BC Building Code Updated | Changes To Council Elections | Nominations For Awards And Fellowships

ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA JANUARY/FEBRUARY 2019

INNOVATION

BUILDING AND DESIGNING ACCESSIBILITY

NEW PROFESSIONAL GOVERNANCE ACT

THE VIEWS OF OUR MEMBERS AND THE PUBLIC

BIG DATA SHAKES UP MINING

PM40065271

INNOVATION

JANUARY/FEBRUARY 2019 | VOLUME 23 NUMBER 1

COVER STORY

BIG DATA SHAKES UP MINING

Artificial intelligence. Machine learning. Big data. Virtual reality. Not long ago, these were just buzzwords in an industry that seemed comfortable with proven but aging methods and technologies. Now, the mining industry is showing everyone how quickly it can adapt.

NEWS / DEPARTMENTS

DESIGNING ACCESSIBILITY

There's nothing wrong with tapping into the existing trends and technologies. But if you really want to make our world a little more accessible, you might need to design something new.

BUILDING ACCESSIBILITY

Our built environment in BC is becoming increasing accessible. Meet the BC engineers who are helping to establish the standards for accessibility and press for an even more accessible future.

COMMENT

OTHER

ON THE COVER

Kevin Oke of LlamaZOO Interactive demonstrates MineLife VR.
PHOTO: KENT KALLBERG

ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

Dr. Katherina Tarnai-Lokhorst, P.Eng., FEC,
President
president@egbc.ca

IN THE FACE OF UNCERTAINTY, STAY INFORMED

It's a new year—a great time to reflect on the previous year and look ahead to the next. As engineering and geoscience professionals, most of us would likely reflect on our own developments and achievements, both personal and professional. But, if you kept pace with the news, reflecting on the activities of Engineers and Geoscientists BC as an association of professionals might lead you to think that 2018 was full of challenges, changes, and a few bumps.

You'd be right: 2018 was a challenging year for our professions and for the association. In late 2017, the Government of BC announced that it would review the professional reliance model in the natural resource sector, and that an audit of the association would be part of that review. Despite the fact that the audit confirmed we were fulfilling all our legislative responsibilities, the government received the Professional Reliance Report in the summer of 2018, which recommended significant changes to the way our professions (and others) are regulated. On November 27, 2018, the BC legislative assembly passed the new *Professional Governance Act*.

If 2018 was challenging, 2019 may prove equally so—maybe more.

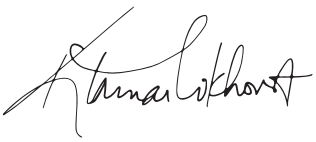
While the *Professional Governance Act* was passed in late 2018, it still leaves us with many unanswered questions about how the *Act* will be applied. We know, for instance, that the *Act* will unite oversight of several associations under one office; we also know government will be examining some significant issues right away, such as practice rights for professionals, corporate regulation, and competency and conflict of interest declarations.

Most of the changes we witnessed in 2018 haven't yet impacted your day-to-day work, but they do indicate where our professions are headed. The full impact of the *Act* in real life—on actual, working professionals—isn't yet clear. We expect the details to be implemented through regulations, each of which will involve a consultation period. That means implementation of the *Act* could take several years.

The first government intentions paper has already been issued and the first consultation period has begun; we expect this approach to continue through 2019 and beyond, and the association will take every opportunity to provide our expertise, insight, and concerns.

As 2019 progresses, we may discover that it holds many uncertainties, challenges, and bumps, as did 2018. As a professional, the best way to weather periods of uncertainty is to stay informed. We're committed to updating our members at every opportunity: through *Innovation*, through eNews, and on our website at *egbc.ca/Professional-Reliance*.

Of course, there will be good moments; we'll be sure to share those, too. While 2019 could hold its share of challenges, we're devoted to making sure that members understand all the developments and changes as they progress, and how they will impact our professions.



INNOVATION

JANUARY/FEBRUARY 2019 | VOLUME 23 NUMBER 1

ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA
Suite 200 - 4010 Regent Street, Burnaby, BC Canada V5C 6N2
Tel: 604.430.8035 Fax: 604.430.8085
Email: info@egbc.ca Internet: egbc.ca
Toll free: 1.888.430.8035

Advertising material must reach the publication by the first day of the first month (e.g., May 1 for the MAY/JUNE issue), or by the first business day immediately preceding the first day of the first month.
Advertising Contact: Gillian Cobban Tel: 604.929.6733
Email: advertising@egbc.ca

Design/Production: Mary Montica Poole–re:fresh design
Printed in Canada by Mitchell Press Ltd on recycled paper

Subscription rates per issue $4.50; six issues yearly $25.00. (Rates do not include tax.)

Innovation is published six times a year by Engineers and Geoscientists British Columbia. As the official publication of the association, *Innovation* is circulated to members of the engineering and geoscience professions, architects, contractors and industry executives. The views expressed in any article contained herein do not necessarily represent the views or opinions of the Council or membership of this association.

Submission Guidelines: *Innovation* encourages unsolicited articles and photos. By submitting material to *Innovation*, you grant Engineers and Geoscientists BC a royalty-free, worldwide licence to publish the material; and you warrant that you have the authority to grant such rights and have obtained waivers of all associated moral rights. *Innovation* reserves the right to edit material for length, clarity and conformity with our editorial guidelines (egbc.ca/innovation-editorial) and is under no obligation to publish any or all submissions or any portion thereof, including credits.

ISSN 1206-3622
Publications Mail Agreement No 40065271. Registration No 09799.

Return undeliverable Canadian addresses to *Innovation*, Suite 200 - 4010 Regent Street, Burnaby, BC V5C 6N2.

US Postmaster: *Innovation* (ISSN 1206-3622) is published bimonthly for $25.00 per year by Engineers and Geoscientists British Columbia, c/o US Agent-Transborder Mail, 4708 Caldwell Rd E, Edgewood, WA 98372-9221. Periodicals postage paid at Puyallup, WA, and at additional mailing offices, US PO #007-927. POSTMASTER send address changes (covers only) to *Innovation*, c/o Transborder Mail, PO Box 6016, Federal Way, WA 98063-6016.

Letters to the editor containing your views on topics of interest are encouraged. Opinions expressed in letters are not necessarily endorsed by Engineers and Geoscientists BC. Letters should be 300 words or less and can be emailed to innovation@egbc.ca. *Find more information at* egbc.ca/Submitting-to-Innovation.

COLLEAGUES HONOUR A PIONEER AND FRIEND

Bruce Thomson, retired geoscientist, passed away in November 2018. Early in his very productive career, he was a member of the innovative group of terrain mappers in the BC Environmental and Land Use Committee Secretariat. Bruce was always supporting new refinements to traditional surficial geology mapping so that the sediments and rocks directly underlying the surface, their genesis, texture, morphology, and the past and present geomorphological processes modifying them could be assigned a designation code. Once familiar with this legend scheme, a land manager could read a map like a book. Appropriate and inappropriate land use became readily apparent, as did geological hazards. The approach spread nationally and internationally, and the Geological Survey of Canada was quick to adopt it. Bruce's later career included researching forestry-related landslide rates at the Ministry of Forests, and at the Ministry of Environment, where he utilized his extensive geohazard knowledge. An active volunteer at Engineers and Geoscientists BC, he served many years on the editorial board of *Innovation*, co-edited the newsletter (Aspect) of what was then known as the Division of Engineers and Geoscientists in the Resource Sector (DEGIRS), and acted as a registration interviewer. Always easy to talk to and willing to help, he taught classes at SFU and assisted grad students. Many of us often enjoyed a glass of scotch with Bruce back at a motel after a long day in the field, while he entertained us with his stories. He was a striking figure when he dressed in buckskin and carried his musket at black powder rifle matches. We will miss our colleague and friend.

Dan Hogan, P.Geo.
Glynnis Horel, P.Eng.
Lionel Jackson, P.Geo.
Denny Maynard, P.Geo.
Tom Millard, P.Geo.

LIPSTICK ON A PIG

The article on the North Shore Wastewater Treatment plant (November/December edition of *Innovation*) had a lot of omissions. It is true that the new plant is a partial step forward, from primary to secondary treatment, and it has focussed on energy efficiency. However, I believe it may be one of the last plants built without tertiary treatment. The use of the ocean to dilute wastewater discharge is out-of-date thinking, even if it is still legal. In my view, the proposed future-proofing is short-sighted. The Capital Region District on Southern Vancouver Island is subject to the same regulations as Metro Vancouver, but is building a new plant with tertiary treatment. The Vancouver Branch of Engineers and Geoscientists BC held a seminar on the North Vancouver plant, which I attended. At the meeting, a number of members questioned the decision to treat only to a secondary level and the continued need for an ocean outfall to dilute the discharges. The *Innovation* article left me with the impression that the new plant was best-in-class, and the term "lipstick on a pig" came to mind. When *Innovation* is publishing articles, it should take care to present a balanced view.

Glen Parker, P.Eng.
North Vancouver, BC

ENGINEERS CAN CHANGE LIVES WITH TETRA SOCIETY

RUBY NG, EXECUTIVE DIRECTOR

At Tetra Society, we ask ourselves: What can we do to make each day matter for people with physical disabilities?

If you're an engineer who likes to develop clever and unique designs, we encourage you to consider volunteering at Tetra Society. We empower people to live full lives, even when physical or environmental challenges pose barriers. This is what motivates us to innovate, develop, and create devices that help people with disabilities.

For people with disabilities, the functional and life-enhancing devices created by Tetra Society volunteers—many who are engineers—means that each day is a gift rather than a chore. If we can help someone accomplish even a simple or routine task that enhances their life but that everyone else might take for granted, that's worth celebrating.

Our history is full of success stories. Following a stroke that caused partial paralysis, Ben was frustrated by his inability to play guitar. A Tetra volunteer devised a foot-operated guitar strummer with a drummer's hi-hat stand, linked to a bike cable that drove a spring-loaded lever arm attached to the body of the guitar that holds a pick. This innovation showed Ben that physical challenges does not mean that he has to lose his love of music.

Stephanie has cerebral palsy, which affects her balance; she needs the use of a walker. In the kitchen, this can pose a risk of injury such as burns. She asked us to make modifications to her kitchen that would make one of her favourite activities—cooking for herself and guests—more safe. Tetra volunteers made covers to protect her from the hot burners, and designed a device to take hot items off her stove and move them to her table. Now, she can reach the switches without the risk of stovetop burns. Now her only concern is making enough food for all of her guests.

Tetra's positive impact is possible only with teamwork. We are grateful for the volunteers who work tirelessly to design and build innovative devices that make a world of difference for our clients, and we are excited that Engineers and Geoscientists BC is once again sponsoring our work.

Our vision is to bring even more unique and innovative solutions to people with disabilities to enhance their quality of life—solutions that don't yet exist or are cost-prohibitive. Headquartered in BC, Tetra has volunteers across Canada and in chapters in the US who help propel this vision. As the number of requests for assistance increase, our need for volunteers becomes even more urgent. We also hope to provide this kind of support in rural communities, where assistance is limited. We are actively building up a diverse team of volunteers with diverse technical expertise, and equip them to collaborate across the country to further enhance accessibility solutions.

We know the work of Tetra volunteers makes a significant difference, and we believe that together we can help more people. Consider becoming a Tetra volunteer—learn more about us and attend an upcoming chapter meeting by visiting *www.tetrasociety.org*. You can also contact our Tetra coordinator Eric Molendyk by email at *eric@tetrasociety.org* or by phone at 604.688.6464, extension 117.

