MAY/JUNE 2017

ENGINEERING DIMENSIONS

FRESH THINKING ON environmental engineering

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- **2016 year in review and audited financial statements**

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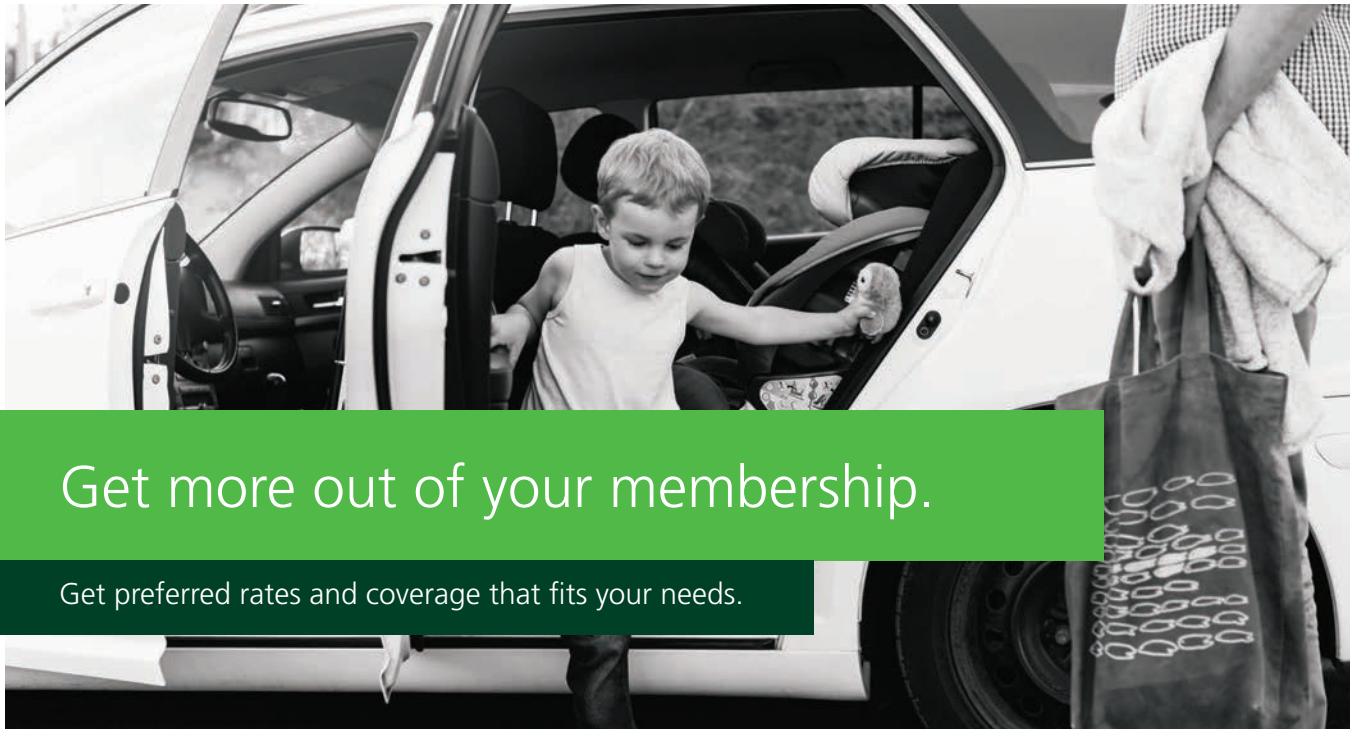

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WEB EDITION

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TACKLING THE ENVIRONMENT ISSUE

By Nicole Axworthy

ENGINEERING DIMENSIONS

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This isn't the first time we've covered the environment in *Engineering Dimensions*, since we can't begin to scratch the surface of such a broad topic in a single issue of the magazine. Previously, we've featured engineering educators who have embraced sustainability as a valuable teaching component, fascinating examples of animal- and plant-inspired sustainable engineering designs, and the subject our letter writers are most passionate about: climate change. There's plenty of information out there on the importance of environmental protection planning, and one thing's for sure: environmental engineers are necessary players in the team efforts to save our planet.

In "Environmental concerns coaxing new levels of input from P.Engs" (p. 40), Associate Editor Michael Mastromatteo delves into what may be expected of environmental practitioners moving forward, given the increasing public concern about water pollution, greenhouse gases, alternatives to fossil fuels and the emerging carbon economy. Experts at Engineers Canada, the national body of the country's provincial and territorial engineering regulators, for one, see significant changes on the horizon for the way environmental engineering is understood and practised, and recently published its *National Guideline on Sustainable Development and Environmental Stewardship for Professional Engineers*, which highlights the changing priorities in this sector. It suggests that individual engineers should make it their professional responsibility to consider the environmental impact of their work.

We also sought out several frontline practitioners to find out what they're doing in the field, and their views on what may be in store ("Practitioners survey the current—and future—environmental landscape," p. 46). Each with their own area of expertise, these individuals are proving the field is ripe for fresh and innovative thinking. Personally, I'm excited about the possibilities of what these—and other—forward-thinking specialists can achieve in making our future a brighter and cleaner one.

This issue, we also introduce you to PEO's council for 2017-2018 (p. 24), including new President Bob Dony, PhD, P.Eng., FEC. As you'll read in his first president's message (p. 6), he has lofty goals for his year in office and is putting particular emphasis on educating the next generation of engineers, which is not surprising, given he is a long-time engineering professor at the University of Guelph. He also hopes to focus on implementing a leadership renewal plan, which is already a topic of conversation via PEO's Council Term Limits Task Force and its recent report (see In Council, p. 62). Dony also believes in taking a proactive approach in protecting our self-regulating profession and plans to make it a cornerstone of his presidency.

On a slightly self-serving note, I invite you to take part in our 2017 *Engineering Dimensions* reader survey starting May 15. The survey helps us gauge reader satisfaction and assists our advertising efforts. It should only take about 15 minutes, and we'll automatically enter you into a draw to win a $500 Apple gift card. Visit PEO's homepage and click on the rotating banner to take part in the survey. Or, click the link on page 15 of *Engineering Dimensions'* digital edition. I hope you'll take the time to let us know your thoughts. e

THIS ISSUE Engineers as tree-huggers? The environment remains a top-of-mind issue for the profession, but there is a lot of fresh thinking going on about what practitioners can do to bring more influence to bear in the development of technically sound policy to better protect people, places, nature, air, water and many other finite things.

MOVING FORWARD IN A HOST OF WAYS

By Bob Dony, PhD, P.Eng., FIEE, FEC

As I write this first President's Message column, I am still humbled and grateful for the support of the members and my colleagues in allowing me the honour and privilege to serve as the 98th president of the association.

When I stood for election last year, I used the phrase "Moving forward for a stronger profession" to sum up my perspectives on how I wish to focus my efforts in the coming year. This emphasis on the future of the profession is a direct result of my full-time job as an engineering professor. Being surrounded by the future generation of engineering practitioners continually reminds me that, really, it is their profession that we should be working for. And not only does this come from my professional life, but closer to home, literally, as I am the proud father of two engineering interns (EITs), Lynn Dony, EIT, and John Dony, EIT, as well as Greg Dony, a student member.

So, what does their profession look like? It is certainly different than the one I entered when I graduated in 1986 with my degree in systems design engineering. At that time, such a non-traditional program was very much the exception to the classical engineering disciplines of the day. Today, there are over 100 differently named engineering programs in Canada that have been accredited by the Canadian Engineering Accreditation Board (CEAB). The old framework of discrete engineering disciplines is now simply obsolete. Instead, there is a continuum of engineering competencies and scopes of practice, a spectrum that ranges from civil engineering to biomedical engineering, and everything in between. This is a world of makerspaces, hackathons, unicorns and self-driving cars. How do we take a regulatory framework that, some would argue, was designed for 19th-century technology and adapt it to today's reality?

There are a few areas that I plan to focus on during the year to help us move forward.

INNOVATIVE EDUCATION

Most new licence holders gain their academic requirements for licensure through an engineering program accredited by the CEAB. As a member of the CEAB myself, I am very proud of its over 50-year history of accrediting engineering programs in Canada. The criteria have allowed the universities—and now colleges—to develop innovative curricula and teaching methods. The final product has been an outstanding engineering graduate who is recognized as world-class across the globe. However, we need to ensure that educators continue to have room to innovate and meet the challenges of today's professional environment on one hand, while maintaining the technical rigour we require as a regulator on the other. There have been recent discussions between the national deans of engineering and Engineers Canada about accreditation and its evolution. It is imperative that the requirements of PEO, as Ontario's engineering regulator, are still met if any changes are contemplated.

To this end, I am organizing a workshop between PEO and the Ontario deans of engineering in May to examine the future evolution of the accreditation system. It will be a unique opportunity for the provincial educators and regulator to have a direct face-to-face discussion. It is also an opportunity for us to take a leadership role, especially considering that Ontario graduates make up half of engineering students nationally.

LEADERSHIP RENEWAL

Because we have the privilege of belonging to a self-governing profession, it is we, the members of the profession, who must provide the leadership to chart a new path forward for the profession. To succeed, we must ensure that diverse voices are present at all levels of discussion within PEO and we must embrace a culture of change as part of our core DNA. Succession planning and renewal are key to make sure fresh perspectives are brought into the organization. I will continue to support the work of the Human Resources Committee to have all PEO committees develop and implement succession and renewal plans. Even at the top—PEO council—there is much work to be done. The members' motions concerning term limits at the 2015 AGM spoke to this issue directly. The resulting council-appointed Council Term Limits Task Force presented its report to council in March and will present the details of their final recommendations in June.

I firmly believe the profession is bigger than any one of us. It is the responsibility of those of us who take on leadership roles to step aside and encourage new people to take our places. Personally, once my term is up on council, I will devote my time to

renewal, encouraging new voices to join the conversation—much like former president Walter Bilanski, PhD, P.Eng., FEC, did almost 20 years ago when he asked me to join the Engineering Disciplines Task Group examining the role of PEO in software engineering.

While we are encouraging new voices to enter the conversation, we must make sure it is a diverse set that reflects not just our profession, but society as a whole. Engineering as a profession has had a challenging history in trying to achieve gender equity. I want to explore initiatives to improve the gender balance of our volunteer leadership base. But, can we go beyond just reflecting the current balance within the profession and take a leadership role by setting more progressive goals? For example, can we exceed Engineers Canada's "30 by 30" goal of raising the percentage of newly licensed women engineers to 30 per cent by the year 2030 for our own leadership? This past election saw three women successfully elected of the seven contested positions. While these results are very encouraging, there is still much to do.

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PROTECTING SELF-REGULATION

The expectations of society on whose behalf we serve has also changed over the years. Today's public rightly demands much more transparency in how the professions govern themselves. Past President George Comrie, P.Eng., FEC, has spoken of the "contract" between the public and the profession. We gain the privilege of self-regulation in exchange for the obligation to protect the public as our primary function. This arrangement is increasingly under scrutiny for professions in general. With this in mind, we are very disappointed by the government's about-face on the repeal of section 12(3)(a) of the *Professional Engineers Act*, the industrial exception, whose repeal was dealt a death knell in March by the passing of the so-called *Burden Reduction Act*. Doctors are concerned about the erosion of their self-governing powers with Bill 87, *Protecting Patients Act*. And the placing of the Quebec regulator, l'Ordre des ingénieurs du Québec (OIQ), into trusteeship last year is yet another blow to self-regulation. Understanding the need for more transparency and taking a proactive response is, I believe, the best approach. The introduction of PEO's Practice Evaluation and Knowledge (PEAK) program is an excellent demonstration to the public at large of our desire to regulate the profession openly and transparently. I am fully in support of the program that was launched in March and will work to support its further evolution as we gain more experience with it over the coming year.

