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Jim Kells, Ph.D., P.Eng., FCSCE, President/
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Goals for My Presidential Year

Here it is, the summer of 2012, and I am just now winding up my 37th year as a member of the Canadian Society for Civil Engineering. Yes, my journey with CSCE began in 1975 when I joined as a student member of what was then a newly-minted learned society, albeit one that already had nearly a century of foundation under its belt.

In many ways, assuming the CSCE presidency is rather daunting, not only because I am following in the footsteps of many others who have given selflessly of themselves in leading our organization, but also because of the tremendous opportunities and challenges that are before us as we endeavour to move the society forward. Although I am not one to make big and bold promises of what I will try to achieve, I do promise to do my best with the financial and time resources available to me during my year in this role. And I invite our members and those who would care to join us as members to accompany me in this year-long journey.

By the time you read this article, we will all be reflecting back on our highly-successful annual conference held in Edmonton in June. I congratulate the co-chairs, Bob Driver and Jeff DiBattista for their hard work and offer the entire conference team a very warm vote of thanks.

Now let me take a few lines to look forward to the year ahead. Since the board workshop held some two and a half years ago under the direction of then-senior vice president Vic Perry, the society has been on a journey to establish a renewed vision, which is referred to as Vision 2020. Since that workshop in the fall of 2009, we have been working to develop plans to express that vision in tangible fashion so that we might make it truly a reality. As Vic did during his presidency, and as did Randy Pickle who followed him, I intend to keep us moving forward on this journey. This year, we intend to spend considerable effort in communicating the vision to our members and others, and to putting word into action. In this, we will be working to engage our core strength as exhibited in our Technical Divisions and through our leaders in the Regions and Sections who are on the front line of connecting with our membership.

The strategic plan, which expresses our new vision in some detail, has been a work in progress for more than a year. Arising from the board workshop held in November 2011, we established three strategic directions that we intend will focus our efforts over the next several years. These directions have been shared with you before in one manner or other, but it is worth restating them here: (1) enhancing our current program offerings so as to better support our members at all stages in their professional careers, (2) developing an improved focus on our newer and younger members so as to both better serve their needs and retain them as members, and (3) demonstrating leadership in sustainable infrastructure so as to better position ourselves in an area of importance to our profession and to our country. By using these directions to inform and guide us in all that we do, we will significantly strengthen our society. In many ways, adhering to these strategic directions is metaphorically equivalent to having all the rowers in a longboat pull in unison in the same direction; winning teams are those that do that best.

I look forward to working on your behalf as CSCE President throughout the coming year! ■

J.A. (Jim) Kells, Ph.D., P.Eng., FCSCE is Professor and Head, Dept. of Civil and Geological Engineering, University of Saskatchewan.

Les objectifs de ma présidence

Nous voici déjà à l'été 2012, et j'achève ma 37e année à titre de membre de la Société canadienne de génie civil. Oui, c'est en 1975 qu'a débuté mon aventure avec la SCGC. J'étais alors membre étudiant d'une nouvelle société savante, qui comptait déjà presque un siècle d'histoire.

À plusieurs égards, prendre la présidence de la SCGC est une tâche redoutable, parce que je succède à des gens qui se sont dévoués pour notre organisme et aussi en raison des formidables défis que nous devons relever pour assurer le succès de notre société. Je ne promets rien, sauf que je vais faire de mon mieux pour faire le maximum avec les moyens et le temps dont je disposerai au cours de cette année.

Lorsque vous lirez ces lignes, nous en serons à nous féliciter du succès de notre congrès du mois de juin à Edmonton. Je félicite les coprésidents, Bob Driver et Jeff DiBattista, et je remercie toute l'équipe du congrès et les félicite pour leur dévouement.

Voici comment j'entrevois l'avenir immédiat. Depuis l'atelier du c.a. organisé il y a environ deux ans et demi sous la direction du premier vice-président de l'époque, Vic Perry, la société a entrepris de se donner

une nouvelle vocation, que nous avons baptisée « Vision 2020 ». Depuis cet atelier tenu à l'automne 2009, nous nous sommes employés à élaborer un plan d'action pour mettre en œuvre cet idéal. Tout comme Vic Perry l'a fait pendant sa présidence, et tout comme l'a fait son successeur Randy Pickle, j'entends continuer sur cette lancée. Cette année, nous consacrerons beaucoup de travail pour communiquer cet idéal aux membres et à d'autres personnes et pour passer aux actes. Ce faisant, nous solliciterons nos forces vives au sein de nos divisions techniques, de nos régions et de nos sections afin de rejoindre nos membres.

Le plan stratégique, qui exprime en détails notre vision, est en voie de réalisation depuis plus d'un an. Suite à la réunion du c.a. de novembre 2011, nous avons créé trois orientations stratégiques auxquelles nous consacrerons nos efforts au cours des années à venir. Ces orientations vous ont été communiquées de multiples façons, mais il est bon de rappeler qu'il s'agit (1) d'améliorer nos programmes actuels de façon à mieux aider nos membres pendant les diverses étapes de leur carrière, (2) de porter plus d'attention aux membres plus jeunes et plus nouveaux afin de mieux combler vos besoins et de vous conserver comme membres, et (3) d'incarner un leadership en matière d'infrastructures durables, ce qui nous accordera plus d'importance en tant que profession et à travers le pays. En nous servant de ces orientations pour nous guider dans notre démarche, nous renforcerons notre société de façon importante. À plusieurs égards, le fait de souscrire à ces orientations stratégiques est, métaphoriquement, l'équivalent de ramer à l'unisson, ce qui est le propre des équipes gagnantes.

Je me réjouis à l'idée de travailler avec vous tous pendant l'année qui vient ! ■

J.A. (Jim) Kells, Ph.D., ing., FSCGC est professeur et directeur du département de génie civil et géologique à l'Université de Saskatchewan.

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Celebrating a busy year in Toronto

By James H. Garland, P.Eng., FCSCE
SCSCE VICE-PRESIDENT, ONTARIO REGION

The Toronto Section of the CSCE has a lot to be proud of. After a lull in activities, the section has seen a rebirth in the past eight months. The section executive, made up of several new faces supported by a few seasoned stalwarts, has managed to engage a broad cross-section of members by creating a range of events and activities that offered something for everyone.

The section has hosted six dinner meetings since October 2011, with presentation topics of interest to practising engineers (“expert testimony”), contractors (“F360 high-rise concrete forming system”), construction engineers (“First Canadian Place, Recladding Canada’s tallest skyscraper”), public and urban infrastructure engineers (“Toronto Waterfront redevelopment”), structural engineers (“ultra high performance concrete”), and tunnel and heavy construction engineers (“Niagara power plant – new water supply tunnel”). These events have been well attended and provided an excellent transfer of knowledge from experts to CSCE members.

This program of activities would be sufficient for many section executives, but not the crew running things in Toronto. They have also empowered and supported a sub-committee of Young Professionals, who organized a networking evening at a downtown pub and a dinner lecture on nuclear power plant safety.

The Toronto Section also hosted the CSCE workshop “Guide to Bridge Hydraulics” in April 2012, serving Southern Ontario members seeking affordable professional development training in this field.

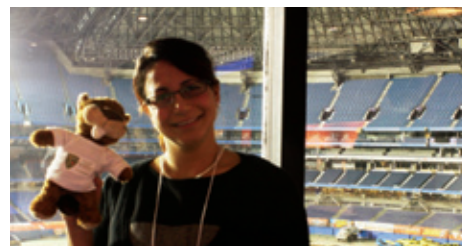
Another vehicle for delivering professional development is partnering with other organizations that provide training. CSCE-Toronto

entered into such a partnership with the Canadian Green Building Council (CaGBC) to make available to members at a discounted rate a one-day Rainwater Harvesting Workshop the council was running to teach practitioners about the technical and regulatory aspects of rainwater harvesting in institutional/commercial/industrial and residential buildings. Rainwater harvesting is becoming a commonly used methodology for reducing a project’s environmental footprint and increasing its sustainability rating.

The Toronto section executive has managed to provide all of this local CSCE presence by using the traditional tools of a successful enterprise. The executive works as a team, relying on each other’s strengths, working together to solve problems, and trusting each other to do what they say they will do. They are a truly dedicated group of professionals, working to serve their peers through the vehicle of the CSCE.

CSCE members and prospective members in Toronto owe a thank you to Nigel Parker (webmaster), Zeina Elali (secretary), Peter Langan (past chair and treasurer), Faizul Mohee (Young Professionals representative), and Cameron Blair (Section chair), as well as event coordinators Sheri Sullivan and Mike Ropret, and Student Chapter liaisons Mena Marcos and

Zeina Elali with the CSCE 2012 Conference Mascot Eddie at the Rogers Centre, learning about the Toronto Waterfront redevelopments and watching workers set up a monster truck show in the stadium.



Zeina Elali, en compagnie de Eddie, la mascotte du congrès de 2012 de la SCGC, au « Rogers Centre », se renseignent sur la redéveloppement des rives de Toronto et observent des travailleurs organisant une exposition de camions au stade.

Ahmad Alabdallah (Ryerson University) and Sherif Kinaway (University of Toronto). The student chapters not only contributed support and ideas by being represented at the section executive meeting, but also have hosted some of the section dinner meetings on campus.

Congratulations on a very successful 2011-2012. Thank you for your service to your profession. ■

James H. Garland, P.Eng., FCSCE, is a project manager in the Works Department, Region of Durham, Ontario. E-mail james.garland@durham.ca

Une année bien occupée à Toronto

par James H. Garland, ing., FSCGC
SCGC VICE-PRÉSIDENT,
RÉGION DE L'ONTARIO

La section de Toronto peut être fière de ses œuvres ! Après un ralentissement, la section a connu une relance au cours des huit derniers mois. L’exécutif de la section, composé de plusieurs nouveaux épaulés par quelques anciens, a réussi à intéresser un bon nombre de membres en organisant des activités conçues en fonction de diverses clientèles.

La section a tenu, depuis octobre 2011, six déjeuners causeries portant sur des sujets intéressant les praticiens (des témoignages d’experts), les entrepreneurs (le système pour l’utilisation du béton dans les tours -F360), les ingénieurs en construction (First Canadian Place – Refaire le recouvrement du plus important gratte-ciel du pays), les spécialistes en infrastructures publiques urbaines (le redéveloppement des rives de Toronto), les spécialistes des charpentes (le béton à très haute performance), et pour les spécialistes des tunnels et des grands travaux (la centrale de Niagara – le nouveau tunnel pour amener l’eau). Ces activités ont attiré une bonne clientèle et assuré des transferts de connaissances de la part



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Ce programme d'activités serait bien suffisant pour l'exécutif de plusieurs sections, mais pas pour l'équipe de direction de Toronto. Ils ont aussi créé un sous-comité de jeunes professionnels qui a organisé une soirée de rencontres dans un pub du centre-ville ainsi qu'un déjeuner-causerie sur la sécurité dans les centrales nucléaires.

La section de Toronto a également accueilli l'atelier de la SCGC sur l'hydraulique des ponts, en avril 2012, desservant ainsi les membres du Sud de l'Ontario qui étaient à la recherche d'une occasion de perfectionnement dans ce domaine.