NEW GOVERNING LEGISLATION FOR ENGINEERING AND GEOSCIENCE IN BC

On November 27, 2018, the *Professional Governance Act* received Royal Assent in the BC Legislature and became law. The *Act* represents the culmination of government's Professional Reliance Review, which examined the current legislation governing qualified professionals, and the role their professional associations play in upholding the public interest.

In particular, the new *Act* consolidates government oversight of the professions of engineering and geoscience, among others, under a new Office of the Superintendent of Professional Governance. This Office will set consistent governance standards, including common ethical principles, increased public representation on Councils, enabling the regulation of firms, and providing whistleblower protection.

WHAT HAPPENS NOW?

While it has received Royal Assent, the new *Act* will not immediately come into force. Rather, it will be implemented over time via regulations for the various provisions within the legislation. As each regulation is developed and details are determined, it is expected to involve its own consultation period. It is likely that it will take three to five years for the *Act* to be fully implemented.

Two major elements of the new *Act* are currently the subject of a consultation process. First, the *Act* suggests that before any engineer or geoscientist takes on any project, they would need to file a declaration of competence and conflict of interest with the regulator. Second, the *Act* suggests broadening practice rights to include agrologists, biologists, and applied science technologists and technicians.

We have significant concerns with both these provisions, their risks, and potential for unintended consequences. Government has released an intentions paper on these topics (found at *engage.gov.bc.ca/professionalreliance*)—as well as corporate regulation—and is inviting comments until March 4, 2019. Engineers and Geoscientists BC is responding and is involved in direct consultation with government in order to ensure, to the best of our ability, that these changes to the regulatory model are carefully considered and effectively implemented. Members are also welcome to submit their own views directly to government.

In addition, the *Act* details new rules for the number of Council members, term lengths, and a new merit-based appointment process. As Engineers and Geoscientists BC's 2019 election process will need to adhere to these rules, we have been proactively seeking input so we can be in a position to advise government on what we think would work best. More details about the impact of the new *Act* on Council is provided on the following page.

WHAT ACTION IS ENGINEERS AND GEOSCIENTISTS BC TAKING?

We continue to engage with government and other stakeholders to articulate our concerns that any changes should benefit the overall public good and support key regulatory priorities identified by Engineers and Geoscientists BC to that end.

At this time, we are:

- working with Council and a working group of members with senior experience in relevant areas to develop a response to government's intentions paper on the regulation of firms, competency declarations and conflict of interest declarations, and practice rights of professionals; and
- proactively seeking input on proposed models for Council elections and nominations so we can advise government on what we think would work best.

WHAT ACTION CAN I TAKE?

We encourage members to get involved by reviewing the current consultation paper and submitting their feedback. While the *Professional Governance Act* is now law, it only sets the framework for the new model—the regulations still to be developed will be the most important component because they will specify how the new legislation will be implemented. The consultation period for each regulation will be an important opportunity to ensure government understands the complexities, unintended consequences of any proposed policy change.

The comment period on the intentions paper for the current regulations under review— declarations of competence and conflict of interest, practice rights, and corporate regulation—is open until March 4, 2019. The paper and comment form are available at *engage.gov.bc.ca/professionalreliance*.

To help keep the association informed, members providing submissions to government are welcome to forward a copy of that feedback to *professionalreliance@egbc.ca*.

NEXT STEPS

The key to successfully improving the framework and protecting the public interest will be careful, well-considered implementation of the office and these changes. We are calling on government to be cautious and to work with the impacted regulators to ensure that the risks associated with sweeping change are identified and mitigated.

MORE INFORMATION

More information about the *Professional Governance Act* is available at *egbc.ca/Professional-Reliance*.

If you have questions, please contact *professionalreliance@egbc.ca*.

NEW *ACT* INTRODUCES CHANGES FOR COUNCIL NOMINATIONS AND ELECTIONS

Photo: Joakim Honkasalo on Unsplash

The new *Professional Governance Act*, brought into law on November 27, 2018, introduces new governance standards and processes and has several implications for how Engineers and Geoscientists BC Council nominations and elections are conducted.

COMPOSITION OF COUNCIL: Future Councils will comprise 11 voting members: four government-appointed laypersons, five Councillors, one Vice President and one President. The Immediate Past President will also sit on Council in a non-voting capacity.

TERM FOR A COUNCILLOR: Councillors will serve terms of three years. The terms for President and Vice President will be up to three years.

TERM LIMITS: Members of Council will be limited to up to six years in any one position, and up to 12 years in total.

NOMINATION CRITERIA AND PROCESS: A new merit-based nomination process will be established; only those candidates approved through this process are eligible to stand for election.

While the *Professional Governance Act* specifies these new requirements, there are a number of additional details that will be provided through supporting regulations. Government has indicated that these particular regulations will be developed in February or March 2019. This means that the 2019 Council election, and all subsequent elections (and supporting nomination processes) will need to adhere to these regulations.

The forthcoming regulations will likely specify the requirements for a new nomination process (including skills and competencies, and provisions to determine how the current Council composition will transition to the new composition requirements). We are actively engaging with government on the development of these regulations. To assist with this, Council created and appointed four members to a Nomination and Election Advisory Group. The purpose of this Advisory Group is to examine the election implications of Bill 49 and develop recommendations on how to proceed with the 2019 election, transitional requirements, and a new candidate selection process consistent with the anticipated merit-based selection requirements.

And, to remove any potential of a perceived conflict of interest, Council has delegated the decision on how to move forward with the 2019 election, the transitional requirements, and the candidate selection process framework to a sub-committee of Council, comprising the four public appointees and the Immediate Past President.

More information is expected in early 2019.

HELP RECOGNIZE OUTSTANDING ENGINEERING AND GEOSCIENCE LEADERS IN BC

Nominations are now being accepted for Engineers and Geoscientists BC's President's Awards, Environmental Award, Sustainability Award, and Mentor of the Year Award. The awards will be presented at our 2019 Annual Conference in October.

PRESIDENT'S AWARDS

Nominations accepted until Friday, April 12, 2019

Our President's Awards are British Columbia's top honours for professional engineers, professional geoscientists, and licensees. The awards recognize the exemplary and outstanding professional, technical, and community contributions of Engineers and Geoscientists BC members and allow the association to showcase the professions to the public.

SUSTAINABILITY AWARD

Nominations accepted until Friday, March 22, 2019

The Sustainability Committee welcomes nominations from sustainable projects both large and small. The Sustainability Award is open to any project that has demonstrated a commitment to, and understanding of, the concept of sustainability or has applied one or more of the Sustainability Guidelines.

ENVIRONMENTAL AWARD

Nominations accepted until Friday, March 22, 2019

The Environmental Professionals Division encourages submissions for the Environmental Award highlighting engineers and geoscientists' roles in responsible environmental management, environmental protection, and sustainable development.

MENTOR OF THE YEAR AWARD

Nominations accepted until Friday, April 12, 2019

Our Mentor of the Year Award recognizes excellence among mentors in BC's engineering and geoscience community. Nominees must be active mentors in the association's Mentoring Program.

FOREST ENGINEERING AWARD OF EXCELLENCE

Nominations accepted throughout the year

The Forest Engineering Award of Excellence, sponsored jointly by Engineers and Geoscientists BC and the Association of BC Forest Professionals, recognizes excellence, cooperation, and leadership in forest engineering. Award presentation alternates between associations each year.

For detailed information about nomination procedures, award terms of reference, and eligibility, visit *egbc.ca/awards*. Questions about the association's awards program can be directed to Laurel Buss, Communications Officer, at *lbuss@egbc.ca* or 604.412.6052.

SEEKING PRESENTERS FOR 2019 ANNUAL CONFERENCE

Do you have a technical, business management, or personal development topic, or a case study that could benefit other engineering and geoscience professionals?

Engineers and Geoscientists BC is seeking session presenters for its 2019 annual conference in October, in Kelowna, BC. The association looks for topics and case studies on current industry trends that will interest, instruct, or inform delegates on issues that affect the professions.

The deadline for proposals is Thursday, February 28, 2019. The 2019 conference and annual general meeting will be held October 17–19, 2019, at the Delta Grand Okanagan Resort and Conference Centre in Kelowna.

Engineers and Geoscience BC's annual conference brings together engineers, geoscientists, technologists, academic faculty, government representatives, industry leaders, students, and other members of the community for two full days of professional development, speakers, events, and networking. About 800 delegates are expected to attend the 2019 conference.

The professional development sessions are a central part of annual conferences. Last year, sessions included streams on better business, the emerging professional, energy efficiency and renewable energy, engineering and geoscience in the resource sector, environmental engineering and geoscience, management, consulting practice, diversity, municipal engineering, and structural engineering.

Presentations are 1 hour and 15 minutes in length , including time for questions and answers.

To learn more about presenting at the conference, or to submit a proposal, visit *egbc.ca/Call-for-Presenters*. Entries must be received by February 28, 2019.

Presentations for the purpose of promoting or selling specific products, services, or providers will not be considered. Presentations should be educational and tailored to members.

For additional information, email *conference@egbc.ca*.

MARK YOUR CALENDERS FOR THE 2019 CONFERENCE AND ANNUAL GENERAL MEETING

Planning for Engineers and Geoscience BC's 2019 Conference and Annual General Meeting in October is already underway. The event will be held October 17–19, 2019, at the Delta Grand Okanagan Resort and Conference Centre in Kelowna, BC. The conference is a unique opportunity for our members to hear leading speakers, network with other professionals and government and industry representatives, and take in two days worth of professional development sessions. The event caps off with the association's Annual General Meeting. For more information, email *conference@egbc.ca*.

TWO NEW GOVERNMENT REPRESENTATIVES APPOINTED TO COUNCIL

The Lieutenant Governor in Council of the Government of British Columbia recently appointed Alan Andison, LL.B and Leslie Hildebrandt, ICD.D., LL.B to serve on Engineers and Geoscientists BC Council for two-year terms, effective December 31, 2018 and November 30, 2018, respectively.

Mr. Andison and Ms. Hildebrandt replace outgoing appointees John Turner, P.Ag. and Ken Laloge, CPA, CA, TEP.

Alan Andison is the Chair of the Environmental Appeal Board, as well as the Forest Appeals Commission, and is the Chair of the Oil and Gas Appeal Tribunal. He has held a variety positions with the BC public service, including the Office of the Ombudsperson, the Human Rights Council and the Ministry of Environment, Lands and Parks. He has a BA and LL.B., and has experience in the areas of administrative, environmental, forestry, and natural resources law. He is past Chair of the British Columbia Circle of Chairs, past member of the Executive for the British Columbia Council of Administrative Tribunals, and is a past member of the Executive of the Council of Canadian Administrative Tribunals.

Leslie Hildebrandt is a Corporate Director with over 25 years of strategic governance, legal and regulatory experience. She is a Board Director of the Art Gallery of Greater Victoria where she serves as 1st Vice President of the Board and Chair of the Facilities Committee. Prior to her retirement from the Land Title and Survey Authority of BC in 2018, Leslie was Vice President, Regulatory and Corporate Affairs and Corporate Secretary, where she delivered a new Board governance framework, delivered corporate legal services, and managed strategic government relations. She also served as Chief Advisor to the Province of BC on land title and survey systems, regulatory reviews of BC's environment assessment, crown land management, and environmental protection programs.

Engineers and Geoscientists BC's Council comprises 13 elected councillors and four government appointees. The role of government appointees is to act in the public interest, support governance best practices, and contribute their diverse experiences and professional backgrounds to inform Council decisions.