Again, I wish to express my gratitude to those members of the profession who put their trust in me. And I would like to thank Past President Comrie for his year of service as president. I am looking forward to the challenges ahead, working diligently to fulfill my obligations as your president. There is much I am looking forward to: working with the new council and with our various partners in the engineering profession, such as the Ontario Society of Professional Engineers (OSPE), Consulting Engineers of Ontario (CEO), and the Ontario Association of Certified Engineering Technicians and Technologists (OACETT), and meeting many of you at chapter events and other engineering activities across the province, and hearing all your diverse views on the myriad issues facing our profession. The strength of our profession rests on the shoulders of its over 80,000 members. And as a self-governing profession with over 1000 volunteers across the province, I look forward to "crowd sourcing" a path together to move this great profession of ours forward for the next generation of practitioners. **e**

DAVID BROWN WINS 2018-2019 PRESIDENTIAL TERM

By Nicole Axworthy

On March 20, PEO received the official council elections results revealing David Brown, P.Eng., BDS, C.E.T., has been elected to the office of president-elect. He will begin his run as PEO president at the 2018 annual general meeting in Toronto. Brown served as vice president (appointed) in 2016-2017, and Eastern Region councillor in 2013-2015 and 2015-2017.

In this election, 16.3 per cent of PEO membership voted. This marks an uptick in voting from 2016, when only 10.2 per cent of PEO licence holders participated. PEO launched an email campaign for the 2017 election season in an attempt to increase participation and, despite some challenges, slightly higher voting results were achieved.

Nancy Hill, P.Eng., LLB, FEC, was elected vice president for the 2017-2018 council. Hill has been involved in a number of PEO committees, such as the Council Term Limits Task Force and Awards Committee, and previously served as an appointed councillor and member of the Executive Committee in 2001-2003 and 2005-2006.

The new council, including the following newly elected councillors, took office on April 22 at PEO's annual general meeting in Thunder Bay.

- Councillor-at-Large Kelly Reid, P.Eng.
- Councillor-at-Large Roydon Fraser, PhD, P.Eng., FEC
- Northern Region Councillor Dan Preley, P.Eng.
- Eastern Region Councillor Ishwar Bhatia, P.Eng., FEC
- East Central Region Councillor Thomas Chong, P.Eng., FEC
- West Central Region Councillor Warren Turnbull, P.Eng.
- Western Region Councillor Lola Hidalgo, P.Eng.

At the first meeting of council on April 22, Marilyn Spink, P.Eng., was appointed to the position of vice president by and from the members of council, and Christian Bellini, P.Eng., FEC, and Warren Turnbull were elected as additional members of the Executive Committee.

New PEO President Bob Dony, PhD, P.Eng., FEC (at podium), gives his closing remarks at the association's 2017 annual general meeting on April 22 in Thunder Bay, Ontario. Seated beside him are 2016-2017 President George Comrie, P.Eng., FEC, Registrar Gerard McDonald, P.Eng., and 2016-2017 Past President Thomas Chong, P.Eng., FEC. Seated at front are members of PEO council.

HOW YOU VOTED

PRESIDENT-ELECT

David Brown	5615
Faizul Mohee	3148
Darla Campbell	2161
Peter DeVita	2135

VICE PRESIDENT

Nancy Hill	7595
Changiz Sadr	3002
Raymond Linseman	2321

COUNCILLOR-AT-LARGE

Kelly Reid	4693
Roydon Fraser	3399
Lisa MacCumber	2823
Nick Colucci	2760
Hamid Batenipour	2247
Fred Saghezchi	2103
Leila Notash	1996
Victoria Hilborn	1948
Ewald Kuczera	1727

EASTERN REGION COUNCILLOR

Ishwar Bhatia	880
Randy Walker	678
Orijit Pandit	407

EAST CENTRAL REGION COUNCILLOR

Thomas Chong	1160
Greg Merrill	859
Peter Cushman	655
Tina Emamverdi	365
Kam Leong	309

WESTERN REGION COUNCILLOR

Lola Hidalgo	1568
Vaj Banday	597
Rup Dhawan	419

WEST CENTRAL REGION COUNCILLOR

Warren Turnbull	acclaimed

NORTHERN REGION COUNCILLOR

Dan Preley	acclaimed

PEO BEEFING UP PEAK OUTREACH AND COMMUNICATION EFFORTS

By Michael Mastromatteo

PEO has created a new Practice Evaluation and Knowledge (PEAK) program coordinator position to better help members come to terms with the requirements of its professional development initiative. The PEAK program coordinator will be responsible for ongoing management of the new program, which is designed to provide the association with an accurate and up-to-date regulatory profile of its licence holders that will help meet the public's ever-increasing demand for accountability among regulators of professions.

The yet-to-be named incumbent will be responsible for overseeing all aspects of the PEAK program, including answering queries from licence holders and their employers, following up on problems and issues that arise, conducting presentations and ensuring licence holders are knowledgeable of PEAK program requirements.

Working with PEO's policy and professional affairs staff, the new coordinator will also develop and maintain program information, produce marketing materials and strategies, and participate in events to promote and explain the PEAK program.

In the meantime, PEO is continuing with its communication and data-gathering efforts. The publication of PEAK-related articles in the March/April 2017 issue of *Engineering Dimensions* also helped spread the word.

"So far, we've had 1400 identify their practice status and more than 950 complete the evaluation questionnaire," said Bernard Ennis, P.Eng., director of policy and professional affairs at PEO, in April. "That is a pretty good turnout because no one has received a fee renewal notice with the PEAK info yet. They must have got the message through *Engineering Dimensions* or the email blast."

In a further update, the PEAK program's ethics module, the component required of all licence holders, is now available. An active link to the online ethics module can be found under the PEAK tab in the member portal.

Ennis says communication efforts to date have been effective but some licence holders are still coming forward with uninformed questions. Information about the PEAK program can be found at www.peopeak.ca.

PRESIDENT DONY BEGINS PRESIDENTIAL TERM

Incoming PEO President Bob Dony, PhD, P.Eng., FEC (right), receives the ceremonial gavel and president's chain of office from Past President George Comrie, P.Eng., FEC.

REPEAL CAMPAIGN BEGINNING TO LOSE STEAM

By Michael Mastromatteo

PEO is doing what it can to win repeal of the industrial exception (section 12(3)(a) of the *Professional Engineers Act*), but the campaign appears to be running out of options.

On March 2, 2017, Bill 27, the government's red tape reduction bill, was presented for third reading and final debate in the legislature. The bill passed and the repeal was cancelled and cannot be proclaimed.

In February, PEO officials attended a standing committee on Bill 27 and attempted to convince MPPs of the need to press forward with the repeal. PEO had also presented MPPs with data from its research report, *Repeal of the Industrial Exception Data Gathering and Analysis Research Project*. Despite some support for the PEO position from New Democratic Party MPPs, the bill went ahead as directed.

PEO then President George Comrie, P.Eng., FEC, and PEO Registrar Gerard McDonald, P.Eng., met with Attorney General and Government House Leader Yasir Naqvi, MPP (Ottawa Centre), on March 22 in Toronto. The group discussed the repeal of the industrial exception, the Elliot Lake recommendations, PEO's Practice Evaluation and Knowledge (PEAK) program, the Ontario Building Code and other important regulatory issues.

This is the first time that PEO has had a formal meeting with the attorney general since his appointment last year.

PEO maintains the view that the repeal of the industrial exception is a workplace safety issue and will now work to facilitate the sharing of relevant information between the association and the Ministry of Labour so that PEO can more effectively regulate engineers and the practice of professional engineering in Ontario in the public interest (see "End of repeal opens new doors," p. 50).

PEO STILL PROBING NIPIGON RIVER BRIDGE INCIDENT

By Michael Mastromatteo

Nearly 16 months after the failure of the Nipigon River Bridge in northwestern Ontario, PEO is still fully immersed in registrar's investigations into the high-profile incident.

Section 33 of the *Professional Engineers Act* (PEA) allows the registrar to open investigations into whether any acts of professional misconduct or incompetence have occurred, without benefit of an official complaint being filed.

Such investigations also must proceed only on reasonable and probable grounds that a PEO licence holder or a holder of a Certificate of Authorization has committed an act of professional misconduct or incompetence.

Under registrar's investigations, PEO staff or contract specialists are afforded additional powers to undertake their work, including obtaining search warrants to enter places of business or other relevant sites.

The PEA also makes it an offense for persons to obstruct the investigators from doing their work by such actions as concealing or destroying any relevant books, records or documents.

The Nipigon River Bridge failed January 10, 2016, only weeks after officially opening. PEO initiated the registrar's investigations in October.

"As a regulator, it's our responsibility to investigate any possible engineering practice deficiencies related to the failure and determine if engineering work was carried out by appropriately licensed people and companies," PEO Registrar Gerard McDonald, P.Eng., said October 21. "This investigation is consistent with our mandate to govern PEO licence and Certificate of Authorization holders, and regulate and advance professional engineering practice to protect the public interest."

Linda Latham, P.Eng., deputy registrar, regulatory compliance at PEO, says complaints and registrar's investigations are never taken lightly. "PEO members and the public need to know that depending on the complexity of some investigations, and the number of individuals and witnesses who may be involved, these investigations can become complicated and very time consuming," Latham says.

Under article 10 of section 33 of the PEA, the registrar must report the results of the investigation to council or "such committee as the registrar considers appropriate."

One of the last registrar's investigations for PEO was initiated in 2012 following the fatal collapse of the Algo Centre Mall in Elliot Lake, ON.

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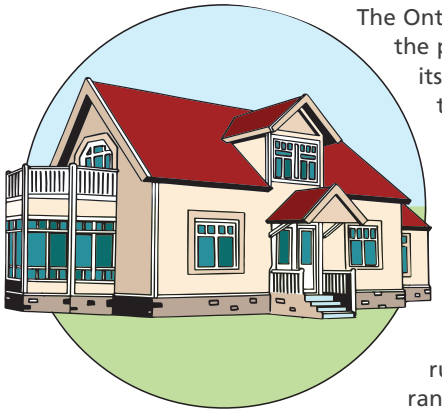
SIGNIFICANCE OF TARION MOVE NOT LOST ON ENGINEERING REGULATOR

By Michael Mastromatteo



The Ontario government's recent move to strip the province's home warranty association of its regulatory duties could have lessons for the engineering community.

The Ministry of Government and Consumer Services announced March 28 that due to weaknesses in its dispute-resolving efforts, the Tarion new home warranty corporation can no longer act as regulator for Ontario home builders and vendors.

Established in 1976, Tarion served as rule-maker, homebuilder regulator, warranty provider and adjudicator between buyers and builders. Tarion became the subject of news investigations in the last two years over concerns it was acting more in members' interests than for those of the home-buying public.

"Tarion's multiple roles and responsibilities can give rise to a perception of conflict of interest, and could result in an actual conflict or conflicts of interest," Government and Consumer Services Minister Tracy MacCharles said March 28. "The new home building sector deserves a stand-alone regulator."

The Ontario government is stripping Tarion of its responsibility to regulate the new home warranty program for the province's homebuilders, but is allowing the company to administer its new home warranty program in the interim.

Some PEO officials have suggested the Tarion situation highlights the need for professional associations to have separate regulatory and advocacy organizations.

"We are seeing governments starting to take over regulators at an alarming rate simply because, like Tarion, they have allowed themselves to become self-serving to their members as opposed to protecting the public," says President-elect David Brown, P.Eng., BDS, C.E.T.

In a message to fellow members of council, Brown cited the Quebec government's recent move to put the Ordre des ingénieurs du Quebec (OIQ) into trusteeship, and the British Columbia government move to strip real estate agents of the right of self-regulation. Brown says self-regulating professions must remain vigilant against the perception of putting members' interests ahead of the public.

Sandro Perruzza, CEO of the Ontario Society of Professional Engineers (OSPE), agrees that the Tarion case is instructive for engineers.

"This announcement from the Government of Ontario is part of a growing trend that we've observed throughout Canada regarding self-regulated professions and licensing in general," Perruzza told *Engineering Dimensions*. "Although governments do like the thought of a self-regulated profession, and the ability to pass on the responsibility for establishing codes of practice, enforcement and discipline to the profession, they are also aware that if this model fails, governments will eventually be held responsible by the public for not maintaining proper oversight of this model."

