



Newsletter

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Grandview Heights Aquatic Centre Photo Credit: Hughes Condon Marler Architects



Message from the President



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

Steady as we go

I am thrilled to be presenting my first President's Report. Having read so many insightful reports from SEABC's first two presidents, to find a new message is a challenge, so I am recycling one of Cameron Kemp's key messages. "Steady As We Go" refers to SEABC keeping to a well-established pathway in which we are doing an awful lot of things right. Although we cannot please 'all of the people, all of the time,' SEABC's programs are all in demand and continue to be well-supported.

In addition, our membership numbers remain strong and make up the majority of structural engineers practicing in British Columbia. Over 5% of SEABC members live outside of BC. This may reflect the fact that although SEAs exist in most states in the US, BC still has the only SEA in Canada, and 'outsiders' also see the value of SEABC membership.

SEABC will continue to innovate. We have tried several good ideas in the past which never gained enough traction to become viable, and we continue to test new ideas. However, we are not afraid to move on, and leave our good ideas behind – possibly to be retried at a later date. No matter what, our values and core programs continue.

Recent events have reinforced the value that structural engineers, among other groups, bring to society. Like most of you, I have been shocked and saddened by the news from the Fort McMurray wildfire. It was brought home to me by the news that my company's Fort McMurray office had been evacuated. While the evacuees are all safe, there is a cloud over their future. BC is sending its trauma recovery team to help out at the evacuation centre. A friend who specializes in trauma counselling recently departed for Alberta. Some of you will have friends and family who have been caught up in these tragic events, and you will know

firsthand the grief and disruption that the fire has caused.

News of the havoc wreaked by the fire is trickling out. Several Fort McMurray neighborhoods have been hard hit, with a high percentage of homes lost. Other areas, including the town centre, escaped most of the devastation. The good news is that 85% of the town has survived and that 90,000 people were safely evacuated. For this we can thank the heroism of the firefighters, and the diligence of the engineers who created the infrastructure that served the community so well at a time of great need.

I am always grateful when structures serve our needs well above and beyond the call of duty. This includes structures created in Victorian times and earlier, that remain in daily use today – well after many other structures built at the time are long gone. I think also of the many successful structures standing after devastating earthquakes. Further successes include the roads and bridges used by the Fort McMurray evacuees for their escape route. Could the designers have anticipated such a need from their designs? I doubt it. Yet the structures were there to allow the community to flee.

I am grateful that we use non-combustible materials for essential infrastructure and normally provide generous set-backs from trees. Our approach serves the public well and we must continue to stay the course, despite constant pressures to innovate and cut costs. After the Fort McMurray fires I will think anew when designing infrastructure in future.



The fire-damaged Beacon Hill neighbourhood in Fort McMurray. Photo credit: Jonathan Hayward/AFP/Getty Images

ACEC-BC AWARD Winners



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

On April 9 the Association of Consulting Engineering Companies British Columbia announced the winners of its 2016 Awards for Engineering Excellence. Structural engineering firms were well represented among the best and brightest in the industry, and the winning projects are some of the most amazing work produced by B.C.'s consulting engineers over the 27-year history of the awards program.



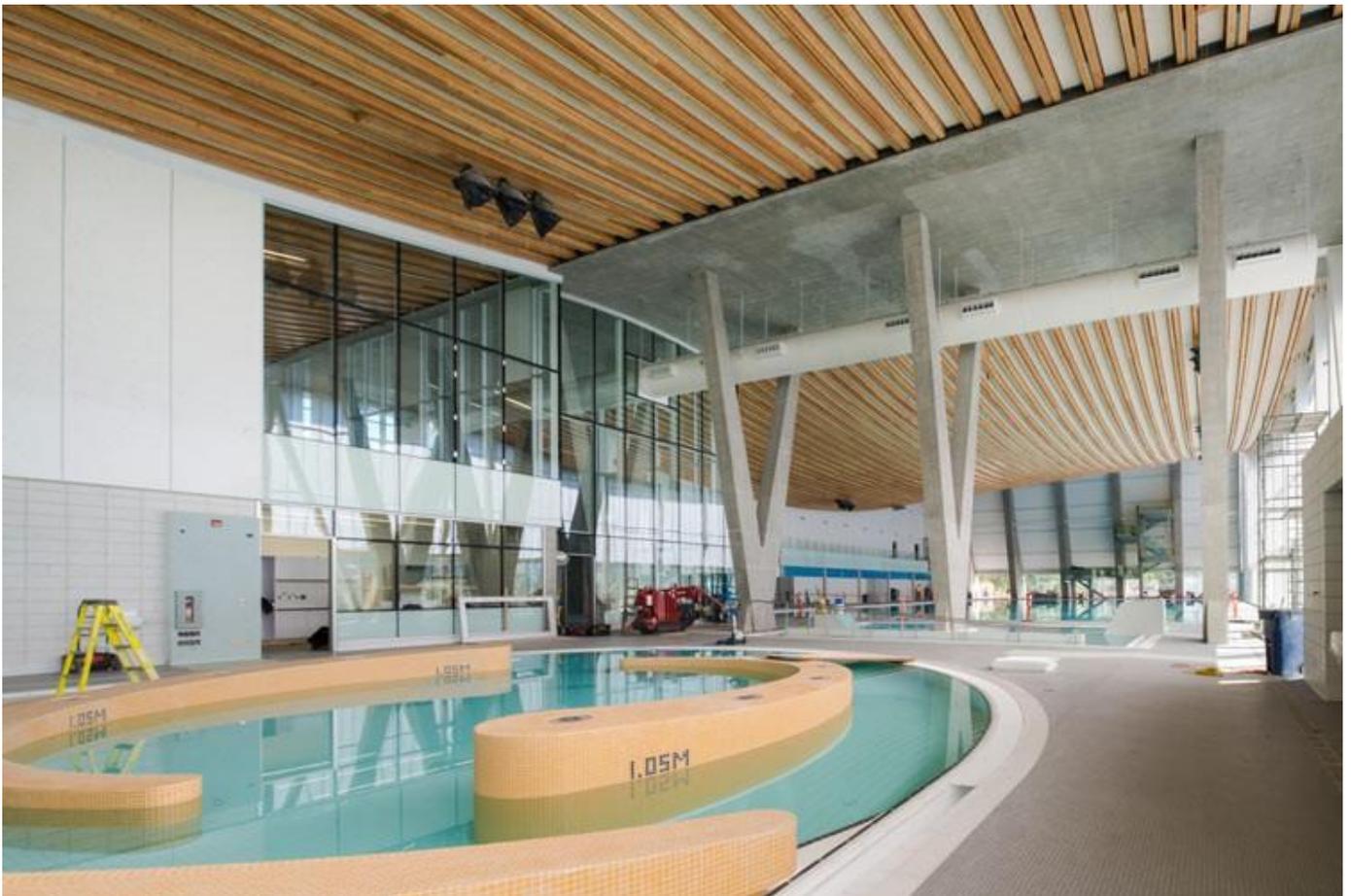
*Lieutenant Governor's Award for Engineering Excellence - Grandview Heights Aquatic Centre
Photo Credit: Alison Faulkner*