Une autre façon d'offrir des occasions de perfectionnement est de conclure des partenariats avec des organismes qui font de la formation. La SCGC-Toronto a conclu un tel partenariat avec le Conseil du bâtiment durable du Cana-

da (CaGBC) afin d'offrir aux membres, à prix réduit, un atelier d'une journée sur la cueillette des eaux pluviales. Cet atelier porte sur les aspects techniques et réglementaires de la cueillette des eaux pluviales dans les édifices institutionnels/commerciaux/industriels et résidentiels. La cueillette des eaux pluviales est en train de devenir une méthode courante pour diminuer l'empreinte environnementale d'un ouvrage et améliorer sa durabilité.

L'exécutif de la section de Toronto a réussi à assurer cette présence locale de la SCGC en faisant appel à toutes les recettes traditionnelles d'une entreprise à succès. L'exécutif fonctionne en équipe, exploitant les forces de tous et chacun, collaborant pour régler les problèmes, confiants que chacun va faire ce qu'il dit qu'il va faire. Voilà un authentique groupe de professionnels dévoués qui s'emploient à servir leurs pairs via la SCGC.

Les membres actuels et les futurs membres de Toronto doivent beaucoup à Nigel Parker (webmestre), Zeina Elali (secrétaire), Peter Langan (ex-président et trésorier), Faizul Moehe (représentant des jeunes professionnels) et Cameron Blair (président de la section), ainsi qu'aux coordonnateurs des activités, Sheri Sullivan et Mike Ropret, et aux agents de liaison du chapitre étudiant, Mena Marcos et Ahmad Alabdallah (Université Ryerson) et Sherif Kinaway (Université de Toronto). Les chapitres étudiants ont contribué en étant représentés aux réunions de l'exécutif de la section et en organisant certains dîners de la section sur le campus.

Félicitations pour 2011-2012 et merci pour tous ces services rendus à la profession. ■

James H. Garland, ing., FSCGC, est directeur de projet au département des travaux publics de la région de Durham, Ont.

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By Amie Therrien, P.Eng., M.Eng.
CHAIR, CSCE YOUNG PROFESSIONALS
COMMITTEE

Calgary YPs' first event focuses on career transitions

During this past year the CSCE Young Professionals (YP) committee has made great strides in connecting with new civil engineers across the country. The main focus of the committee has been to implement local activities by establishing a YP presence at the Section level. A number of sections have already held their first activity and we expect there to be many more when events start up again in the fall.

Below is a report on the CSCE Calgary YP group by its co-chairs, Angelina Sotnikova and Ashley Wiebe:

“The CSCE Calgary YP group was established to focus on providing networking and development opportunities for recent graduates and those who are early on in their civil engineering careers. Bringing together young professionals in a social scenario, where they are able to meet new people working in the same industry, share their experiences and learn about other field-related opportunities, is a key objective to achieving this. Main events are planned to occur quarterly, with smaller, social events occurring several times throughout the year.

“The Calgary YP group held its inaugural event in February, which focused on career transitions. This event provided the opportunity to discuss changing roles within companies and how to adapt to or direct career changes. A casual atmosphere was chosen to encourage informal networking and face-to-face discussions between attendees. Presenters for this event included volunteers from IMV Projects, SNC-Lavalin, and Associated Engineering.

“Visit www.facebook.com/CSCEYPCalgary to find out about future events (including related CSCE and APEGA events). You can also see photos from past events and read career pointers and interesting engineering facts.

The feedback posted on this page will be used when planning future events.”

If you are interested in what's happening for young professionals in your area, please contact me or your local section chair for more information. ■

Amie Therrien, P.Eng., M.Eng., is a water resources engineer with GHD in Whitby, Ontario, e-mail amie.therrien@ghd.com

par Amie Therrien, ing., M.Ing.
PRÉSIDENTE, COMITÉ DES JEUNES
PROFESSIONNELS DE LA SCGC

Une première activité pour les jeunes professionnels de Calgary porte sur les transitions en cours de carrière

Au cours de l'année écoulée, le comité des jeunes professionnels de la SCGC a fait de grands progrès afin d'établir des liens avec les nouveaux ingénieurs civils du pays. L'objectif principal du comité a été de mettre en œuvre des activités locales en créant une présence des jeunes au niveau des sections. Nombre de sections ont déjà tenu leur première activité, et nous nous attendons à ce que plusieurs autres sections repartent en force à l'automne.

Voici le rapport d'un groupe de jeunes professionnels de Calgary rédigé par les deux co-présidents, Angelina Sotnikova et Ashley Wiebe.

« Le groupe des jeunes professionnels de la SCGC de Calgary a été créé pour offrir des occasions de réseautage et de perfectionnement aux nouveaux diplômés et à ceux qui viennent de commencer leur carrière en génie. Réunir de jeunes professionnels dans un cadre social où ils sont en mesure de rencontrer d'autres jeunes travaillant dans la même industrie, mettre en commun leurs expériences et apprendre ainsi constitue un objectif important dans cette perspective. D'importantes activités sont prévues sur une base trimestrielle, et d'autres activités sociales de moindre importance sont prévues



Photography: Angelina Sotnikova

Speakers and attendees at the CSCE Calgary YP kick-off event (left to right): Sina Rezaian, Jonathan Tow, Pouya Zangeneh, Viktoriia Smith. / Conférenciers et participants à l'activité inaugurale des jeunes professionnels de la SCGC à Calgary (de gauche à droite) : Sina Rezaian, Jonathan Tow, Pouya Zangeneh, Viktoriia Smith.

tout au long de l'année.

« Le groupe des jeunes professionnels de Calgary a tenu en février son activité inaugurale, qui portait sur les transitions en cours de carrière. Cette activité a été une occasion de discuter de l'évolution des rôles au sein des entreprises et de la façon dont il faut s'adapter ou diriger l'évolution de sa carrière. Un cadre décontracté favorise les échanges et le réseautage ainsi que les discussions directes entre participants. Les présentateurs pour cette activité étaient notamment des bénévoles de IMV Projects, SNC-Lavalin, et Associated Engineering.

« Visitez le site www.facebook.com/CSCEYPCalgary pour consulter les prochaines activités dont les activités reliées à la SCGC et l'APEGA). Des photos des activités passées sont également disponibles, ainsi que des conseils pour votre carrière et des nouvelles intéressantes pour la profession. Les commentaires et les demandes apparaissant sur cette page seront utilisées pour la planification des activités à venir. »

Si vous vous intéressez à ce qui se passe chez les jeunes professionnels de votre région, faites-le moi savoir ou renseignez-vous auprès de votre section locale. ■

Amie Therrien, P.Eng., M.Eng., est une ingénieure spécialisée en ressources hydriques chez GHD, à Whitby, Ontario, courriel amie.therrien@ghd.com

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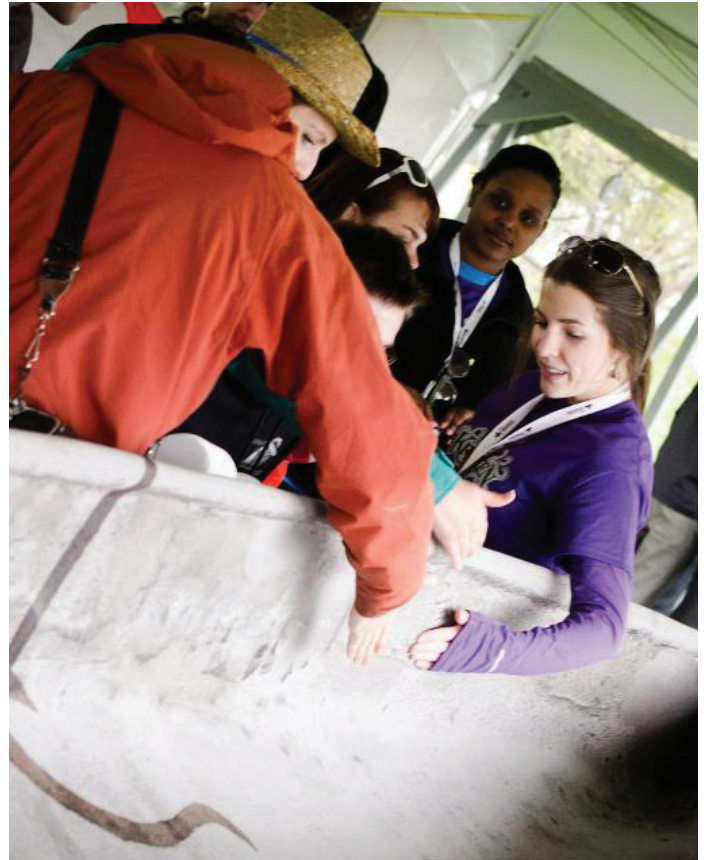
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Participants of the 2012 CSCE CNCCC admiring the aesthetics and finish of Université de Moncton's concrete canoe. / Participants de la CNCCB SCGC 2012 admirent les esthétiques et la finition du canoë de l'Université de Moncton.

University of Western Ontario Student Chapter wins Presidents Award

Reading and evaluating the submissions for the Presidents Award recently, I was struck by the energy of our student chapters and the range of activities they organize. From purely social events (such as a Grey Cup party), to professional activities (technical talks and tours), to peer support (such as exam tutorials and tutor services), the activities our civil engineering students are engaged in show tremendous leadership at their institutions.

In addition to organizing chapter activities, our students are arranging large events, such as the CSCE Canadian Concrete Canoe Competition (CNCCC) competition, and international trips, such as the University of Calgary trip to Hong Kong. This latter trip included a meeting with the Hong Kong Chapter of the CSCE, which was fun for all and a great connection for both parties.

I am pleased to announce that the Presidents' Award for Best Student Chapter this year went to the University of Western Ontario.

Leadership, a succession plan, mentorship and a solid plan of so-

cial and technical activities elevated this year's winner above a small but competitive field of applicants.

Unique amongst the other applicants, this chapter actively mentored younger, struggling students through well attended pre-exam statics tutorials. In addition to a stick bridge building competition between 24 teams that caught the attention of the local media, a strong social program of pub nights, football barbecues, and a Mo- vember Fundraiser rounded out a solid year of activities.

I encourage all the chapters to consider submitting to next year's competition. And for the chapters and sections who assist our student chapters — keep encouraging them and get involved! ■

Lynne Cowe Falls is the director of students at the Schulich School of Engineering. She can be reached at drlynne@ucalgary.ca.

Le chapitre étudiant de l'Université Western Ontario remporte le prix du président

En lisant et en examinant les candidatures au prix du président, j'ai été frappée par l'énergie de nos sections étudiantes et l'étendue des activités qu'elles organisent. Depuis les activités strictement sociales (comme les partys de la coupe Grey) jusqu'aux activités professionnelles (conférences et visites techniques), en passant par l'entraide (comme l'aide aux examens et le tutorat), les activités de nos étudiants en génie civil témoignent du remarquable leadership qu'ils exercent dans leurs institutions.

En plus des activités de leurs chapitres, nos étudiants organisent d'importantes activités comme le concours CNCCB et des voyages outre-mer comme l'expédition des étudiants de l'Université de Cal-

gary à Hong Kong. Ce voyage comportait une rencontre avec le chapitre de Hong Kong de la SCGC, qui a été apprécié par tous et qui s'est avéré une excellente occasion de rencontre pour tous.

Je suis fière d'annoncer que le prix du président pour la meilleure section étudiante a été attribué cette année au chapitre étudiant de l'Université Western Ontario.

L'exercice du leadership, le plan de succession, le mentorat et un solide programme d'activités sociales et techniques ont valu au gagnant du prix du président de se démarquer par rapport aux autres candidats, qui, s'ils n'étaient pas nombreux, étaient quand même de grande qualité.