CORPORATE REGULATION FOR SOLE PRACTITIONERS HIGHLIGHTED IN UPCOMING WEBINAR

In Canada, corporations (along with individuals) that practice engineering and geoscience are regulated everywhere except in BC and Quebec. Since 2015, Engineers and Geoscientists BC has been examining the best ways to regulate corporate entities in BC as a public protection enhancement.

In late 2018, the provincial government introduced new legislation that would enable regulation of engineering and geoscience firms in BC (SEE PAGE 8). The *Professional Governance Act* introduces new regulatory tools and standards, including corporate regulation. The *Act* will be implemented in stages over time, but government has indicated that corporate regulation will be one of the first regulations developed. Engineers and Geoscientists BC continues to develop its model for corporate regulation, to advise government on what would work best.

Our Advisory Task Force on Corporate Practice is currently examining the appropriate level of regulatory oversight for sole practitioners.

We encourage members—in particular, sole practitioners—to learn more about this issue at our February 13 webinar, **Corporate Practice: What You Need to Know**. This webinar will address key questions, important developments, the anticipated impacts of the new *Act*, and how sole practitioners will participate in a corporate regulatory model.

To register for this free lunchtime webinar, visit *egbc.ca/Events*.

Engineers and Geoscientists BC's Council of elected members and government representatives meets throughout the year to conduct the business of association governance. The following are the highlights of the November 23, 2018 meeting.

PROFESSIONAL GOVERNANCE ACT IMPLICATIONS FOR COUNCIL ELECTION PROCESS

The *Professional Governance Act* introduced by the BC Government will restructure governance oversight, standards, and processes for Engineers and Geoscientists BC. One of processes impacted by this new legislation will be the association's Council nomination and election process. The new *Act* contains provisions for the composition of Council, terms for a Councillor, term limits, and a merit-based nomination process.

Government has indicated that the supporting regulations will be released in early spring, which means that the 2019 election, and all subsequent elections, will need to adhere to these regulations. Council has created an advisory group to examine next steps for the 2019 election process that will present its recommendations to a Council subcommittee for review. In order to avoid any potential for a perceived conflict of interest, Council has delegated the decision on how to move forward with the 2019 election, the transitional requirements, and the candidate selection process framework to a subcommittee of Council consisting of the association's four public appointees and the Immediate Past President.

AGM MOTION ON CLIMATE ACTION PLAN

The following motion was brought forward at the AGM in October: "That Council consider undertaking and putting the necessary resources into the development of a comprehensive Climate Change Action Plan that will provide direction on the roles and duties of EGBC's member *[sic]* in addressing this issue."

At its November meeting, Council directed staff to consult the Climate Change Advisory Subcommittee and the Division of Environmental Professionals and prepare a report for Council ahead of the 2019/2020 budget deliberations.

ANNUAL CONFERENCE AND AGM SUSTAINABILITY INITIATIVES

At its meeting, Council received a report on sustainability initiatives for the association's annual conference and AGM. Initiatives for 2018 included the introduction of a mobile app and condensed version of the delegate booklet as a means to reduce the amount of materials printed. Conference processes also considered the use of digital platforms to minimize paper use, as well as locally-sourced environmentally friendly products. Venue selection also took into account the venue's own green initiatives and accessibility.

This year, the Climate Change Advisory Group (CCAG) was engaged to provide feedback and recommendations on how the association could reduce its carbon footprint for conference and use carbon offsets as a sponsorship opportunity. The CCAG worked with a greenhouse gas estimating firm to develop guidelines for carbon offsets, and staff will be considering this in developing a sponsorship opportunity as a pilot project for the 2019 conference.

PILOT FOR COMPETENCY-BASED ASSESSMENT OF ENGINEERING LICENSEES

Council approved an extension of the pilot program for competency-based assessment of engineering licensees to June 2019. The extension will allow more data to be gathered to inform future decisions on the evaluation of engineering licensees.

BUDGET GUIDELINES APPROVED

Council approved guidelines for the creation of the association's 2019/2020 budget. The budget guidelines emphasize Engineers and Geoscientists BC's commitment to sustainable financial management and effective regulation of the professions as directed by government.

APPOINTMENTS

Council approved the following appointments to Engineers and Geoscientists BC committees, boards, and task forces.

ADVISORY TASK FORCE ON CORPORATE PRACTICE

Don Burns, P.Eng.
Patricia Chong, P.Eng.
David Chwaklinski, P.Eng.
Mike Currie, P.Eng.
Dr. Michael Davies, P.Eng./P.Geo.
Catherine Fritter, P.Eng.
Adrian Gygax, P.Eng., Struct.Eng.
Scott Martin, P.Eng.
David Melville, P.Geo.
Ed Miska, P.Eng.
Dirk Nyland, P.Eng.
Julius Pataky, P.Eng.
Greg Scott, P.Eng.
Colin Smith, P.Eng., FEC, FGC (Hon.)
Gary Webster, P.Eng.
Selena Wilson, P.Eng.

BOARD OF EXAMINERS

Dr. Ewelina Holuszko, P.Eng.

CPD COMMITTEE

Mark Adams, P.Eng.
Ted Fuller, P.Eng./P.Geo.

DISCIPLINE COMMITTEE

Rajib Ahsan, P.Eng.
Chris Arthur, P.Eng.
Jaswinder Bansal, P.Eng.
Frank Denton, P.Eng., FEC, FGC (Hon.)
John Hawthorne, P.Eng., FEC, FGC (Hon.)
Colin Smith, P.Eng., FEC, FGC (Hon.)

EDITORIAL ADVISORY COMMITTEE

Elizabeth Brown, P.Eng.
Roger Ord, P.Eng.
Matthew Zieleman, EIT

GEOSCIENCE COMMITTEE

Delbert Ferguson, P.Geo., Eng.L.

INVESTIGATION COMMITTEE

Lindsay Bottomer, P.Geo., FGC, FEC (Hon.)
Jeffrey Corbett, P.Eng., Struct.Eng., FEC
Clinton Low, P.Eng., Struct.Eng., FEC
Andy Mill, P.Eng., Struct.Eng., FEC
Mehrdad Roozbahani, P.Eng., FEC
Gregory Smith, P.Eng., Struct.Eng.

NOMINATING COMMITTEE

Garth Kirkham, P.Geo., FGC
Mahmoud Mahmoud, P.Eng., FEC
Karen Savage, P.Eng., FEC
Robert Stewart, P.Eng.

PRACTICE REVIEW COMMITTEE

Vijay Kallur, P.Eng., FEC

REGISTRATION COMMITTEE

Shiloh Carlson, P.Eng.
Martin Fandrich, P.Eng.
David Harvey, P.Eng., Struct.Eng., FEC
Nathan Ozog, P.Eng.

Photo: Joanne Vincent on Fotolia

2018 BC BUILDING CODE UPDATE SEMINARS

Engineers and Geoscientists BC is combining efforts with the Architectural Institute of BC to mount two one-day training seminars (February 22 and March 8) on the new 2018 BC Building and Plumbing Codes. This seminar will focus on the major changes to the code, and how they affect the practice of engineers and architects.

Participants can choose which days to attend depending on the topics they wish to cover. February 22 will focus on Parts 1 through 3, and March 8 will focus on Part 4 through 7, and Part 10. (Parts 8 and 9 are not included in the seminars.)

Registrants who are unable to attend in person have the option of attending the course via webinar.

For more information, or to register, visit *egbc.ca/events*.

The Government of BC has adopted the 2018 edition of the BC Building Code and the BC Fire Code (BC Codes 2018). Both codes came into effect on December 10, 2018, and apply to building permits applied for on or after that date. Buildings with permits in place under the previous code will generally not be affected.

The BC Codes 2018 are based on the model National Building, Plumbing and Fire Codes of Canada 2015, which adopted about 600 technical changes to enhance clarity, introduce new concepts, and expand existing requirements.

WHAT'S NEW IN THE BC BUILDING CODE 2018

The BC Building Code 2018 makes substantial changes in the area of accessibility by combining provincial and national requirements and adding several new requirements. For instance, the new code requires accessibility improvements in retail shops, condos, apartments, assembly buildings, etc. The BC Building Code 2018 also includes changes involving seismic design, asbestos, exit signs, energy efficiency standards, water efficiency of plumbing fixtures, mid-rise combustible construction, stairs, heritage buildings, and more. The Building and Safety Standards Branch has developed a technical bulletin outlining the new requirements in the code. More information about the updates is provided at *www.gov.bc.ca/buildingcodes*.

Another notable revision to the BC Building Code 2018 includes extensions and minor improvements to the BC Energy Step Code. Guidelines on meeting energy efficiency requirements in existing Part 3 buildings have also been included. More information, including the relevant ministerial order and technical bulletin, is provided on the Energy Step Code website, at *www.energystepcode.ca/news*.

Engineers and Geoscientists BC and the Architectural Institute of BC are coordinating efforts to provide training early in 2019 on BC Building Code changes. The training will take place over two days, on February 22 and March 8, 2019. Different parts of the code will be addressed on each day; details are provided below, and on our website at *egbc.ca/events*.

WHAT'S NEW IN THE BC FIRE CODE 2018

The BC Fire Code 2018 makes changes to areas such as fire alarms, sprinkler systems, emergency lighting, smoke alarms, and use of elevators in an emergency. The Building and Safety Standards Branch has developed a technical bulletin outlining the new requirements in the code. The Office of the Fire Commissioner also provides guidelines, bulletins about Fire Safety for Construction and Demolition Sites, and position papers about fire safety on their website, at *https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/fire-safety*.

WHERE CAN I ACCESS THE NEW BC BUILDING AND FIRE CODES 2018?

Online versions of both the BC Building Code 2018 and BC Fire Code 2018 are available for purchase from the British Columbia Codes website, at *www.bccodes.ca/index.html*. Print and print/online combination copies are also available.

DESIGNING GUARDS FOR BUILDING PROJECTS GUIDELINE UPDATED

The *Professional Practice Guidelines – Designing Guards for Building Projects* were developed to guide professional practice related to the design of guards. Guards are considered secondary structural components of buildings, and are critical to life safety because they are a barrier that prevents people from falling from a height. These guidelines were first published in 2013; this revision was released on December 11, 2018.

A variety of issues are discussed in these guidelines, including roles and responsibilities, design considerations, continuity of professional responsibility, and assurance pathways. This revision was undertaken to reflect current industry standards and practices, with the most notable change being the introduction of a new CSA standard, CSA A500 Building Guards, which is a comprehensive Canadian standard on the design, testing, and implementation of guards and provides explicit guidance on the use of glass in guards.

Guards play a significant role in public safety and these guidelines help to ensure that the design and construction of a guard will meet the appropriate standard of practice and the requirements of the applicable building code.

These guidelines were reviewed by a group of technical experts, and also received the endorsement of the Structural Engineers Association of BC and of the Architectural Institute of BC.

This and other professional practice guidelines, along with additional professional practice resources, can be found on the association's website at *egbc.ca/Practice-Resources*.

ASSOCIATION CLARIFIES SEALING INSURANCE DOCUMENTS

Some Authorities Having Jurisdiction, such as municipalities, have increasingly been asking engineering and geoscience professionals to seal documents that do not contain engineering or geoscience content. Often, these documents are intended to confirm professional liability insurance coverage.

The association issued a Member Advisory that clarifies how members should respond if asked to seal documents that do not contain engineering or geoscience content.

