The east abutment comprises a bank-seat abutment with spread footing, sitting on approximately 12 m of fill above bedrock.

We considered several strategies to strengthen and rehabilitate the pier half-joints and improve the seismic performance of the bridge. After extensive seismic performance assessment, we elected to provide movement restraint at the abutments, thus reducing the displacement demands at the slender piers, and create a continuous deck diaphragm to tie the system together. Other alternatives, such as strengthening the columns, were also evaluated, though we determined that the installation of concrete or steel jackets would be uneconomical, given the access constraints. We also determined that the performance benefits of column jackets relative to abutment restraint would not provide good value to the Ministry.

To provide restraint at the west abutment, we converted the approach span and pier into a voided abutment by adding longitudinal and transverse shear walls, which were anchored into the exposed bedrock. This conversion included bearing replacement and concrete shear keys to ensure proper engagement of the superstructure. At the east abutment, steel piles were added alongside the existing footing to provide supplementary restraint and prevent transverse sliding.

With restraint provided at the abutments, the design pier displacement demands were significantly reduced, and the columns could thus remain nominally elastic. With the exception of the west pier, costly column retrofit works were avoided. Despite the demands being reduced, framing forces in the grade beams still exceeded their capacity. To increase the capacity, we retrofitted these beams using shear-connected concrete jackets, with longitudinal reinforcement dowelled into the columns.



Figure 3: Typical Grade Beam Retrofit

Figure 3 shows several partially completed grade beams. Given the skew of the west pier columns relative to the superstructure, we found biaxial effects to be significantly greater than the other two piers. Accordingly, dowelled surface anchors, consisting of high-strength rod and plate washers, were added in zones of rebar curtailment and deficient confinement, to delay the onset of cover concrete spalling. These surface anchors are shown in Figure 4.



Figure 4: West Pier Column Surface Anchors

In order to create a continuous deck diaphragm, we designed link slabs to replace the existing compression seal joints at each of the piers. Link slabs create a structurally continuous deck diaphragm for the length of the structure, thus altering the articulation for thermal response. The continuous deck surface requires the abutment expansion joints to accommodate the thermal strains. While both abutment joints have sufficient displacement capacity, the east abutment bearings

consisted of thin elastomeric pads, which could not accommodate the increased shear strains. As a result, we replaced the east abutment bearings with much thicker laminated elastomeric bearings.

To strengthen the pier half-joints, we drilled high-strength bars through the corbels, and cast them into a new reinforced concrete diaphragm between the existing girder end diaphragm and pier table wall, as shown in Figure 5. These high strength bars tie into the pier table deck reinforcement, providing a more direct load path than the corbels were previously relying upon.



Figure 5: Half-joint Diaphragm Rebar Being Placed

In designing the half-joint strengthening, we recognized the opportunity to make the bridge fully continuous, thus reducing the structural demands and providing increased redundancy to the superstructure. To achieve continuity, we needed to retrofit the structure to handle moment reversals near the points of contra-flexure, which occurred near the half-joint bearings. We accomplished this by modifying the link slabs with additional longitudinal reinforcement for negative bending, and by adding offset flanges to the drop-in span girders, which are dowelled into the face of the half-joint corbel, as shown in Figure 6. These slabs are shear-connected to the suspended-span girder bottom flanges using dowelled rebar. This connection required careful detailing and execution, as the girder end zones are heavily reinforced and contain prestressing strands.



Figure 6: Corbel Dowel Holes for Offset Flange Rebar

In addition to the structural strengthening and seismic rehabilitation, works included a fibre-reinforced deck overlay, abutment deck joint replacement, deck drainage improvements, asphalt repaving, general concrete patch repair and epoxy injection.

The work recently completed on the Nelson Creek Bridge not only provides the Ministry with better performance in the event of a design earthquake, but adds value in service to this major asset through increased structural strength and redundancy. The improved structural details also serve to enhance durability and reduce ongoing maintenance. The renewal work will therefore provide this prominent bridge with a new lease on life supporting a vital traffic artery through West Vancouver.

Committee Reports

Education Committee



Tejas Goshalia, P.Eng., S.E.
Director SEABC

One of our goals at the Education Committee is to keep the fire of innovation alive within us through ongoing seminars and discussions on current technical issues that shape our practice. We beseech professionals and academicians to share their experiences and knowledge on note-worthy topics.

During the fall of 2014, our volunteer members of the Education Committee worked diligently to coordinate and bring to you a number of events, including the following:

- An evening seminar on the Designing of the Flying Theatre for China. This was presented by David Siu-Kau Lo, M.A. Sc., P.Eng, Vice President at Dynamic Structures on September 17th. During the talk, David shared with us some of his notable experiences with codes and regulations in China and the unique construction related challenges posed by the Chinese market.
- The Annual 2014 Wine and Cheese was hosted by UBC on October 15th. This traditional event provides an opportunity to practicing engineers to meet and mix with UBC students and staff. UBC students participated in this event enthusiastically with 19 unique presentations - each on one of their recent research topics and how it holds a promise to shape our industry. These were organized as a 3 minute blitz presentation competition whose winner was presented a free ticket to the upcoming 2015 SEABC AGM.