Ce chapitre a été le seul à exercer un mentorat auprès des plus jeunes et à les aider à préparer leurs examens. En plus d'organiser un concours de construction de ponts en bâtonnets qui a mis aux prises 24 équipes et attiré l'attention des médias locaux, ce chapitre étudiant a réalisé un excellent programme social comprenant des soirées « pub », des barbecues au football et une activité d'autofinancement.

J'invite tous les chapitres étudiants à soumettre leur candidature l'an prochain, et je félicite toutes les sections de la SCGC qui ont appuyé nos chapitres étudiants. ■

Lynne Cowe Falls est directrice des étudiants au « Schulich School of Engineering ». Son adresse électronique est drlynne@ucalgary.ca.



By Lynne Cowe Falls,
Ph.D, P.Eng, FCSCE
CHAIR, CSCE STUDENT CHAPTERS
 par Lynne Cowe Falls,
Ph.D, ing, FSCGC
PRÉSIDENTE, CHAPITRES ÉTUDIANTS
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Interior of the concert hall on opening night.

Maison Symphonique de Montreal

Building an acoustically isolated new concert hall for the Montreal Symphony Orchestra was challenging on a busy urban site.

By François Picher, ing., M.A.Sc.

SNC-LAVALIN

On September 7, 2011, the Montreal Symphony Orchestra inaugurated its new concert hall to considerable fanfare. Part of the Place des Arts, the most important visual and performance arts centre in Canada, the new concert hall is a venue that meets the highest standards for acoustics, stage design and architecture.

The design parameters and acoustic requirements for the concert hall were selected by the owner with input from Artec, a New York firm widely recognized for its design work on other renowned concert halls.

The Maison Symphonique de Montréal was built by SNC-Lavalin through its subsidiary, Groupe immobilier Ovation, as part of a public-private partnership (P3) with the government of Quebec.

SNC-Lavalin engineered, built and secured project financing for the project. The company has also signed on as building manager for the next 27 years. Toronto-based architects Diamond and Schmitt, and AEdifica Consortium, along with their consultants from Sound Space Design, an acoustics design firm based in the U.K., also participated in the acoustic interior design.

The location selected for the new hall created significant challenges for the design team. The site, which has a relatively small footprint (3,900 square metres), sits beside busy city boulevards atop a 375-car underground parking lot and is adjacent to a subway line. It was a major challenge to insulate the hall from its immediate surroundings in a location with such a potential for noise and vibrations. A variety of solutions was required to meet the criteria for acoustic quality for the concert hall.



Design concept of a “box within a box.”

Soundproofing the concert hall

To obtain the required acoustic quality for the structure, it was necessary to completely separate the acoustic auditorium from the adjacent structures, both vertically and horizontally. The result was essentially a box within a box.

The acoustic enclosure is 65 metres long, by 35 metres wide, by 28 metres high. To prevent the conduction of sound and transmission of vibrations through the concrete structure from the underground parking lot or subway line, the soundproof volume rests on more than 175 rubber pads lined with steel plates.

The engineering and installation of the rubber vibration isolators was one of the unique aspects of the project. The design of the hall called for isolators with a wide range of stiffness, and a total of nine different mould sizes and shapes were used.

The acoustic volume is bounded by an equivalent of three thicknesses of massive masonry wall, assuring soundproofing from external ambient street noise. The steel roof structure also includes three layers of concrete slabs.

The question of noise control also extended to the building’s ventilation system. A design for getting air into the hall had to include provisions for doing it silently. Air was directed down from the mechanical room located in the steel roof structure to the side of the hall, and then up through small openings located beneath each of the 2,100 seats via large plenums integrated into the structure of the auditorium. To further reduce noise, the air conduits were designed like a labyrinth, with angles and sound baffles installed at strategic locations along the air path.

The form and texture of the wood surfaces inside the performance space are designed to optimize the sound of musical instruments. All the interior surfaces of the walls and balcony parapets are curved and coated in wood veneer. In addition, the ceiling features nine large sound reflectors which can be lowered or raised to optimize and adjust the acoustic properties of the hall. Different settings for

THE MAISON SYMPHONIQUE DE MONTRÉAL IN FIGURES:

- Project conceived as part of a \$266-million public-private partnership
- Concert hall stage has room for 120 musicians and 200 singers
- Total living surface area is 19,187 square metres
- Auditorium contains 29,000 cubic metres of space
- Work began in May 2009, completed Fall 2011
- Hall officially inaugurated September 7, 2011

the acoustic ceiling reflectors can be used to adapt the volume in the room according to the type of music being played — whether it’s one of Beethoven’s dramatic masterpieces, or a more mellifluous piece from Ravel or Bach.

Ensuring lateral stability of the floating structure

Ensuring the lateral stability of a structure that is separated from the support structure and held in place by rubber isolators was a challenge.

A system of steel members was designed to be strategically placed beneath the auditorium structure’s base at the level of the isolators. These members, equipped with pre-compressed isolators, are engineered to confine and limit displacement of the base, while maintaining the integrity of the structure’s acoustic soundproofing.

Furthermore, to limit any differential displacements between the separate acoustic enclosure and adjacent structures, the structure of the acoustic auditorium roof is also fitted with a system of lateral confining members. At each end of the acoustic enclosure this confining system ensures lateral loads are transferred to the shear walls located in structures adjacent to the isolated structure. Pre-compressed isolators are used so that lateral differential movements between the acoustic enclosure and the adjacent structures are limited, both lengthwise and crosswise. ■

François Picher, ing., M.A.Sc. is a project manager and engineering design officer with SNC-Lavalin in Montreal.

P3 PARTNERSHIP: Government of Québec, Ministère de la Culture, des Communications et de la Condition Féminine (MCCCF), Artec Consultants, Diamond and Schmitt / AEdifica, Sound Space Design, SNC-Lavalin, Groupe Canam
STRUCTURAL, MECHANICAL & ELECTRICAL ENGINEERING: SNC-Lavalin

ARCHITECT: Diamond and Schmitt/AEdifica consortium

CONSTRUCTION: SNC-Lavalin/Groupe immobilier Ovation

Loblaws at Maple Leaf Gardens

Transforming Toronto's historic hockey arena involved completely gutting and rebuilding the inside while preserving the original walls.

Neil Banerjee, P.Eng., G.S.C., LEED AP
exp

When Toronto's hometown hockey team moved to a new state-of-the-art facility in 1999, not only was their once vibrant arena silenced, but also the neighbourhood and the local economy was left deflated.

Fast forward to 2012, and the storied facility on Carlton Street has been transformed into a hub of daily life. It is now a Loblaws retail and grocery store with underground parking and a soon-to-open athletic centre.

The redevelopment included the preservation of historically significant elements, including the 80-year-old art deco brick facade, domed roof, window frames, light fixtures and iconic marquee above the main entrance. But this revitalization of one

of Canada's landmark buildings was more than just a cosmetic renovation to an existing building.

New structure supports the old

Originally built in 1931, the structure can best be described as a concrete seating bowl topped with a structural steel arched dome roof. The seating bowl by its very shape provided lateral stability to the building and to the exterior walls. The dome roof was supported on large concrete columns that were integral with concrete stair towers in the four corners of the building. Demolishing the seating bowl meant that the exterior walls would lose their lateral support.

The challenge was to retrofit the building's structure and interior, while keeping the exterior walls from collapsing. The interior of the building needed to be completely demolished.

The concrete seating bowl was re-

The renovated landmark on Carlton Street in downtown Toronto.





(Left) Demolition of the former hockey arena gets under way; the interior was gutted, including the seating bowl which had provided lateral stability to the exterior walls. (Centre) Construction of a concrete frame within the interior. (Right) Shoppers browse in the new grocery store.

moved, including the concourse floor areas, end seating, and box seats that were additions to the original arena.

The renovations replaced the seating bowl with below-grade parking, a grade-level grocery store at the original ice level, and two additional floors for retail and athletic use. The latter include a second floor gymnasium and third floor ice rink.

The project presented complex structural engineering challenges. The structural consultant for the renovation, exp, had been associated with the facility since the 1960s and had intimate knowledge of the existing building structure. "Constructing the new structure was similar to building a ship in a bottle, except that the bottle already contained a ship that had to be dismantled piece by piece without breaking the bottle," says exp structural engineer, Paul Sandford.

Careful monitoring during demolition

As the original building was demolished, the stability of the structure and the exterior walls was maintained by installing temporary steel bracing within the original concrete frames at the east and west sides of the building. At the north and south ends, large box trusses 10'4" deep and 26' wide, spanning 202' (3.4 m x 8.5 m x 66.3 m), were installed between the existing buttresses at the corners of the building.

With the new parking level being 13' below the exterior grade at the south side and up to 21' below grade at the north side, significant portions of the exterior foundation walls required underpinning with a combination of traditional underpinning, helical piles, micro-piles and soil nailing.

At the corner buttresses, which support the entire weight of the roof, temporary caisson walls were installed adjacent to footings to laterally support the soil under them, while the surrounding area was excavated down to the parking level. Basically, a brand new structure was built inside the four walls and at every floor the new structure supports the old structure.

Throughout the demolition and construction the existing structure and exterior walls were remotely monitored around the clock for any movement. Monitoring was done through the innovative use of exp's proprietary OSMOS fibre optic technology. Alarms were sounded and work stopped if movements exceeded a pre-determined safe threshold.

As the new interior structure was constructed and connected to the original exterior structure, the temporary bracings were removed. Since the building stability was provided by the new structure within the original shell, large openings could then be cut into the corner buttresses for the parking ramp and Loblaws' main entrance.

A new 70' wide loading dock door was installed through the north wall. The door required the removal of four concrete columns which supported both the north wall and the roof.

Exp was successful in solving the structural engineering challenges of redeveloping this historic building and was recently recognized with the Award of Merit: Building Engineering and Science by Consulting Engineers of Ontario.

The new Loblaws at Maple Leaf Gardens is now open. It has brought excitement, life and employment back to the downtown neighbourhood. To the delight of many, Loblaws, along with its partners, has successfully saved a sports treasure through its adaptive reuse, allowing fans to keep alive the memories of their much-loved arena. ■

Neil Banerjee, P.Eng., G.S.C., LEED AP, is the Managing Principal of exp Structural Division in central and western Canada, neil.banerjee@exp.com

OWNER/DEVELOPER: Loblaws and Ryerson University
STRUCTURAL CONSULTANT: exp (Paul Sandford, P.Eng., Weimin Liang, P.Eng., Gord Ho, P.Eng., Anthony Di Stefano, P.Eng., Andy Kaminker, P.Eng., Alan Parker, P.Eng., Gary Moloney, P.Eng., Walid Elsayed, P.Eng.)
ARCHITECT (LOBLAWS AND BASE BUILDING): Turner Fleischer Architects
GENERAL CONTRACTOR: Buttcon
MECHANICAL CONSULTANT: LKM Engineering
ELECTRICAL CONSULTANT: Hammerschlag + Joffe
TOTAL FLOOR AREA (INCLUDING PARKING): 431,500 sq.ft.
BASE BUILDING CONSTRUCTION COST (EXCLUDING FINISHES): \$75 million

Vision 2020 Advocates Sustainable Infrastructure

By Doug Salloum,
BSc (Civil Eng.), MBA, PMP



CSCE EXECUTIVE
DIRECTOR/SCGC
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EXÉCUTIF,
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In June your Board of Directors approved three new strategic directions for CSCE. You will be hearing more about these in coming months; from your Section Executives, your Technical Committee Chairs and your National Office.