The advisory "Sealing Insurance Declarations" is available at *egbc.ca/guidelines*. Members may also wish to refer to Quality Management Guidelines—Use of Seal, found at *egbc.ca/Quality-Management-Guidelines*.

YOU MAY BE COVERED BY SECONDARY PROFESSIONAL LIABILITY INSURANCE

Did you know that many engineers and geoscientists across Canada have secondary professional liability insurance? Engineers Canada provides this insurance to all members in good standing at participating regulators—including all members of Engineers and Geoscientists BC—as part of their membership. This type of insurance benefits engineers and geoscientists by providing coverage in situations not covered by primary insurance; it also assists in maintaining public safety through features such as whistleblower coverage. Engineers and Geoscientists BC provides the details of this insurance, along with links to Engineers Canada videos that explain the nature of this insurance coverage and whistleblower protection, on its website. Visit *egbc.ca/secondary-insurance* for more information.

BIG DATA'S IMPACT ON MINING

Not long ago, artificial intelligence, machine learning, big data, and virtual reality seemed like futuristic ideas of science fiction. But they're here, and they're quickly changing the landscape of planning and design—even for a conservative and risk-averse industry that sometimes seems like it hasn't changed much in decades.

The bucket of Teck's smart shovel is outfitted with x-ray sensors that can distinguish between waste rock and ore. The sensors report the bucket's contents in real time to determine whether the load should be sent to the waste dump or processing plant.

It's tempting to think that Kevin Oke might be taking a friendly interoffice challenge a little too seriously.

But when the co-founder and Vice President of Business Development at Victoria's LlamaZOO Interactive straps on his HTC Vive virtual reality headset and grabs his wireless controller-paddles, he's not about to dominate the office pool on Doom VFR or Star Trek Bridge Crew. He wants to help planners, stakeholders, and decision-makers get a detailed and immersive 3-D view into the design and operation of a mining project thousands of miles away without leaving their office.

Oke and his colleagues are responsible for the creation of MineLife VR, which gives an exhaustive, 3-D virtual reality representation of a mining project. MineLife VR is capable of combining almost every imaginable project detail—the characteristics of the orebody itself and its drillholes over time, the mine plan, tailings dams, roads, buildings, area topography, nearby waterbodies, and mine operations—into a real-time virtual reality experience that allows engineers, geologists, mine staff, and executives to work from a centralized data source.

MineLife VR is one of the most prominent examples of the way that engineering and geoscience work is quickly transitioning towards digital technologies and leveraging big data: that is, extremely large data sets (versus what used to be small, disparate, and soloed data sets) and imagining new ways to use it.

MineLife VR combines data from many disciplines and sources to provide a visual, 3-D representation of an entire mining project. MineLife VR can combine geological and drillhole data (both current and historical); orebody shape, composition, and location; mine features like tailings dams and pits; and infrastructure items like roads and buildings. It can also incorporate real-time machinery GPS and sensor data, giving operators immediate insight into mine operations.

This confluence between big data, engineering and geoscience innovation, virtual reality, and relative digital newcomers like machine learning and artificial intelligence, are at the heart of the Government of Canada's "supercluster" initiative: five national consortiums from the worlds of high-tech, computing, industry, and academia. BC's supercluster, called "Canada's Digital Technology Supercluster", comprises some of the province's biggest names on its list of founding members: Avcorp, Boeing, Canfor, Teck, TELUS, Microsoft, GE Digital, D-Wave Systems, Deloitte, and LlamaZOO. Altogether, BC's supercluster lists 413 companies, 24 post-secondary institutions, and 67 non-profits.

The BC supercluster officially launched in late November 2018, with $153 million in federal funding from the nearly-$1 billion pledged to the superclusters over 5 years. The government says that amount will be matched by the private sector and will create 50,000 jobs over 10 years.

The theory behind the five national superclusters is to cross-pollinate various-sized companies with not-for-profit, academic, service delivery, and research institutions. Organizations that seem to make strange bedfellows could find themselves working on a project or technology that they wouldn't have otherwise—at least not without the supercluster making the introductions, guiding the path, and shuttling the funding to the right parties at the right time.

Even before its recent official launch, the BC-based digital technology supercluster has been busy in the background, developing a collection of made-in-BC projects. One example is the Earth Data Store (EDS), a large-scale earth observation data ecosystem that combines massive data and machine learning at its core. The project, involving UrtheCast, Geoscience BC, Microsoft, Sparkgeo, Bioenterprise, UBC, and UVic, includes a collection of six satellites that will capture high-quality, daily multi-spectral images of the Earth.

That kind of data detail, accuracy, and quality sounds enticing to anyone working in resource industries in Canada and around the world. But it comes at a cost: UrtheCast's satellites will generate six *trillion* new pixels every day—that's nearly 300,000 times more pixels than a professional digital camera. That amount of unmanaged data won't be very useful to anyone. So the supercluster partners will combine cloud-based computing, machine learning, and high-speed networks to receive each pixel, check and adjust it for quality and calibration, authenticate the results, and then upload scientific-quality data to the EDS. The outcome is that massive amounts of high-quality data will be made constantly available to resource industry experts, quickly, and without human intervention.

Victoria Sterritt, P.Eng., is Lead, Technology and Innovation at Teck Resources, Canada's third-largest company and a founding member of the digital technology supercluster. Teck has been placing a much greater emphasis on technology and data. High-tech instruments are increasingly normal at Teck's operations and projects: instruments like blast balls that track ore movement before and after blasting, so Teck can better distinguish between waste rock and ore; shovel sensors that x-ray the rock inside of a shovel's bucket; and truck-outfitted monitors that predict maintenance demands before they occur.

Sterritt thinks that companies like Teck still stand to benefit from the relationships the supercluster are meant to foster. "We see [the supercluster] as an excellent opportunity to collaborate with leaders in technology and industry to exchange insights and data with likeminded partners to solve our shared challenges," she said.

But Sterritt says, for both Teck and the supercluster, acquiring data is important but is not the main focus. "We're fortunate

Continues on page 36...

ACCESSIBLE DESIGN

ACCESSIBILITY IS BECOMING AN INCREASINGLY IMPORTANT FACTOR IN BC—BUT ARE WE DESIGNING FOR AN ACCESSIBLE FUTURE? HERE, WE GIVE TWO EXAMPLES OF BC ENGINEERS HELPING TO DEVELOP AWARD-WINNING, LIFE-CHANGING, ACCESSIBILITY DEVICES.

ROBIN J. MILLER


Tap your card, not your wallet.
Fare Paid Zone
Valid Fare Required Beyond This Point
TRANS LINK

In early January 2019, Metro Vancouver released some startling figures for its TransLink system. While most North American transit systems lost riders in 2018, TransLink counted more than 430 million "boardings" by the end of the year, an increase of nearly 20 percent since 2015. Some 26 of those boardings were made in just a few short hours by a wheelchair user so ecstatic about receiving his first hands-free fare card that he couldn't resist going from station to station to test it out. "I received a call from TransLink because they were concerned about the security of his card," says Ashish Sachdeva, Director of Hyperlight Systems, which partnered with TransLink on the new hands-free fare gates, but instead of multiple people using the same card, "it turned out to be one person who was just really, really excited."

Which is certainly a better reaction than when TransLink first made the switch to a tap-and-go fare card system in 2016. That switch was supposed to make the SkyTrain and SeaBus faster and easier to use, but it unintentionally left out a segment of the wheelchair- and scooter-using population who are unable to use their arms to tap.

When TransLink realized its mistake, the corporation quickly offered wheelchair users the option to call an attendant for help. When that, too, proved unsatisfactory, TransLink began exploring the idea of building new separate gates for wheelchair users at every station—a very expensive proposition that would also isolate wheelchair users from everyone else.

Enter Vancouver's Hyperlight Systems.

"Our idea," says Sachdeva, "was to place wireless RFID readers above existing accessible fare gates at every station," so that the gates would open as soon as a rider with a special fare card got within about two to three metres, and then close after the rider has passed though. It was a relatively simple idea that ensured wheelchair users would have both independence and equality, could be installed more quickly than new gates, *and* would keep the budget to a more manageable level. But it had—until now—never been used in this way on a mass transit system, anywhere.

With TransLink on board, Hyperlight asked AES Engineering "to steer the engineering infrastructure and design for the project," says AES Senior Associate, Philip O'Neill, P.Eng. "As the prime consultant, we coordinated with local architectural and structural practices, and designed the data and the power services for the RFID equipment."

Challenges included figuring out how to route cabling within the stations—"TransLink does not like to have power conduits in the walls," says O'Neill, "so they must be hidden"—and the fact that each station is architecturally and structurally different. "Some have ceilings that are 20 feet high, others are lower, some are beautifully decorated. We had to come up with ways to align with each station's finishes and also suspend the readers so that they were not in the way of existing signage."

By far the biggest challenge, however, was the project's extremely ambitious timetable. After extended collaboration with a focus group drawn from Disability Alliance BC and the Neil Squire Society, a local spinal cord injury association, the team piloted the readers at three stations in late 2017. They worked so well that TransLink CEO Kevin Desmond asked them to install the technology at all 56 SkyTrain stations and two SeaBus terminals by the end of 2018. "And we did it," says O'Neill. "It was a huge success in terms of the team and delivering the project on time and on budget." It has also resulted both in considerable interest from other transit systems around the world and in a number of awards, including a 2018 Innovation Award from the Canadian Urban Transit Association.

But while receiving awards is great, of course, what has meant even more to Sachdeva was what the first hands-free user said the day the system was officially launched: "He said it was magical. From a tech design perspective, that's what you wake up for each day."

Jeanie Malone, EIT, probably understands exactly what Sachdeva is talking about. In October 2018, she and three fellow UBC master of biomedical engineering students—Carly Jones, Taylor Molde, and Avineet Randhawa—were both surprised and gratified to win second place in the national 2018 Innovative Designs for Accessibility (IDeA) student competition. Their invention: a device that makes it possible for quadriplegic wheelchair tennis

ORGANIZATIONAL QUALITY MANAGEMENT PROGRAM

The following organizations have recently received OQM certification.
To find out more, visit *egbc.ca/oqm*.

Altec Inspection Ltd.
Aspyr Engineering
Burnaby Engineering Associates Ltd.
CR Engineering Inc.
Equilibrium Engineering Ltd.
Geber Consulting Group (Engineering Services)
GWES Greywater Environmental Solutions
J. Tuama Engineering & Consulting Ltd.
McCuaig & Associates Engineering Ltd.
Metso Minerals Canada Inc.
Ministry of Forests, Lands, Natural Resource Ops & Rural Dev, West Coast Region
PMY Consulting Ltd.
SNT Geotechnical Ltd.
Urban Geo Engineering Ltd.
Weiler Smith Bowers Consulting Structural Engineers

This mitten helps wheelchair tennis players maintain their racket grip and angle during games.

players to stop using skin-ripping hockey tape to secure their rackets to their hands.

According to the International Tennis Federation, wheelchair tennis is one of the fastest growing sports in the world. But the equipment has lagged behind the players. BC's Rob Shaw, a world-ranked quadriplegic tennis player, has stated that the team's invention "will allow international athletes like myself to compete and train at the highest possible level." Even more than that though, it will allow many more recreational players to get out on the court with confidence and control.

"Anyone doing a master's degree in biomedical engineering at UBC can opt into the Engineers in Scrubs program," says Malone, which is designed to match health care clinicians with a problem they currently face in their daily practice to engineers who can potentially help them solve that problem. When the Rick Hansen Institute for spinal care research described the need for a better racket grip, Malone, Jones, Molde, and Randhawa came together as a team to see what they could come up with.