- The Education Committee also participated in coordinating the APEGBC's Structural Stream held on October 24. Four topics with a common theme on "Global Innovation Begins at Home," were presented.

Grandview Heights Aquatic Centre, presented by Paul Fast, P.Eng., Struct.Eng.

Post-earthquake Jacking and Re-alignment of the "El Parque-Cuerpo 3" Building, Santiago, Chile, presented by John Sherstobitoff, P.Eng.

Structural Design of Lynden Pindling International Airport in Nassau, Bahamas, jointly presented by Tejas Goshalia, P.Eng.PE, SE and Andrew Metten, P.Eng., Struct.Eng., FEC

Models for Process Change, Sustainability Frameworks and Our Role, presented by Mark Porter, P.Eng., Struct.Eng.

Archives of the AGM are available on the APEGBC website.

- On November 7th SEABC organized a half day seminar on the Post-Earthquake Assessments. More details on this topic are summarized in another article within this newsletter.

Mark your calendar for the evening of December 4th when we have scheduled a seminar on the Seismic Risk Management of Non Structural Building Components- An Overview of the new CSA S832-14. Professor Ghyslaine McClure; Eng., Ph.D. & Chair of CSA S832 Technical Committee will be presenting an overview of the latest 2014 standard and display results of its application to Montreal public facilities. The talk will also clarify and discuss: The scope of CSA S832-14 beyond NBCC 4.1.8.18; Why engineers should look into CSA S832 and not just depend on NBCC 4.1.8.18; and the future role of the CSA S832 standard.

In addition, the SEABC Education Committee provided continued support to the recent CSRN seminar event held on September 19th on the Seismic Evaluation and Retrofit of Buildings. Note that a repeat of this seminar is scheduled for December 5.

As always, for members from both the Vancouver Island Branch and the Okanagan Branch and for others who were unable to attend the above events held in the Lower Mainland, we urge you to visit the SEABC website for past event's archives. This valuable resource is provided for your benefit - do use it.

Also ... if there are topics and/or speakers that you would like our Committee to explore and bring to the podium, please feel free to contact our group of dedicated volunteers.

Technical Committee



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

The SEABC Glass Technical Committee recently received a question regarding the design of glass guardrails. The question and discussion are presented for the information of all members.

The project involves a free standing glass guard and a steel frame installed a few inches away from the guard in a Part 3 Building. There is no contact between the two elements and the assumption is that the steel frame is designed and anchored to the slab to act as a guard. The design of the steel frame and anchorage is not part of the discussion. The question is:

1. Considering that the steel frame can carry the guard loads and it is in front of the glass, is the glass still considered to act as a guard?
2. If the glass is still considered as a guard, does it have to be designed to carry all guard loads specified by the Code, or just the 1.0 kN horizontal concentrated load? The uniformly distributed 0.75 kN/m horizontal load and the 1.5 kN/m vertical load would be applied to the steel frame. Is a railing cap required?
3. If the glass is not considered to act as a guard, would it be safe to design it to carry

only the 0.5 kN point load applicable to infill panels in guards? Is a railing cap required?

Response:

1. To satisfy the current Building Code requirements of a "guard", it must be able to carry the prescribed guard loads at the defined height of 1070 above the walking surface. Therefore the steel frame in this case, does not meet all the requirements of a "guard."
2. The resisting element at guard height must be designed for the full guard loads as described in Article 4.15.14. Loads on Guards.
3. Since the "guard" in the present case is a free-standing glass assembly, it must also satisfy the requirements of the Code-referenced design standard, CAN/SGSB-12.20-M89, which states in Sentence 7.1.b: "Any free standing glass guard shall be capped by a rail which is continuous over two or more lights. The glass guard shall resist the factored design load after failure of alternate lights." The Appendices go on to explain that the continuous top cap is required to provide a redundant load path due to the brittle nature of glass breakage.
4. Since 12.20 was published in 1989, there have been many advances in laminated glass technology and fabrication, and the Committee in general agreement, feels that the top cap described in 7.1.b may be replaced by a properly designed laminated glass assembly. The requirement for redundancy may be restated as *"Any glass guard shall be capped by a rail which is continuous over two or more lights, unless the glass assembly is capable of resisting the factored design load after breakage of any one glass layer."* It should be noted that any design that deviates from the Division B standards must go through the "Alternative Solutions" approval process.
5. Though not specifically asked, it has been implied by the discussion, that most members consider that the "infill" portion of the guard must also have a redundant load path to prevent occupants from breaking

through a glass panel. This is an issue that need to be more fully addressed by the codes and perhaps the SEABC/APEGBC Guard Task Group.

Young Members Group



Emma Houiellbecq, EIT

On October 20th 2014, a group of young professionals with SEABC YMG visited the Wesbrook Community Centre for a tour of the building in its final stages of construction. This new community centre is located on the UBC campus on Ross Road.

The tour was led by Omer Mohammed of Equilibrium Consulting and Darren Southey of Scott Construction Group. The attendees were able to explore the two-storey building and examine the innovative timber connections, CLT panels, and composite steel deck. The building is projected to achieve LEED Gold upon completion.

The tour was followed by a social gathering at Mahoney and Sons on the UBC campus.