OSPE applauds the fact PEO is reaffirming its role as the regulator of the engineering profession in Ontario and is focusing its messaging on what it means to be a regulated profession and why having a regulator focused on its mandate is what's in the best interest of the profession, Perruzza adds.

The difficulties in having a single entity (PEO) serve as regulator and advocate for Ontario's engineering profession led to the creation of OSPE nearly 20 years ago.

In an April 4 message posted on its website, the Tarion group said its current responsibilities remain the same until the government's changes are implemented. These include licensing new home builders and vendors, resolving warranty claims and investigating illegal building practices.

BITS & PIECES

Toronto's CN Tower turns 41 this year. Open to the public as of June 26, 1976, it held the record as the tallest building, tower and freestanding structure for over three decades. It remains the tallest in the western hemisphere.

In 1901, Samuel Pierpont Langley built a gas-powered version of his tandem-winged Aerodrome aircraft, the first successful flying model to be propelled by an internal combustion engine.

ENGINEERS CANADA NAMES INTERIM CEO

By Michael Mastromatteo

Engineers Canada has appointed Stephanie Price, P.Eng., interim chief executive officer (CEO) of the national engineering association. The former chief of staff at Engineers Canada, Price will serve in the interim capacity while a search committee recruits a permanent CEO.

"The board of directors established a search committee March 1," says Engineers Canada President Chris Roney, P.Eng., BDS, FEC. "That committee will begin its work shortly."

The position became open January 30 with the departure of former CEO Kim Allen, P.Eng., FEC.

Allen, who served at Engineers Canada since 2012, is also the former registrar and CEO of PEO.

Price first joined Engineers Canada in 2009 as manager, qualifications. She also held the positions of practice lead (assessments) and chief of staff, before being appointed interim CEO in February. She was first licensed by PEO in 1997.

"I'm honoured to take on this role and to continue the great work Engineers Canada does to support the engineering regulators and foster engineering excellence in Canada," Price said in a media release. "Engineers play a pivotal role in our rapidly changing world, and I look forward to leading our team as we advance the profession."

Annette Bergeron, P.Eng., FEC, former PEO president and a current PEO director at Engineers Canada, is part of the search committee charged with finding a new CEO. The committee held its first meeting in mid-April.

Other members of the search committee are Chris Roney, P.Eng., BDS, FEC (PEO), Russ Kinghorn, P.Eng., and Ann English, P.Eng. (Association of Professional Engineers and Geoscientists of British Columbia), Digvir Jayas, PhD, P.Eng., FEC (Engineers Geoscientists Manitoba), Darryl Ford, P.Eng. (Engineers Geoscientists New Brunswick), Connie Parenteau, P.Eng. (Association of Professional Engineers and Geoscientists Alberta), and Zaki Ghavitian, ing., FIC (Order des ingénieurs du Quebec).

Stephanie Price, P.Eng., has been named interim CEO of Engineers Canada.

BITS & PIECES

Completed in 1920, the Kinsol Trestle just off the Trans-Canada Highway on Vancouver Island is one of the tallest freestanding and most spectacular timber rail trestle structures in the world. It stands 44 metres above the Koksilah River and is 187 metres in length.

EXPANSION OF TRANSFORMATIVE TECHNOLOGY JUST YEARS AWAY

By Michael Mastromatteo

The full rollout of self-driving or autonomous vehicles is still several years away, but engineers are already being challenged to help communities cope with this major form of disruptive technology.

This was among the major items debated by mobility and innovation experts at this year's Engineering Innovation Forum (EIF), held March 8 in Toronto.

The theme for the 2017 EIF was self-driving vehicles, transformers of the future.

Speakers at this year's forum included Krzysztof Czarnecki, PhD, P.Eng., of the University of Waterloo, Joel Adams, director of engineering and innovation for the Erwin Hymer Group, and Terry Ostan, senior manager of innovation and advanced technologies at General Motors Canada.

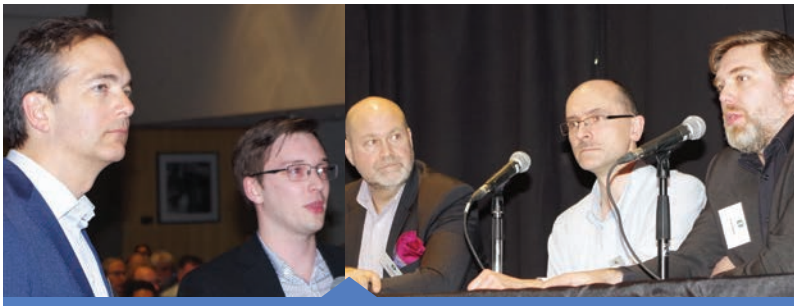
Mike Wise, reporter and broadcaster with CBC News Toronto, was host for this year's EIF. It was the second consecutive year with Wise as host and master of ceremonies. Previous CBC personalities hosting EIF events include video journalist Steven D'Souza, and Bob McDonald, science reporter and host of CBC Radio's *Quirks and Quarks* program.

This was the 28th year for the EIF, a major engineering showcase during National Engineering Month.

In his review of self-driving vehicle research, Krzysztof Czarnecki, a professor of electrical and computer engineering at the University of Waterloo, said that while the full onset of driverless technology is still at least 10 years distant, the industry is already making great strides in organizing all the data required to make autonomous cars safe, reliable and truly transformative.

With advances in machine learning and artificial intelligence, Czarnecki said, one of the next big challenges will be to allow self-driving vehicles to develop common-sense thinking and response.

Joel Adams of the Erwin Hymer Group outlined developments with his organization's aim to produce self-driving recreational vehicles (RVs), which he said will focus primarily on the passenger experience. He said a fleet of connected, automated and electrified (battery and solar powered) vehicles could have an enormous impact on family mobility and the worldwide RV market.



CBC News journalist Mike Wise (left), seen here rounding up questions from the audience, was host and master of ceremonies for the 2017 EIF.

Mobility experts attending this year's Engineering Innovations Forum included (left to right) Terry Ostan of General Motors Canada, Krzysztof Czarnecki, PhD, P.Eng., of the University of Waterloo, and Joel Adams, director of innovation and marketing at the Erwin Hymer Group.

Final speaker Terry Ostan of General Motors Canada said driverless technology ushers in the most exciting era of travel and mobility since motorized vehicles came into being more than 100 years ago. He said the industry could climb to some $87 billion in value by 2030, and will bring the added social benefit of reducing car-related accidents and fatalities by a huge order of magnitude.

"The promise of autonomous vehicles ultimately is to save lives," Ostan said, adding that the primacy of driver-operated vehicles is giving way to an autonomous mobility era.

To help protect the public with the emergence of autonomous vehicles, however, professional engineers will be called on to enhance a wide range of supporting technology, including on-vehicle sensors, connectivity, machine learning and big data computational power. This must be accompanied by advances in the supporting driverless car infrastructure—everything from charging stations to embedded sensors in road surfaces to instantaneous messaging between vehicles and traffic signals and signage.

In a panel discussion following the individual presentations, speakers debated some of the ethical and liability issues surrounding the rise of the driverless car. Experts agreed that engineers and other designers developing the next generation of driverless technology will need to review ethical biases and values in bringing maximum societal benefit to this transformative way.

A volunteer group of engineers and technicians spends several months each year preparing the EIF. The forums are aimed at raising awareness of engineering and technology, and promoting the importance of engineers and technologists in linking science and technology.

Then PEO President George Comrie, P.Eng., FEC, welcomed speakers and guests to the 2017 forum and later thanked organizers and sponsors for helping bring together a wide array of speakers and topics for the past 28 years.

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NATIONAL ENGINEERING MONTH HAS ITS BIGGEST IMPACT YET

By Jonathan Lazo

This past March marked another exhilarating month of engineering celebrations for National Engineering Month (NEM), kicking off with Nothin' but NEM and finishing off with Purple Power at the CN Tower, with nearly 350 NEM-supported events—the largest event total ever—rounding out the campaign.

This year's theme, "There is a place for you," showed youth and members of the public that engineering and engineering technology is open to all kinds of thinkers interested in making a difference in the world with a little patience and dedication. The campaign has shown massive growth since its inception, thanks to the great work of its organizers, volunteers, sponsors and partners.

The partnership of the Ontario Association of Certified Engineering Technicians and Technologists (OACETT), the Ontario Society of Professional Engineers (OSPE), Engineers Without Borders Canada (EWB) and PEO works to highlight engineering and engineering technology in schools, colleges, universities, workplaces, malls and public spaces across Ontario. Passionate volunteers contributed their time and expertise to conduct some of the most innovative and engaging events to date.

Generous sponsors contributed financial support to make the NEM 2017 campaign possible. Sponsors also participated in the festivities by contributing their branded merchandise and content for the NEM blog.

Twenty-four PEO chapters ran nearly 60 events across the province, continuing the association's outstanding participation in the annual campaign. The East Toronto Chapter received innovation funding for partnering with the Ontario Science Centre for a screening of the engineering film *Dream Big* (see "Dream-gineering the future," p. 18) and their interactive Mad Science event. The Etobicoke Chapter once again ignited engineering passion with their annual Engineering Idol event. The Hamilton-Burlington Chapter played a key role in facilitating the annual Bay Area Science and Engineering Fair. The Engineering Innovations Forum in Toronto highlighted how advanced self-driving cars have come in the past decade. Exciting events included everything from brewery and museum tours to design challenge hackathons.

PEO's Lakehead Chapter teamed up with OACETT's Thunder Bay Chapter to host a Student Design Challenge. Here, a team shows off their self-powered fan design.

There was a great turnout for the Grand River Chapter's Mathletics competition. The chapter designs questions to illustrate the relevance of engineering in practical life.

NEM 2017 made its presence felt through various media outlets. Dozens of articles appeared in local newspapers and websites, as well as interviews featuring volunteer engineers on local TV and radio. On social media, #NEM2017 was popular across the country, with photos, videos and stories being shared throughout the network and beyond. NEM was promoted on 680 NEWS AM radio, screens along The Path in downtown Toronto, and in online advertising that reached clear across the province.

The NEM website features a blog (nemontario.ca/blog) with coverage and photos of NEM events. This year, the site featured profiles of engineering and engineering technology professionals contributing to safety,

A few of the slogans ready to be transformed into buttons that the Mississauga Chapter used at their Bridge-Building Competition. Participants showed off their engineering spirit by wearing a button.

health and happiness, taking care of communities, and creating innovative breakthroughs in many sectors and industries. Campaign highlights were also shared on Twitter, Instagram and Facebook @NEMOntario.

Even with NEM 2017 fresh in our memories, preparation for NEM 2018 is already underway. Chapters are reminded to include a submission in your June business plan for next year's NEM events. Applications for NEM 2018 are due to the National Engineering Month Ontario Steering Committee in November 2017. Contact Erica Lee Garcia, P.Eng., at nemontario@ewb.ca with comments or questions.

Jonathan Lazo is an engineering student at the University of Waterloo and a Canadian junior fellow at Engineers Without Borders.

DREAM-GINEERING THE FUTURE

By Shannon Pole, EIT

The morning of February 16, 2017 saw 300 high school students, teachers and engineers gather at the Ontario Science Centre for the Canadian film premiere of *Dream Big: Engineering Our World*, the first big-screen, STEM-focused film. Developed by MacGillivray Freeman Films, the American Society of Civil Engineers and Bechtel Corporation to engage students in science and engineering, it also reminds practising engineers about the possibilities of their profession.

When the Great Wall of China was being built they needed a mortar that would flex with the temperature and the ground. The solution? Sticky rice. The workers at the time looked past the barriers, envisioned the outcome they wanted and found an innovative solution, literally sitting right in front of them. This is just one of the examples in the film of how "the boldest solutions start with the biggest dreams." As an engineer, you're trained to solve problems and to think outside the box, and this film highlights the innovative solutions possible when the focus stays on imagining possibilities, despite any obstacles.