"It was a very intensive four-month development," says Malone, "that used many more of our skills than we expected initially—like sewing!" To begin, the team spent a lot of time watching wheelchair users play tennis and speaking to top-ranked athletes like Shaw. What they learned is that the players not only need help in maintaining their grip on the racket over the duration of a game, but also in keeping the racket at the correct angle. At the same time, the players also need to be able to use their hands to pivot the wheels of their chairs quickly.

The resulting, award-winning device is essentially a soft cloth mitten with pockets for custom-molded rigid plastic components inside and Velcro straps outside: easy to get into and comfortable to wear, but also providing a grip firm enough to return a mid-court serve and both flexible and sturdy enough to spin a wheel. "We learned a lot about templating and about hard and soft surfaces," says Malone, "and also about impact and direction and control. The hardest part was perhaps figuring out how to deal with hands that can have very different function. It depends on the injury. You might have someone who can't insert their fingers, or who has movement in some fingers but not the thumb, who has a flaccid hand or has to force open their hand."

The custom molding and adjustable straps allow the mitten to work for a variety of players, and at least five athletes are now using the prototype. "The diehards who use hockey tape now might never change, but others will join in if it's more comfortable and safer," Malone says. While the team has no intention currently to pursue manufacturing the device ("we're all running full steam as it is," she says), there is a potential market for it not just within the wheelchair tennis world—1,000 players and counting in Canada alone—but also in a modified form for use by quadriplegic athletes in other sports, such as curling, table tennis and kayaking.

It could also be adapted for anyone with lesser hand function, says Malone, "including people with injuries, arthritis, or carpel tunnel syndrome" to help with daily life, which may be why Universities Canada, which administers the IDeA Competition on behalf of Employment and Social Development Canada, decided to recognize it in a contest that normally focuses on other aspects of accessibility, such as architectural or website design. "We didn't see ourselves fitting in," says Malone, "so it was very surprising to win. Great, too. Maybe in the future we'll come back to working on the mitten again. It's definitely something we're considering." ◆

MEASURING PERFORMANCE IN A CHANGING LANDSCAPE

Engineers and Geoscientists BC has a proud history of effective self-regulation. As a professional regulator, we are accountable to government and to the public we serve, and are responsible for supporting our members in meeting their professional obligations—and how well we're meeting the expectations of our stakeholders is important to us.

As we navigate a new regulatory model for engineering and geoscience in BC—including new legislation and oversight (SEE PAGE 8)—it's more important than ever to ensure our stakeholders understand and are aligned with our primary mandate.

This past August, we surveyed two key stakeholders—the public and members—to check in on their expectations of us as a regulator, and how well they felt we were delivering on our mandate.

STRONG ALIGNMENT WITH PRIMARY MANDATE

Our surveys revealed some very positive results, indicating strong alignment with our primary mandate among both members and the public.

When it comes to the public's perceptions, they continue to demonstrate high levels of respect for both engineering and geoscience. The responsibilities they believe are most important—setting practice standards and guidelines, assessing qualifications of applicants, and investigating complaints and disciplining members—are also our mandated responsibilities.

Consistent with previous waves of research, the public demonstrated an increasing desire for stronger regulatory tools and programs. Respondents placed a high level of importance on each of the current or potential regulatory activities we measured, including regulating firms, conducting practice audits, and advising the public of disciplinary actions.

Members are also aligned with our primary mandate, saying that enforcing standards of practice, protecting the public interest, and setting standards of entry are most important to them. About eight-in-ten members are satisfied with how Engineers and Geoscientists BC is carrying out each of these duties, and members are also satisfied with the current standards for entry to the professions and professional practice.

When it comes to to members' perceptions of how the association protects their interests, 88 percent feel satisfied or neutral regarding the work we do to protect members' interests, and the majority feel the association is doing "about the right amount" in this area. While 29 percent feel the association is doing "too little" to protect their interests—an area for further exploration—most are aligned with the association's primary mandate in that they believe the association should put the interests of the public before the interests of members. Very few—just seven percent—feel that the association should put the interests of members first.

Members viewed the association's work to promote the professions as less important than its primary mandate, and had mixed views on whether more work should be done in this area. While 47 percent feel more could be done to promote the professions, 42 percent are satisfied with what currently happens.

WHAT'S NEXT?

As we navigate the changes 2019 is bound to bring, Engineers and Geoscientists BC will continue to reinforce its mandate with its key audiences. And it will be important to engage all of our stakeholder groups—government, the public, and members—to identify how we can enhance on how we deliver on this mandate.

In particular, it will be critical to continue working with government as the *Professional Governance Act* is implemented; this is a process that is expected to take several years. While the legislation sets the framework, regulations are yet to be developed, and will be the most important component because they will specify how the *Act* will be implemented.

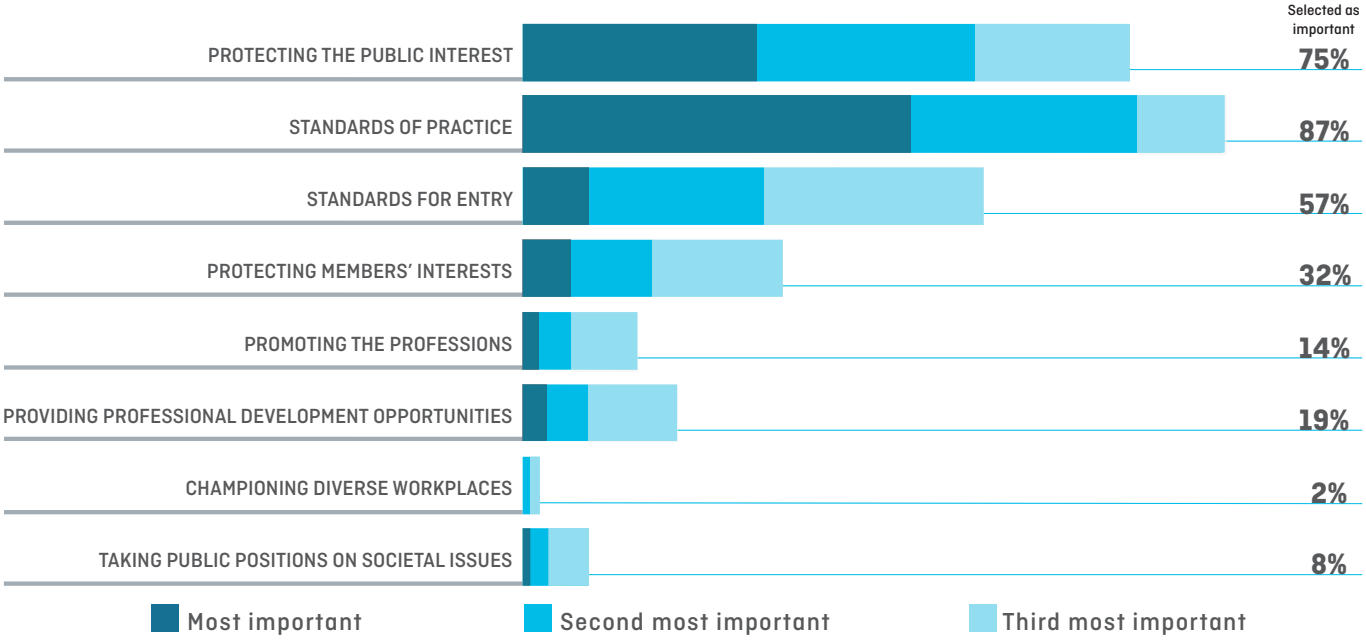
With our members, we will continue to track engagement and expectations; we'll also look for ways to address any gaps that are identified, and to address any risks or opportunities.

For the public, we will focus on building on our strong reputation and growing awareness, and will continue to measure how we are meeting their expectations as a regulator responsible for protecting their interests. ◆

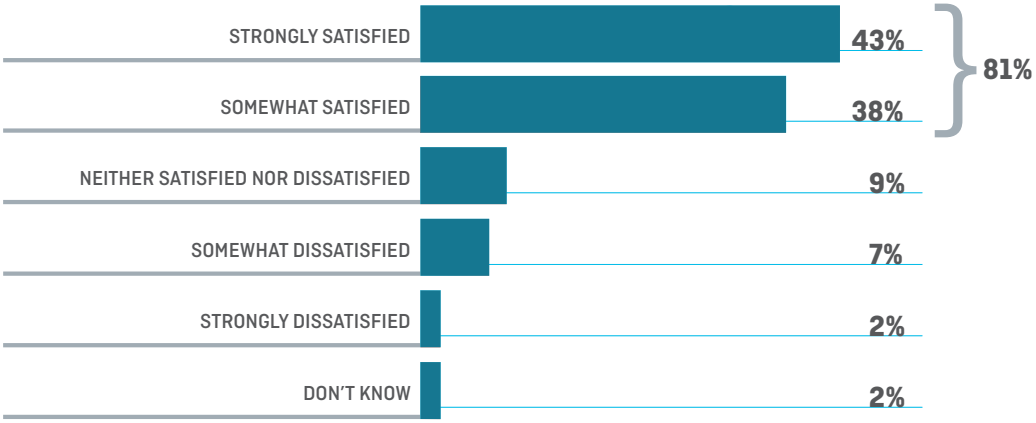
ADDITIONAL INSIGHTS

- Most members (81 percent) are satisfied with Engineers and Geoscientists BC's performance in fulfilling its mandate
- Public awareness of Engineers and Geoscientists BC is increasing: 32 percent in 2018, compared to 27 percent in 2017, and 21 percent in 2014
- British Columbians continue to demonstrate a high level of respect for both professions (93 percent for engineers, 80 percent for geoscientists). They use broad terms to describe what each profession does, describing engineering as mostly civil (build/construct roads, bridges, structures) and geoscience as studying the earth or checking for ground stability.

MEMBERS SAY **ENFORCING STANDARDS OF PRACTICE** AND **PROTECTING THE PUBLIC INTEREST** ARE MOST IMPORTANT TO THEM



MOST MEMBERS ARE **SATISFIED** WITH OUR PERFORMANCE IN FULFILLING OUR MANDATE



BUILDING ACCESSIBILITY

It's easy to take built environments for granted. But if you happen to have a disability, environments built without sensitivity and forethought can make everyday tasks inconvenient, impossible, or even dangerous. BC engineers with the Rick Hansen Foundation and the City of Vancouver are hoping to ensure that built environments leave no one behind.

ROBIN J. MILLER

Previous page: Vancouver International Airport received a Gold rating under the RHFAC program in 2018. Accessibility features include induction loops to help hearing aid wearers pick up announcements; textured flooring for easy wayfinding; and pet relief stations for assistance animals.
Photo: Rick Hansen Foundation

Right: A RHFAC Professional assesses the accessibility of a restroom.
Photo: Rick Hansen Foundation

For 26 months, starting in March 1985, Rick Hansen was the Man in Motion, covering 40,000 kilometres across 34 countries and making the world take notice that people with disabilities are capable of tremendous accomplishments. He founded the Vancouver-based Rick Hansen Foundation in 1988 to enable people with disabilities across the country to reach their full potential, and create communities that are fully inclusive and accessible. In 2018, the foundation reached its latest major milestone, officially launching the first program in Canada to measure the level of meaningful building access beyond what's required under building code—with assistance from Patricia Short, P.Eng.