Thank you to Omer Mohammed and Darren Southey for the interesting tour and to all those who could attend.



Omer Mohammed explaining the design of the CLT walls in the gymnasium.



The 4-meter cantilevered dance studio featuring 7ply CLT floor panels to achieve minimal vibration.

Communications Committee



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

I hope you enjoy reading SEABC's exciting and highly-regarded newsletter – many thanks to those who forwarded articles describing their recent work. This edition features a report written by a young structural engineer about the challenges of seismically upgrading a North Shore landmark – the Nelson Creek Bridge. If you enjoyed reading this article, we invite you to take the time to tell us about your current project and the challenges you overcame.

By informing the members about our engineering work, we maintain interest in our popular magazine and help raise the profile of our profession. There is always much to learn from the information that the structural engineer responsible can provide. It is also a great way to raise your profile in the structural community, so why not give it a go? We look forward to hearing from you.

Kindly forward information for publication to:-

newsletter@seabc.ca

On the Web



Stephen Pienaar, P.Eng.

Webmaster

New Website

Work on a brand new SEABC website has reached an advanced stage; we hope to launch the new website in December or January. With the new website we hope to improve on the existing website on many fronts:

- Give the website a fresh new look.
- Make the website adjust to screen size, e.g. PC vs. mobile phone, by adjusting to screen size (responsive design).
- Use a content management system (CMS) that enables multiple authors to contribute to the website (instead of only the webmaster).
- Improve access to archived seminar recordings and active courses (learning management).

How you can help:

- Send us suggestions how we can improve our web service. It's never too late to share great ideas.
- Donate photographs that we can use to beautify the new website. We will give full credit to all contributors.

Please contact webmaster@seabc.ca with suggestions or questions.

Current Events

Current activity on the SEABC website:

- CSE Program:
Registration for the January 2015 Term of the **Certificate in Structural Engineering** is now open.
Early-bird deadline: December 19
Lectures start: January 13
www.seabc.ca/cse-current

- Recent seminar recordings:
Pushover Analysis (September 2013 evening seminar).
www.seabc.ca/videos
- Be first the first to know:
Join our **Twitter feed**: announcements for SEABC events and other interesting structural engineering snippets.
www.twitter.com/seabc

Membership Renewal

It is the time again for all SEABC members to renew their membership. Please renew your membership before December 31 to continue enjoying the benefits of membership: free monthly seminars, discounts on full-day seminars and courses, access to the SEABC's web archive of seminars, and more. SEABC seminars and courses are a valuable source for compliance with the APEGBC professional development guidelines.

Membership Fees

Annual membership fees remain unchanged from 2014. The Associations' finances are very healthy, thanks largely due to successful events hosted by the Education Committee.

The membership fees for 2015 are as follows:

- Individual Members: \$75 plus GST
Structural and civil engineers who hold P.Eng. or E.I.T. status.
- Associate Members: \$75 plus GST
Technologists and non-structural engineers.
- Affiliate Members: \$75 plus GST
Individual members of organizations that share the interests of SEABC.
- Student Members: Free
Engineering students enrolled full-time on January 1, 2015.

Renewal

Kindly renew your membership online (credit card payment). To renew multiple memberships or pay by cheque, please go to:

www.seabc.ca/renewal

IStructE News



Bill Alcock, P.Eng. Struct.Eng.
MStructE.

Director SEABC

Highlights of the IStructE Presidential Visit to Vancouver, September, 2014

In mid-September, the SEABC had the pleasure of hosting President Nick Russell and CEO Martin Powell, and their wives, Rita and Rosemary respectively. We were blessed with an extension to the best summer in recent memory for Vancouverites. For their entire visit, the sun shone – an unusual occurrence in Vancouver. As a result, Nick and Martin were able to tour the sites of three very different timber structures designed by Fast&Epp, the award-winning VanDusen Gardens Visitor Centre, Richmond Oval and South Surrey Aquatic Centre.

Along with Rita and Rosemary, David Harvey, Cecilia Bernabe, my wife Victoria and myself, we spent a glorious day on SEABC President Cam Kemp and wife Kim's, magnificent 65 ft. yacht. The next day we toured the upper peak at Whistler Mountain and took the Peak 2 Peak Gondola from Whistler to Blackcomb Mountain.

Getting down to business on the following Monday and Tuesday:

- Nick and Martin visited APEGBC and together with APEGBC President Mike Bapty, Nick signed an MOU for the continued co-operation between APEGBC and IStructE.
- Nick also signed an updated MOU with SEABC President Cam Kemp for the continuation of SEABC co-sponsorship of the IStructE Regional Group.
- Nick delivered a lecture to 4th year UBC Civil Engineering students.
- Nick and Martin attended and SEABC Directors monthly meeting followed by a dinner on the terrace of the Royal Vancouver Yacht Club hosted by SEABC. To everyone's

amusement, Martin was the unexpected recipient of a full glass of beer being poured over his back as a young waiter lost control of his tray! I am not so sure that Martin was amused!

Nick, Rita, Martin and Rosemary also attended a reception at the Coast Coal Harbour Hotel for local IStructE members. Many thanks to David Harvey for pulling this one off when the Terminal City Club cancelled the venue on the day of the event because of a flooded kitchen!