Winner of the Lieutenant Governor's Award for Engineering Excellence was Fast + Epp for the structural design of the Grandview Heights Aquatic Centre in Surrey. The ambitious and daring project involved designing the roof to resemble a gently undulating and metaphorically appropriate wave form. The superstructure was constructed using a highly unusual structural system – a novel hanging timber catenary roof suspended between concrete buttresses and free-spanning 55 metres. Rather than employ conventional steel roof trusses, glue-laminated timber 'cables' were introduced, reducing the effective structural depth by 90 per cent. This served to reduce building volumes and energy costs, sequester carbon, and provide the community with an architecturally striking and functionally efficient recreational environment.

The Meritorious Achievement Award is presented to an individual for significant lifetime contributions to engineering, the industry and the community. This year's award was given to Kerry Rudd, CEO of Associated Engineering, for promoting sustainable business management throughout his career.

The winner of the Client of the Year Award, recognizing the benefits of good client was the BC Ministry of Transportation and Infrastructure (MoTI). MoTI is considered to be a model for client best-practices.

An Award of Excellence was given to COWI Bridge North America for their innovative erection engineering of the World Trade Centre Transportation Hub, commonly referred to as "The Oculus". Designed by Santiago Calatrava for Port Authority of New York and New Jersey, the structure is the entrance to the new multi-billion dollar transit station that will serve over 200,000 members of the travelling public each day. The Oculus is an eye-catching, iconic structure, with striking architecture, but was extremely complicated to construct.



Grandview Heights Aquatic Centre - Photo Credit: Mathias Fast

Another Award of Excellence was given to Gygax Engineering Associates Ltd. and Northwest Hydraulic Consultants for the McLymont Creek hydropower plant owned by AltaGas Ltd. This challenging and remote project diverts rainwater for power generation in Northwest BC's Coastal Mountains approximately 500 km north of Terrace.

Awards of Merit were presented to Read Jones Christoffersen Ltd for the UBC Student Union Building; to Associated Engineering for the design of Metro Vancouver's Barnston / Maple Ridge Pump Station; and to McElhanney for deconstruction of the Port Mann Bridge on behalf of the BC Ministry of Transportation and Infrastructure.

Committee Reports

Technical Committee



Kevin Riederer, M.A.Sc. P.Eng.,
Director SEABC

The Guard Design Task Group remains in the early stages of efforts to update the Guard Design Guidelines published by SEABC. This group, along with the Task group investigating the Seismic Design of Basement Walls, are currently the only active task groups.

SEABC is currently exploring if and how we might contribute to an IStructE “Technical Guidance Note”. These ‘notes’ are a series of brief reports that provide code neutral guidance on a specific topic which is commonly encountered by structural engineers around the world. IStructE has published many of these in the past and is looking to member organizations such as SEABC for new contributions. We will keep all SEABC members informed as we pursue this further.

Anyone with interest in participating on a Technical Subcommittee is encouraged to contact SEABC. Any member with an issue or concern that they would like to have the Technical Committee consider is also encouraged to reach out to the committee.

Communications Committee



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

Newsletter

We always encourage our members to contribute newsletter articles or photographs – please describe your activities or matters of interest to our readers.

When our fellow professions read about our designs, or interests, we raise our personal profile, and can inspire others to build on our experience. The articles we receive are always interesting but we need many more. We want to hear from you!

Kindly send articles for publication to:
newsletter@seabc.ca We’ll include as many of your articles and photos as we can and we look forward to hearing from you.

Committee

The Communications Committee is responsible for SEABC’s membership, website, and newsletter. At this time we are looking for a new member to help with communications. Are you interested in publishing newsletters? Do you enjoy writing articles about structural engineering? Do you enjoy volunteer activities? If so, we’d like to hear from you. You can contact us at: newsletter@seabc.ca

Young Members Group



Nick de Ridder, P.Eng.

On February 24th the SEABC YMG hosted its fifth annual ‘So You Think You Can Give a Presentation’ Competition. This competition allows young professionals to hone their presentation skills, while informing and entertaining this audience about an engineering topic of their choice, while competing for a cash prize of \$1,000. This year’s event was held at UBC Robson Square, and saw four young structural engineers give 10 minute presentations on a variety of interesting topics.



Judges and Presenters at the 5th Annual 'So You Think You Can Give a Presentation' Competition

Mathew Reynolds of COWI presented on key construction considerations for the Abraham Lincoln Bridge, which connects Kentucky and Indiana. Hendrik Westerink, also of COWI, presented on his recent trip to Nicaragua to help construct the Rio Abajo Footbridge, as part of Bridges to Prosperity. Hardeep Gill of Reed Jones Christofferson presented on the engineering challenges and innovative solutions employed in Telus Garden skyboxes. Finally, Nazli Azimikior or Fast and Epp presented on her recent volunteering experience in Ghana.

All four presenters delivered fascinating and well-delivered talks to the captive audience, including an esteemed panel of judges. John Sherstobitoff of Ausenco, Kevin Riederer of Reed Jones Christofferson and Anthon El-Araj of Glotman Simpson provided feedback to each of our presenters, with all judges commenting on the high quality of presentations across the board.

While the judges deliberated over the four presentations, Sampson Chan of SNC Lavalin gave an engaging, thoughtful (and at times, hilarious) overview of his career, with focus on several key projects and lessons learned from them.

In the end, Hendrik Westerink was selected as the competition winner. In addition to the cash prize, Hendrick also received a seat at the SEABC Dinner and AGM, and was kind enough to give his presentation there as well.

On behalf of the SEABC YMG, a big 'thank you' to our presenters, judges, and to the SEABC Directors for financial support.