"I joined the Rick Hansen Foundation as a volunteer in 2014," says Short, "because I wanted to work with an organization that I believed in and use my professional skills to make a difference." Those skills are many and varied. After a career in Ontario that included working as a civil engineer with Bell Canada and earning an MBA, Short switched gears to retrain as an IT consultant when she moved to BC. Through that consulting work, she also discovered a love of teaching, and went back to school yet again for a Provincial Instructor Diploma. It was this combination of skills and experience that uniquely qualified her to shift from volunteer to instructional designer/consultant for the foundation in 2015.

"After I started at the foundation," she says, "I quickly became immersed in a new program they were working on—the combined vision of Rick Hansen and Brad McCannell [Vice-President, Access and Inclusion]—to develop a certification program that would rate buildings for their accessibility." Building accessibility remains one of the most fundamental barriers faced by people with disabilities. While most building codes have been rewritten to try to accommodate people in wheelchairs (and indirectly also help out parents with strollers, couriers delivering heavy parcels, and your Uncle Ned after his skiing injury), they still have not solved a number of issues wheelchair users face with the built environment, and few, if any, have considered the needs of people with other disabilities, such as loss of vision, hearing, agility, or cognition. Considering that 22 percent of Canadian adults currently identify as having a disability, and there are 1,000 Canadians turning 65 every day, this is a significant oversight.

Poor accessibility means that people with a disability, whether temporary or permanent, visible or invisible, may struggle with the things most of us take for granted, like meeting for coffee with a friend, navigating successfully through an airport, or safely getting out of our apartment in an emergency.

"The idea the foundation had was to create a system, modelled after LEED, that uses trained professionals to assess a commercial, institutional, or multi-unit residential building—as well as other elements of the built environment, such as a pathways or trails—and give it a rating that will help both owners and users understand the level of accessibility in that site," says Short. When the team asked if she would be interested in collaborating on the design and development of an assessor course, as well as delivering the training, "I jumped at the chance."

Short delivered the first Rick Hansen Foundation Accessibility Certification (RHFAC) Accessibility Assessor Training pilot, mixing theory with extensive hands-on practice, at Vancouver Community College in late 2016. After a further pilot in 2017, she delivered the official version of the course five times in 2018: three times in BC, and twice at Nova Scotia Community College. Colleges in Ontario and Alberta are now offering the program, too. On completion, participants may choose to sit an exam to receive their RHFAC Professional designation, which will then allow them to conduct ratings.

The course is primarily geared to people with a background in engineering, architecture, or construction. "Rating a building can be quite subjective at times—it's as much an art as a science," says Short. "You have to know how to look at each site individually to judge how it is used and determine if there is meaningful access." Meaningful access, based on

the concept of universal design, considers all users and their entire experience within a space. "Everyone," says Short, "regardless of who they are, should be able to navigate the built environment from the moment they arrive to the time they leave, without adaptation."

The first of BC's designated RHFAC Professionals have been kept busy, working through a backlog of requests for ratings. Some were paid for by building owners, but many others sponsored by the BC Government through a quickly over-subscribed program providing a free assessment for 1,100 buildings, plus the opportunity to apply for funding of up to $20,000 to complete an accessibility improvement project.

Patricia Short says that having engineers and architects qualify as RHFAC Professionals is useful not only to owners and tenants of existing buildings, who will be able to use the information gleaned from the assessment to make improvements and showcase their accessibility rating much as LEED-qualified buildings do now, but also to future owners and tenants, who will benefit from engineers and architects applying their new knowledge. "This is where the real difference will be made," she says, "as these RHFAC Professionals integrate accessibility into their everyday jobs. Our hope, eventually, is to have the training become part of every university engineering and architecture program in Canada."

But the Rick Hansen Foundation is not the only Vancouver-based organization working toward world-leading accessibility standards for the built environment.

The City of Vancouver itself is continually working to improve accessibility in new building and street design.

This commitment to accessibility goes back many years, but received renewed emphasis in the mid-2000s, when Sam Sullivan was mayor. "At that time, both the mayor and a city councillor, Tim Louis, were wheelchair users," says Vancouver's Chief Building Official, Pat Ryan, P.Eng., "which I think helped accessibility become embedded, something that we and the council just did, no debate. Now it is part of our culture. We have put a lot of effort into understanding and relating to being disabled, and to the goal of ensuring not two levels of service—one for abled and one for disabled people—but equal access to equal services."

That effort has resulted in a number of firsts for the city, including most recently being the first city in Canada to require all new homes—single-family homes, townhouses and laneway homes, as well as multi-unit buildings—to be adaptable not only for people with a range of disabilities to live in safely and comfortably, but also to allow seniors to age in place. In addition to wider doors and hallways for easy transit by wheelchair or walker, and wider stairs to accommodate stair lifts, new homes in Vancouver must now be constructed to allow for retrofitting, so that, for example, "a bathtub can be replaced with a level-entry shower stall," says Ryan, "without significant cost or major renovation."

In street design, too, "we do a lot of work to evolve our accessibility standards," says Eileen Curran, Engineering Assistant for the city's Streets and Electrical Design Branch. Some of that evolution involves what she calls "the usual stuff," like reducing vibration in sidewalks to make them more comfortable for people using wheelchairs, scooters, and walkers. Other projects are more cutting-edge (so to speak), such as adding extensive score-lines to the curb ramps at intersections, so people with low vision using white canes can feel where a ramp starts and ends.

But perhaps the most interesting street design work is happening near Vancouver General Hospital on West 10th Avenue. Recently, engineers put down poured-in-place, recycled rubber sidewalk sections to test their ability to solve

The Blusson Spinal Cord Centre—home to ICORD, UBC's spinal cord injury research centre—recently received a RHFAC Gold rating. The building features wide pathways, plenty of spaciousness, a colour-glass interior, accessible washrooms and elevators, and a 200-metre-long entrance ramp with a 5 percent incline. Photo by Wendy Niamath

two issues at once: "be permeable enough to allow some really big old trees stay in place longer," says Curran, "and provide a really nice, quiet surface to wheel on." Within that area, the city is also testing at-grade crosswalks, which are easier for wheelchair and walker users to navigate than curb ramps, but is also equipping them with high-contrast tactile paving—textured inserts placed just before intersections—to provide a warning to vision-impaired pedestrians that they are about to step out into the road. "Only some people can detect the contrast in colour, but everyone with a cane can pick up the sound and feel of the tactile domes."

Future challenges for Vancouver, says Building Policy Engineer, Kevin Lau, P.Eng., include beginning to grapple with how to make the city more accessible for people with cognitive impairments. "Cognitive issues are not dealt with in current codes," he says, "but we know we need to do things like make sure pathways and exits are really clear and intuitive." Like other accessibility and adaptability measures, he says, "that can only be good for everyone." ◆

Located on the northwest coast of British Columbia, Rio Tinto's aluminum smelter in Kitimat is one of the largest manufacturing complexes in the province.

Photo: Rio Tinto

EITs AND THEIR EMPLOYERS SEE BIG BENEFITS FROM ACCREDITED MIT TRAINING PROGRAM

Peter Lillos, EIT, works at Rio Tinto's aluminum smelter in Kitimat, one of the largest manufacturing complexes in the province. Lillos had been progressing towards his professional engineer (P.Eng.) designation when he read about Engineers and Geoscientists BC's Accredited Employer Member-in-Training Program in the March/April 2018 edition of *Innovation*. Lillos was intrigued.

"While working towards completing my competency experiences, I realized I had difficulty proving a few of the examples," explains Lillos. "I discussed this with other [engineers-in-training] (EITs), who said that they had experienced similar issues. I realized that if I had adhered to a more defined structure through my earlier working years, I would not have faced these issues."

Lillos saw that the program had the potential to help him and others like him become better trainees and develop better and more applicable technical skills—and he became convinced his organization needed it. He researched the program on the Engineers and Geoscientists BC website and soon developed a proposal for his senior managers that explained how the program would benefit the entire company. The goal was to demonstrate how gaps in their current EIT training could be addressed where the progression path was unclear.

"Rio Tinto has offered some excellent opportunities to develop experience," he said. "However, as we are a manufacturing facility, there are not always consistent training opportunities from projects that are present at regular intervals. By establishing a more defined program and starting the discussion earlier in their careers, I knew that EITs across the site would be able to find more opportunities to develop their competencies."

The Accredited Employer Member-in-Training Program is a unique partnership between employers, their EITs, and Engineers and Geoscientists BC, designed to assist EITs in their progression towards professional licensure. It establishes a framework that defines how EITs are trained and satisfies Engineers and Geoscientists BC's competency requirements. That means that employers can offer their MITs an expedited path towards professional licence, and it helps EITs develop into proficient, skilled professionals.

Through the program, employers design their own training regimens for their EITs, and then apply to the association to become accredited. The program gives the opportunity for employers to match their real-life training with the association's competency requirements towards licensure.

Participating employers have seen an increase in hires as the program enables them to attract EITs who express an interest in becoming professional engineers, but don't want to change employers to gain suitable experience.

Many EITs see the program as a fast-track route to their P.Eng. However, participants soon discover other advantages. Some appreciate the presence of the designated 'Head of Scheme'—a sort of coach who oversees the program, progresses the competency reviews, and gives direct support to EITs. Others like how the program increases collaboration with their supervisors

and provides access to a single administrative contact at Engineers and Geoscientists BC.

Lillos explained these and other benefits of the program to his managers at Rio Tinto, who agreed to participate after listening to Lillos' presentation. He spent part of this past summer fulfilling accreditation requirements, such as finding a suitable Head of Scheme and recruiting professional engineers to serve as competency assessors.

Brent Volk, Technical Services Manager, accepted the role of Head of Scheme because he saw the how the program promoted and recognizing technical careers, supported technical development, and improved employee engagement and retention.

"The competency development goals of Engineers and Geoscientists BC are very well aligned with Rio Tinto. If we can reinforce the development of those competencies by being part of the program and support engineers in getting the certification they are deeply invested in, everybody wins," he said.

With the appropriate documentation submitted and specific roles approved, Lillos and Volk arranged to have an Engineers and Geoscientists BC staff person come to the plant in Kitimat to hold a training session for the EITs, professional engineers, supervisors, and staff members involved in the program. Within a week, Rio Tinto was granted accreditation and their first group of EITs are already enrolled in the program.

"[Rio Tinto] is one of the biggest, if not *the* biggest, private sector employers in BC. We need to attract and retain great technical talent and help them grow," Volk said.

More information about the Accredited Employer Member-in-Training Program is available at *egbc.ca/Accredited-Employer.* You can also contact Leila Lagroix, Member-in-Training Program Administrator, at *llagroix@egbc.ca*.

MARCH IS NATIONAL ENGINEERING AND GEOSCIENCE MONTH

For Christina Noël, EIT, the path toward a career in engineering started when she was just 13 years old, when, in 2006, she joined her first popsicle-stick bridge building contest, hosted by the association's South Central branch. "I was already interested in science and math, and this seemed like the perfect opportunity put those theoretical concepts to life," she says. "Plus, it looked like lots of fun."

In her first year of competition, Christina placed first in her category with a bridge that bore a load of 133.4 kilograms. She competed for five years, closing her tenure with 1,066-kilogram bridge that placed her first overall. She "retired" from competition in 2010.

Did she ever get bored of competing in the same competition, year after year? "Not at all," she says. "I kept learning with each new bridge I built, improving upon what I already knew, and making new designs to make them better and stronger."