Left to right: Bill Alcock, David Harvey (former IStructE President), Cam Kemp (SEABC President), Nick Russell (IStructE President) and Martin Powell (IStructE CEO) on Cam's magnificent boat.

IStructE Meetings in London, November 14, 2014

As your representative on the IStructE Council, I am pleased to report on the recent meetings and the Structural Awards night held on Friday November 14 in London, England.

International Interest Group

CPD

IStructE Director of Membership and Education Services, Darren Byrne, led a discussion on the mandatory CPD requirements in IStructE. Members are required to report their CPD on an annual basis; 20% on members are audited each year on their most recent 3 years of reporting, or, in other words, one can expect to be audited every 5 years.

Performance Based Seismic Design of Tall Buildings

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John Viise (USA) gave a very informative presentation on performance based seismic design of tall buildings (PBSD) in the USA and guidelines being prepared by the Council on Tall Buildings and Urban Habitat (CTBUH). The guidelines will split PBSD into 2 phases:

Phase 1: Linear Elastic Design using an appropriate low level earthquake time history record.

Phase 2: A rare event high-level-time-history record in which a detailed review of the performance of all structural components is examined.

Using this approach, John recommended that lower damping values be used because some damping is inherent in the material properties used for each component (such as hysteresis loops). John also recommended that all PBSD designers read the Los Angeles Tall Building Design Council guideline (approximately 50 pages). The CTBUH guideline is expected to be published in October 2015. CTBUH originated in Chicago and has spread worldwide, including China.

IStructE Council Meeting

President Nick Russell:

Nick Russell thanked his hosts in Toronto and Vancouver for a very enjoyable trip to both cities. Nick was very complimentary about SEABC and the Struct.Eng. program in BC. He also stated that IStructE has been collaborating with PEO in following up on the Elliott Lake mall collapse.

CEO Martin Powell:

Martin confirmed that the Institution will be moving into the newly renovated Bastwick Street offices before Christmas and expects to be operational by the New Year. This will include enhanced video conferencing capabilities which should much improve connections with remote Regional Groups such as SEABC. Acquisition of the new building will change the Institution from being cash rich, to asset rich and cash depleted. The 2015 budget is planned to have a break-even target. The Board is reviewing the timing and length of Council meetings to improve the effectiveness of the time spent by the many regional group representatives, particularly those that travel a long way to get to London.

Singapore Conference (Sept 3 and 4, 2015):

All members of IStructE are strongly encouraged to attend the upcoming Singapore Conference

Video:

A short YouTube video on the role of structural engineers, prepared by IStructE staff, was presented to Council and received very positive support.

Exams:

There was considerable discussion concerning the need for interviews to take place twice per year to match the dates for the IStructE Exams but no resolution was reached on this issue.

The Future of Regional Groups:

A five member panel (with questions and comments from the audience) debated the future of Regional Groups. There was general consensus that regional groups are the life-blood of the institution. All volunteers are recruited through the regional groups and it is vital to attract them or they will go elsewhere. In many regions, the organization is relying on young members, and senior members need to encourage active participation by younger members. Regional Groups are now seen as providing networking opportunities as opposed to dissemination of technical knowledge. It was widely acknowledged that members have many options to obtain technical information from elsewhere on the Internet.

2014 Structural Awards

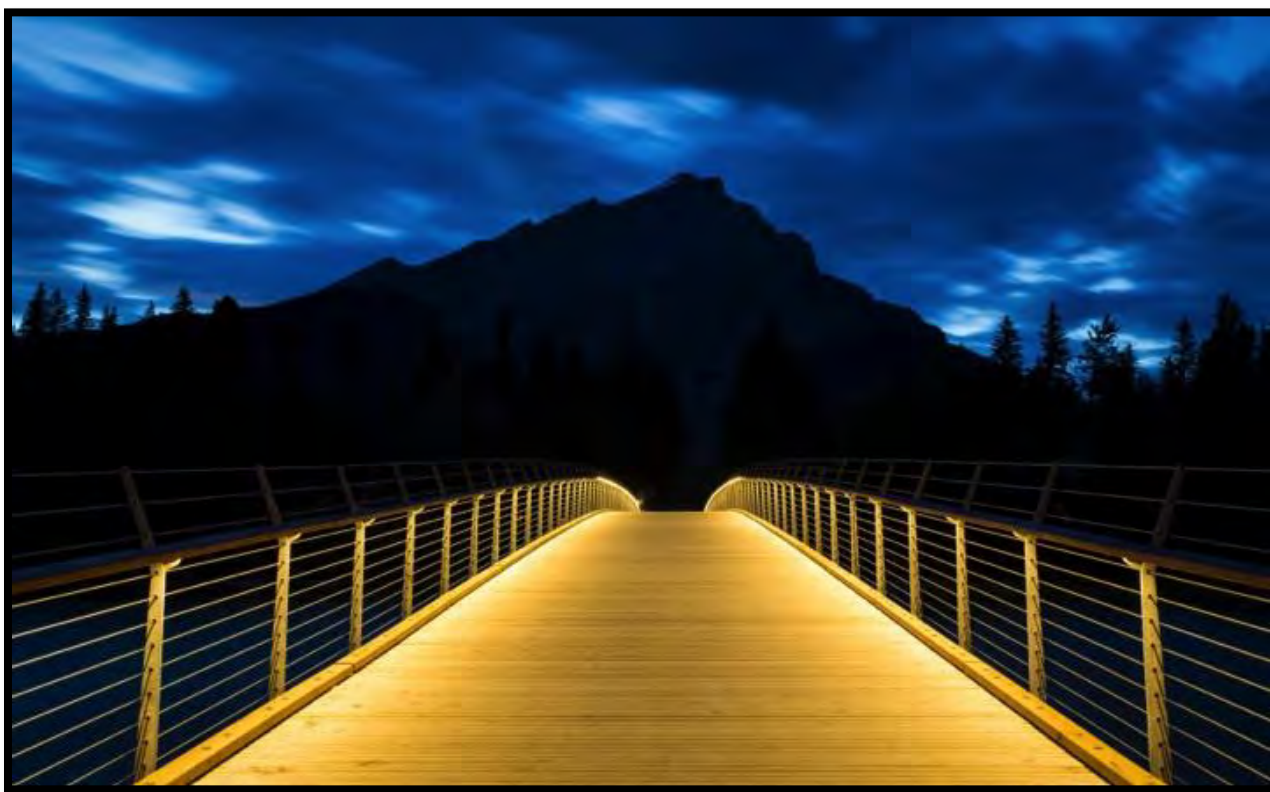
The annual Structural Awards ceremony was held at "The Brewery", a beautifully restored convention facility in what used to be a Whitbread brewery. BC was well represented with 2 entries from Fast + Epp.