Following this, on April 30th, a group of SEABC Young Members teamed up with UBC to participate in the Emergency Preparedness Week kickoff event at the

Science World. Volunteers from SEABC helped out at the UBC booth which featured a mini shake table. Participants are challenged to build earthquake resilient structures with only straws and modeling clay. This is then tested on the shake table. Although the shake table challenge targets young children; the activity also facilitated plenty of conversation with the general public on the topic of seismic design in structural engineering.



A young visitor learning about seismic design with a the shake table during EP Week

On the Web



Stephen Pienaar, P.Eng.
Webmaster

As SEABC events are winding down for summer, things are getting very busy behind the scenes – the website refresh project is back track.

Website refresh

SEABC has retained Floating World Web Development, a Vancouver web development company, to help us complete the website refresh. Floating World has worked with prominent local businesses before and has a good reputation for project delivery. We are therefore confident that the project will be very successful.

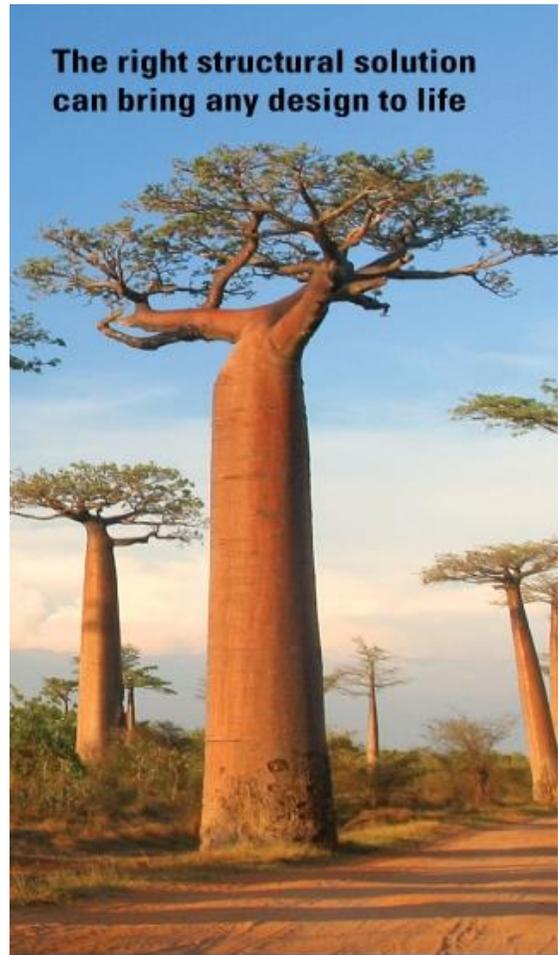
The project goals are:

- Fresh new look for the website.
- Responsive layout, i.e. good usability on screens large (computer) and small (smartphone).
- More cohesive presentation of various web services.
- Improved functionality with regards event registrations and payments.
- New learning management system for the Certificate in Structural Engineering Program.
- Easier behind the scenes involvement for volunteers who organise events.

The project schedule has the new website launching in August, in time for the resumption of activities in fall.

Want to help?

We have a small group of stakeholder that will provide input as the project progresses. Members will also be welcome to provide feedback and suggestions – if website and user interface design peaks your interest and you have a few hours available in coming months, please contact webmaster@seabc.ca to get involved.



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IStructE News



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

Director SEABC

The following are a few highlights of from the IStructE Board Meeting which was held on Thursday May 12:

Internationally, the Institution is continuing to develop its relationship with the USA where meetings have been held with the NCEES, and discussion revolves about the potential “for further benchmarking between the SE standard and the MStructE standard”. Elsewhere, the Institution is close to opening a UAE Branch Office of IStructE Limited in Dubai. In India, the President, Alan Crossman, recently visited Mumbai and Pune, although no progress has been made on development initiatives with the Indian Engineering Institution. In China, the Comparability Exam is moving toward a more formal arrangement with a memorandum of understanding between PQRC of China and IStructE in the works (not unlike the agreement with APEGBC).

In the UK, the three largest engineering institutions, ICE, MechE and IET are pushing an agenda for radical change in the engineering profession, where there are currently 35 institutions. It is believed that the big three intend to conduct an independent review of how the Royal Academy of Engineering, Engineering UK, and the Engineering Council operate as effective umbrellas for all of the institutions. How this might affect IStructE is not exactly clear at this time.

On the exam front, the first Chartered Membership (CM) Exam of 2016 was held on January 8. 304 candidates sat the exam in 38 centres around the world. 80 candidates passed the CM exam (a pass rate of 26.3%).

There is a lot of interest in the 2017 IABSE conference which will be held in Vancouver in September 2017, and next year’s President, Ian Firth is very keen on attending and being actively involved.

Robert Jackson Wins Prestigious IStructE Award



David Harvey, P.Eng. Struct.
Eng.

President SEABC

Robert Jackson of Vancouver-based consulting firm Fast + Epp, recently wrote a paper for IStructE’s Kenneth Severn Award, and submitted an application and video for IStructE’s Young Engineer Award. His efforts certainly paid off – amazingly, Robert won both of them! Clearly Robert is a talented young structural engineer with a bright future ahead of him.

A delighted Paul Fast, Fast + Epp’s Managing Partner, commented,

“I have had the privilege of working with Robert on some interesting projects including UBC’s Tall Wood building”.

Robert will receive his awards at a presentation in London on June 8 at IStructE headquarters. Thank you, Robert, for helping to raise the profile of British Columbia structural engineering across the world, and for highlighting the opportunity that local engineers have to apply for Institution awards. Look out for a report of the award presentations in an upcoming edition of *The Structural Engineer*.



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Northwest Conference



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

President SEABC

This year's Northwest Conference of Structural Engineers Associations (NWCSEA) will be hosted by the Structural Engineers Association of Montana (SEAM) in Bozeman, MT on August 3-5, 2016. The Northwest Council will meet on Wednesday in Downtown Bozeman. The conference sessions will take place on Thursday and Friday at Montana State University. Conference dinners will take place at the Rockin' TJ Ranch and the Historic Story Mansion.

NWCSEA comprises of Oregon, Washington, Idaho, and British Columbia. For a couple of years Montana has been looking at joining the North West Conference and was formally elected at last year's Council meeting in Boise, ID. BC was previously the last member organization to join the conference in 1996.

Of the over 2000 SEA members in the Pacific North West, almost one third are SEABC members. BC therefore represents a significant proportion of structural engineers in our region and the other chapter members love having BC as part of the conference. We have historically taken an active role, and next year we will be firmly in the spotlight. In September 2017, BC showcases our structural engineering capabilities as part of the 2017 IABSE Symposium. We are inviting our Northwest Conference delegates to come to Vancouver and experience a global structural engineering event.