The most dramatic and possibly most controversial strategic direction approved by the board was “Leadership in Sustainable Infrastructure.”

What CSCE means by “leadership” or “sustainable infrastructure” is not immediately obvious. We will be exploring and developing both of these themes together, probably for years to come. CSCE will pursue this new strategic direction while continuing to maintain our traditional commitment to civil engineering professional development through courses, national lecture tours, conferences, CSCE Section presentations and the publication of this magazine.

Starting with this issue, CIVIL magazine will regularly provide opinions, articles and updates on activities that demonstrate either “leadership” or what we mean by “sustainable infrastructure.” Material will also be posted on our website and Facebook page.

To kick off what we hope will be a lively

ongoing discussion on sustainable infrastructure I offer the following notes. I am not an expert in this area, so we welcome all comments and I hope that others will contribute to the content of this section in the future.

Essential features of sustainable infrastructure

As a starting point, I offer the opinion that public infrastructure that has to be replaced after 40 or 50 years is not sustainable infrastructure. Longevity of service life, therefore, is a practical measure of sustainability. In order for public infrastructure to survive and to serve society for 100 or 200 years or more it must meet two tests:

1. It must be built right;
2. It must be the right infrastructure to build.

Well-built infrastructure uses the best material and the best designs. Well-built infrastructure has the lowest life-cycle cost, taking into consideration not only the initial capital cost, but also operating and maintenance and even demolition and replacement costs. Social and environmental costs must be considered at the design stage and both of these must be minimized. These issues are the bread and butter of modern civil engineering.

But do civil engineers always build the right infrastructure? If what we build does not meet the future needs of society, regardless of how well it is built, it will have to be torn down, perhaps prematurely and wastefully. The issue here is not how we build infrastructure, but rather what infrastructure we build and why. Civil engineers have tended to focus on the “how” of infrastructure con-

struction and to leave the decisions around what and why infrastructure is built to others – to planners, politicians, financiers and other non-engineers.

If we truly want to ensure that our public infrastructure is sustainable infrastructure, then we will have to leave our technical comfort zone and wade into the murky waters of public policy. We will need to participate in public debates on competing visions for the future of our country. This will be a new and challenging arena for CSCE to participate in. This is where we will have to go, however, if we want to demonstrate leadership in sustainable infrastructure.

Current initiatives by CSCE

CSCE has made a number of tentative first steps into the realm of public policy:

New infrastructure program for Canada

Infrastructure Canada announced a three-phase consultative process intended to result in a new infrastructure program by spring of 2013. CSCE was asked to participate.

Phase 1: Stock Taking (fall 2011 – winter 2012). During this stage CSCE partnered with the Association of Consulting Engineering Companies Canada and Engineers Canada to produce a document entitled “The Role of Engineering in Infrastructure.”

Phase 2: Identifying Priorities (winter – summer 2012). CSCE’s Infrastructure Renewal Committee made a presentation to the Infrastructure Long-Term Plan Phase 2 Steering Committee. CSCE recommended that infrastructure funding provided by the federal government should vary depending on an independent assess-

ment of the sustainability of the project. CSCE offered to manage that assessment process using a version of the Envision assessment tool developed in the U.S. (More on Envision and the Institute for Sustainable Infrastructure will be provided in future issues of CIVIL.)

Phase 3: Informing the Next Agenda (summer – fall 2012). CSCE plans to be front and centre for this next phase of consultation.

Infrastructure Report Card

CSCE's Infrastructure Renewal Committee under the leadership of Reg Andres and Guy Felio set up a working group, which included the Federation of Canadian Municipalities, the Association of Consulting Engineering Companies Canada, the Canadian Public Works Association and the Canadian Construction Association, to assess the state of Canada's public infrastructure.

The first Infrastructure Report Card reviews our nation's municipally owned transportation, potable water, wastewater and stormwater infrastructure. CSCE has offered to contribute to an expansion of the areas of infrastructure covered by this report and, if supported by its partners and funders, to manage its continued production.

CSCE Award for Governmental Leadership in Sustainable Infrastructure

CSCE wants to encourage and recognize municipal governments and provincial or federal governments that demonstrate true leadership, those that go beyond business as usual in the way they build or manage their infrastructure. CSCE presented the first of these annual awards to the City of Edmonton for their Risk-based Infrastructure Management System. We hope that this award will become a high profile and sought-after form of recognition and that the work for which the winners are recognized will inspire other governments to follow their lead. ■

EXAMPLES OF DURABLE INFRASTRUCTURE

"LONGEVITY OF SERVICE LIFE IS A PRACTICAL MEASURE OF SUSTAINABILITY."

The R.C. Harris Pumping Station in Toronto is one example of durable infrastructure. A combination of critical infrastructure and architectural heritage building, it was constructed between 1932 and 1941 in "Art Deco" style. The plant continues as an essential part of Toronto's water supply system.

Another example is the Lethbridge Viaduct, which is the largest railway structure in Canada and reputedly the longest and highest railway trestle in the world. The structure was completed in 1909 and continues in use.

The Confederation Bridge (see photo below) joins the eastern Canadian provinces of Prince Edward Island and New Brunswick. At 12.9 kilometres (8 miles), the bridge is the world's longest bridge over ice-covered water. It has won dozens of international engineering awards since its construction. It was designed to last for a century.



THREE VIEWS ON PROFESSIONAL DEVELOPMENT

A practising engineer must continue to learn in order to keep current on the latest developments in technology, materials, standards and practices. The theme of this issue, professional development for practising engineers, addresses that need.



Bhuwan Devkota,
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Engineering theories and practices are constantly advancing. Keeping up with their progress and responding to the needs of the rapidly changing world is a challenge for practising engineers. An engineer must continue to learn in the course of his/her professional career to keep current on the latest developments in technology, materials, standards and practices, in order to achieve the ongoing trust and confidence of the public. The demonstration of continuing competency through continuous learning fulfils the increasing demand from the public for greater accountability.

The theme of this issue of CIVIL magazine is “Professional Development for Practising Engineers.” It includes three articles that address three unique perspectives on this theme.

The first article, by Burrell and Devkota, provides an overview of professional development

and a discussion of professional development from the viewpoint of practising civil engineers. The authors discuss needs and benefits, plus types and formats of professional development. They also describe how continuing professional development activities not only benefit individuals but also help companies to retain employees. This article further discusses a wide range of professional development programs — in-class, correspondence and on-line — that can be attended by engineers to maintain their competence and to fulfil the professional development requirements of the regulatory bodies.

Lis and Veenstra state in the second article that emotional intelligence (as measured by EQ, emotional quotient) is emerging as the key component, or the “edge,” that promotes high performance. The authors further argue that learning and applying the skills associated with EQ is becoming one of the key differentiating factors of high performing organizations, even in those sectors that have traditionally found success through their technical and analytical strengths, such as the engineering sector.

The third article, by Emilie Adams, provides an overview of Engineers Canada’s professional development guidelines that act as general guiding principles for its 12 constituent associations — Canada’s provincial and territorial engineering regulatory bodies. The article further describes the current status of the continuing professional development programs of all 12 Canadian associations.

These articles represent some perspectives on continuing professional development in Canada, and suggest there is a need to collaborate with universities, regulating bodies, educational institutions, employers and individual engineers for the implementation of practical professional development programs for practising engineers.

A recent research study, conducted by the Iron Ring Leadership for the Canadian Society for Civil Engineering, has identified the leadership development needs of engineers at all levels in the civil engineering sector. The study has made recommendations on the lead-

ership skills that are needed to complement the technical education/training for a successful professional career. More information on the study results is available in the Lifelong Learning section of this issue (page 33).

The editors extend their thanks to all those who contributed to the publication of this issue. ■

Bhuwan Devkota is project manager, Jasper National Park of Canada, Parks Canada Agency.

TROIS CONCEPTIONS DU PERFECTIONNEMENT

**Bhuwan Devkota, ing.,
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PRÉSIDENT, COMITÉ DE
PERFECTIONNEMENT DE LA SCGC**

En matière de génie, les théories et les pratiques évoluent constamment. Demeurer à la fine pointe des développements et répondre aux besoins d’un univers en constante évolution représente le défi par excellence pour les praticiens du génie. Un ingénieur doit toujours continuer d’apprendre, pendant toute sa carrière, pour se tenir au courant des derniers développements en matière de technologies, de matériaux, de normes, afin de mériter la confiance du public. La compétence continue qu’assure une formation permanente permet de satisfaire les exigences du public pour une plus grande imputabilité.

Ce numéro de la revue « CIVIL » est consacré aux outils pratiques de perfectionnement à l’intention des praticiens du génie civil. Il comporte trois articles qui abordent trois conceptions du perfectionnement.

L’article de Burrell et Devkota intitulé « Professional Development for Practising Engineers » expose une conception du perfectionnement et traite du sujet du point de vue du praticien du génie civil. Les auteurs abordent

les besoins observés et les avantages offerts, ainsi que les formats et les types de perfectionnement. Ils décrivent également comment la formation permanente profite aux personnes et les aide à conserver les ingénieurs à leur emploi. Cet article traite aussi d'une vaste gamme d'activités de perfectionnement sous forme de cours en classe, de cours par correspondance, de programmes en ligne que peuvent suivre les ingénieurs pour conserver leur niveau de compétence et rencontrer les exigences des organismes qui les régissent en matière de perfectionnement.

L'article d'Emilie Adams intitulé « Continuing Professional Development for Practising Engineers: Guidelines in Canada » présente les principes directeurs adoptés par Ingénieurs Canada en matière de perfectionnement, qui servent aussi de principes de base pour les 12 associations qui constituent Ingénieurs Canada et qui sont les organismes de réglementation de la profession dans

les provinces et les territoires.

Dans leur article intitulé « Engineering Leadership – The “Edge” that Drives Business Results », Lis et Veenstra affirment que l'intelligence émotionnelle (telle que mesurée par le quotient émotionnel (EQ) apparaît comme le principal élément, l'avantage décisif qui assure une performance de haut niveau. Les auteurs affirment aussi que l'apprentissage et la mise en œuvre des aptitudes reliées à l'EQ sont en voie de devenir le principal facteur des organismes ayant une performance de haut niveau, même dans les secteurs où le succès était traditionnellement attribuable aux aptitudes techniques et analytiques, comme le secteur du génie.

Ces articles représentent quelques idées sur le perfectionnement au Canada, et il y a lieu de collaborer avec les universités, les organismes de réglementation, les institutions d'enseignement, les employeurs et les ingé-

niers eux-mêmes pour la mise en œuvre de programmes pratiques de perfectionnement à l'intention des praticiens du génie.

Une étude récente effectuée par l'unité « Iron Ring Leadership » de la Société canadienne de génie civil a défini les besoins de perfectionnement en leadership des ingénieurs de tous les niveaux en matière de génie civil. L'étude formulait des recommandations quant aux qualités de leadership nécessaires pour compléter la formation technique d'un ingénieur civil qui souhaite une carrière fructueuse. La section de ce numéro consacrée à la formation permanente contient d'autres renseignements sur les résultats de cette étude.

La direction de la revue remercie toutes les personnes qui ont contribué à la réalisation de ce numéro. ■

Bhuwan Devkota est directeur de projet, Parc national du Canada Jasper, Parcs Canada.