The competition was fierce with many excellent entries. Fast&Epp received the award for Pedestrian Bridges for their 'Footbridge over the Bow' in Banff, Alberta. Gerry Epp was on hand to receive the award. Congratulations to Gerry and the Fast&Epp team!

Full details of the Awards can be obtained by contacting the author or going to the IStructE website: www.istructe.org

Photographs showing Fast&Epp's 'Footbridge over the Bow'



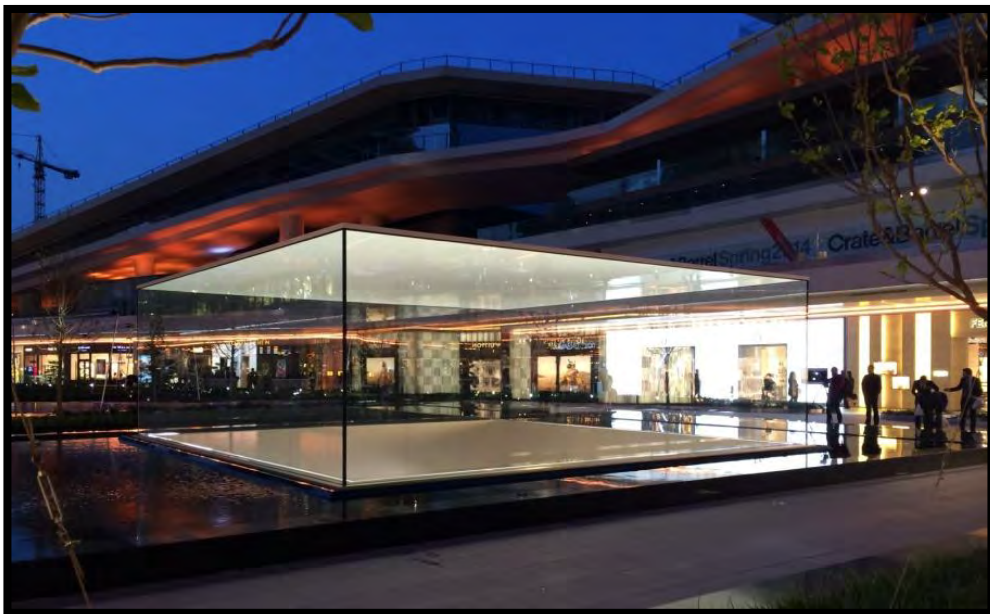


Supreme Winner of the Structural Awards

The Glass Lantern, a feature at the new Apple store in Istanbul, Turkey, has been presented with The Supreme Award for Structural Engineering Excellence, as well as the Award for Commercial or Retail Structures. The Lantern, a stunning and unique glass structure which floods the store below with light, is made up of only five elements: four 10m x 3m laminated glass walls, supporting a roof made of Carbon Fibre Reinforced Plastic. Engineered by Eckersley O'Callaghan, the "Glass Lantern" was designed to achieve the ultimate transparent

structure, free of the visible fixings and joints which could mar its integrity and transparency. The effect is a reductionist sculptural presence opening onto the store below.

The Awards judges said: "This project is a supreme example of collaboration between engineer and fabricator, taking structural glass technology into a new dimension. Only engineering excellence and attention to detail can produce a result of such simplicity and purity of expression."



The Institution of Structural Engineers Hosted a President's Reception for Local Members and Guests.



Bob Trinder and Li Ma share an amusing moment.



Craig Schaper with Carine and George De Ridder.



Dejan Erdevicki and daughter Nina.



Duane and Michelle Palibroda with Joel Hampson.



Guests Cam and Kim Kemp enjoying the occasion.