March is National Engineering and Geoscience Month (NEGM)—and it's stories like Christina's that make it so meaningful. NEGM aims to inspire elementary-aged children to learn and appreciate science, technology, engineering, and mathematics (STEM). This March, Engineers and Geoscientists BC and its branches around the province will hold family-oriented events such as popsicle-stick bridge building contests and Science Games. These events help kids and their families learn about math and science concepts in an entertaining way. By making STEM easy-to-understand and interesting, the association hopes to inspire interest in STEM.

Christina went on to study civil engineering at UBC, during which time she received four Engineers and Geoscientists BC Foundation and branch scholarships, was Vice President of the UBC Civil Engineering Club, and Documentation Co-Lead on the UBC Concrete Canoe team. She now works at SLR Consulting as an environmental engineer, and continues to volunteer at the association.

She says that without events like the popsicle-stick bridge building contest, she wouldn't be where she is today. "I have kept in touch with so many people that I met at these events, she says. "Learning this way is important for all kids, especially for young women," she says.

Noël advises kids with an interest in STEM should use NEGM to hone their skills and meet people. "Keep an open mind and explore everything—there are so many different choices out there," she says.

To find an event near you, visit *egbc.ca/negm*.

IRISH GEOLOGISTS HONOUR BC TRAILBLAZER

The former CEO of Geoscientists Canada, Oliver (Ollie) Bonham, P.Geo., has been made the first-ever Honorary Fellow of Institute of Geologists of Ireland (IGI) for his significant international contributions to Earth Science. IGI awarded the distinction to Bonham at a ceremony on October 4, 2018, in Dublin.

Bonham, a native of Ireland, served as CEO of Geoscientists Canada between March 2006 and March 2018. During his tenure, Bonham helped establish the association's Council, and standards allowing Canadians to create international Cooperation Agreements, including the including the much-valued Mutual Recognition Agreement with IGI.

Before his tenure at Geoscientists Canada, Bonham also served as the Executive Director and Registrar of the Association of Professional Geoscientists of Ontario, and held positions across Canada and in Ireland, Chile and the United Kingdom.

IGI President Catherine Buckley presented Bonham with the award, noting that many of Bonham's family, friends, and former colleagues travelled to Dublin to attend the event. Bonham presented the IGI with a book on Canada's geological heritage.

MEMBER CARDS GO DIGITAL

This year, Engineers and Geoscientists BC are providing members with digital membership cards instead of paper copies. To view your digital membership card, log in to *egbc.ca/account* and click on the **View Member Card** button. You can print a physical copy of the card, or, if you access this page from a mobile device, you can display the card in landscape mode. Scanning the barcode on the digital card will link to the member's profile.

CAROLINE ANDREWES, P.ENG., APPOINTED ACEC-BC PRESIDENT AND CEO

Caroline Andrewes, P.Eng., Immediate Past President of Engineers and Geoscientists BC, has been appointed President and CEO for the Association of Consulting Engineering Companies of BC (ACEC-BC).

Kevin Savage, Chair of the Board of Directors of ACEC-BC, welcomed Andrewes to the new position, saying that he is "very pleased to have a person with Caroline's background and abilities take on the leadership of our organization."

Ann English, P.Eng., and CEO and Registrar of Engineers and Geoscientists BC, says that Andrewes' experience at the association will help strengthen the ties between the two organizations. "We have seen Caroline's leadership proven in action in her roles as President and Past President here," she said.

Andrewes, also a Certified Professional Accountant, was first elected to Engineers and Geoscientists BC Council in 2014 and held the position of President for a one-year term that began in 2017.

ACEC-BC represents BC's consulting engineering companies that provide engineering and other technology-based to the public and private sectors. ACEC-BC represents 84 consulting engineering companies that employ 9,300 people in BC.

PHOTO: WENDY D PHOTOGRAPHY

DO YOU QUALIFY FOR A FELLOWSHIP FROM ENGINEERS CANADA OR GEOSCIENTISTS CANADA?

Engineers Canada and Geoscientists Canada both grant annual fellowships to individuals as recognition of their significant contributions to their respective professions.

Both the Engineers Canada Fellowship and the Geoscientists Canada Fellowship are given to individuals on the basis of specific criteria. For both fellowships, individuals may qualify if they provided noteworthy service, or served as a volunteer for the engineering or geoscientist professions for at least 10 years. In both cases, length of service can be combined with board or committee service with Engineers Canada or Geoscientists Canada, or volunteer work for the organizations' constituent organizations, (e.g., Engineers and Geoscientists BC, APEGA, etc.).

For more information about fellowships and the criteria for eligibility, visit *egbc.ca/Fellowships*.

Nominations for these fellowships must be made by constituent organizations. Engineers and Geoscientists BC is looking for your help in identifying members who qualify for this honour. Visit *egbc.ca/Fellowships* for the complete fellowship criteria and information on how to suggest someone for nomination. Engineers Canada Fellowship submissions may be made at any time. Geoscientists Canada Fellowship submissions must be received by April 12, 2019.

Engineers Canada and Geoscientists Canada fellows receive a certificate and a pin, and are given the privilege to use the fellowship designation (i.e.; "Fellow of Engineers Canada – FEC", "Honorary Engineers Canada Fellow – FEC (Hon.)", "Fellow of Geoscientists Canada – FGC", or "Honorary Geoscientists Canada Fellow – FGC (Hon.)").

To view lists of those who have already received fellowships, visit *www.engineerscanada.ca/awards-and-honours/fellowships/fellowship-recipients* and *www.geoscientistscanada.ca/about/awards-fellowships*.

DISCIPLINARY NOTICE: AHMED RAZA SYED, P.ENG., SURREY, BC

On December 23, 2018, the Discipline Committee of Engineers and Geoscientists BC suspended the membership of Ahmed Raza Syed, P.Eng., on an interim basis, pending the conclusion of a disciplinary hearing currently scheduled for February 20 and 21, 2019. Both the interim suspension and the disciplinary hearing relate to engineering services Mr. Syed provided regarding glass guardrail systems for multiple residential properties in Langford, BC.

The association's Discipline Committee found that the evidence concerning Mr. Syed's practice was sufficient to establish a real risk of danger to the public if Mr. Syed was not suspended pending the outcome of the disciplinary inquiry. The panel also found that an interim suspension was the least restrictive action proportionate to the risk Mr. Syed's practice poses to the public interest. In its determination, the Discipline Committee wrote the following:

1. The Panel accepted that this was an urgent application because the evidence gathered in the latter stages of the investigation revealed profound public safety concerns. There is a significant risk that guard rails that are not properly designed and installed in accordance with Code requirements may fail, which, in turn, can lead to serious injury or death.
2. The evidence concerning Mr. Syed's practice is sufficient to establish that there is a real risk of danger to the public if an interim order is not made pending the outcome of the inquiry.
3. In view of the evidence suggesting that Mr. Syed may be operating as a seal for hire and his inability to answer basic engineering questions and perform a basic calculation during the interview, the Panel finds that immediate interim action is necessary to protect the public.

The full text of the determination can be found in the Disciplinary Notices section of our website, at *egbc.ca/discipline-notices.*

The Engineers and Geoscientists BC website contains information on the complaint, investigation, and discipline processes. You can contact us at 604.558.6647 or toll-free at 1.888.430.8035 ext. 6647, or by email at complaints@egbc.ca.

DISCIPLINARY NOTICE: ELWYN (TED) BURCH, P.ENG., COURTENAY, BC

Engineers and Geoscientists BC issued a Notice of Inquiry to Elwyn (Ted) Burch, P.Eng., in July 2018 regarding engineering services he provided for a landslide assessment geotechnical report for a residential property in Comox, BC. Instead of proceeding to a disciplinary inquiry, Mr. Burch agreed to a Consent Order dated November 1, 2018.

In the Consent Order, Mr. Burch admitted he demonstrated unprofessional conduct, incompetence, or negligence by affixing his seal to reports and a Landslide Assessment Assurance Statement when he:

1. failed to qualify or limit the purpose for which the reports were prepared and indicated the reports could be used by the client "for any purpose" and that the Town of Comox could rely on the reports for applications for a development permit and a building permit when they were preliminary;
2. represented that the geoscience work he had performed was appropriate for the issuance of a development permit when the work was still preliminary and was not suitable for the issuance of a development permit; and
3. accepted responsibility for a professional assignment through the sealing of the report and the Assurance Statement when he was not qualified to do so.

Mr. Burch also admitted he demonstrated unprofessional conduct, by preparing the reports which were deficient and fell below the standard expected of a professional engineer with experience in geotechnical engineering, specifically by failing to:

1. include an adequate description of the field work, including failing to include an explanation of the location of test pits and the test pit logs, and a detailed description of his observations from his site visit;
2. either adequately describe the background information that he relied on, or alternatively failing to consider surficial geology maps and/or historical air photos;
3. reference in the reports that he relied on reports of others;
4. include on the site plan the topographic information for the property and its surrounding areas, and the recommended slope hazard mitigation recommendations;
5. provide an adequate description of the slope on the property, including the height of the slope;
6. describe the methodology and the assumptions he used when he calculated the factor of safety of the slope;
7. provide clear definitions of important qualitative and/or descriptive terms relating to the terrain and the perceived hazard levels identified;
8. adequately explain the basis for his conclusions with respect to the relevant geology and tectonic activity; and
9. provide clear slope hazard mitigation recommendations and failing to explain how the risks of shallow slides and/or erosion of the slope on the property by surface water would be mitigated by the recommendations made in his reports, and failing to include an assessment of the residual risks if your recommendations in the reports were implemented.

Mr. Burch admitted he contravened section 14(b)(2) of the association's bylaws when he failed to ensure regular, documented checks of the geological engineering work, and/or section 14(b)(1) of the association's bylaws when he failed to retain records relating to the geoscience work.

Mr. Burch admitted his conduct was contrary to Principle 1 of the association's Code of Ethics.

As part of the Consent Order, Mr. Burch agreed to the following:

1. His membership in the association is cancelled effective January 15, 2019.
2. Until then, he will transfer his ongoing professional engineering project files to other professional engineers, limit his practice to those project files he is currently engaged on, and refrain from providing landslide assessment services or slope stability analysis services.
3. If he re-applies for membership or licensure with the association, he must complete and pass the Professional Practice Examination and the Professional Engineering and Geoscience Practice in BC Online Seminar. If his application is approved, he must not provide landslide assessment services or slope stability analysis services, including signing or sealing landslide assessment reports, or by signing and sealing Landslide Assurance Statements.
4. He will pay $3,000 towards the association's investigation and legal costs.
5. If he fails to comply with any of the terms of the Consent Order, his membership in the association will be suspended until every default has been remedied.

Mr. Burch had previously been the subject of association disciplinary action. In 2015, Mr. Burch admitted that he demonstrated unprofessional conduct surrounding sewerage and hydrology-related engineering work on a property in Comox, BC. Mr. Burch was reprimanded and was ordered to immediately cease and desist from a series of engineering practices related to the disciplinary action.

The full text of the Consent Order can be found in the Disciplinary Notices section of our website.

Engineers and Geoscientists BC's website contains information on the complaint, investigation, and discipline processes. You can contact us at 604.558.6647 or toll-free at 1.888.430.8035 ext. 6647, or by email at complaints@egbc.ca.

...CONTINUED FROM PAGE 19

because the IT group at Teck has set us up well with respect to data acquisition. We gather terabytes of data every day," she says. "Now, our attention has turned to making the most of the useful data," she says.'