So what happens when you get stuck? It's time to start asking smart questions. In the face of challenges, our human response is often to shut down and berate ourselves for not being able to figure it out and do it right the first time. Any time something is new, it will be difficult, and that is how we grow and evolve both as people and as a profession. As the film highlights, the individuals and teams who accomplished the most worked collaboratively with diverse teams.

Steve Burrows, executive vice president and the US director of buildings for WSP, who was featured in the film, attended the Canadian premiere to answer questions from the student attendees. One of Burrows' answers that stood out was, "When you're faced with a big problem, go find someone who has done something similar"—just as his team did when building the Beijing Olympic Stadium. The design

called for large steel panels, much larger than they had experience using. Instead of giving up or pushing through with brute force to figure it out internally, they looked for someone to assist. The result? They found a shipbuilder with experience to provide guidance for the project, which was a simple and elegant solution that helped them avoid unnecessary work and struggle.

Find out more about *Dream Big* at www.dreambigfilm.com.

Shannon M. Pole, EIT, is an executive member of PEO's West Toronto Chapter.

PEO REACHES OUT TO INTERNATIONALLY EDUCATED APPLICANTS

Pauline Meyer Lebel, P.Eng. (left), manager of licensure for PEO, took part in the March 3 Internationally Educated Professionals (IEP) Conference at the Metro Toronto Convention Centre. She was part of the engineering sector panel organized to help internationally educated engineering graduates learn more about Ontario's licensing and registration system. "Attendees were well informed for the most part with many personal questions coming up after the formal discussion," Meyer Lebel says. "Questions were what I expected and related to topics that are usually covered in our [engineering intern] presentations or in our experience guide." She says the annual IEP conference is an important forum for PEO and other engineering-related associations to spread the word to potential applicants about what may be in store as they navigate the path to the P.Eng.

May 2017

MAY 30–JUNE 1
Canada Green Building Council's Building Lasting Change 2017, Vancouver, BC
www.cagbc.org

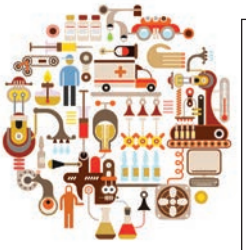
MAY 31–JUNE 3
Canadian Society for Civil Engineering Annual Conference, Vancouver, BC
csce2017.ca

June 2017

JUNE 4–6
IEEE Radio Frequency Integrated Circuits Symposium, Honolulu, Hawaii
rfic-ieee.org

JUNE 19–21
IEEE International Symposium on Industrial Electronics, Edinburgh, Scotland
isie2017.org

JUNE 4–7
37th Annual Canadian Nuclear Society Conference, Niagara Falls, ON
cns2017conference.org



JUNE 4–8
Manufacturing Science and Engineering Conference, Los Angeles, CA
www.asme.org/events/msec

JUNE 5–9
AIAA Aviation 2017, Denver, CO
www.aiaa-aviation.org

JUNE 11–15
American Nuclear Society Annual Meeting, San Francisco, CA
www.ans.org/meetings/c_1

JUNE 26–30
Power & Energy Conference & Exhibition, Charlotte, NC
www.asme.org/events/power-energy

July 2017

JULY 9–14
Summer Heat Transfer Conference, Bellevue, WA
www.asme.org/events/shtc

JULY 10–12
AIAA Propulsion & Energy Forum & Exhibition, Atlanta, GA
www.aiaa-propulsionenergy.org

JULY 16–20
IEEE Power & Energy Society General Meeting, Chicago, IL
www.pes-gm.org/2017

JULY 16–19
American Society of Agricultural & Biological Engineers Annual International Meeting, Spokane, WA
asabemeetings.org

PRACTITIONER WORKS TO BRING ENGINEERING BOUNTY TO MORE FIRST NATIONS COMMUNITIES

By Michael Mastromatteo

An Ontario engineer must overcome unique cultural challenges in a specialized kind of consulting work for projects under First Nations jurisdiction.

Kelvin Jamieson, P.Eng., co-founder of FHR Inc. on Christian Island, Ontario, is an elected councillor on the Beausoleil First Nation Chief and Council, one of more than 130 First Nations across Ontario.

FHR—its name derived from the fairness, honesty and responsibility tenets of project management officials—is an aboriginal-owned company located on Beausoleil First Nation. Its services to First Nations communities include project management, capital funding planning, construction management and design-build alternative, feasibility studies and advisory services on public works operation.

Co-owner is Keith Maracle, P.Eng., a member of Tyendinaga Mohawk Territory located near Belleville, ON.

Over and above his frontline engineering work, however, Jamieson is especially concerned with delivering services to First Nations people in an appropriate and culturally sensitive manner. He is troubled by the generally poor quality of drinking water and related infrastructure in some First Nations lands, and he believes the profession can take a leading role in extending the benefits of technology to these sometimes overlooked and marginalized communities.

"Generally, First Nations clients are unaware of the professional organization, let alone the professional duties and responsibilities of practising engineers, both in private industry and the government roles," Jamieson said in a recent interview with *Engineering Dimensions*.

Jamieson has a unique perspective on providing better engineering services to atypical clients. Not only is the First Nations engineering community relatively small, it is often required to act as ambassadors or translators to Aboriginal community leaders, many of whom have only recently learned English, and are more comfortable communicating in their native languages.

Jamieson, who graduated from McMaster University in Hamilton, ON and is of Chippewa descent, didn't learn the native tongue as a child and is still trying to learn Cree and Ojibwe to help him deal with leaders in some remote communities in northern Ontario.

"The Elders still speak Cree and there's a lot of weight given to the Elders' opinions," he says. "And if the Elders don't feel right about a project, it doesn't go forward."

Jamieson, who began his engineering career with Indigenous and Northern Affairs Canada, says it's extremely important for engineers involved with First Nations projects to be culturally sensitive and fully attuned to local needs. This includes making sure there are enough indigenous workers on hand to staff infrastructure projects. With unemployment rates running high on many remote communities, it's important that projects provide work opportunities for First Nations residents.

"It's also important to note that not all First Nations are the same," Jamieson notes. "They come from different linguistic groups, different treaty histories and different topographies in Ontario. With 133 First Nations in Ontario, this means a wide variety of backgrounds, and one should not always assume that what approach works well in one community works in another."

MEETING LOCAL NEEDS

Engineers Canada, the national association for engineering regulators, echoes that sentiment. In its recent guideline on environmental stewardship, Engineers Canada says traditional and cultural values of First Nations are of vital importance in the assessment of impacts of certain projects. "Consultation processes need to be planned and executed to ensure these values are defined and understood by local and community stakeholders," says the guideline. "These can be accounted for in the development of engineering solutions to minimize negative social impacts on tradition and culture."

Providing engineering services to the Aboriginal communities in Ontario is enhanced by Jamieson's FHR Inc. organization and by a few other Aboriginal-owned consulting firms. It's become a specialized kind of consulting work aimed at overcoming contractual, design, building and maintenance challenges for projects under First Nations jurisdiction.

The work is aided by the Ontario First Nations Technical Services Corporation (OFNTSC), established in 1995 to provide expert technical advisory services to the First Nations of Ontario.

Another Aboriginal concern, First Nations Engineering Services Ltd. (FNESL), is a fully Aboriginal-owned engineering company based on the Six Nations of the Grand River Territory, in Ohsweken, ON.

Kevin Baker, P.Eng., general manager of FNESL's engineering department, is another First Nations engineer fully familiar with Jamieson's efforts. "Kelvin [Jamieson] and I have often commented that we develop relationships with First Nations before they become clients," Baker says. "This means a lot of our time is spent networking with First Nations and their representatives before there is an opportunity to undertake a project with them. We spend more time listening and explaining than is expected from clients such as municipalities. Our First Nations clients depend on us to provide the technical capacity that they may not currently have in-house, and as such we are often

playing an advocate role for them with the various funding agencies."

Jamieson says a typical approach at FHR Inc. involves developing a request for proposal (RFP) and selecting a design engineer, followed by scoping out the project and administering the RFP on the client's behalf. "At that point, we will go through the design process with the consultant," Jamieson says. "The client still has full responsibility for their design, but we try to step in and pick out the local nuances that a design consultant from elsewhere would not appreciate in the First Nations. It can be something simple like local content—How many workers do they have that can be part of the job, are there specialized businesses that can contribute to the project, or is there something about the lands themselves to be developed that the consultant is quite unaware of?"

He says it's crucial for such consultants to consider factors not only from a technical standpoint but from cultural and traditional perspectives as well.

"We're keen not to prescribe a one-size-fits-all design," Jamieson adds. "We will do technical review of the design progress and we'll tell the consultant that if we're in a remote community, such as James Bay or northwestern Ontario, we don't want to see a plant that works in Barrie or Sudbury, because we need something that recognizes key elements of the design, such as supply of critical items that may take two to three months to bring into the community."

Kelvin Jamieson, P.Eng. (second from left), with the chief and council members of the Beausoleil First Nation. Chief Mary King is in the centre. Others in the photo are (left to right) Councillor Hank Monague, Councillor Dave Sylvester, Chief Councillor Joanne Sandy, Councillor Neil Monague and Councillor Clayton King. Jamieson is not only a First Nation council member but an engineering consultant specializing in delivering services to Ontario's 133 First Nations communities. Photo: Beausoleil First Nation

MAKING A DIFFERENCE

"It was a weird series of coincidental events that got me into First Nations work," Jamieson says. "Up to the mid-1980s, infrastructure development on First Nations was very minimal. Back in 1984, there were two First Nations in Manitoba that invited MPs from South Africa to see their communities. And what they saw were Third World conditions, similar to the ghetto townships out there. It was a real embarrassment to Canadian government because South Africa was under sanction at the time for their Apartheid program. In the space of two to three years, the government began addressing water plants in the communities and then gave some attention to the schools."

While there has been progress on that front, Jamieson still sees room for further education and leadership from the engineering community. He suggests outreach by PEO and other engineering groups to the Chiefs of Ontario organization to help spread the word about engineering regulation and how the profession can better serve Aboriginal communities. Jamieson is also encouraged by the recent efforts to bring more indigenous people into the engineering profession. This has been led by universities, such as Lakehead University in Thunder Bay, which provides a Native Access program for students of Aboriginal ancestry who require academic preparation for admission to a regular engineering program. Queen's University in Kingston also has its Aboriginal Access to Engineering program to provide culturally relevant student support services to Aboriginal students enrolled in the faculty of engineering and applied science.

Jamieson is still bothered, however, by infrastructure deficiencies, as evidenced by the 48 drinking water advisories still in effect in 25 Ontario First Nations. He also cites Indigenous and Northern Affairs Canada's *National Assessment of First Nations Water and Wastewater Systems, 2009-2011*, which estimates a $1.2 billion expenditure to bring Ontario First Nations' water and wastewater plants up to current design standards—and that expenditure would still not address the dynamic growing populations of Indigenous communities.

Nonetheless, Jamieson remains optimistic that engineers can still make a difference. "The [First Nations] communities are much more aware of technical standards and their impact over time, and are much more engaged in the development process overall," he says. "I have been told by clients that through my work, I am an 'honest man,' which I have replied that yes, I am a professional engineer." **e**

THE ASSOCIATION HAS RECEIVED WITH REGRET NOTIFICATION OF THE DEATHS OF THE FOLLOWING MEMBERS (AS OF MARCH 2017).