IStructE Reception hosts CEO Martin Powell and his wife Rosemary, enjoy the entertainment.



John Peddle with Clint Low.



Rebecca and Tomas Leung with David Harvey.



Peter Thatcher and Dorian Tung share a thought.



Stephanie and Charles King.



Head table – IStructE President Nick Russell, Rita Russell, Victoria and Bill Alcock and Iain Ward.

Announcement!

Bill Alcock has been elected by IStructE's Council to serve on the Institution's Executive Board for a two-year term. Bill has served diligently as British Columbia's representative on IStructE's Council for the past three years and continues in that role. Heartiest congratulations, Bill – we are confident that you will contribute strongly to the Institution's affairs. [Editor]

Recent Seminars and Events

International Steel Day Tour

By UBC CSCE

To celebrate International Steel Day, the UBC CSCE Student Chapter toured the George Third & Son steel fabrication facility in Burnaby, BC.



The Student Chapter standing outside George Third & Son

Before the tour, the chapter was treated to a brief lecture by Rob Third, Director of George Third & Son, and he focused on the problem-solving process that teams face on construction projects. Rob also spoke about the long history of the company, and what it has taken to grow a small operation into one of the Lower Mainland's premier steel manufacturing facilities.

The tour itself focused on the various processes that GTS completes on a regular basis, including blacksmithing, rolling, welding and fine-fabrication.



Rob shows the challenges within the project

George Third & Son prides itself on accepting and successfully completing challenging steel projects. As Rob puts it, the challenging and complex jobs that scare most steel fabrication companies away are the jobs that George Third & Son pursue. One such challenging job that George Third & Son is currently working on is the Telus Gardens Office Tower. Rob was able to show us pieces of this project that are currently in the facility and highlight the project's unique challenges.

The UBC CSCE Student Chapter would like to thank Rob and the team at George Third & Son for taking the time to host our members on International Steel Day.



Inside the steel fabrication shop

Mark Your Calendar

Upcoming SEABC Seminars/Courses

Evening Course: C4-2 Advanced Concepts in Earthquake Engineering and Seismicity

Date: Tuesdays, January 13-April 7th 2015

Co-ordinator: Carlos E. Ventura, Ph.D, P.Eng.

Venue: Alma Van Dusen Room, Vancouver Public Library

Time: 4.00pm-6.00pm

Registration: www.seabc.ca/cse_current_term.php

Evening Course: C8 Geotechnical Aspects of Foundation Design

Date: Thursdays, January 15th-April 9th 2015

Co-ordinator: Dr. Jorge Prieto, P.Eng.

Venue: Alma Van Dusen Room, Vancouver Public Library

Time: 4.00pm-6.00pm

Registration: www.seabc.ca/cse_current_term.php

Evening Course: C12 Practical Design of Reinforced Concrete (I)

Date: Thursdays, January 15th-April 9th 2015

Co-ordinator: John Pao, M.Eng, P.Eng

Venue: Alma Van Dusen Room, Vancouver Public Library

Time: 6.30pm-8.30pm

Registration: www.seabc.ca/cse_current_term.php

Evening Course: E15 Applications of Dynamic Analysis for Seismic Design of Structures

Date: Tuesdays, January 13th-March 24th 2015

Co-ordinators: Carlos E Ventura, Ph.D. , P.Eng. and Mahmoud Rezai, Ph.D., P.Eng., Struct.Eng.

Venue: Alma Van Dusen Room, Vancouver Public Library

Time: 6.15pm-8.45pm

Application forms attached at the end of newsletter

Meet Your Okanagan Branch and Social

Date: Wednesday 26th November 2014

Time: 05.00-08.00pm

Venue: Freddy's Brew Pub, 124-948 McCurdy Road, Kelowna

Recent Updates to NBCC and CSA Structural Design Standards

Date: Friday 16th January 2014

Time: Sign-in 08.00am, seminar 08.30am-05.30pm

Venue: Coast Harbour Hotel, 1180 W.Hastings Street, Vancouver.

Annual General Meeting and Dinner

Date: Wednesday 4th March 2015

Time: 06.00pm-09.00pm

Venue: Sutton Place Hotel, 845 Burrard Street, Vancouver.

Upcoming Industry Events

11th Canadian Conference on Earthquake Engineering: Facing Seismic Risk

Date: July 21st-24th 2015

Venue: Victoria Conference Centre, Victoria, BC.

More information:

www.canadianearthquakeconference.ca

Registration: Opens December 15th 2014

Canadian National Research Network: Seismic Evaluation and Retrofit of Buildings

Date: Friday 5th December 2014

Overview: One-day seminar presented by CSRN. This is a repeat of the popular seminar held on September 19th.

Venue: Sheraton Wall Centre, Vancouver, BC

Time: 9.00-5.00pm

Registration: Coming soon.

EERI Distinguished Lecture: Challenges in Estimating Real-time Earthquake & Impact

Date: 22nd January 2015

Venue: Town Hall Meeting Room, 1st Floor, City Hall,
453 West 12th Ave.