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Professional Development for Practising Engineers

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Continuing scientific progress and advances in technology mean that a university education cannot sustain an engineering graduate long into his or her career. Therefore, a civil engineer must continue to learn. Professional development involves the systematic and formal attempts to improve one's knowledge, skills, and understanding. Professional engineers are expected to keep current on the latest advances in technology, materials, standards, and practices. This expectation, and the engineer's duty only to undertake engineering work for which they are fully competent, are enshrined in Engineers Canada's Code of Ethics (Engineers Canada, 2001). Similar requirements apply to several professions, including accountancy, law, and medicine.

Continuing professional development (CPD) is the means by which a person maintains professional knowledge and skills. CPD contains both the acquisition of new skills to broaden competence, and the enhancement of existing skills to keep abreast of evolving knowledge.

An overview of professional development is provided in this article and a discussion of professional development from the viewpoint of practising civil engineers is presented. Engineering education, both undergraduate

and graduate, differs from professional development in intensity and purpose, and is not considered professional development in this article. A short article on professional development cannot cover the full breath of professional, pedagogical, and personal issues involved with professional development. This article is intended to provide a general framework for further discussion of professional development and to invoke for the reader personal insights with respect to maintaining professional competence.

Needs and benefits

The individual engineer, the employer of the engineer, and the industry or sector in which the engineer is employed have differing needs for continuing professional development (Evetts, 1998). Civil engineers need an active and constant engagement in lifelong learning activities, not only for the benefit of their personal and/or career development, but also because their profession is aiming to serve the modern world globally in a forthright way (Latinopoulos, 2005). As today's civil engineers are expected to succeed in multiple professional tasks, a civil engineer should acquire a planned combination of knowledge, experience and skills, and develop his or her individual qualities and competences including those related to decision-making and leadership. Professional development helps a civil engineer to fulfil licensing requirements with respect to continuing professional competency, demonstrate to an employer a commitment to

the profession, obtain greater professional recognition, have improved capability and confidence to do one's work (if work-related), and potentially have greater earning power.

Civil engineers need to pursue opportunities for professional development, as the shelf life of engineering education is less than a decade (National Academy of Engineering, 2005). Technology is rapidly changing (for example, computer hardware and software), and advances in engineering science are occurring steadily that affect the planning and design of engineering projects and the monitoring of structures and the environment. The latter two items are evinced by emerging specialty sub-disciplines.

Needs and benefits change throughout one's career. Recent graduates undergo a period of development during which an individual acquires a level of competence necessary to operate as an autonomous professional, thereby bridging the gap between formal education (the university degree) and attaining professional qualifications. Intermediate engineers often need to broaden their experience and to take courses that would help them "climb the corporate ladder." Senior engineers need to learn about new technologies and keep abreast of the latest benefits, and therefore require specialized professional development aimed at upgrading technical and computing skills. No matter how accomplished one may feel, there is always more to learn.

Globalization has created new challenges. Economic globalization is accelerating and the international marketplace for engineering services is dynamic (National Academy of Engineering, 2005). Canadian engineering must remain competitive to take advantage of foreign markets for engineering services or to respond to the challenges of foreign competition (Gupta and Burrell, 2010). It is no longer sufficient to keep up only with advancements in one's own country (Baukal 2010). The half-life of cutting-edge technical knowledge today is in the order of a few years, but Rollin (2007) recommends continued education, international workshops and seminars, and student international exchange programs.

Types and formats of professional development

Most of the formats of professional development in the list included with this article are recognized by engineering licensing bodies, learned societies, and employers, but the weighting (perceived value) given to different types of professional development differs. Generally classroom instruction or equivalent distance learning programs by established educational institutions are the most widely accepted, as they are the most specific as to learning objectives and often the most verifiable as to learning outcomes (especially if a certificate or statement of completion is provided). Distance education increases access to focused learning and training opportunities, with greater schedule and learning flexibility, timelier updating, more customized learning experiences, and less disruption to work and family life (Baukal, 2010). In comparison, self-directed learning is more difficult to verify and therefore often given less weight (perceived value) when evaluating an engineer's professional development. Nonetheless, the actual learning outcomes of an individual differ in response to different formats of professional development and the physical, mental, and emotional state of the individual while participating in a professional development activity.

Professional development can involve deductive or inductive learning or a combination thereof. Deductive teaching and learning involve the transfer of engineering knowledge in the form of formal lectures to students who are expected to absorb that knowledge and to apply it in similar situations. [However] simply telling students that certain knowledge is needed is not a particularly effective motivator for learning (Price and Felder, 2006). Educational psychologists believe that people are most strongly motivated to learn things they clearly perceive a need to know (Price and Felder, 2006). Inductive teaching and learning encompass a range of learner-centered instructional methods, including case studies, inquiry learning, problem-based learning, and project-based learning. More responsibility resides with students for their own learning than the traditional lecture-based deductive approach.

“On average, engineers and engineering technicians and technologists reported that they took about four days of continuing professional development per year (Prism Economics and Analysis, 2009). This is less than half the norm established by those associations that have adopted policies.”

Inductive education makes learning more of an activity, often in a collaborative or cooperative learning environment (Price and Felder, 2006). A detailed discussion of pedagogical issues is beyond the scope of this article, but the learner should be cognizant of the above differences in teaching and learning styles when considering options for professional development.

What makes a professional development event worthwhile to a practising engineer? Foremost, is applicability – that is, there must be a potential for the acquired knowledge to be utilized before it is forgotten. Other considerations are the possession of prerequisite knowledge required to understand any new material, the market value of the information which depends upon its applicability and rareness, and the prevailing perceived value of that information among employers. A cautionary warning is to avoid

trends, as what seems to be important today may not be important in the long-term.

Providers

The awareness of the need to update and acquire new knowledge creates a demand for professional development, which is met by supplying programs of comparable quality (Evetts, 1998). Universities, learned societies, and licensing bodies have obvious responsibilities to provide relevant professional development courses and play a key role in helping engineers to maintain their professional competence (Andrews, 2009). They offer a wide range of professional development in-class and on-line programs that can be used by engineers to maintain and improve their professional development and competence. These programs may be technical, managerial or professional in nature.

Associations regulating the engineering profession in Canada have developed methods to evaluate the professional competence of professional engineers on an ongoing basis and to assist engineers with their professional development. To facilitate this process, Engineers Canada has developed a national guideline, *Continued Competency Assurance of Professional Engineers*, to help regulatory associations develop approaches to ensure the continued competence of professional engineers following their initial licensure (Engineers Canada, 2004). The requirements for professional development are not unique to Canadian situations.

For some engineers, universities continue to be the preferred provider of continuing education courses for reasons of prestige and for pragmatic reasons of ease of accreditation and comparability (Evetts, 1998). Some Ca-

nadian universities offer certificate courses specially for practising engineers that have been developed with part-time learners in mind and are offered at times and in formats that can easily fit into practitioners' learning needs and schedules.

Yet several Canadian universities with engineering degree programs provide limited continuing education on technical subjects. Lifelong learning in civil engineering today is a challenge for the providing institutions, especially since the rewards for faculty for teaching continuing education courses often are less than for other academic pursuits. Also, providing professional development opportunities to practising engineers is seen as outside the core functions of civil engineering departments.

Universities, as mainstream lifelong learning providers, should: reconsider their approach and relationship to lifelong learning and integrate it into their overall strategy and mission; provide well-defined and designed programs; and make lifelong learning a distinct and distinguished characteristic of their institution as well as a component that will add extra value to its overall pursuit of excellence (Latinopoulos 2005). As well as delivering content, engineering schools must teach engineering students how to learn, and must play a continuing role along with professional organizations in facilitating lifelong learning, perhaps through offering "executive" technical degrees (National Academy of Engineering, 2005).

Professional development course providers have some useful courses for practising engineers. Their courses tend to be condensed intensive short courses (often for upgrading technical skills) taught by one or two qualified and experienced professionals. Working on a cost-recovery basis, their courses are likely to be attended by engineers with employer support.

The Engineering Institute of Canada (EIC) is one of the useful institutions to search for appropriate CPD course providers (see www.eic-ici.ca/findprovider.html, and www.csce.ca/docs/EIC_Continuing_Education_Unit.pdf). EIC does not offer courses, but coordinates CPD activities provided by other educational institutions.

Records of professional development

The International Association for Continuing Education and Training (IACET) oversees the Continuing Education Unit (CEU) program it developed in 1970 to provide a measure of completed non-credit educational experiences by individuals. IACET-approved CEUs meet internationally recognized standards. According to the IACET, one Continuing Education Unit is defined as 10 full contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction (IACET, 2011). The Engineering Institute of Canada authorizes quality providers of professional development to award EIC continuing education units, the "CEUEIC" (EIC, 2012b).

Continuing professional education for licensed engineers generally is measured in Professional Development Hours (PDHs). A PDH is one contact hour of professional development activities, which include a wide range of technical activities and informal learning activities, where the acquisition of knowledge is not assessed. Generally, PDHs are assigned by the course provider.

There are, of course, other measures of professional development. These vary from certificates of completion to academic transcripts. These measures of professional development vary depending upon the reputation of the course provider, and the accompanying information on course content and duration.

The requirements for continuing professional development are determined by the requirements in the province where the civil engineer is registered. Any queries related to professional development requirements and reporting requirements should be directed to the professional licensing body. Generally,

the licensee is responsible for maintaining records – in the form of registration documents, completion certificates, and/or a journal of completed self-learning – that are necessary to support claimed professional development credits.

The EIC established a registry to record CEUs and PDHs of continuing education activities done by professional engineers during the past seven years. Certificates of participation and transcripts are provided upon request. The EIC Technical Professional Development Committee reviews continuing education policies and practices relative to the EIC Registry, and guidelines for approval of CEU and PDH activities.

Onus: responsibility of employee versus employer

Employers (government, consulting firms, and industry) benefit if their staff undertake professional development. A better skilled, more efficient, and more adaptable workforce increases the earning potential of the company and its ability to withstand changing market conditions. In an increasingly litigious world, a demonstrated commitment to the professional development of employees also mitigates the potential for liability and reduces the possible financial settlements and penalties arising from legal action, as a lack of recorded professional development can be used to cast doubt on the professionalism of an employee engineer and on the employer's ability to have technical duties completed competently. Furthermore, employers who financially support the continuing education of their employees can expect greater staff retention and motivation. Therefore, it seems reasonable that employers should budget enough funding for the professional development of their employees and use these funds in a fair and equitable manner considering business needs. Employers of professional engineers are encouraged to support and to promote the participation of employee engineers in activities that maintain and advance their professional development.

They also share a responsibility to maintain a work environment in which the continued competence of professional engineers is supported (Engineers Canada, 2004).

Engineers in management and supervisory positions are obliged ethically to consider the professional development needs of their subordinates. The Code of Ethics of the American Society of Civil Engineers (ASCE) states that engineers shall provide opportunities for the professional development of those engineers under their supervision, and should encourage engineering employees to attend and present papers at society and technical meetings (ASCE, 2010). Engineers Canada's Code of Ethics states that professional engineers should

strive to advance the body of knowledge in their area of practice, and provide opportunities for the professional development of their subordinates (Engineers Canada, 2011).