ACRI, William Wallace
North York, ON

ALBANESE, Fred
Thornhill, ON

ALDEN, Robert Thomas Harold
Mississauga, ON

ANGELES-SALGADO, Teodomiro
Burnaby, BC

ATKINS, Harry Andrew
Fenwick, ON

ATKINSON, John Clayton
Ottawa, ON

BACCHUS, Grant Arland
Richmond Hill, ON

BARR, Robert Marshall
North York, ON

BEHREND, Guenther Otto Michael
Victoria, BC

BENN, Kenneth Howard
Alma, ON

BEVILACQUA, Michael Domenic
Port Perry, ON

BIRCH, Grahame Noel George
Brampton, ON

BIRCHENOUGH, Arthur James
Oakville, ON

BLAKE, Charles Henry
Sault Ste Marie, ON

BOEHLAU, Ernst-Ulrich
Toronto, ON

BOUTNIKOFF, George
Mississauga, ON

BRIGNALL, Douglas Lawrence
Ancaster, ON

BROWN, Colin Ralph
Ottawa, ON

BRUNGER, Alfred Peter
Waterloo, ON

BUCHAN, Robert
Peterborough, ON

BUMBULIS, Martins Davis
Burlington, ON

BURFORD, Frank
Etobicoke, ON

CALLANDER, Michael David
Kleinburg, ON

CALZOLARI, Mario Loris
Toronto, ON

CAMPBELL, Russell John
Kanata, ON

CHANDRA, Vijaya
Brampton, ON

CHAPMAN, Robert Donaldson
Toronto, ON

CHAPPLE, Alan
Toronto, ON

CHMIEL, Robert
Kitchener, ON

CLARKE, Victor Lancelot
North York, ON

COLADIPIETRO, Remo Michael
Etobicoke, ON

COLLINS, John Harris
Pembroke, ON

COLLISON, Kenneth Wales
Vancouver, BC

DABROWSKI, Joseph Michael
Rochester Hills, MI

DALBEC, Peter Ronald
Georgetown, ON

DAVIES, Charles Victor
Calgary, AB

DAWSON, Brian Frederick
Maxville, ON

DELANEY, Roland Grant
Kingston, ON

DE MALHERBE, Michael Caesar
Ottawa, ON

DIAZ, Andres Eduardo
North York, ON

DIXON, Francis Fox
Hamilton, ON

DOWN, Richard Francis
North York, ON

DOWNIE, Gerald
Peterborough, ON

DROUIN, Roland Donat
Gatineau, QC

DUECK, Ernest George
Fort Erie, ON

EASTWOOD, John Russell
Stittsville, ON

ELLISON, John Derek
North York, ON

EXWORTH, Terence Edward
Oshawa, ON

FAIRWEATHER, Gordon Ralph
Barrie, ON

FOLLETT, Douglas John
Erin, ON

FRASER, Andrew Kenneth
Oakville, ON

FU, Jacky Wai Keung
Thornhill, ON

FUNKE, Edgar Richard Rudolf
Ottawa, ON

GARDNER, John Lonsdale
Brantford, ON

GAVRILENCO, Vladimir
Montreal, QC

GEE, Roy David
Rexdale, ON

GLAUSER, Wesley Ernest
Niagara-on-the-Lake, ON

GLEASON, Joseph Edward
Toronto, ON

GORMLEY, Donald James
Ottawa, ON

GOSSELIN, Leonard
Gloucester, ON

GRAHAM, Brian Robert
Ottawa, ON

GREEN, Anthony
Toronto, ON

GREGG, Donald James
Brampton, ON

GREGORY, David Mackay
Toronto, ON

HAIGHTON, Frank Robert Emberton
Burlington, ON

HALLAM, Russell Clinton
Peterborough, ON

HAMPSON, Lisa Anne
Nepean, ON

HANSON, John Douglas
York, ON

HARDY, Gordon
Ottawa, ON

HAUSE, Karl Michael
Vancouver, BC

HENDERSON, James Adam Cunningham
Stittsville, ON

HLUCHAN, Thomas Henry
Brampton, ON

HOLMES, Brian Richard
Tiny, ON

HOPKINS, John Roderick
Ottawa, ON

HOWE, Richard George
North York, ON

HUNGATE, Steven Scott
Mississauga, ON

HUNTER, John Alcorn
Toronto, ON

ISKANDER, Abrahim K.
Oakville, ON

JANCIC, Peter
Toronto, ON

JENKINS, John Robert
Ottawa, ON

JONCKHEERE, Michel Theofiel Achiel
Nepean, ON

KALMET, Juhan John
Delta, BC

KANE, Joseph Richard
Thunder Bay, ON

KEMPSTER, David Jewitt
Ottawa, ON

KENDRICK, Stanley Harry
Mississauga, ON

KERR, Ian Ross
Toronto, ON

KIRK, John Keown
Scarborough, ON

KITCHEN, Clifford Bruce
Burlington, ON

KOBLENTS, Khatskel Davidovich
North York, ON

KONG, Wei-Ling
Kingston, ON

KORING, Herbert Victor
Etobicoke, ON

KWOK, Chun Hee
Mississauga, ON

LAKE, Edwin Berthrand
Ottawa, ON

LANGDON, Donald James
Ottawa, ON

LAW, Douglas Alex
London, ON

LE BRUN, Julius Alexander
Surrey, BC

LITCHFIELD, Ernest Leroy
Magrath, AB

LOW, Kai Fee
Calgary, AB

MACGILLIVRAY, Pamela Anne
Milton, ON

MACKINNON, Dhonald W.
Burlington, ON

MARCEAU, Richard Joseph Raoul Adelard Herman
Conception Bay South, NL

MARSON, Ezio
Burlington, ON

MARTIN, Peter Lynn
Scarborough, ON

MCNAUGHTON, John William
Mississauga, ON

MEIKLE, Kenneth Bryce
Mississauga, ON

MELVILLE, Robert Douglas
Perth, ON

METZGER, Alan William
Guelph, ON

MEYER, Fred
Ottawa, ON

MILLS, Kenneth Douglas
Waterdown, ON

MORIN, Jean Charles
Ottawa, ON

MOXHAM, Robert Lynn
Toronto, ON

MULLAN, Robert Llewellyn
Oshawa, ON

NAUG, John Lionel
Sarnia, ON

PAGE, David Hanson
Kingston, ON

PEACOOCK, William Boyd
Ottawa, ON

PLATTEN, James Leslie
Oakville, ON

POLLARD, William David
Victoria, BC

POPOVSKI, Nesko
Oakville, ON

PRYKE, Douglas Charles
Toronto, ON

RANDMAA, Erik
Markham, ON

RANKINE, Hugh Gordon
Sidney, BC

READ, Jonathan Wayne
Toronto, ON

RIEGER, Scott James
Brooklyn Center, MN

RODDY, Dennis
Thunder Bay, ON

ROGER, Thomas Francis
St. Catharines, ON

ROWLAND, Wilfred Keith
Sidney, BC

ROWLANDSON, Lyall Gilbert
Vernon, BC

RUSSELL, Alexander
Oakville, ON

RUSSELL, Charles Leister
Windsor, ON

SCARROW, Earl W.
Brantford, ON

SCHLOTE, Paul Graham
Brampton, ON

SCHULTZ, Clifford Edward
Welland, ON

SCHULTZ, Manley Scoble
Ottawa, ON

SCUDAMORE, Owen Salisbury
Brampton, ON

SEMCHUK, Bohdan Carl
Kanata, ON

SHENOY, Vishwanath Udyavar
Burlington, ON

SHIPP, William John
Oakville, ON

SHORE, John Willoughby
Ottawa, ON

SIEKIERSKI, Leszek
Kincardine, ON

SIM, Norman David
Kanata, ON

SIMPSON, James Grant
Kingston, ON

SKELTON, Christopher John
Stanstead East, QC

SMEJKAL, Ivan
Kitchener, ON

SMITH, Gary Wayne
Sudbury, ON

SPEED, Leonard Frederick
Toronto, ON

STEVANOVIC, Miroslav
Concord, ON

STEWART, Charles Murray
Basking Ridge, NJ

STORER-FOLT, John Peter
Mississauga, ON

STRAH, Ludwig Michael
New Liskeard, ON

STRUTHERS, William Hugh
Loretto, ON

SUGDEN, Alan Brian
Anderson, SC

TANT, Verne Everet
Ottawa, ON

TAYLOR, Gordon Ralston
Plantation, FL

THOMPSON, Ronald E.
Ottawa, ON

TIEDE, Hinz F.A.
Brights Grove, ON

TREMBLAY, Leo Eugene
Hawkesbury, ON

TURNER, William Ian Mackenzie
Montreal, QC

UTTAMSINGH, Rabindra Suratsingh
Oakville, ON

VANDERZWAAG, Dirk
Mount Hope, ON

VILLAMIL, Bernardo
Niagara Falls, ON

VOICULESCU, Romeo
Hamilton, ON

WADE, Edwin Milton
Ottawa, ON

WALKER, Richard William Reid
London, ON

WALTON, Herbert John
Burlington, ON

WHITLOCK, Edward Frederick
Milton, ON

WILLIAMS, Dennis
Mississauga, ON

WILLINGS, Peter
Toronto, ON

WONG, Hung-Fai Humphrey
Scarborough, ON

ZENGO, Lydia
Stratford, ON

ZHENG, Xiaogang
Oakville, ON

INTRODUCING PEO COUNCIL 2017-2018

Executive Committee

Bob Dony, PhD, P.Eng., FIEE, FEC
President

Bob Dony holds BASc and MASc degrees in systems design engineering from the University of Waterloo and a PhD in electrical and computer engineering from McMaster University. He is an associate professor in the School of Engineering, University of Guelph. Licensed by PEO in 1989, Dony was a member of PEO's Emerging Disciplines Task Group (1997-2002) and Evolution of Engineering Admissions Task Force (2000-2005) and of Engineers Canada's Canadian Engineering Qualifications Board (2001-2004). From 2008 to 2011, Dony was co-editor-in-chief, *Canadian Journal of Electrical and Computer Engineering*, Institute of Electrical and Electronics Engineers. He is currently a member (since 1998) and past chair (2011-2012) of the Academic Requirements Committee, a member (since 2012) and past chair (2012-2015) of the Legislation Committee, and PEO's representative on Engineers Canada's Canadian Engineering Accreditation Board since 2014. He previously served two terms (2012-2016) as councillor-at-large and one year as vice president (appointed) at PEO before his election as president-elect in 2016. PEO has a responsibility to the people of Ontario to regulate the profession with diligence and transparency, and with a diversity of voices brought to the table, at all levels within the association, that reflects the society whose safety we are entrusted to safeguard. bdony@peo.on.ca

George Comrie, MEng, P.Eng., CMC, FEC
Past president

George Comrie holds BASc and MEng degrees in industrial engineering from the University of Toronto, and has had a successful career as a software/systems engineer, management consultant, entrepreneur and business manager. As a volunteer for the profession, he is a long-time executive member of PEO's Etobicoke Chapter; chair of the Licensing and Human Resources committees; vice chair of the Emerging Disciplines Task Force; and a director of Engineers Canada. He was PEO president in 2004-2005, and is a past president of the Ontario Professional Engineers Foundation for Education. The founder of PEO's Engineer-in-Residence and Government Liaison programs, he was invested as an Officer in the Order of the Sons of Martha in 1982 and a Companion of PEO's Order of Honour in 2007 to recognize his contributions to PEO. A passionate advocate for our Canadian model of professional self-regulation, Comrie believes in PEO's accountability to its membership, and in strengthening its core regulatory functions. He also serves as a municipal councillor in the Municipality of Whitestone, Ontario. gcomrie@peo.on.ca

David W. Brown, P.Eng., BDS, C.E.T., MCSCE
President-elect

Dave Brown is both a senior managing partner and practising structural engineer with TaskForce Engineering Inc., a Belleville-based design-build firm that specializes in the ICI construction sector. He is a founding partner of TaskForce and holds a diploma in civil engineering technology from St. Clair College of Applied Arts and Technology and a bachelor of applied science in civil engineering from Queen's University. Brown is a member of PEO, the Ontario Society of Professional Engineers, Canadian Society for Civil Engineering, and the Ontario Association of Certified Engineering Technicians and Technologists. Brown also sits as a board member for Engineers Canada and is the board representative to the Canadian Engineering Accreditation Board. Aside from his work at PEO, Brown has volunteered extensively within his community and, in particular, with the United Way, where he was chair of the 2013 Campaign Committee. He is very happily married to his wonderfully supportive wife, Liza, and between them have four amazing children. dbrown@peo.on.ca