Northwest Conferences are always enjoyable, informative events in which you get to interact with our great neighbours to the south. Most conferences, including this year's event under Montana's Big Sky, are held in locations well suited to family vacations. There are always excellent presentations with some key guest speakers, plus some very enjoyable social activities.

So please consider joining us in Bozeman Montana, August 3-5, and have a great vacation while you are there!

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Certificate in Structural Engineering Program



Shannon Remillong
CSE Program Co-ordinator

A spring term was added this year, offering one course **E12 Seismic Design of Steel Structures** due to its extreme popularity last September 2015.

This upcoming September 2016 term will offer 4 courses:

- **C4-2** Advanced Concepts in Earthquake Engineering & Seismicity
- **C2** Effective Structural Modeling
- **E23** Performance-based Design of Tall Buildings **NEW!**
- **E24** Introduction to Marine Structures **NEW!**

Course Outlines will be available through our Certificate in Structural Engineering Program webpage once registration opens in July 2016; until then, below is a quick look at our 2 new courses.

E23 Performance-based Seismic Design of Tall Buildings

This course covers detailed information from the conception to the final design of a Reinforced Concrete Shear Wall building using a performance-based seismic design (PBSD) approach. One example building case will be used throughout the entire course to illustrate the value and complexities of using PBSD. In addition, this course will include experiences in the application of PBSD on several buildings projects on the West Coast of Canada and USA.

E24 Introduction to Marine Structures

This course discusses the fundamentals of marine structural engineering and the unique aspects of construction in a marine environment. The intent is to help participants apply their structural engineering knowledge to the analysis and design of

marine structures. Participants will also learn about the multi-disciplinary aspects of marine structural engineering to help them interact with other professionals and stakeholders involved in marine infrastructure projects.

Registration for the September 2016 term will open Friday, July 15th through the SEABC website. SEABC Members will receive a discounted rate, and additional savings with early-bird rates apply until Friday, August 19th. Classes begin the week of September 6th and end the week of December 1st with a mid-term break in the week of October 25th.

Registration Inquiries and Requests/Suggestions: Please contact Shannon Remillong, Certificate Program Administrative Assistant, at email: <mailto:courses@seabc.ca>

CSE Board of Directors

John Pao, P.Eng, Bogdonov Pao Associates Ltd.
(Chair)

Shannon Remillong (Administrative Assistant)

Farshid Borjian, M.A.Sc., P.Eng., C.Eng., M.I.Struct.E., Struct.Eng.

Svetlana Brzev, Ph.D., P. Eng. BCIT

Anthony El-Araj, P.Eng, PE, LEED AP, Glotman Simpson Consulting Engineers

Andreas Felber, Ph.D., P.Eng.,(on temporary leave), BC Hydro

Darrel Gagnon, M.Sc., P. Eng., Buckland & Taylor

Chris Jacques, P. Eng., MIStructE, LEED AP, Read Jones Christoffersen Ltd

Bishnu Pandey, Ph.D., P. Eng., British Columbia Institute of Technology

Carlos Ventura, Ph.D., P.Eng., University of British Columbia

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2016 AGM and Dinner Meeting



David Harvey, P.Eng.Struct.
Eng.

President SEABC

The 2016 Annual General Meeting of SEABC took place on March 10th at the Sutton Place Hotel, Vancouver. Addressing the 85 members attending SEABC's flagship event, President Cameron Kemp highlighted the financial balance sheets and the various committee reports which had been distributed to the membership earlier by email. He also confirmed that current membership renewals indicate that membership in the Association remains strong and can be expected to increase again this year. Cameron thanked Prokon Software Consultants for once again donating this year's draw prize: a gift certificate worth \$2000 against the purchase of the Prokon Structural Analysis and Design Software suite.

Cameron then gave a summary of SEABC's biggest undertaking so far, the IABSE 2017 Symposium, to be held on September 21-23, 2017. A promotional video on this symposium was shown, highlighting the sights and activities that Vancouver offers visitors. The symposium theme is 'Engineering the Future', and topics include innovations and performance based design of buildings, bridges and other structures. Peter Taylor is Honorary Chair of the symposium. The deadline for abstracts is October 15, 2016.

Cameron then introduced Hendrik Westerink, winner of the Young Members Group 'So You Think You Can Give a Seminar?' competition and presented him with a cheque for \$1000. Taking us through his winning presentation 'The Rio Abajo Footbridge: Reducing Rural Isolation in Northern Nicaragua', Hendrik described his work for the charity Bridges to Prosperity. The organization builds low-cost, readily-maintainable footbridges for rural communities in economically-disadvantaged countries, which provide safe river crossings and economic opportunity. To date, Bridges to Prosperity has constructed nearly 100 footbridges in 14 counties

over impassable or life-threatening rivers, which are performing well and have improved the quality of life for many thousands of people.

Paul Fast then introduced the evening's keynote speaker, Tristram Carfrae, who is currently visiting Vancouver. Tristram has spent his whole career at Arup and has worked some of the industry giants. He is Deputy Chairman of Arup in London, UK and is an Arup Fellow, chairing the high-profile architectural-engineering firm's Global Buildings Practice. Tristram was awarded the 2015 Gold Medal of the Institution of Structural Engineers – IStructE's highest award.

Tristram's keynote presentation to SEABC, entitled *Design in the Digital Age*, was based on his passion for using computers for design tasks, as opposed to purely analysis. Tristram gave us a tour of the spectacular structures he has designed which includes some of the world's best known and most adventurous buildings.



Water Cube and Bird's Nest Stadium

Tristram kicked off his global tour with perhaps his best-known creative structure; the Beijing National Aquatics Center. Seen by billions of television viewers during the 2008 Olympic Games, the unique 'Water Cube' is famous for having had 25 world records set in it during the competition. Inspired by soap bubbles, the building is clad in ultra-light ETFE which, along with air circulation within the walls, was used for year-round temperature control and energy efficiency. Tristram used the computer to generate the random orientation of the tubular frame elements, then analyse the resulting structure. The program next assigned prescribed tube sizes according to demands to elements, and iteratively reanalyzed the structure until stability was achieved. Tristram contrasted the ultra-light Water Cube with its famous but much heavier neighbour, the Beijing

Nation Stadium, the 'Bird's Nest', which consumed 40,000 tonnes of steel plate in its box girders which follow complex geometric lines.