Time: 6.00pm-8.00pm

More information: www.eeri.org/-eeri

Wood Design Conferences

2014 Wood Design Luncheon Conference

Dates: November 25th 2014, Delta Grand Okanagan
Resort & Conference Centre. Kelowna

November 27th 2014, Delta Ocean Pointe, Victoria

November 28th 2014, Vancouver Island Conference
Centre, Nanaimo

Time: 09.00am

More information: [www.ams.cwc.ca/wood design](http://www.ams.cwc.ca/wood%20design)

2014 Introduction to Timber Engineering Workshop

Dates: December 9th 2014, Delta Ocean Point,
Victoria.

December 10th 2014, Delta Vancouver Airport,
Vancouver

December 12th 2014, Fairfield Inn & Suites by
Marriott, Kelowna

Time: 08.00am

More information: www.wood-works.ca/bc/

2015 Timber Connections Design 2-Day Workshop

Dates: February 19th and 20th 2015 (2 Day workshop)

Venue: Fairfield Inn & Suites by Marriott, Kelowna

Time: 07.00-08.00am registration & continental
breakfast, 08.00-05.00pm workshop

More information: www.ams.cwc.ca/

Have Your Say in the Next Concrete Design Handbook

The Cement Association of Canada (CAC) is conducting research for the development of the next edition of the Concrete Design Handbook (CDH) through means of an online survey. They'd love to hear from CDH users to better appreciate their needs. This will help make any necessary improvements or changes to the next edition of the Concrete Design Handbook.

The survey should take less than 5 minutes and responses are completely anonymous. The survey will run until 28th November 2014. The online survey can be accessed

at: www.fluidsurveys.com/s/cdh/english/ through the CAC website at: www.cement.ca



Final Words

Editorial Information

The SEABC Newsletter is published by the Structural Engineers Association of British Columbia. The current and past issues are available on the SEABC website at www.seabc.ca.

The Newsletter is edited and managed by the SEABC Communications Committee.

- Committee Chair: David Harvey
- Newsletter Editor: Catherine Porter
- Webmaster: Stephen Pienaar

Submissions are welcomed and all SEABC members are encouraged to actively contribute to the Newsletter. Submissions, letters to the Editor, questions and comments can be sent to: newsletter@seabc.ca.

The Committee reserves the right to include or exclude submitted material and in some cases edit submitted material to suit overall space requirements. If content is not to be edited, please advise so at submission time.

SEABC Board of Directors

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Structural Practice:	Leonard Pianalto
Technical:	Renato Camporese
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Vancouver Island:	Martin Turek
Okanagan:	Meagan Harvey

Advertising

Pre-paid rates per edition:

- \$270 (quarter page), \$360 (half page) or \$450 (full page) plus GST. Rates include a banner advert on the Events page of the SEABC website.
- 50-word "Available for Employment" ads are free.

Please address advertising enquiries to: newsletter@seabc.ca.

Please support our advertisers!



CERTIFICATE IN STRUCTURAL ENGINEERING PROGRAM



January 2015 Application (Webcast)

PERSONAL INFORMATION – PLEASE NOTE: CERTIFICATES WILL BE MAILED TO THE ADDRESS INDICATED BELOW:

Mr/Ms/Dr				
	First Name	Surname		
Street Address		City	Province	Postal Code
Phone	Mobile		E-Mail	

Have you previously completed a course in this program?

If "no", complete the "Educational Background" section on the back of this form

Yes / No
(circle one)

COURSE SELECTION & PAYMENT: The tuition fee (audit or credit) is \$850-875 per course if **postmarked** on or before **Friday, December 19, 2014** or \$900-925 per course if postmarked after that date. Include a cheque or money order payable to the **Structural Engineers Association of B.C.** for the full amount, including GST.

	Webcast	Credit	Audit*	Before Dec 19	After Dec 19		
C12	Practical Design of Reinforced Concrete (1)			\$850	\$900	=	
C4-2	Advanced Concepts in Earthquake Engineering & Seismicity (Mathcad licence \$25 fee included)			\$875	\$925	=	
C8	Geotechnical Aspects of Foundation Design			\$850	\$900	=	
E15	Applications of Dynamic Analysis for Seismic Design of Structures (Mathcad licence \$25 fee included)			\$875	\$925	=	
Deduct \$25.00 per course if you are a member of SEABC						=	
Subtotal						=	
Add 5% GST (GST #889675526)						=	
TOTAL							

See back of this form for payment details and other information.

Administrative use only

Received	Payment	Deposit	Notes	Confirmation email
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EDUCATIONAL BACKGROUND

If you have not previously completed a course in this program, list degree(s), diplomas, certificates, and other formal or informal courses of study/qualifications that you consider relevant to your application:

Degree/Diploma/ Certificate/Courses/Other	Program/Major	Institution	Year Completed

PAYMENT & ENQUIRY DETAILS

Make cheque or money order payable to: Structural Engineers Association of B.C.

Forward this application and full payment to: Certificate in Structural Engineering Program
c/o Department of Civil Engineering
University of British Columbia
Room 2002, 6250 Applied Science Lane
Vancouver, B.C. V6T 1Z4

Confirmation of registration: Notification of admission will be made by e-mail.