Nancy Hill, P.Eng., LLB, FEC, FCAE
Vice president (elected)

Nancy Hill is a professional engineer, lawyer, patent agent and trademark agent. She is a founding partner of the award-winning firm Hill & Schumacher. For over 25 years Hill has been managing intellectual property rights for clients worldwide, including from many universities across Canada. Considered an expert in her field, Hill's area of focus is in robotics, structural steel, healthcare and green energy, with many of her clients going on to win prestigious awards for their innovations. As a sought-after speaker on intellectual property rights, Hill has given talks at the Ontario Centres of Excellence, the Law Society of Upper Canada, the Certified General Accountants of Ontario, as well as many PEO chapters. She also has over 20 years of experience volunteering with PEO, including as past chair of the Complaints Committee, past chair of the Awards Committee, and past chair of the Women in Engineering Advisory Committee, and was invested in 2008 as a Companion in the Order of Honour. In 2014, she was recognized for her influence on the engineering profession in Canada by being inducted as a fellow of the Canadian Academy of Engineering. Hill has worked tirelessly to affect positive change within PEO, and was instrumental in amending the *Professional Engineers Act* to include harassment as part of the definition of professional misconduct. As vice chair of the Council Term Limits Task Force, Hill and the task force will be recommending changes to institute a governance framework for renewal and succession planning.
nhill@peo.on.ca

Marilyn Spink, P.Eng.
Vice president (appointed)

Marilyn Spink's 30-year engineering career began in northern Ontario's mining and pulp and paper industries and then moved to steelmaking operations in both the US and Canada. After executing capital projects with Dofasco, she moved into the consulting engineering EPCM world, working on large, complex mining and minerals projects around the world. At Hatch, SNC-Lavalin, Wardrop (now Tetra Tech) and Golder Associates, as a multi-discipline engineering manager and a process engineer at heart, she led and supported teams of professional engineers and designers. She is now mentoring engineers and project managers with Isherwood Geostructural Engineers. Giving back to the engineering profession is also important to Spink via her appointment as a lieutenant governor-appointed councillor to PEO and by contributing to several committees and task forces. She has been a licensed professional engineer (PEO) since 1995, is a member of the Ontario Society of Professional Engineers (OSPE) since 2000, the year OSPE was created, and a long-time member of several mining industry associations. Her long-term goals are to build board/directorship experience to feed her strong interest in corporate governance and to ensure the voice of engineering is heard at the boardroom table. Spink is married to Jamie Gerson, also a professional engineer, who is extremely supportive of all her interests and a wonderful father to their three boys. **mspink@peo.on.ca**

Christian Bellini, P.Eng., FEC

Christian Bellini began his engineering career in 1995 at a small structural engineering firm called Blackwell. Today, he is a principal at the same firm, now 50 strong with offices in Toronto, Waterloo, Victoria and Halifax and an international portfolio of projects. A key characteristic of the firm is a high level of engineering engagement at all levels, which allows him to carry out engineering design on a daily basis in addition to his administrative duties. His volunteer career at PEO began in 2005 when he joined the Experience Requirements Committee (ERC), serving in later years as vice chair and chair. In 2012, he chaired the Overlapping Practices Committee, which successfully developed an approach to deal with perceived scope overlap between engineering and natural science. In addition to the ERC, he now serves on the Licensing Committee, the Finance Committee, the Legislation Committee and the Advisory Committee on Volunteers. He has contributed to various Engineers Canada initiatives, holding the position of vice chair on Engineers Canada's Licensing Affairs Committee and having served on PEO's National Framework Task Force, which was struck to provide PEO feedback to Engineers Canada on their Canadian Framework for Licensure project, and participated in Engineers Canada's competency-based experience assessment project. On an academic front, Bellini has taught structures courses at the University of Waterloo and Laurentian University. He is also frequently invited as a guest critic at Architecture Studio Reviews at University of Toronto, Ryerson University and Dalhousie University. **cbellini@peo.on.ca**

Warren Turnbull, P.Eng.

Warren Turnbull is a retired executive with over 33 years of engineering and senior sales management experience. He holds a BASc from the University of Waterloo. Turnbull led many multi-disciplinary teams related to instrumentation, product design, maintenance, marketing and sales. Turnbull moved from successful assignments in engineering, customer technical and product development to senior marketing and sales roles at DuPont Canada Inc., Continental Group of Canada Ltd., Fabrene Inc., Flexia Corporation and Intertape Polymer Group. Turnbull now provides technical sales and distribution management. Turnbull was on PEO's North Bay Chapter board and rose to become chair. For the last two years he has served as West Central Region councillor and has been on the OSPE-PEO Joint Relations Committee for two years, vice chair and chair of the Chapter Leaders Conference committee, a member of the $(CP)^2$ Task Force, member and chair of the Volunteer Leadership Conference Planning Committee, a member of the Finance Committee, the Discipline Committee and the Government Liaison Committee. For the previous five years, he held positions on the Oakville Chapter executive, including event coordinator and chair, chapter chair for two years and past chair. Turnbull led implementation of Oakville's first all-day symposium, "The Future of Energy in Ontario," which resulted in an ongoing partnership with the Oakville Chamber for future events. The chapter also partnered with local businesses and the town to encourage innovation in Oakville and Halton. Turnbull served on the Glen Abbey Residents Association board and was president for two terms. He chaired the Group Homes Advisory Committee for Oakville. **wturnbull@peo.on.ca**

Councillors-at-large

Christian Bellini, P.Eng., FEC
(see Executive Committee)

Roydon Fraser, PhD, P.Eng., FEC

Roydon Fraser received a bachelor's degree in engineering physics at Queen's University, and his master's degree and doctorate in mechanical and aerospace engineering from Princeton University. He is a professor in the mechanical and mechatronics engineering department at the University of Waterloo. He joined PEO in 1991, serving on the executive of the Grand River Chapter (formerly the Kitchener-Waterloo and Guelph-Cambridge chapters) starting in 1993, and chairing the chapter in 1996. Fraser supervises the University of Waterloo Alternative Fuels Team (UWAFT), which competes internationally in the Advanced Vehicle Technology Competitions (AVTCs), such as the current EcoCar 3 Competition, with the goal of offering unparalleled hands-on, real-world experience to engineering students. He received the 2014 National Science Foundation Outstanding Long Term Faculty Advisor Award. Over a multi-year design and build cycle, UWAFT achieves reduced fuel consumption, reduced greenhouse gas emissions, and reduced tailpipe emissions, all while maintaining consumer acceptability in the areas of performance, utility and safety. UWAFT is proud to have built the world's first, student-built, fuel-cell vehicle to complete successfully all of AVTC's production vehicle tests. Fraser continues to lead the organization of Explorations, an evening where the University of Waterloo's faculty of engineering is open to hundreds of grades 6, 7 and 8 students to see and explore the wonders of engineering. He is a member of the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the Ontario Society of Professional Engineers, and is a lifetime member of the Sandford Fleming Foundation. He serves on PEO's Academic Requirements and Discipline committees, both since 1999. rafraser@uwaterloo.ca

Kelly Reid, P.Eng., IACCM CCMP

Kelly Reid graduated first division from the University of New Brunswick, Fredericton with a bachelor of applied science in chemical engineering, nuclear and power plant option. She has over 20 years of nuclear engineering experience. She has worked at Atomic Energy of Canada Limited (AECL), Nuclear Safety Solutions Limited (NSS), and Ontario Power Generation (OPG). Her primary technical focus has been thermal hydraulic safety analysis. At Pickering Nuclear Generating Station, Reid provided technical support to assess and manage nuclear safety risks. In 2004, she was recognized with a Chief Nuclear Officer award for dedication and commitment. She was responsible for a large portion of the Integrated Safety Review to support the Darlington Nuclear Generating Station Refurbishment. More recently, she managed a variety of important contracts for the Darlington refurbishment project. Reid is currently project management and oversight for the Low and Intermediate Waste Deep Geologic Repository project as that project transitions into its next phase. In 2003, Reid represented her colleagues during the successful negotiation of the first NSS-Society collective agreement. In 2009, she attended the World Nuclear University Summer Institute (WNU-SI) at Oxford University. In 2018, she will represent OPG at the next International Atomic Energy Agency (IAEA) Joint Convention on Safety of Spent Fuel and Radioactive Waste Management. She and her engineer husband Scott love to travel and take mini-adventures, such as dog sledding, gliding, hot air ballooning, or whatever else takes their fancy. At home in Ajax they dote on their cat. kreid@peo.on.ca

Regional councillors

EASTERN REGION COUNCILLORS

Guy Boone, P.Eng., FEC

Guy Boone was elected in February 2016 as an Eastern Region councillor, after serving as the PEO Ottawa Chapter (oPEO) 2015 chair and the oPEO Government Liaison Program (GLP) 2013 and 2014 committee chair. Boone joined the Ottawa Chapter executive in 2008 after serving as PEO Algonquin Chapter vice chair. As a public safety engineer for certification of products, machines and systems, Boone has had first-hand experience protecting the public and influencing safety designs and practices on a daily basis. He is an electrical engineering graduate from Memorial University of Newfoundland (MUN), and a safety advisor with SafetyGuy Consulting Inc. He has worked with Alcatel, Nortel and Nemko Canada as a product safety engineer, and as a system safety engineer with Atomic Energy of Canada Ltd. (AECL) and Alcatel Transportation. Boone is a strong, active advocate for the engineering profession, serving on OSPE's Chapter Liaison Committee and working within both oPEO and OSPE to initiate and develop unique programs to support the engineering profession in the greater Ottawa region. These included joint social and technical seminars, engineering employment events (OSPE E3), joint GLP/PAN meetings with MPPs, and the 2015 launch of the oPEO/OSPE Engineering Innovation Ecosystem program. Boone is a tireless advocate for services engineers need and supports co-operation among PEO, OSPE, Engineers Without Borders (EWB), learned engineering societies (IEEE, IET, CIMarE/SNAME, INCOSE, cISSS and SRE Ottawa) and the faculties of engineering at University of Ottawa and Carleton University. gboone@peo.on.ca

Ishwar Bhatia, MEng, P.Eng.