Water Cube Structure

Tristram next moved on to parametric design and described another unique structure, AAMI Park Stadium, Melbourne, Australia. The stadium's bio-frame roof combines arch and shell behaviour, in a lightweight steel design based on the structural efficiencies of the geodesic dome. The structural system using 50 per cent less steel than an equivalent traditional cantilever roof design. Without any superficial elements, the bio-frame roof components serve multiple purposes, ensuring that an absolute minimum of material is used.



AAMI Park Stadium

Tristram then explored the result of virtual design – the distinctive 'Fig Tree' building in Brisbane's Riverside District. Its unique feature is that randomly inclined columns are used to resist gravity and lateral forces, and elegantly and economically span over the existing Riverside basement car park and service area without conventional bridging beams. The column configuration was computer generated using an algorithm that mimics the way in which plants grow. The sinuous organic pattern formed on the tower sides is reminiscent of the local historic

Moreton Bay fig trees. The clever use of biomimicry provides the tower with a unique appearance and striking architecture, celebrated by the community.

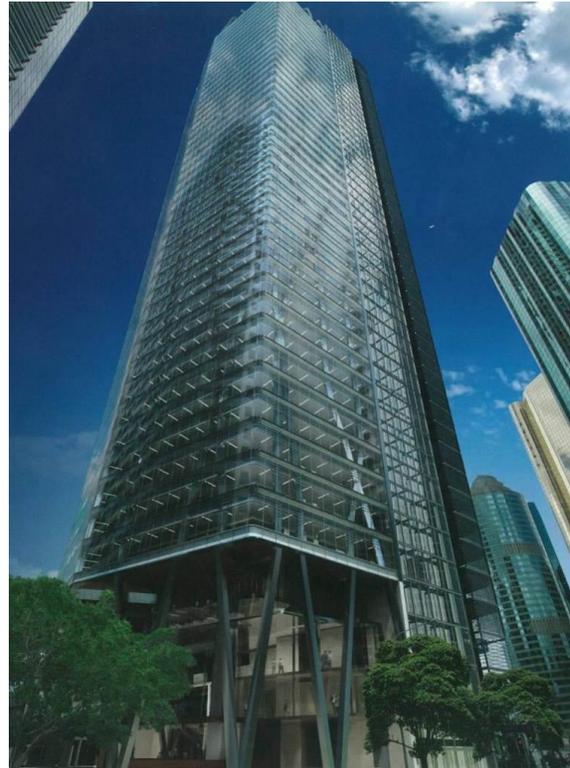


Fig Tree Building

Turning to the Singapore Nation Stadium and Sports Hub, Tristram described how the \$1.3 billion design/build project was conceived. Despite its record-breaking 310 m span domed roof, the arch ribs reduce in size to pedestrian-scale dimensions at the springings. The massive dome has a retractable centre section to provide shade, shelter or cooling for up to 55,000 seated spectators. The Sports Hub won the Supreme Award for Engineering Excellence at IStructE's 2015 Structural Awards.



Singapore Sports Hub



Sports Hub Arch Springings

Tristram’s adventure with contextual design involved developing a joint-free design for a 1km long new middle-eastern airport terminal building with massive 60m cantilevered roof overhangs. The cutting-edge design is currently awaiting funding.



Basilica de la Sagrada Familia

Tristram wrapped up his breathtaking tour of spectacular structures by describing his innovative work on Antoni Gaudi’s Basilica de la Sagrada Familia, in Barcelona, Spain. The ongoing project began in 1882 and the final phase of construction continues today with completion expected in 2026. The remaining six towers will be the tallest part of the Basilica, and will include the tower of Jesus Christ which will rise to 172.5m. Tristram’s innovation is to use pre-stressed stone elements to provide the necessary strength to achieve the unprecedented heights required. The amazing elements have proven

to be practical to produce and assemble, and have helped expedite the outstanding construction work for this iconic structure.

Tristram’s keynote address was well received by those attending SEABC’s Annual Dinner. Members were heard discussing ways of adopting Tristram’s design optimization approach using computers. Many will now think of Tristram’s inspirational structures, and will doubtless approach their designs very differently in future.



Tristram Carfrae

Thank you to our Sponsors

SEABC's Annual General Meeting is our flagship event, which features a keynote presentation by a leading international structural engineer with an interesting story. The event is affordably priced and we encourage our members to attend. This is made possible thanks to the generosity of our event sponsors, which we have recognized by including their advertisements in this edition of the newsletter. The organizations who sponsored our 2016 AGM are:

- Canadian Wood Council**
- Fast + Epp**
- Glotman Simpson Consulting Engineers**
- Gygax Engineering Associates Ltd**
- Masonry Institute of BC**
- Metrix Professional Insurance Brokers**
- Prokon Software Consultants (Canada) Ltd**
- S-Frame Software**
- Sacre Davey Engineering**
- Thomas Leung Structural Engineering Inc.**

Images from the 2016 AGM



Andrew Seeton outlines the agenda to Kitty Leung



Adam Lubell listens to Bernhard Gafner



Paul Fast takes a break with colleagues Ian Boyle and Mehrdad Jahangiri



Tijana Vulic relaxing with Raya Smertina



Bill Alcock and John Sherstobitoff with Okanagan Branch Chair Meagan Harvey



Webmaster Stephen Pienaar and Past president Dave Davey make light of continuing website refresh challenges

2016 AGM Emotions



SEABC Administrator Cecilia Bernabe enjoys the occasion with incoming President David Harvey



David Woo celebrates with James MacAuley and Graham Best



Hendrik Westerink describes the fun of overseas bridge building to YMG Chair Grant Fraser...



...but Andy Vizer and Steven Lerer are unconvinced



George De Ridder and Stephen Pienaar share the joy of structural engineering life in Canada



Adel Elgabry is ecstatic and even Adam Lubell is amused

2016 AGM Reflections



Kate Thibert and Colin MacMillan anticipate...



...while Tristram Carfrae points the way forward – Paul Fast is not so sure



Presidential duties are outlined to David Harvey...



...while Cam Kemp recalls five years of leadership



Tristram Carfrae outlines his thoughts on digital-age design and his breathtaking structural portfolio



Student member Lena Zhu recounts her understanding with keynote speaker Tristram Carfrae

IABSE Symposium 2017



Adam Lubell, PhD, P.Eng.
Read Jones Christoffersen Ltd
Symposium Co-Chair



Katrin Habel, Dr. Sc. Techn., P.Eng.
Associated Engineering
Symposium Co-Chair

SEABC will host the 2017 IABSE Symposium, a three-day technical conference preceded by a program of pre-conference workshops, tours of local structural engineering projects, and the Annual Meetings of IABSE's technical committees and working groups.