Direct ALL enquiries to: Ms. Shannon Remillong
shannon.remillong@seabc.ca
Program Executive Secretary
Tel: (604) 789-5801

Check for current information on our web site at www.seabc.ca

REFUNDS

Submitting this application does not guarantee admission into the program. As each course is limited to a maximum of **35**, there is a possibility that enrolment may reach its capacity by the time you apply and, therefore, your name will be placed on a waiting list. In the event a vacancy becomes available, you will be contacted and enrolled in the course. If a vacancy does not become available prior to the commencement of classes, your fees for the course will be fully refunded.

You may withdraw from a course at any time **prior to Monday, January 26, 2015**, and be refunded your fees less a \$75 administration charge per course. Refunds will not be issued for withdrawals after that date.

IMPORTANT NOTES

While the Department of Civil Engineering at UBC is a co-sponsor of the Certificate Program, students enrolled in the Certificate Program are not UBC students, nor have they access to the various programs and resources available to UBC students.

***Audit status** requires regular class attendance. Audit status will not be granted where this requirement is not fulfilled.



CERTIFICATE IN STRUCTURAL ENGINEERING PROGRAM



January 2015 Application (Classroom)

PERSONAL INFORMATION – PLEASE NOTE: CERTIFICATES WILL BE MAILED TO THE ADDRESS INDICATED BELOW:

Mr/Ms/Dr				
	First Name	Surname		
Street Address		City	Province	Postal Code
Phone	Mobile		E-Mail	

Have you previously completed a course in this program?

If "no", complete the "Educational Background" section on the back of this form

Yes / No
(circle one)

COURSE SELECTION & PAYMENT: The tuition fee (audit or credit) is \$600-625 per course if **postmarked** on or before **Friday, December 19, 2014** or \$650-675 per course if postmarked after that date. Include a cheque or money order payable to the **Structural Engineers Association of B.C.** for the full amount, including GST.

	CLASSROOM	Credit	Audit*	Before Dec 19	After Dec 19		
C12	Practical Design of Reinforced Concrete (1)			\$600	\$650	=	
C4-2	Advanced Concepts in Earthquake Engineering & Seismicity (Mathcad license \$25 included)			\$625	\$675	=	
C8	Geotechnical Aspects of Foundation Design			\$600	\$650	=	
E15	Applications of Dynamic Analysis for Seismic Design of Structures (Mathcad license \$25 included)			\$625	\$675	=	
Deduct \$25.00 per course if you are a member of SEABC						=	
Subtotal						=	
Add 5% GST (GST #889675526)						=	
TOTAL							

See back of this form for payment details and other information.

Administrative use only

Received	Payment	Deposit	Notes	Confirmation email
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EDUCATIONAL BACKGROUND

If you have not previously completed a course in this program, list degree(s), diplomas, certificates, and other formal or informal courses of study/qualifications that you consider relevant to your application:

Degree/Diploma/ Certificate/Courses/Other	Program/Major	Institution	Year Completed

PAYMENT & ENQUIRY DETAILS

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University of British Columbia
Room 2002, 6250 Applied Science Lane
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shannon.remillong@seabc.ca
Program Executive Secretary
Tel: (604) 789-5801

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***Audit status** requires regular class attendance. Audit status will not be granted where this requirement is not fulfilled.



Are you a student, EIT, or engineer with less than 10 years of work experience?

Do you have a project that you were involved in that you are excited to share?

Do you need practice for when you will one day be giving TED Talks and keynoting events?

Do you want a chance at winning cash prizes of up to \$1000?!

The SEABC Young Members Group (YMG) is excited to announce the third annual SEABC Young Engineer Presentation Competition:

So You Think You Can Give a Seminar?

This is an opportunity for young engineers to get up on the podium and receive recognition for work that they have done, and practice valuable public speaking skills. On February 18th, 2015, finalists will present on the topic of their choice in front of colleagues, peers and a judging panel of local engineers, competing for cash prizes of up to **\$1000!**

Requirements for Participation:

- Must be a student, EIT, or engineer with less than 10 years of work experience.
- Must be a member of SEABC – annual memberships are available for \$75 (free for students).
- Must be available to attend the final round on February 18th, 2015 in Downtown, Vancouver. We encourage presenters from outside of the Lower Mainland - contact the YMG to inquire about a small travel bursary.
- Applicants must have their presentation ready for a preliminary round on the evening of January 21st, 2015. At this time, a panel will provide feedback and choose presenters to advance to the final round. For applicants outside of the Lower Mainland, a video presentation will be acceptable for the preliminary round only.
- Everyone is welcome and encouraged to participate! Participation in last year's event does not disqualify you from participating in this year's event.

Presentation Guidelines:

- Topic must pertain in some way to structural engineering and can include projects or portions thereof that the participant was involved in, post-disaster reconnaissance work, or research. Please ensure that confidentiality is maintained as required.
- Presentations will be 10-15 minutes long followed by a question period of up to 5 minutes. Time limit is strictly enforced and individuals going over their
- Participants will be judged on presentation skills, topic and content, as well as their effectiveness to answer questions during the question period.

Final Application Deadline: January 4th, 2015

Provide the YMG with a presentation title and description of the presentation (250 words max.) as well as your full name, title and affiliation. Include any special requirements (audio-visual, etc.) required for your presentation. For more information or to submit an application, please contact the YMG at ymg@seabc.ca.