Ishwar Bhatia completed his BEng in 1970, and his MEng (civil engineering) at Dalhousie University in 1972. After starting in consulting with McNeely and Northland Engineering, he joined the City of Ottawa in 1974 as head of sewer maintenance. For 30 years after joining the city, eventually taking on the role of senior project leader in infrastructure, Bhatia supervised project managers, oversaw environmental assessments, hired consultants, and managed multi-million-dollar complex construction projects. From 2009 to 2011, he once again joined the consulting engineering industry with GENIVAR in order to start up its municipal group. He has twice volunteered as president of Ottawa's Civic Institute of Professional Personnel (CIPP). Bhatia served on PEO council from December 2008 until June 2016 as a lieutenant governor-appointed councillor under three different attorneys general. He served on the Executive, Audit (chair), Finance (vice chair), Discipline and Government Liaison committees, and 40 Sheppard Task Force (chair). Bhatia has served on several discipline panels. He has been elected as the Eastern Region councillor for a two-year term and will serve from 2017-2019. ibhatia@peo.on.ca

EAST CENTRAL REGION COUNCILLORS

Noubar Takessian, P.Eng., FEC

Noubar Takessian received his BSc in mechanical engineering in 1972. He worked extensively in the Middle East and Europe before moving to Canada in 1985. He obtained his P.Eng. licence in 1987 and has been working in mechanical engineering services for buildings since. He has been a holder of a Certificate of Authorization from PEO for many years. Currently, Takessian is the chief mechanical engineer and senior project manager involved in the design and construction of mechanical services for commercial and industrial buildings. He has been a member of the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) since 1983 and a life member since 2013. Takessian volunteered on the board of trustees for Holy Trinity Church Saturday School from 1995 to 1998. He volunteered for York Condominium Corporation YCC433—for a 25-storey condominium building—from 1988 to 2004, and as president of the board of directors during the last four years. Takessian has volunteered extensively for PEO. He joined PEO's Willowdale Thornhill Chapter in 1997. He has been continuously serving PEO since, serving all executive positions in his local chapter, including chapter chair from 2004 to 2008. He continued with the chapter executive in an advisory and consulting role and was vice chair from 2014 to 2016. He left the chapter executive after being elected regional councillor in 2016. Takessian received his FEC designation in 2010. He was made a member of PEO's Order of Honour in 2013. He has been on PEO council and various other committees, like Regional Councillors Committee and Volunteer Leadership Conference Planning Committee, since 2016. ntakessian@peo.on.ca

Thomas Chong, MSc, P.Eng., FEC, PMP

Thomas Chong earned a master's degree in mechanical engineering from University of Strathclyde, Glasgow, Scotland, in 1973. He became fellow of Canadian Academy of Engineering 2017, fellow of Engineers Canada 2011; International Project Management Professional 2009; senior member, American Institute of Industrial Engineers 1977; PEO member 1976; and Chartered Engineer 1974. Chong was recruited from London, England, by Nortel Canada as a corporate engineering manager in 1976. He has been president of a 4000-member network since 2008, and currently works as system lead with the Ministry of Health and Long-term Care. Chong won Gold Medal and Canada Cup 2016 and 2014 in dragon boating. He received Amethyst Award twice, in 2014 and 2009. He won the ACE award from the Ministry of Health and Long-term Care in 2015 and 2014. Chong received Queen Elizabeth II Diamond Jubilee Medal in 2013. Since 2009, he has also won 15 other major awards. Chong helped York University's engineering program receive accreditation in 2007. Chong has been a mentor, York University engineering design program since 2008; mentor, Chinese Professionals Association of Canada (CPAC) since 2008; Knights of Columbus and Lector, St. Agnes Tsao Church since 2011; founding member, Popular Music Club since 2007; former board member, Legal Aid Ontario Clinic, 2004 to 2009. Chong was president 2015, vice president (elected) 2014; vice president (appointed) 2013; East Central Region councillor 2006 to 2013; and director, York Chapter, 2000 to 2008; current member of Human Resources, Audit and Discipline committees, and Government Liaison Program. Chong has published many technical papers. thomas.chong3@gmail.com

NORTHERN REGION COUNCILLORS

Michael Wesa, P.Eng., FEC

Michael Wesa received his BASc degree (MechEng) from the University of Waterloo (co-op) in 1974, was registered in 1976, and is also a member of OSPE. The son of an engineer, Wesa attended local chapter functions with his Dad before graduation, and since 1980 has served on the Lakehead Chapter executive. Wesa is proud Lakehead Chapter hosted the 2017 PEO AGM in Thunder Bay. Having previously served as a Northern Region councillor from 1992 to 1996, and 2011 to 2015, Wesa also contributed to numerous PEO committees—Executive, Finance, Regional Councillors, OSPE Joint Relations, and CLC planning—and various task forces. He has served on the Discipline Committee since 1992. Wesa was inducted into the Order of Honour in 2008. Wesa's engineering career included service in the forestry industry, three consulting firms, and Hydro One electrical utility. His technical expertise includes HVAC, power transmission, material handling, diesel generation, and mechanical building services. Retirement in 2012 affords more time for travel, and other local volunteer activities (minor hockey, symphony orchestra, church treasurer). Wesa recently traced his ancestral roots to 1665 in the Rheinland-Pfalz, DE, through historical research of the region, and is now turning travel into journeys of discovery. Other interests include classical music, musical theatre, computing, and learning Deutsch for his new grandson. Although retired from squash and tennis, he can still hike and bicycle. Married in 1975, Wesa and wife Arlien raised two sons and a daughter. mwesa@peo.on.ca

Dan Preley, P.Eng.

Dan Preley was born and raised in Thunder Bay. He received a bachelor of civil engineering degree from Lakehead University in 1981 and has completed several advanced alternative dispute resolution courses with the University of Windsor. He was employed by R.V. Anderson Consulting Engineers, Wardrop Consulting Engineers, Public Works Canada and Ontario First Nations Technical Services Corporation. Preley is currently a senior project engineer and regional value engineering coordinator with the Ontario Ministry of Transportation. He was a board member with the Canadian Society of Value Engineering and the Cross Country Ski National Development Centre. Preley has been a PEO member since 1983 and is an associate value specialist with the Society of American Value Engineering. Since joining the PEO Lakehead Chapter executive in 2004, he has served as the chair, past chair, vice chair and treasurer. He was the PEO Northern Region councillor from 2015-2017 and a member of the PEO Audit Committee from 2016-2017. His PEO priorities are implementing the strategic plan, ensuring that significantly more engineering graduates become P.Engs, and strengthening our relationship with the provincial government to protect our self-regulatory status. He supports council term limits and reducing the size of council. Preley is an avid cross country skier, hiker, cyclist and sea kayaker. dpreley@peo.on.ca

WEST CENTRAL REGION COUNCILLORS

Danny Chui, P.Eng., FEC

Engineer Danny Chui has been in the position of manager, capital works for Toronto's Exhibition Place since 1991. He was involved in the construction of the Enercare Centre, Ricoh Coliseum, BMO Field and Beanfield Centre. He undertook many innovative projects, such as photovoltaic, tri-generation, geothermal, green/white roofs and back pressure steam turbine. He received a certificate of appreciation from Exhibition Place for completing the project on time and within budget of the Infrastructure Stimulus Fund's $27.3 million program in 18 months. Chui was first elected to PEO council as West Central Region councillor for four consecutive terms from 1995 to 2002. He was again elected in 2012 and now begins to serve his third consecutive term, the 13th year on council. He was elected by council this March to serve as Engineers Canada director for a three-year term effective the 2017 AGM. While on council, he has served as Executive Committee member, appointed vice president, Finance Committee chair, Audit Committee chair and Regional Councillors Committee vice chair. He was invested as Member of the Order of Honour in 2002 and fellow of Engineers Canada in 2009. He received a 15-Year and 25-Year Volunteer Service Awards from the Ontario Ministry of Citizen and Immigration as well as from PEO. Chui is a past member of APEGGA, ASCE, AAET and OACETT, and served once on the Mississauga Public Library board. He has been on the board of directors of the Ontario Construction User Council for over 20 years and is now their appointed executive director. dchui@peo.on.ca

Warren Turnbull, P.Eng.

(see Executive Committee)

WESTERN REGION COUNCILLORS

Gary Houghton, P.Eng., FEC

Gary Houghton graduated from Western University with a bachelor of engineering science. He has been a professional engineer since 1979. Houghton has spent over 30 years in consulting, working primarily on environmental projects in water and wastewater. He had the opportunity to plan and design several significant water treatment, transmission and distribution projects in southwestern Ontario. He is currently manager of engineering for Norfolk County, overseeing planning and capital projects in water, wastewater, roads, bridges and stormwater. He has been a member of the PEO Enforcement Committee since 2000, and given the designation fellow of Engineers Canada. He assisted in the founding of the London Chapter of Consulting Engineers of Ontario. He has been a member of the Ontario Water Works Association (a section of AWWA) board for several years, serving as president in 2015-2016. He is an NFPA and Ontario Fire Marshal certified firefighter with additional NFPA certification in water rescue, and is an active firefighter with Central Elgin Fire Rescue. Pastimes include restoring, driving and riding old cars and motorcycles. ghoughton@peo.on.ca

Lola Mireya Hidalgo, P.Eng., PMP

Lola Hidalgo is an engineer and proud P.Eng. with the Ministry of Transportation's (MTO) provincial highways management division. Hidalgo began her career with the MTO Engineering Development Program after graduating in 2007 from Concordia University in civil engineering. She progressed to more senior roles and now works in the provincial construction and engineering section of the Contract Management Office in St. Catharines. Hidalgo has gained diverse engineering experience, including working in Latin America, Asia, and over five different Canadian cities in the private, public and non-profit sectors. She has recent experience in the transportation infrastructure construction, engineering, maintenance, 3P and policy areas. Hidalgo was raised in Montreal and is now a proud resident of Burlington, Ontario. She has a long history of serving her local communities and chose the engineering profession as it allowed her to pursue this commitment. She has been actively involved with groups such as the Tomorrow Ontario Public Servants, Project Management Institute, Canadian Red Cross, Government of Ontario's Women in Engineering, AIESEC, Engineers Without Borders, Women in Engineering and Science Design Competition, Canadian Society for Civil Engineering, United Nations Office of Drugs and Crime, Jane Goodall Institute, Young Chambers of Commerce, Junior Achievement of Canada, amongst others. She also enjoys playing piano, learning new languages, and travelling with her supportive husband (who is also an engineer). Hidalgo believes in public service and is honoured to serve on PEO council. lhidalgo@peo.on.ca

Appointed Councillors

Michael Kwok-Wai Chan, P.Eng.

Michael Chan is a former manager of chapters with PEO, a project manager with SHL Systemhouse and a regional director with Olivetti Canada Limited. As PEO chapter manager for eight years, Chan helped develop PEO's Government Liaison Program (GLP) and associated chapter GLP committees. He established principled administrative processes to effect the requisite changes with an emphasis on fairness and transparency. His efforts led to many significant improvements and advancements in the chapter system. After retiring from PEO, Chan began volunteering for the association. He joined the executive of the Willowdale/Thornhill Chapter where he helped improve the chapter's business plans, activity reports and operations. He also invigorated the chapter's government relations efforts while chairing its GLP committee for two years. Chan also served on PEO's Advisory Committee on Volunteers, including three years as chair. Besides his volunteer commitments with PEO, Chan has served as a member and past president of the Federation of Chinese Canadian Professionals, and a past co-chair of the Chinese Community Liaison Committee of Toronto Police Services 42 Division. He is currently a vice president of the Chinese Cultural Centre of Greater Toronto. mchan@peo.on.ca

Qadira C. Jackson Koukaou, BA, BSW, LLB

Qadira Kouakou is the principal lawyer at Jaxon Law Professional Corporation, practising in the areas of wills, estates, corporate and real estate law. Kouakou holds a bachelor of arts degree in psychology, a bachelor of social work degree and a certificate in dispute resolution from York University, and a bachelor of laws degree from the University of Windsor. She articled with the Canadian Union of Public Employees and was previously a social worker with experience at the Children's Aid Society, Toronto District Catholic School Board, Woman Abuse Council of Ontario and "Wholistic" Child and Family Services. Kouakou's community involvement includes serving as an executive board member with the Canadian Association of Urban Financial Professionals, the Canadian Association of Black Lawyers, Black Pearls Community Services and serving on the Equity Advisory Group and as a community liaison for the Law Society of Upper Canada. qjackson@peo.on.ca

Richard J. Hilton, P.Eng.