Despite the foregoing discussion of employer and supervisor responsibility, the onus for professional development remains primarily on the individual. Three reasons for this are given. First, professional licensure requires the individual engineer to maintain and extend his or her knowledge, expertise and experience, especially if working in areas that can affect public health and safety (ASCE, 2001; Engineers Canada, 2011). Second, considering developments in engineering science and changing employer demands for expertise in

specific specialized areas, the individual engineer should ensure that he or she remains competitive both within the firm and in the marketplace. Third, continuing education of the engineer will become increasingly the responsibility of the individual engineer rather than the company due to an increased mobility of engineers among employers, which is necessitated by a changing employment situation and work environment (Haddad, 1996). Changes in the marketplace for engineering services may result in increased mobility of engineers between jobs and employer reluctance to train staff rather than purchase expertise.

On average, engineers and engineering technicians and technologists have reported

TYPES AND FORMATS OF PROFESSIONAL DEVELOPMENT

Professional development can be undertaken by professional engineers, and designed by providers of professional development, to meet differing objectives:

- Engineering review – for engineers who may be re-entering the profession or who want to review partially forgotten subjects that the engineer studied previously;
- Technical upgrading – for engineers needing to improve knowledge in a changing field such as a new code or version of a computer model used in civil engineering;
- Technical advancement – for engineers (a) to acquire an overview of other areas of civil engineering, e.g., structural engineering for non-structural engineers, or (b) to gain a knowledge of emerging areas of engineering, such as green energy solutions, civil engineering for better urban environments, advances in geomatics and geodesy;
- Professional practice – for engineers wishing to advance their knowledge of the business of engineering, such as marketing of professional services, engineering law, technology management;
- Professional advancement – for engineers seeking to improve their interpersonal and communication skills (the so-called soft skills such as report writing); and
- Personal growth – for engineers wanting to broaden their knowledge of art, humanities and social sciences for personal interest or to better interact with other elements of society.

Professional development opportunities exist in many forms and delivery formats, which include:

- Classroom education involving formal instruction in which a subject is presented according to a specific syllabus or course outline by a knowledgeable instructor;
- Online education wherein the Internet is used to access the distance learning programs of educational institutions and webinars provided by learned societies;
- Other distance learning opportunities such as correspondence courses;
- Professional events (conferences, workshops, and symposia) focusing on the exchange of technical knowledge or information where presentations are made to an audience;
- Research and demonstration projects where the engineer learns by viewing the results of an engineering work with an explanation given by an informed individual;
- Hands-on training where the engineer learns by doing a task following a specified procedure;
- Site visits where the participants view the results of an engineering project with an explanation of the project given by an informed individual;
- Professional activities undertaken by an individual such as the preparation and delivery of lectures, the preparation of articles and refereed papers, the organization of professional events, and the review of papers as part of a peer review process, and
- Self-directed individual learning acquired by the reading of technical papers, manuals and books, by listening to audio materials, and by viewing appropriate educational programs on television and instructional videos.

that they took about four days of continuing professional development per year (Prism Economics and Analysis, 2009). This is less than half the norm established by those associations that have adopted policies.

Barriers to professional development

An individual engineer may be constrained in pursuing his or her professional development needs. This applies especially to engineers who wish to expand their opportunities beyond their present employment or if they are unemployed. Learners require: adequate learning opportunities for the diversity of potential learners; incentives that make learning both possible and worthwhile; appropriate financial and labour conditions (financial assistance and flexibility at work); and recognition of acquired knowledge, competencies and skills (Latinopoulos, 2005).

Cost is a major impediment to acquiring certain types of continuing education and constrains the types of learning that can be obtained. For example, attending national conferences of engineering learned societies in Canada and the United States generally requires several thousand dollars, including travel costs, accommodation costs and several hundred dollars in registration fees. Similarly, the present-day cost of attending a well-organized short course can vary from several hundred to a few thousand dollars. The opportunity for practising civil engineers to attend these conferences diminishes with increase in costs, as employers consider their expected return on investment. This constraint also applies to individual employee engineers when considering using limited personal financial resources to attend a conference, but less so to self-employed individuals who can deduct professional development costs on their income tax returns.

Another barrier to professional development is the low importance some employers and individuals give to it. Somewhere between 60% and 75% of Canadian engineering and technology employers have

policies that support professional development (Prism Economics and Analysis, 2009). The number of employers supporting professional development is encouraging, but it is neither an adequate measure of the amount of professional development support provided per employee nor a measure of the quality of professional development being provided.

Other barriers to professional development are related to individualism. These include psychological make-up, cultural background, learning style, lifestyle, and current personal situations.

Concluding remarks

By a lifetime commitment to learning and improving their skills, civil engineers, collectively and individually, retain their professional status and marketplace respect. The demonstration of continuing competency fulfils the increasing demands from the public for greater accountability. The maintenance of continued competency is and should always be the responsibility of the individual engineer. An individual's program for maintaining competency can vary significantly and should be directed by the need appropriate to the professional practice of the engineer. ■

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Engineering Leadership – The Edge that Drives Business Results

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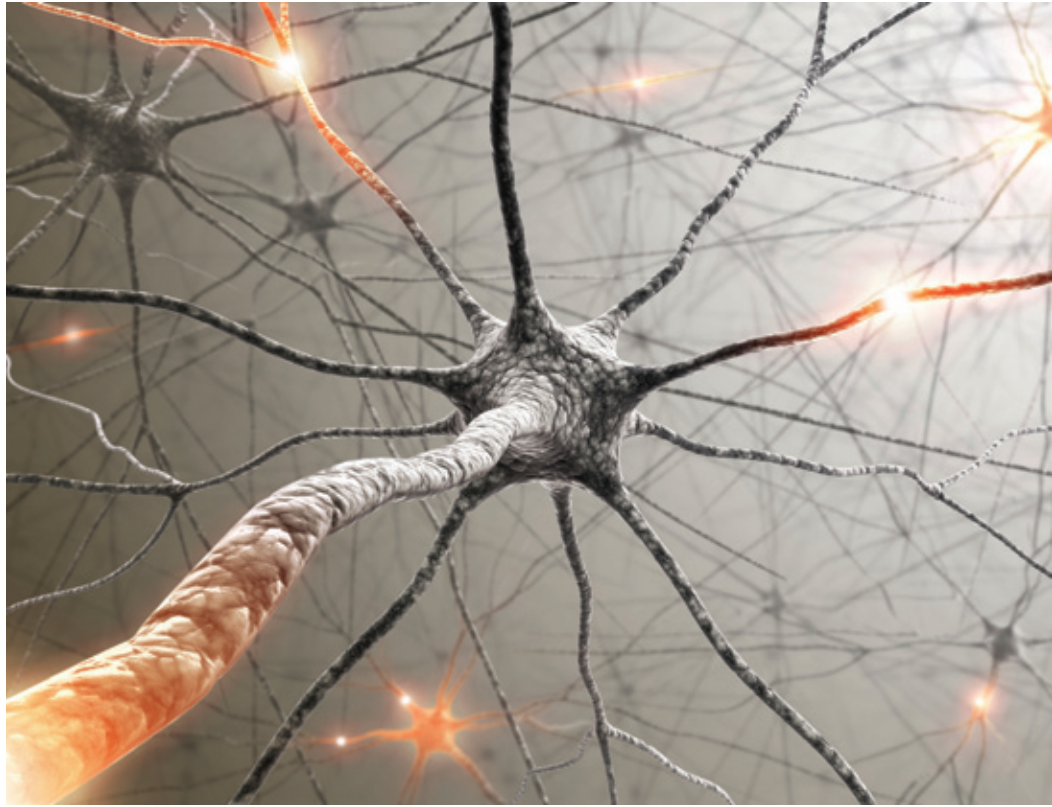
In today's dynamic business environment, companies are seeking out new solutions and innovative approaches to deal with rapid change, to develop a competitive advantage in a globalized economy, and to engage and motivate talent. Emotional intelligence (as measured by EQ, emotional quotient) is emerging as the key component, or the edge, that promotes high performance.

EQ is the ability to use emotions effectively in our thinking and decision making. Learning and applying the skills associated with EQ is becoming one of the key differentiating factors of high-performing organizations, even in those sectors that have traditionally found success through their technical and analytical strengths, such as the engineering sector.

EQ in action

Jim is a senior manager at a global engineering consulting firm. He is very bright and everyone who works with him agrees that he has great potential for success. One of his key strengths is project management; he has a track record for being on time, on budget, and avoiding project scope creep.

Jim is a busy guy with a long daily to-do list, almost always longer than the daily hours provided. While his track record has been the main impetus for moving up the organization, people are starting to see a side of Jim that isn't so admirable – he often lashes out at people and is unable to build relationships based on trust.



Jim's boss, Steve, knows that no matter what Jim sets out to do, whether it's managing a project worth \$30 million or a small project worth \$500,000, Jim's success depends on how he executes the project with his team. He realizes that even if Jim focuses on the task and completes each element of the project correctly, the optimal performance of the team will only be achieved when Jim learns to cultivate, drive, and focus the team's energy and emotions in the right direction.

Steve's job is to help Jim find his edge. What Steve has come to realize is that the "how-to" for Jim is tied to good leadership and emotional intelligence – Jim's EQ. It is EQ that will create the edge to better meet challenges and achieve the success that is expected of Jim.

Leadership and EQ

Leadership skills drive a project team from good to great; EQ skills drive a leader from great to exceptional. Leadership builds a team's bench-strength, in technical skills as well as relationship building and com-

munication, with the goal of enhancing the bottom line of the organization. So what is the silver bullet? Researchers around the world have come to similar conclusions: emotional intelligence makes the difference, and what's more, it can be learned!

Emotional intelligence, made popular by researchers such as Peter Salovey and John Mayer (1997), and Daniel Goleman (1995), has been determined as the key factor that sets apart high performers from average performers. In fact, research proves that 80%-90% of EQ competencies differentiate top performers.

We are all familiar with the measurement of IQ. It is a score derived from one of several different standardized tests designed to assess intelligence. IQ serves you well in that it helps to develop and master book knowledge, develop technical skills, and secure a job. Your IQ provides you early success in your chosen profession. However, your IQ in relation to career progression and business success has very little added benefit. It is your EQ that makes the difference.

Image of firing neurons: Thinkstock

WHERE TO START WITH EQ?

So what does this mean in your work? How do you incorporate EQ into the decisions, challenges and work that lie ahead of you? Below are some questions that leaders can start asking that weave emotional intelligence into their day-to-day decision-making progress.

- What are the facts?
- What assumptions am I making?
- What is the evidence for my beliefs?
- What's another way of looking at this?
- Is there a less destructive way to look at this?
- What results do I want?
- What can I affect?
- How will the people involved be affected?
- How will each option contribute to agreement and positive interactions?
- What do the people in the project need in order to buy into this?

EQ and the brain

Many of us have been taught that emotions are bad and that they should be suppressed or denied, especially in a professional environment. The fact is, we are neurologically wired to respond to emotions and we do so whether we are aware that it is happening or not. Emotions exist at a very physical level. They are chemicals that are constantly being produced by our brain. They affect us – the way we feel influences the way we think and act; our emotions and our thinking are intertwined whether we choose to admit it or not.

Emotions create energy. The chemicals created by emotions are messengers; they carry an electrical charge from our brain to trillions of receptor sites located throughout the body. We experience the energy that each of these emotional messengers carries. For example, dealing with a major challenge or obstacle may result in a loss of energy and drive, some-

times taking the form of procrastination. However, once we begin to find a solution, our feelings change and our energy picks up.