The International Association for Bridge and Structural Engineering (IABSE) is a technical society whose members include many renowned and top level engineers from around the world. IABSE's aim as a technical society is to promote the advancement of structural engineering practice while taking into account technical, economic, environment, aesthetic and social aspects.

We are regularly updating the symposium website with new information (www.iabse2017.org). Check out the Symposium promotional video on the website (also available at vimeo.com/157380662) and share the link with your colleagues and friends. Be sure to sign up for the mailing list to receive important announcements about the conference.

Scientific Program 'Engineering the Future'

Taking responsibility for the future means that our built environment must exhibit good performance with adequate safety over a long service life. This requires us to understand innovative technologies that are being used in structures today and those that will see increased use in the years ahead. It also

means that we must learn from the past, understand issues surrounding existing structures and facilitate rational approaches to the assessment, rehabilitation, strengthening or repurposing of our existing infrastructure. We must continually explore and adopt new rational design and analysis methodologies, including performance-based design concepts that have gained prominence in recent years to deal with conventional and extreme actions alike. The Symposium will explore these areas for all structure types, including buildings, bridges, civil infrastructure and other essential structures.

Structural engineers are invited to share their experiences with contemporary structures and their vision for the future. Practitioners, researchers and public agencies from around the world will have the opportunity to exchange ideas and explore solutions to topical structural design, construction and maintenance issues.

The Scientific Programme will include Plenary Sessions, Concurrent Sessions, Specialty Tracks, Panel Discussions and Poster Sessions. Invited keynote speakers will present lectures on significant topics related to structural engineering.

Authors are invited to submit a short abstract under the following main themes that relate to the overall motto 'Engineering the Future':

- Innovations in Structures
- Existing Structures into the Future
- Performance Based Design

Additional information on the sub-topics to the main themes is available at:

www.iabse2017.org/scientific-program/themes-topics.

Electronic submission details and document templates will be available soon through the Symposium website. The abstract submission deadline is **Oct. 15, 2016**. The Preliminary Invitation and more information: www.iabse2017.org

Corporate Sponsorship & Exhibition

The Organising Committee is currently focussed on our sponsorship programs. The success of high-calibre conferences like the IABSE Symposium rely on the tremendous energy from our local volunteers and from the support of corporate partners and organizations.

A range of tiered, event and other sponsorship opportunities are available and an exhibition hall will be provided during the Symposium. We have had some early interest in the sponsorship opportunities and the exhibition booths. Our website is constantly updated to show confirmed sponsors as they come on board. Many fantastic sponsorship opportunities are still available that will give your firm strong exposure to local, national and international delegates.

We encourage you to review our sponsorship brochure at:

www.iabse2017.org/images/PDF/IABSE2017-sponsorship-brochure.pdf

Please contact David Ellis, Chair of the Sponsorship Committee, if you would like to discuss these opportunities in further detail (ellisd@ae.ca, 604-293-1411).

Other Activities

The Organising Committee is also hard at work to further define the potential pre-conference workshops and keynote speakers. With top-calibre speakers from around the globe, these are sure to be of high interest to SEABC members.

Work is also in progress in our other sub-committees, including the development of Social and Young Engineers programs. Efforts are also underway to build a presence on several communications platforms in the coming months.

We are excited to welcome this high-quality international conference to Vancouver and we hope to present a program of great interest to SEABC members. Please contact us with any comments, suggestions or questions regarding the IABSE Symposium and stay tuned for updates in the next SEABC Newsletter.



Promoting the 2017 IABSE Symposium. Vanessa Wong, Adam Lubell, Katrin Habel and Peter Taylor pictured on the Vancouver Waterfront.





WoodWORKS! BC

- is a resource for anything and everything related to wood construction, engineered wood products and building systems
- wants to help you build proficiency in using wood.
- offers many opportunities for you to increase your knowledge about designing and building with wood.



Contact:
Sukh Johal, Dipl.T (Civil), MBA
Canadian Wood Council/Wood WORKS! BC
1-877-929-9663 ext. 3
sjohal@cwcc.ca

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Experience – Sacré-Davey Engineering is a mid-sized industrial engineering firm, located in North Vancouver, with specialized expertise in the Ports, Oil and Gas, and Materials Handling fields. Our primary objective in any project is to bring value to our clients beyond the cost of our services.

In our 29 years, we have worked for many industrial clients in western Canada and the USA. Over 80% of our work is with repeat customers. With our current staff levels of approximately 100, we are large enough to provide exceptional service, but not large enough that we carry significant overhead.

We offer a wide range of civil and structural engineering services to multiple market sectors. Our team of engineers are capable of dealing with a diverse and challenging spectrum of projects and we continue to expand our expertise and tools. We adapt and modify the ways we work on projects to respond to the unique challenges that each project may have. We continue to invest in technology and software to continuously improve our services and efficiently respond to our clients.

The Team – At Sacré-Davey Engineering, we strive to create a work environment based on inclusivity and longevity. The culture that we have created attracts some of the best available people and creates long term loyalties.

From our customer's point of view this creates consistency. The team that works together on a project today will most likely be the same team that works on the next project...and the next. This creates not only cost efficiencies, but also project continuity and consistency.

Quality and Safety – SDE was one of the first 14 companies to receive OQM certification from APEGBC. We are very safety conscious and conduct a weekly meeting for all staff at which safety issues are discussed.



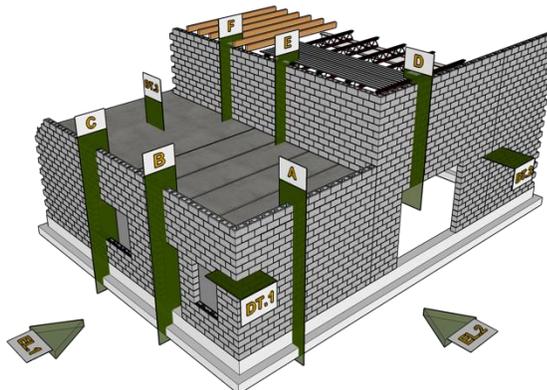
The primary mandate of the Masonry Institute of BC (MIBC) is to enhance the development of masonry in BC through technical support to designers, educators and building officials. This is done through:

- Our on-line Technical Manual, including the “MIBC Design Details”
- Responding to daily inquiries by phone and email
- Visits to design offices, presentations, seminars and courses
- Being a resource for design textbooks, literature and software
- Representation in industry groups, codes & research

The **MIBC Design Details** include two sections:

- ***Veneer Details*** – a wide range of architectural and envelope images and models
- ***Structural Details***
 - o Released in March 2014
 - o Examples of masonry reinforcing and connection details
 - o Includes PDF and AutoCAD drawings, and 3D models of a wide range of wall sections and elevations
 - o The 3D models can be rotated and zoomed with “Sketch-Up” software
 - o The elevations can be built-up on screen in layers to illustrate construction sequencing

The MIBC Structural Details are free for downloading, just click on the icon on the right side of our homepage at www.masonrybc.org.