LlamaZOO's resident data scientist, Brad Oldham, EIT, understands that acquiring and herding massive amounts of data is both a key and a challenge to data-driven innovation. "Now, we can actually bring all that data together—facility planners, mechanical engineers, geologists, everything," he says. "Looking at a mine with all the data can help with road layouts and construction planning. Project planners don't have to make their design decisions based on what happens to be available or what they've chosen to look at. Planners instead can now explore the entire project and scenarios and use them as part of mine design process. It really helps to be able to see from concept to site preparation to resource extraction right through to reclamation," he says.

Oldham explains that, since mining projects are multidisciplinary in nature, various engineering and geoscientists disciplines, along with stakeholders and executives, had the tendency to view projects from within silos. Technical disciplines had trouble seeing projects holistically because their primary interest was ensuring their own areas met the project's technical objectives.

"Now, LlamaZOO amalgamates the data, and we're coaching clients on how to collect and store data that is more useful in a big data environment," he says. Seeing the data as one big piece instead of siloed information

helps their clients see the project from a holistic instead of multidisciplinary perspective, and that helps the decision-making process, he says.

Teck's Sterritt agrees, saying that there are "so many ways" that data-driven innovation and technology is influencing how engineers and geoscientists do their work in mining. "When we think of our mine planning engineers working beyond dozens of spreadsheets on their desktops, new technologies will help them to make safer, more sustainable and more productive decisions on designing and planning," she says.

Sterritt suggests that the availability of big data has created a big push towards analytics and visualization. "We're focusing on everything around machine learning and artificial intelligence," she says—and that is leading to virtual reality and augmented reality applications for visualizing those insights. Sterritt said it's also creating opportunities for data dashboards, using applications like Grafana and Microsoft's Power BI, both of which are analytics applications that convert the continuous flow of data into a real-time summary.

"Everyone generates and has access to so much more data now," says Oke. "Almost everything has connected or internet-capable sensors, and drones, 3-D scanners, and artificial intelligence are pumping out a torrent of new insights. And fat pipes are delivering more and more of this data all the time. So that means we can move more data more quickly," he says. "Sometimes our clients say that they've got more data than they know what to do with. It's being warehoused and they're not always sure how to make sense of it, get some context out of it. And that's where we come in." ◆

MEMBERSHIP

IN MEMORIAM

The association announces with regret the passing of the following members:

D.P. Barlow, P.Eng.
I. Borovic, P.Eng.
R.T. Boughner, P.Eng.
G.W. Clayton, P.Eng.
M.D. David, EIT
R.W. Durie, P.Eng.
J.S. Foster, P.Eng.
D.P. Goodenough, P.Eng.
G.F. Larose, P.Eng.
G.L. Laycock, P.Eng.
E.I. Mackie, P.Eng.
K.W. Major, P.Eng.
D.D. Mears, P.Eng.
R.R. Morrish, P.Eng.
P.J. Neild, P.Eng.
O.E. Owens, P.Geo.
R. Pakalnis, P.Eng., FEC
S. Papile, P.Eng.
R.L. Parrott, P.Eng.
K. Poremsky, P.Eng.
G.S. Prince, P.Eng.
R.R. Roenicke, P.Eng.
I.P. Scarth, P.Eng.
J.J. Szendrey, P.Eng.
J. Tomica, P.Eng.
A. Vitalis, P.Eng. ◆

INNOVATION AD INDEX JANUARY/FEBRUARY 2019

CONTINUING PROFESSIONAL DEVELOPMENT

PERSONAL INVESTMENT. PROFESSIONAL COMMITMENT.

MICROSOFT ONENOTE: A GREAT WAY TO MANAGE TIME AND INFORMATION

February 19, 2019 – Surrey, BC

Research tells us that executives waste up to 20 percent of the workday simply looking for files—never mind the aggravation after the information is found. It's time for a fresh collaborative approach to personal and business data organization, management, and retrieval. Enter Microsoft OneNote, a powerful information organizer that makes it possible to find what you need when you need it.

CONTRACT ADMINISTRATION AND CONTRACTUAL ISSUES FOR ENGINEERING AND CONSTRUCTION PROJECTS

February 20 and 21, 2019 – Vancouver, BC

This module will cover legal and contractual issues related to the effective management and administration of construction projects. It focuses on the roles and responsibilities of the project managers to contractors and suppliers. It provides project managers with a good understanding and the practical implications of the legal precedents and improves the ability to make better decisions. Legal cases and disputes situations will be reviewed and discussed with participants.

SPEAKING AS A LEADER

February 21, 2019 – Vancouver, BC

Speaking as a Leader is a highly interactive program that will show you how to lead every time you communicate. You will learn to organize your thoughts in a logical manner, craft key messages that will tell your audience what's most important, and use your physical and vocal presence to keep the audience engaged.

LEADING MAJOR CAPITAL PROJECTS

February 22, 2019 – Vancouver, BC

The level of uncertainty and volatility associated with major capital projects make a predictable outcome almost impossible to achieve, as these large projects are more complex and last longer. These projects present great challenge to busy leaders, managers, and executives. This session provides an opportunity to discuss the relationship between the business and project sides of the organization.

UPDATE ON THE 2018 BC BUILDING CODE: PARTS 1-3

February 22, 2019 – Vancouver, BC or via webinar

The new 2018 BC Building and Plumbing Codes came in to effect on December 10, 2018, and apply to building permits applied for on or after that date. This seminar will focus on the updates on the following parts of the 2018 BC Building and Plumbing Codes: Part 1 (General), Part 2 (Administrative Provisions), and Part 3 (Fire Protection, Occupant Safety and Accessibility).

LEADING AND MANAGING ORGANIZATIONAL CHANGE

February 26, 2019 – Vancouver, BC

This session is designed for professionals who want to better understand how to adapt to changes and how to lead others more effectively. You'll understand the impacts change has on employees, and how you can increase your organization's readiness levels.

IMPROVING CRITICAL THINKING

February 27, 2019 – Richmond, BC

Thinking critically is a mandatory skill in leading organizations. We will explore our capacity for critical thinking through a series of exercises. We will introduce and use tools to help us increase both our ability to exercise critical thinking, and to help others increase their critical thinking skills.

TAKING THE STAGE

February 28, 2019 – Vancouver, BC

Taking the Stage is a high impact program that enables women leaders to project a powerful leadership presence that commands recognition and respect. Unlock the power of your voice, and excel in the spotlight. This intensive seminar will show you how to be recognized for your views. You will learn how to develop a clear message, create a persuasive structure, and communicate it in a way that allows you to be heard the first time you speak.

PAVEMENT DESIGN AND MAINTENANCE FOR MUNICIPAL ROADWAY INFRASTRUCTURE

March 4 and 5, 2019 – Richmond, BC

This course provides an overview of the most popular design methods for municipal roadway pavements and then focuses on methods and procedures to evaluate pavement condition to determine how we can cost-effectively extend their service life. We will focus on the production and placement of asphalt concrete pavements, including highlights from the soon-to-be published Transportation Association of Canada project that developed best practices for the treatment of potholes.

CONSTRUCTION LAW FOR CONSULTANTS

March 7, 2019 – Vancouver, BC or webinar

Participants will learn about the critical contractual terms and your obligations under standard form construction contracts during the construction phase, strategies to resolve disputes during construction, schedule and delay claim issues and strategies to minimize the impact of delays, dealing with changes, dealing with deficiencies, and a brief review of the obligations owed by consultants under the Builder's Lien Act.

ADVANCED PROJECT MANAGEMENT

March 7 and 8, 2019 – Vancouver, BC

This project management course is designed for project executives, directors, managers, and project managers who are involved directly or indirectly in managing projects. The purpose of this course is to build on the Fundamentals of Project Management background by analyzing current industry practices and introducing some value-improving practices to enhance the delivery of complex construction projects.

UPDATE ON THE 2018 BC BUILDING CODE: PARTS 4, 5, 6, 7, 10

March 8, 2019 – Vancouver, BC or via webinar

The new 2018 BC Building and Plumbing Codes came in to effect on December 10, 2018, and apply to building permits applied for on or after that date. This seminar will focus on the updates on the following parts of the 2018 BC Building and Plumbing Codes: Part 4 (Structural Design), Part 5 (Environmental Separation), Part 6 (Heating, Ventilating and Air-conditioning), Part 7 (Plumbing Services), and Part 10 (Energy Efficiency).

PRESENTATION SKILLS FOR THE EXECUTIVE LEARNER

March 11, 2019 – Vancouver, BC

The number one fear for people is speaking in public. While public speaking can be a nerve-wracking experience, it may also be extremely beneficial for your career advancement. Those who effectively speak in public are more inclined to accept leadership roles and are often perceived as better leaders. The objective of this workshop is to help you be a polished, public speaker which can, in turn, enhance your career.

2-D RIVER FLOW MODELLING

March 11, 2019 – Vancouver, BC

The large number of 2-dimensional (2-D) depth-averaged flow models currently available attest to the fact that 2-D flow modelling is now a common and well-established practice in river engineering. The seminar provides the basic understanding of hydrodynamic flow models in general; and will focus on 2-D flow models and provides hands-on training using the HEC-RAS 5.0 2D (RAS2D) flow model.

For a complete listing of events or for more information, visit *egbc.ca/Events/Seminars* or contact us at 604.430.8035 or 1.888.430.8035.

CALL FOR PRESENTERS

Are you an expert in your field who would like to contribute to engineering and geoscience practice?

Engineers and Geoscientists BC is actively seeking members to present on a variety of topics. For more information, please visit *egbc.ca/Events/Seminar*.

ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

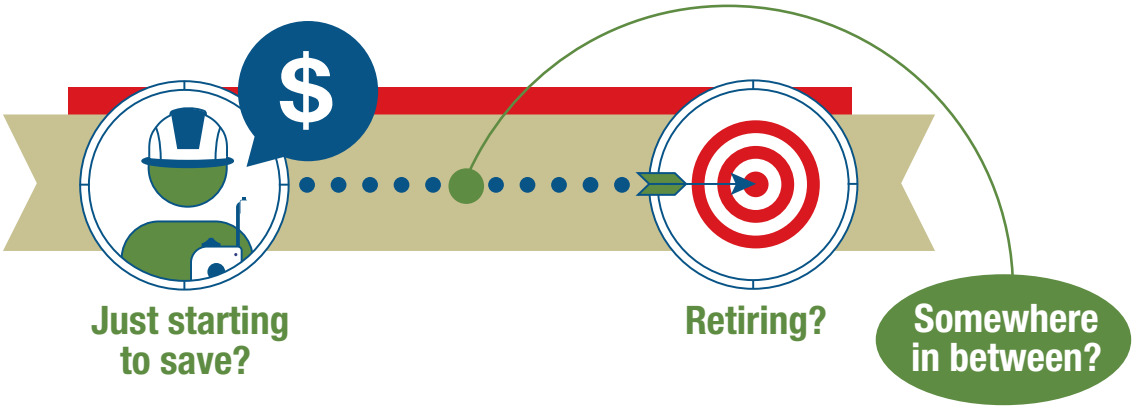
EXCLUSIVE

FINANCIAL SECURITY PROGRAM

For engineers, geoscientists, students and their families

Participants get

FREE INVESTMENT GUIDANCE



Angela Harvey can help you:

- Create a plan for your savings goals
- Invest wisely
- Retire with confidence

Contact Angela

1-866-788-1293 ext. 5786 or angela.harvey@gwl.ca,
or visit www.infosite.grs.grsaccess.com/engineers-canada

Sponsored by:

engineerscanada
ingénieurscanada

THE Great-West Life ASSURANCE COMPANY