The power of emotions

To fully leverage the power of emotions, we must consistently remind ourselves of three simple points:

1. **Emotions are data.** They are signals that give you information about yourself and others. Developing emotional intelligence helps to pick up important signals and to gain insight into how our own emotions colour our thinking (for good and for ill).
2. **Emotions drive behaviour.** Developing emotional literacy helps you understand what motivates you and others.
3. **Emotions are contagious.** Leaders who are vulnerable in emotional literacy rely on intellectual or cognitive analysis for problem solving; therefore, insights and nuances can be overlooked. They are also uncomfortable talking about feelings, and tend to either minimize or generalize them. Leaders with an underdeveloped EQ are often confused about what drives people (including themselves) and are surprised by the way people react. They are generally unaware of the feelings they are spreading to others and don't recognize how these feelings are driving performance up or down.

Understanding EQ and developing emotional awareness will drive leadership excellence. EQ is not about being nice or being emotional, nor is it about a fixed set of attributes or personality styles. Rather, EQ is a complex ability to regulate your impulses, empathize with others, and persist and be resilient in the face of obstacles and challenges. EQ effectively blends thinking and feeling to make wise decisions about business essentials such as, but not limited to, project scope, budgets, and timelines.

No matter what project leaders set out to achieve, whether it's creating a project terms of reference or detailed budget tracking and timeline reports, their success depends on how they do it. The essential ingredient is EQ.

Components of EQ

Your self-awareness:

- Your own emotional reactions
 - Reading what influences people's behaviours
- Your self-management:

- Identifying and choosing appropriate options
- Your ability to stay focused/your personal drivers
- How you manage/work through your colleagues' reactions

Your self-direction:

- How you read and understand other people
- Your connection to what is important to you.

The bottom line: Emotions (energy) drive people and people drive performance. The edge has become EQ – it has become essential to differentiating world-class organizations in a complex marketplace.

Great leaders engender a workplace where people can leverage their potential to reach new heights and expand possibilities. They set the course and create the framework for people to do exceptional work. They motivate, grow and build confidence in people. They form an authentic connection and demonstrate commitment that builds trust and fuels performance. This unique ability requires an understanding of what stimulates and motivates others (as well as themselves) combined with a robust set of techniques for creating the right conditions for performance. It is these leaders that truly have the edge that drives business results. ■

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Continuing Professional Development for Practising Engineers: Guidelines in Canada



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Engineering means addressing the constantly evolving needs of society, and the methods used to address them. One of the core values expected from engineers as professionals is to keep current on the latest advances in technology, materials, standards and practices in order to respond to the challenges of a rapidly changing world.

Among Engineers Canada's ongoing endeavours is to support its 12 constituent associations – Canada's provincial and territorial engineering regulatory bodies – in being leaders in self-regulation and excellence in professional practice. One way of achieving this is by bringing the associations together to discuss best practices for their regulation work. From this important collaboration come guidelines and standards that are of benefit to the entire engineering profession.

Professional guidelines

Engineers Canada, along with the Canadian Engineering Qualifications Board and in

direct consultation with the 12 associations, issues guidelines on various subjects that act as general guiding principles for their programs. But it is up to each of the associations to implement detailed applications, policies, practices and exceptions.

Information-sharing on what works and what does not in terms of the continuing professional development (CPD) of engineers has resulted in guidelines on CPD (Engineers Canada, 2004) to ensure the profession's members are always aware of developments and on top of their field to deliver the best possible results for their clients, and in turn, the public.

Preserved in Engineers Canada's Code of Ethics (Engineers Canada, 2012) is the expectation of continual self-improvement and the engineer's duty to undertake only engineering work for which they are fully competent. Engineers are expected to keep themselves informed in their area of practice to maintain competence, to strive to contribute and advance the body of knowledge in their field, and to ensure opportunities for the professional development of those working under them.

The *Guideline on the Continuing Pro-*

fessional Development and Continuing Competence for Professional Engineers (Engineers Canada, 2004) provides information on how the 12 associations may encourage and monitor the competence of professional engineers within their jurisdictions. The objectives of the guideline are to guide the development of programs that support and promote CPD and the competency of engineers. Engineers Canada developed this guideline by reviewing programs that were already in place and incorporating best practices into one guideline.

Engineers Canada also offers the *Step-By-Step Guide for the Preparation and Implementation of an Individual Continuing Professional Development Plan* (Engineers Canada, 2004). The goal of this document is to provide the individual professional engineer with an easy system to help plan and implement CPD activities that will help maintain and enhance knowledge, skills and competence as outlined by their association. Both the guideline and the step-by-step guide help professional engineers assess and manage their professional development in order to maintain and further their competencies.

TABLE I. STATUS TABLE OF CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMS IN CANADIAN ENGINEERING ASSOCIATIONS

ASSOCIATION	NAME OF PROGRAM	STATUS	COMMENTS
APEGBC	Practice Review	Operational, Mandatory	Random selection from practice areas and disciplines prioritized by APEGBC Council.
	Professional Development	Operational, Voluntary	Mandatory program voted down by members in 2009. Council revised the CPD Guideline (based on APEGA model). New CPD guideline took effect January 2012.
APEGA	Continuing Professional Development (CPD)	Operational, Mandatory	Exemption for members submitting written "non-practising" declarations. Annual reporting of professional development hours required. Cancellation of registration for failure to provide detailed CPD records on request.
	Practice Review	Operational, Mandatory	Permit holders (firms) and individuals randomly selected for review. Power of Practice Review Board to make orders is similar to Discipline Committee's.
APEGS	Continuing Professional Excellence (CPE)	Operational, Mandatory	Mandatory participation, but no mandatory reporting (over 90% of members reporting voluntarily)
APEGM	Professional Practice Guideline	Operational, Mandatory	Mandatory participation and reporting authorized by bylaw amendment in 2011.
PEO	Continued Competency Assurance	Operational, Voluntary	
OIQ	Professional Development	Operational, Mandatory	Members must obtain 30 hours of professional development activities every 2 years.
APEGNB	Continued Competency Assurance Program	Operational, Mandatory	Mandatory participation, but only selected members are required to report their activities
Engineers Nova Scotia	Professional Development Program	Operational, Mandatory	Members are required to certify their compliance with the CPD program and that they will practise only in areas of competence when renewing their annual dues. Life Members and Retired Non-Practising Members are exempt from the program.
Engineers PEI	Professional Development Program	Operational, Mandatory	Non-practising are exempt from the program. However, they give up the right to practise. Program includes mandatory reporting and auditing.
PEGNL	Professional Development Program	Operational, Mandatory	Non-practising are exempt from the program. However, they give up the right to practise. Mandatory annual reporting with annual audits.
NAPEG	Professional Development	Operational, Voluntary	
APEY	Continuing Professional Development Program	Operational, Voluntary	Program is based on APEGA model. Members who do not file their CPD report must pay a \$50 penalty before they can be considered in good standing.

Canadian framework for licensure

In addition to providing these guidelines and the step-by-step guide, Engineers Canada and its constituent associations are creating a *Canadian Framework for Licensure*, which will include guiding principles on aspects of the regulated profession. The framework contains 26 elements, one of which is CPD. The guiding purpose of this element is: "to have an effective and relevant continuing professional development program that achieves the ongoing trust and confidence of the public and government that licence holders are meeting ethical obligations to maintain their professional competencies" (Engineers Canada, 2012).

Engineers Canada released a consultation paper on CPD and asked for feedback from the associations and other national and provincial stakeholders. Engineers Canada's

Board endorsed the key considerations in 2012 and the associations concurred. Approval of this element means that all parties agree that members must maintain their competence, regardless of jurisdiction.

The established set of guiding principles in this framework are: participation in a measurable CPD program where the individual is responsible for maintaining their knowledge, a program that takes into account that knowledge and skill may be acquired in many ways, awareness that reporting requirements will vary, provisions to conduct quality or risk audits within CPD programs, and consequences for non-compliance. Perhaps one of the most important results will be the elimination of duplicate reporting for engineers who work across jurisdictions.

Mandatory CPD is required in most other

regulated professions in Canada including: accounting, law, pharmacy, teaching, architecture, veterinary sciences and all healthcare-related professions. Professional organizations are experiencing increased scrutiny by government, the public and media to demonstrate their effectiveness, particularly in those professions that self-regulate. Internationally, required reporting of CPD is also becoming the norm.

Provincial and territorial continuing professional development

Currently eight of the 12 professional engineering associations have mandatory CPD programs. At the end of 2011, almost 50% of practising members in Canada were held accountable to a mandatory continuing professional development program.

The Association of Professional Engineers and Geoscientists of the Province of Manitoba amended its bylaws last year to have a mandatory CPD program. The Association of Professional Engineers and Geoscientists of British Columbia, although still offering a voluntary program, updated its guidelines in 2012 to align with those of other associations.

Both Professional Engineers and Geoscientists of Newfoundland and Labrador and the Association of Professional Engineers and Geoscientists of Alberta have established comprehensive programs that served as models for the rest of the associations' programs. The Association of Professional Engineers and Geoscientists of British Columbia, Association of Professional Engineers and Geoscientists of the Province of Manitoba and Engineers Nova Scotia have modelled their programs after that of Alberta, which was first established in 1997.

Those regulators that do not currently have mandatory reporting – British Columbia, Northwest Territories and Nunavut, Ontario, and Yukon – strongly recommend self-reporting.

“The regulators have a role to play in developing requirements that best meet the needs of their memberships and jurisdictions. Continuing professional development is something that every responsible professional engineer would engage in regardless of it being mandatory or not,” says Marie Carter, FEC, P.Eng., chief operating officer of Engineers Canada.

While not all associations in Canada have adopted mandatory CPD, even in the absence of such a requirement, there is still considerable participation in CPD by engineering professionals. However, it is clear that policies requiring continuing professional development have a direct impact on participation in CPD. According to the joint Engineers Canada/Canadian Council of Technicians and Technologists 2009 report, *Trends in Continuing Professional Development*, 87% of engineers reported participation in some form in CPD activities. From the same survey, between

60% and 75% of engineering and technology employers reported having formal policies to encourage continuing professional development. The most common form of support is reimbursement for tuition costs or course fees.

In Ontario – where there is currently no mandatory CPD policy – engineers reported taking 10.4 days of CPD in the past three years. In provinces where associations have established mandatory CPD requirements, such as Alberta, the average was 14.1 days.

Most programs have minimum yearly hours requirements, between 60 to 80 hours per year, and the total hours required over a three-year period is up to 240 hours. Most programs also require reporting in a minimum number of six categories (see sidebar below, “Reporting Categories ...”).

Continuing professional development status table

Engineers Canada has created a “Status Table of Continuing Professional Development Programs in Canadian Engineering Associations” for your information (see Table I). This table provides information about the continuing professional development programs of all of the associations, including the name of the program, its status (operational vs. planned) and whether the program is optional or mandatory.

Please visit www.engineerscanada.ca/e/files/statustable_eng.pdf for the most current table. “Canadians can be confident that

licensed members of the engineering profession have a guiding set of principles that means they are obliged to be current and qualified in their fields,” says Carter. ■

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REPORTING CATEGORIES OF MOST MANDATORY CPD PROGRAMS

- Professional practice
- Formal learning, such as structured courses, programs or seminars of a certain length
- Informal learning, such as self-directed study, journal reading, seminars, conferences, technical field trips, or trade shows
- Participation, such as mentoring, attending committee meetings, community involvement
- Presentations, such as preparing and giving presentations
- Contributions to knowledge, such as writing papers, or developing codes and standards.