E22: Introduction to Heavy Timber Design



J.A. Hamson, M.A.Sc., P.Eng.
LEED AP

The SEABC Certificate in Structural Engineering (CSE) program provided a new course this term:

Introduction to Heavy Timber Design. The course presented an introduction to the structural design aspects of heavy timber construction. Over thirty students gained basic skills and knowledge in topics such as wood science, gravity systems, connections and lateral force resisting systems for heavy timber construction. Students were introduced to the current state of heavy timber products and design resources. As with other courses in the CSE syllabus, presentations were given at the Vancouver Public Library, and web cast students participated on line. On-line students made up about half of the class and several attended from other provinces.

As a special part of this new course, the final lecture was in the laboratory at the UBC Forest Science Centre. The class participated in testing samples of mass-timber diaphragm connections to destruction.



The CSE is a unique and rich program that is intended to enhance the knowledge of structural engineers with courses that fill industry needs. The program is for students that already have a good grasp of structural engineering fundamentals and are pursuing a design oriented career. This new course, Introduction to Heavy Timber Design, was a great fit for the program: attended by students with strong & diverse engineering backgrounds and presented by experienced practitioners in this developing field.

The course was presented by Joel Alexander Hampson, Bernhard Gafner, Mark Porter and Mark Robertson. The presenters thank the CSE Board of Directors—John Pao, Carlos Ventura & Farshid Borjin, in particular—for their vision with the program and the creation of the new course; Shannon Remillong and Indira Bhusal who did the administration and A/V, respectively, necessary for the course success; Frank Lam, George Lee & Tom Zhang for opening-up and operating the lab; and the students for sharing the passion for timber structures and expanding the boundaries of knowledge.

The presenters have already started working on further developing the course for its next appearance in the CSE calendar.

Managing Suspended, Terminated, or Restarted Projects



Rob McLeod, CIP, CAIB
Metrix Professional Insurance
Brokers

Most projects begin with optimism, but unfortunately, not all have happy endings. In many cases the problem is a lack of money. A client may have been overly optimistic about projected budgets or unforeseen conditions may have increased overall costs. Prudent design firms know the importance of examining a client's financials, but sometimes, a rosy picture can turn sour if income projections don't come to fruition.

All design firms should therefore consider what would happen if:

- The client suddenly halted the project?
- The client suspended design services?
- The suspension became permanent?
- The project is subsequently restarted?

Damages caused to the design firm by project interruption can be substantial and far-reaching, and are certain to bring added expenses. Staff rescheduling affects productivity and can impact other work. The project's schedule will need to be extended, affecting the completion date. Suspensions cause a loss of continuity for all parties and require additional meetings to ensure everyone is still on the same page.

Despite the impact on the design firm, it's not unusual for the client to expect that things pick up just where they left off. Clients often expect that schedule delays can be accommodated and that project fees remain the same. The implications of a project suspension should therefore be addressed during the drafting of the design services contract.

These are some items you and your lawyer may want to include:

- Limit the number of days a project can be suspended before you can renegotiate your scope of work or terminate the contract after written notice.
- Establish that you will be compensated within 30 calendar days of the suspension for services performed and reimbursable costs incurred.
- If the contract calls for a retainer from your client, establish that you have the right to apply the retainer against outstanding billings.
- Establish that you will be compensated for the time and costs required to restart your services once the suspension has ended.
- Have the client agree that you have no liability for any delay or other claims as a result of the client's project suspension.

If a contract is terminated, not only can your firm lose substantial income, but there can be sizable costs in closing work on the project. You should therefore ensure you are paid for services rendered and for costs incurred with the termination.

While a client can terminate a project, with or without cause, termination without cause would leave a design firm with substantial liabilities for failure to perform its services, and the damage to the design firm's reputation would be considerable. However, a design firm should establish that just cause for termination is nonperformance of the contract on the part of the client. Accordingly, the contract should establish that should the client decide to terminate the contract, you must be given advance notice and paid for all services rendered and expenses reasonably incurred in closing the project. Some design firms are also able to include estimated lost profit on unperformed services to this payment amount.

The contract should also establish that:

- You have the right to terminate the agreement with cause, which would typically include substantial failure to perform, assignment of the project to a third party, or suspension of design services.

- Imposition of changes in the scope of services or other project conditions that are not agreed to by both parties are grounds for termination.
- Failure of the parties to reach agreement on compensation and scheduling following a material change to the project is grounds for termination.
- The design firm retains ownership of design instruments for the terminated contract unless a purchase agreement can be made with the client.
- If you terminate services for cause within the rights granted in the contract, you will not be liable to the client for delay or damages caused by the termination.

A common reason for the potential termination of a contract by the design firm is nonpayment of fees. In such instances it may be advisable to temporarily suspend your services, giving notice to the client. This will keep the contract in force while giving the client time to make good on the fees due.

A client who restarts a suspended or terminated project usually contacts the designers and asks them to continue where they left off. However, design firms need to be careful and should thoroughly examine the project to determine what changes need to be made. It is a good idea to meet with the

project stakeholders to agree on a plan going forward. It is also important to find out if the owner's objective has changed. Have the schedule and the construction budget been affected? Have the design criteria or technology changed? You may need to examine your fee structure and negotiate a new contract with the client. You should work with your insurance broker to determine how the suspension and restart of services affect your coverage.

If restarting a project is a challenge, restarting another firm's project can be a nightmare. Critical issues regarding liability, copyright, ownership and insurance coverage need to be determined. You'll need legal advice in drafting an indemnity-laden contract with the owner. You should also establish why the previous designer's contract was terminated and why they were not rehired.