CSCE 2012 Awards Banquet

Each year, CSCE recognizes the career achievements of its members and excellence in technical papers. The 2012 awards were presented during the society's annual conference in Edmonton. A few recipients are shown below; the full list of those honoured with awards, fellowships and scholarships can be found on the CSCE Honours and Fellowships web page, at <http://csce.ca/committees/honours-and-fellowships/>

Les Prix 2012 de la SCGC

La liste complète des personnes qui ont reçu des prix, des fellowships et des bourses est disponible à la page web des Honneurs et Fellowships de la SCGC: <http://csce.ca/fr/committees/honours-and-fellowships/>



CSCE past-president Randy Pickle (left) presents awards to artist Karyn Knetemen and Konrad Sui representing the City of Edmonton.



P.L. Pratley Award winners Reid Coughlin (centre) and Scott Walbridge (right).



Stephen G. Revay Award co-winners Aminah Robinson Fayek (centre) and Sangyun Lee (right).



A.B. Sanderson Award winner Ghani Razaqpur.



Camille Dagenais Award winner Greg Lawrence.



Casimir Gzowski Medal co-winner Jeffrey Packer.



CSCE Fellow Christos Katapodis.



Donald R. Stanley Award co-winner Beatrice Yung.



Horst Leipholz medal winner Nemy Banthia.



James A. Vance Award winner Sherry Sparks.

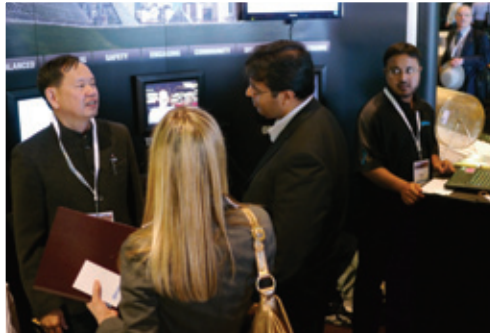


Selected Emerging Alberta Artist Taryn Kneteman.



Shanly Award winner Janaka Ruwanpura.

Gallery: CSCE 2012 Conference/ Galerie : Congrès SCGC 2012



CALL FOR NOMINATIONS | APPEL A CANDIDATURES

CSCE National Honours and Awards – Call for Nominations

Nominations are invited at any time for the awards listed below; those nominations received by November 15, 2012 will be considered for 2013 awards to be presented at the CSCE Annual Conference in Montreal in June 2013.

Please submit nominations, clearly stating the award for which the nomination is made, by e-mail to: doug.salloum@csce.ca, or mail to: Doug Salloum, Executive Director, The Canadian Society for Civil Engineering, 4877 Sherbrooke St. W., Montreal, QC H3Z 1G9

A.B. Sanderson Award

Recognizes outstanding contributions by a civil engineer to the development and practice of structural engineering in Canada.

Albert E. Berry Medal

Recognizes significant contributions by a civil engineer to the field of environmental engineering in Canada.

Camille A. Dagenais Award

Recognizes outstanding contributions by a civil engineer to the development and practice of hydrotechnical engineering in Canada.

E. Whitman Wright Award

Recognizes significant contributions by a civil engineer to the development of computer applications in civil engineering in Canada.

Excellence in Innovation in Civil Engineering Award

Recognizes excellence in innovation in civil engineering by an individual or a group of individuals practicing civil engineering in Canada, or a Canadian engineering firm, or a Canadian research organization. (Deadline for nominations is Jan. 15, 2013).

Award for Governmental Leadership in Sustainable Infrastructure

Recognizes those in the public sector who, through a project or program, are building for the future. Any municipal government or provincial or federal department that is planning, designing, building or delivering an infrastructure program or a project that significantly extends the life of these critical assets, makes better use of resources

and reduces the environmental impact may apply. (Deadline for nominations is Feb. 15, 2013)

Young Professional Award

Awarded annually to a CSCE Member or Associate Member who has demonstrated outstanding accomplishments as a young professional engineer. Normally, nominees must be no older than 35 as of December 31 of the year that the award is presented, although this limit may be extended for nominees who have taken extended leaves from professional practice.

Horst Leipholz Medal

Recognizes outstanding contributions by a civil engineer to engineering mechanics research and/or practice in Canada.

James A. Vance Award

Recognizes a CSCE member whose dedicated service, other than as president, has furthered the advancement of the CSCE and who has completed or recently completed service in one or more sequential positions at the national level.

Sandford Fleming Award

Recognizes outstanding contributions by a

civil engineer to transportation engineering research and/or practice in Canada.

Walter Shanly Award

Recognizes outstanding contributions by a civil engineer to the development and practice of construction engineering in Canada.

W. Gordon Plewes Award

Recognizes particularly noteworthy contri-

butions by an individual to the study and understanding of the history of civil engineering in Canada, or civil engineering achievements by Canadian engineers elsewhere. Normally, the recipient will be an individual, not necessarily an engineer, but in special circumstances the award can be given to an organization.

Appel – Distinctions Honorifiques Nationales SCGC

Les membres sont invités à soumettre en tout temps, des candidatures pour les prix ci-dessous; les candidatures soumises d'ici le 15 novembre 2012 seront considérées pour les prix 2013 qui seront décernés au congrès annuel de la SCGC à Montréal en juin 2013.

Veillez soumettre les candidatures, en précisant le titre du prix, par courriel à: doug.salloum@csce.ca, ou en vous adressant à:

Doug Salloum, directeur exécutif, La Société canadienne de génie civil, 4877 rue Sherbrooke ouest, Montréal, QC H3Z 1G9

Le prix A.B. Sanderson

Est décerné aux ingénieurs civils qui se sont signalés par leur contribution exceptionnelle au développement et à la pratique du génie des structures au Canada.

La médaille Albert Berry

Est décernée à un ingénieur civil qui s'est distingué par son importante contribution au génie de l'environnement au Canada.

Le prix Camille A. Dagenais

Est décerné aux ingénieurs civils qui se sont signalés par leur contribution exceptionnelle au développement et à la pratique de l'hydro-technique au Canada.

Le prix E. Whitman Wright

Est décerné à un ingénieur civil qui s'est distingué par son importante contribution au développement des applications de l'informatique au génie civil au Canada.

Le prix d'excellence en innovation dans le domaine du génie civil

Souligne l'excellence dans le domaine du génie civil dont a fait preuve une personne ou un groupe de personnes pratiquant le génie civil au Canada, ou une société canadienne d'ingénierie

ou un organisme canadien de recherche. (Délai de soumission de candidats : le 15 janvier 2013.)

Le prix pour le leadership gouvernemental en infrastructures durables

Reconnait des entités du secteur public qui, de par un projet ou un programme, construisent pour le future. Tout gouvernement municipal, provincial ou département fédéral qui planifie, conçoit, construit ou livre un programme ou un projet d'infrastructures qui prolonge d'une manière significative la vie de ces actifs, fait un bon usage des ressources et réduit l'impact sur l'environnement peut postuler. (Délai de soumission de candidats : 15 février 2013).

Le prix du jeune professionnel

Attribué annuellement à un membre ou à un membre associé de la SCGC ayant accompli des réalisations exceptionnelles en tant que jeune ingénieur professionnel. Les candidats doivent être âgés de 35 ans ou moins au 1er décembre de l'année de l'attribution du prix. Toutefois, cette limite peut être prorogée pour les candidats qui ont pris des congés prolongés.

La médaille Horst Leipholz

Est décernée à un ingénieur civil qui s'est distingué par son importante contribution à la

recherche et/ou à la pratique de la mécanique appliquée au Canada.

Le prix James A. Vance

Est décerné à un membre de la SCGC dont le dévouement a favorisé l'avancement de la Société et qui termine, ou achève, récemment un mandat au sein de la Société, sauf comme président.

Le prix Sandford Fleming

Est décerné à un ingénieur civil qui s'est distingué par son importante contribution à la recherche et/ou à la pratique du génie du transport au Canada.

Le prix Walter Shanly

Est décerné à un ingénieur civil qui s'est distingué par son importante contribution au développement et/ou à la pratique du génie de la construction au Canada.

Le prix W. Gordon Plewes

Est décerné à une personne, pas nécessairement un ingénieur, qui s'est distinguée par sa contribution à l'étude de l'histoire du génie civil au Canada ou de l'histoire des réalisations canadiennes en matière de génie civil à travers le monde. Dans les circonstances exceptionnelles, le prix peut être décerné à une organisation.

Engineering Leaders

In the previous issue of CIVIL magazine (May 2012, p. 33) I briefly discussed the importance of soft skills training that CSCE would like to develop and deliver in coming months. Our aim is to supplement our successful technical courses and workshops and to offer our members additional professional development opportunities.

Leadership competencies are an important component of soft skills learning programs. CSCE, in partnership with Iron Ring Leadership, conducted a survey on leadership development among our membership with a specific review of Young Professionals. The goal of the survey is to help us understand the leadership development needs of civil engineers and in particular those of young professionals.

Half of all respondents believe that they would be unprepared to enter a managerial position leading people. Personal development is the main factor that would influence their career progression into management.

The research identifies seminars and conferences as the most desirable forms of professional development. Young professionals have expressed a preference for professional development through training programs and even more importantly through mentoring by a senior engineer as part of their day-to-day work schedule.

The full report, including a copy of the survey questionnaire is available at www.csce.ca.

If you have not completed the survey and you wish to contribute to the research, here is the link to access the survey: <http://app.fluidsurveys.com/s/IronRingLeadershipSurvey2012/>

Guide to Bridge Hydraulics

A new session of the Guide to Bridge Hydraulics course will be offered in Ottawa on September 18, 2012. Please visit www.csce.ca ■

Les leaders en génie civil

Dans le numéro précédent de CIVIL, j'ai abordé l'importance de la formation en compétences non techniques que la SCGC souhaite élaborer et présenter dans un proche avenir. Le but de notre démarche est de compléter nos formations techniques qui rencontrent un grand succès et d'offrir à nos membres de nouvelles opportunités de développement professionnel.

Les compétences en leadership constituent une part importante de tout programme de formation visant l'acquisition de compétences non techniques. En partenariat avec Iron Ring Leadership, la SCGC a mené une enquête sur le développement en matière de leadership de nos membres et plus particulièrement des Jeunes professionnels qui entament leur carrière en génie civil. Le but de l'enquête est de mieux comprendre les besoins en développement en matière de leadership des ingénieurs civils et notamment ceux des jeunes professionnels.

La moitié des répondants pensent qu'ils seraient peu préparés, sinon pas du tout préparés, aux tâches qu'ils auront à assumer dans un poste de direction impliquant la gestion d'employés.

La croissance et l'accomplissement personnel sont les facteurs principaux qui les pousseraient à occuper des postes de gestion. Par ailleurs, en matière d'outils de formation, il ressort de l'enquête que les séminaires et les conférences sont les plus indiqués pour offrir ce type d'apprentissage. Les jeunes professionnels, quant à eux, ont exprimé une préférence pour un développement professionnel basé sur des programmes de formation offerts au sein de leur organisation et surtout sur un programme de mentorat continu dans le cadre de leur travail quotidien.

Le rapport, qui inclut une copie du questionnaire, est disponible à www.csce.ca.

Ceux qui ne l'ont pas rempli, mais aimeraient participer à cette étude, peuvent le faire à partir de ce lien <http://app.fluidsurveys.com/s/IronRingLeadershipSurvey2012/>

Guide de l'hydraulique des ponts

Une nouvelle session de la formation sur le Guide de l'hydraulique des ponts sera offerte à Ottawa le 18 septembre 2012. Veuillez visiter www.csce.ca ■



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