National associations serving design firms have recommendations for drafting contract language to address suspension and termination of projects and services. Review these with your lawyer when negotiating your own contract language with clients.



Structural Design for Infrastructure

Mark Your Calendar

Upcoming Seminars and Conferences

SEA Northwest Conference: Back to School - Under the Big Sky

Date: August 3-5, 2016

Venue: Element Bozeman Hotel and Montana State University Ballrooms

Registration: www./back-to-school-under-the-big-sky

See flyer at end of newsletter

Evening Seminar: C5 Conceptual Structural Design

Date: 12 Tuesdays, September 15 – December 8, 2016 (Mid-term break, October 27)

Presenter: Robert Sexsmith Ph.D. P.Eng, Professor Emeritus and other guest lecturers

Venue: Alma Van Dusen Room, Vancouver Public Library, 350 W, Georgia Street.

Time: 4:00-6:00pm

Registration:

www.seabc.ca/documents/course_outlines

Upcoming Industry Events

APEG: When Does Mixing Matter? A Primer on Industrial Mixing

Date: May 30, 2016

Venue: Vancouver , BC

Time: 8:00-8:30am Registration and breakfast, 8:30-4:30pm When Does Mixing Matter? A Primer on Industrial Mixing

Registration: www.seabc.ca/events.php

NCSEA: Webinar: Construction of Post-Tensioned Structures

Date: June 7, 2016

Presenter: Pawan R. Gupta, Ph.D., P.E., S.E. LEEP AP

Time: 12.00-1:30pm central

Registration: www.netforum.avectra.com

NCSEA: Webinar: Introduction to Structural Fire Engineering

Date: June 21, 2016

Presenters: David Barber, P.E. and Darlene Rini, P.E.

Time: 12.00-1:30pm central

Registration: www./netforum.avectra.com

BACK TO SCHOOL
Under the Big Sky



SEA Northwest Conference | Bozeman, Montana | August 3-5, 2016

<https://www.seamt.org/events/event/back-to-school-under-the-big-sky>



Conference Registration

Accommodations

Book Early to Reserve your Spot!

Room Blocks have been reserved at the following hotels for SEAMT or Structural Engineers Association of MT:

Grantree Hotel

\$174/night, Wednesday – Saturday

(406) 587-5261

<http://book.bestwestern.com/bestwestern/US/MT/Bozeman-hotels/BEST-WESTERN-PLUS-GranTree-Inn/Hotel-Overview.do?propertyCode=27064>



The Element – Downtown Bozeman

\$209/night, Wednesday – Saturday

(406) 551-2316

<http://www.elementbozeman.com/>



2016 Western Council Roundup – NW SEA Conference

Summary of Events

Wednesday 8/3

The Element Hotel in Downtown Bozeman

12:00 pm- 5:00 pm: Western States and NW Delegate Meetings (Lunch Included)

6:00 pm – 8:00 pm: Young Member Welcome Reception- Sponsored by Redbuilt



Thursday 8/4 & Friday 8/5

Montana State University Ballrooms

Thursday & Friday 8:30 am - 5 pm : Breakfast – Lunch – Vendors – Seminars!

Rockin' TJ Ranch

Thursday 6 pm – 9 pm: Key Note Speaker Dinner, Sponsored by IES



<http://www.rockingtjranch.com/>



Friday 6 pm – 10 pm: BBQ Dinner at Historic Story Mansion – Downtown Bozeman





CONFERENCE SCHEDULE

WEDNESDAY, AUGUST 3, 2016

Primary Location: Element Bozeman Hotel	
1:00 – 5:00 PM	Western States and NW Delegate Meeting
6:00 – 8:00 PM	Young Member Welcome Reception

THURSDAY, AUGUST 4, 2016

Primary Location: Montana State University Ballrooms	
7:30 – 8:30	SEAMT Meeting & Breakfast
8:30 – 10:00	David Bonowitz - Earthquake Resilience: The Role of Structural Engineers
10:00 – 10:30	Break w/ Exhibitors: Ballroom
10:30 – 12:00	James O. Malley – Upcoming Changes to AISC 341 Seismic Provisions
12:00 – 1:00	Lunch - MSU SUB Ballroom A – IES Presentation
1:00 – 2:30	Dr. Dawn E. Lehman – Concrete Filled Steel Tubes for Seismic Design and Accelerated Construction
2:30 – 3:00	Break w/ Exhibitors: Ballroom
3:00 – 4:30	Dr. Charles Roeder – Braced Frames and Gusset Plate Connections for Seismic Design
4:30 – 6:00	Break w/ Exhibitors: Ballroom; and transport to dinner
6:00 – 10:00	Dinner & Entertainment at Rockin' TJ Ranch
6:30 – 7:30	Keynote: Dr. David Lageson – Himalaya/Nepal & Yellowstone Tectonics Evolution: Volcanic/Seismic

FRIDAY, AUGUST 5, 2016

Primary Location: Montana State University Ballrooms	
8:30 – 10:00	Ethan Martin – Heavy Timber: Woodworks/Dept. of Natural Resources and Conservation
10:00 – 10:30	Break w/ Exhibitors: Ballroom
10:30 – 12:00	Working Better Together – Contractor/Engineers/Architects
12:00 – 1:00	Lunch – MSU SUB Ballroom A – SDI Presentation
1:00 – 2:30	Dr. Greg Kingsley – Seismic Design of Special Reinforced Masonry Shear Walls
2:30 – 3:00	Break w/ Exhibitors: Ballroom
3:00 – 4:30	John Silva – Changes to the Provisions for Anchorage to Concrete in ACI 318-14
4:30 – 5:00	Break
5:00 – 6:00	Social Hour – Historic Story Mansion
6:00 – 9:00	Dinner & Lawn Games - Historic Story Mansion

Event Pricing

Attendee Registration:

SEA Member: \$350

Regular (non-SEA member): \$425

Student: Free

Speaker: Free

Discounts:

2016 SEA Delegate: \$75

Late Registration Surcharge (after July 2nd): \$50

Dinner Events:

Thursday (August 4th) – Rockin’ TJ Ranch, Sponsored by IES:

Included with Registration for Attendee

Guest: \$30

Vendor: \$30

Friday (August 5th)- Story Mansion: Included with Registration for Attendee

Guest: \$30

Vendor: \$30

Exhibitors and Acknowledgements



Cover painting, "Early Girl Mine", courtesy of Russell Chatham
Montana State University image courtesy of Montana State University
Trout image courtesy of Dave Brown Outfitters

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.

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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.

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