Richard Hilton worked for over 30 years in the Canadian mining industry, mostly in the environment, health and safety (EHS) area. In his job, he travelled to many parts of the world to deal with operational and governmental issues. He has been on the cusp of the development of forward-thinking EHS programs and legislation. Hilton retired from full-time work in 2005. He is now a part-time consultant in environment, health and safety. rhilton@peo.on.ca

Tim Kirkby, P.Eng., FEC

Tim Kirkby is a former owner and principal with TFK Engineering, project officer of a branding project for Service Canada, executive corporate advisor with the director general of Public Works Canada, and team technical designer of the Universal Classification System with Treasury Board of Canada. His community involvement includes serving as president of the United Way for the City of Cornwall, chair of the National Applied Science and Engineering Group of the Professional Institute of Public Service and previously as a member of the board of governors for St. Lawrence Community College, Cornwall General Hospital and vice chair of the Township of South Glengarry Economic Development Committee. Kirkby holds a bachelor of engineering degree in civil engineering from Lakehead University. He lives in Summerstown, Ontario with his wife Sue and three horses, Barney, Rainbow and Sally. Originally from Gananoque and growing up on Howe Island has influenced his appreciation of waterfront communities. Realizing a lifetime goal to join council is celebrated and respected. Thank you to all friends and supporters! tkirkby@peo.on.ca

Lew Lederman, QC

Lew Lederman is a businessman, lawyer, Canada representative of Capital Expert Services, LLC (Washington DC) and CEO of Knowledge E*Volutions Inc. Over the course of his career, he has worked in most major legal and business sectors, including private practice at Gowling & Henderson and as general counsel at both the Canadian Payments Association and the Canada Deposit Insurance Corporation. Lederman has authored several books, including *Big, Bang, Boom: Adventures in Banking, Winning's Ways: A Common-Sense Psychology of Successful Governance*, and *Watch Out...He Bites: A Zoology of Dangerous Businessmen*. He has also served on several boards, including the Council of Ontario College of Pharmacists, the International Ship-Owners Alliance of Canada, and the Ottawa Symphony Orchestra. lew.lederman@ledlaw.com

Nadine Rush, C.E.T.

Nadine Rush graduated from the environmental engineering technology program at Georgian College and is a certified engineering technologist (C.E.T.) with the Ontario Association of Certified Engineering Technicians and Technologists (OACETT). Rush's career began while working for a family-run mechanical engineering business that specialized in fluid power. She then moved on to an engineering consulting firm and was involved with various infrastructure and environmental projects. Her career continues within the City of Barrie's engineering department as a development services technologist. As chair of the Georgian Bay Chapter of OACETT, Rush is directly involved with organizing various events to promote the growth of the chapter. Recently, she was an evaluator on the OACETT Abstract Selection Committee reviewing and selecting technical presenters for the OACETT annual general meeting and technical conference. The Georgian Bay Chapter of OACETT and PEO's Simcoe-Muskoka Chapter have partnered to organize events and activities contributing to the overall success of National Engineering Month. nrush@peo.on.ca

Marilyn Spink, P.Eng.

(see Executive Committee)

Iretomiwa Olukiyesi, P.Eng.

Iretomiwa Olukiyesi's 25 years of experience in engineering cuts across various industries. She had nine years of management experience with Procter & Gamble Nigeria before migrating to Canada. She later joined 3M Canada as a senior engineer and currently is a supply chain supervisor. She obtained her first degree in mechanical engineering in Nigeria and her master's degree in advanced design and manufacturing from University of Toronto. As a licensed member of PEO, she currently serves with the London Chapter. She mentors new immigrants and young engineers in her community. She is happily married and blessed with two loving children. tolukiyesi@peo.on.ca

DECISION AND REASONS

In the matter of a hearing under the *Professional Engineers Act*, R.S.O. 1990, c. P.28; and in the matter of a complaint regarding the conduct of KANAN K. SINHA, P.ENG., a member of the Association of Professional Engineers of Ontario, and 1523829 ONTARIO LTD. o/a ENGINEERING ONLINE AMERICA, a holder of a Certificate of Authorization.

A hearing in this matter was held at Toronto on November 25 and 26, 2015.

THE ALLEGATIONS

"It is alleged that Kanan K. Sinha, P.Eng., and 523829 Ontario Ltd. o/a Engineering Online America (EOA) are guilty of professional misconduct as defined in the *Professional Engineers Act* and Regulation 941, the particulars of which are as follows:

1. The respondent, Sinha, was, at all material times, a professional engineer licensed pursuant to the *Professional Engineers Act*.
2. The respondent, EOA, was, at all material times, a Certificate of Authorization holder. Sinha was EOA's contact professional engineer.
3. The complainant, Gino Priolo, was, at all material times, a real estate agent and developer who hired Sinha to provide structural drawings and structural review for a construction project.
4. In or about early 2007, Priolo sold a studio space at 2 Denison Rd. West, Toronto (the building) to a digital animation company called Fast Motion Media Group Inc. (Fast Motion). As part of the agreement, Fast Motion required certain structural changes prior to occupancy. It was agreed that Priolo would carry out this construction.
5. The construction involved the removal of the first floor ceiling and structural supports to allow individuals to be suspended from the ceiling. It also required the construction of a catwalk around the studio space and a reorganization of some of the interior structures.
6. Priolo began construction on the studio space without first obtaining a permit. On or about March 21, 2007, a building inspector issued an Order to Comply, requiring Priolo to obtain a building permit.
7. On or about June 16, 2007, Sinha prepared and sealed three drawings, entitled "Proposed alteration for Mr. Gino Priolo," detailing proposed structural changes to the studio space.
8. On or about June 25, 2007, Priolo submitted to the building office the building permit application, including Sinha's June 16, 2007 drawings.
9. On or about July 9, 2007, the building office provided written notice to Fast Motion that the permit application had been rejected, stating, in part, that the June 16, 2007 drawings submitted contained insufficient detail to determine whether the proposed construction conformed with the applicable regulations and codes.
10. On or about July 31, 2007, Priolo resubmitted the building permit application with the same drawings, and the building office rejected the application again.
11. Fast Motion subsequently removed Priolo from the project and retained Sinha to provide revised drawings to support the building permit application.
12. On or about October 11, 2007, Sinha produced a new set of structural drawings for the project. A peer review of the drawings determined that they were not in compliance with the 2006 Ontario Building Code and would require alteration before being submitted.
13. On or about November 26, 2007, Sinha prepared new drawings that he altered according to the peer reviewer's recommendations. These drawings were accepted by the building office, which issued a building permit on or about December 7, 2007.

Based on these facts, it is alleged that Sinha and EOA are guilty of professional misconduct as follows:

1. Preparing structural drawings sealed on or about June 16, 2007 that were not compliant with the applicable building code, amounting to professional misconduct under sections 72(2)(a) and (c) of Regulation 941; and
2. Preparing structural drawings on or about October 11, 2007 that were not compliant with the applicable building code, amounting to professional misconduct under sections 72(2)(a) and (c) of Regulation 941.

PLEA OF THE MEMBER AND/OR HOLDER

On November 19, 2015, four business days prior to the scheduled commencement of the hearing, Sinha sent an email to the attention of the chair of the Discipline Committee, which stated in its entirety: "I would not be able to attend the tribunal as scheduled due to health reason. I would like to postpone this till mid-summer." The hearing dates had been set in accordance with the agreement of the parties set out in correspondence from the prosecutor dated August 17, 2015. The panel sought submissions from the parties. Sinha provided no medical certificate, nor any further information as to why he was unable to attend the hearing. By order dated November 24, 2015, the panel notified the parties that the hearing would proceed as scheduled.

However, Sinha did not attend the hearing, nor did any representative attend on his or EOA's behalf. At the commencement of the hearing, the prosecutor advised the panel that she had spoken to Sinha that morning and he advised that he had no intention of attending either personally or through a representative in these proceedings. As Sinha did not attend to enter a plea, the panel proceeded as if a not guilty plea had been entered.

OVERVIEW

The allegations against Sinha and EOA relate to two sets of structural engineering drawings dated June 16, 2007 and October 11, 2007, respectively. It was alleged that neither set of drawings complied with the applicable building code requirements. It was further alleged that, in preparing such non-compliant drawings, Sinha was negligent and failed to make reasonable provision for complying with applicable statutes, regulations, standards, codes, bylaws and rules in connection with work being undertaken by or under the responsibility of the practitioner. On both of those bases and in the case of both sets of drawings, it was alleged that Sinha's conduct amounted to professional misconduct as defined in sections 72(2)(a) and (d) of O.Reg. 941.

THE EVIDENCE

In support of its case, the prosecution called four witnesses:

1. Lawrence Au, a plan examiner with the City of Toronto building office;
2. Gino Priolo, the complainant and Sinha's initial client;
3. Robert Holroyd, a structural engineer with Halcrowe Yolles, retained by Fast Motion to peer review Sinha's October 11, 2007 drawings; and
4. Daria Khachi, a structural engineer with Dialog, retained by the association to review both sets of drawings prepared by Sinha.

As noted above, Sinha did not appear, and no evidence was presented at the hearing on his behalf. He forwarded certain documents for the attention of the panel prior to the hearing by email. However, in the panel's November 24, 2015 order, the parties' attention was directed to section 30(6) of the *Professional Engineers Act*, R.S.O. 1990, c. P.28, which provides that, "Despite the *Statutory Powers Procedure Act*, nothing is admissible in evidence before the Discipline Committee that would be inadmissible in a court in a civil case and the findings of the Discipline Committee shall be based exclusively on evidence admitted before it." The various documents sent by Sinha were, thus, inadmissible.

Au testified regarding the interactions between Priolo, Fast Motion and the City of Toronto's building office. He also testified regarding documents that were filed with the city in the course of those interactions. The key evidence provided by Au was:

1. The June 16, 2007 drawings, which were stamped and signed by Sinha, did not contain sufficient detail to permit them to be evaluated for building permit purposes. In particular, these drawings were insufficiently detailed and lacked loading information. For that reason, the city refused to issue a building permit on the basis of the June 16, 2007 drawings.
2. Sinha's name and apparent signature were included on a number of documents provided to the city building office, including the June 16, 2007 drawings, a designer information form dated June 24, 2007, and a General Review Commitment Certificate dated June 26, 2007.
3. For smaller buildings, such as the building in question at 2 Denison Rd. West, it is common for the first submission to lack detail.

Priolo testified regarding his interactions with Sinha, Fast Motion and the City of Toronto's building office. He also testified regarding docu-

ments that were filed with the city in the course of those interactions.

The testimony provided by Priolo included:

1. Sinha provided him with the stamped and signed June 16, 2007 drawings by email on June 18, 2007.
2. Sinha provided him with a signed Review Commitment Certificate by fax on June 26, 2007.
3. Sinha was aware that the drawings were being submitted in support of a building permit application.
4. Emails exchanged between himself and Sinha, including a June 26, 2007 email from Priolo, made it clear that Priolo advised Sinha that the City of Toronto required the Review Commitment Certificate in order to process "the permit."
5. The June 16, 2007 drawings were submitted to the City of Toronto building office in support of an application for a building permit. The application was refused by the city.
6. Sinha suggested that there were reasons for the refusal of the permit other than a lack of detail in his drawings. Sinha did not acknowledge any deficiencies in the June 16, 2007 drawings. Priolo provided an email from Sinha to himself dated July 16, 2007 advising him, "Looks like you need 1) Architectural drawings. 2) Electrical, mechanical & fire drawings."
7. Sinha offered to assist him in further discussions with the city to assist in his obtaining a building permit. He provided a July 18, 2007 email from Sinha to himself to that effect.

The panel qualified Holroyd, P.Eng., of Engineering Link Incorporated, formerly of Halcrowe Yolles, to give opinion evidence in the area of structural engineering. His testimony included the following points:

1. He was retained by Fast Motion to conduct a peer review of the drawings in question, which had been prepared by Sinha.
2. He believed that both the June 16, 2007 drawings and the October 11, 2007 drawings were intended to be final. He identified Core Architects, the architects retained by Fast Motion, as the source of this belief.
3. He had never spoken to Sinha.
4. He identified a number of deficiencies in Sinha's October 11, 2007 drawings, some of which were minor and some of which could lead to failure of the building. These deficiencies included missing or inappropriate information regarding roof beam configuration, roof beam supports and column bases. These deficiencies were set out in detail in an October 19, 2007 report prepared by Holroyd, which was introduced into evidence.

Khachi, P.Eng., a principal of Dialog, a structural design and engineering company, was qualified by the panel to give opinion evidence in the area of structural engineering.

1. He was retained by the Association of Professional Engineers of Ontario in March of 2015 to provide an opinion on both sets of drawings prepared by Sinha.
2. He had never spoken to Sinha, nor had he had any involvement with the renovation of the building, prior to being retained by the association.
3. He identified numerous deficiencies in both sets of drawings prepared by Sinha, some of which were minor and some of which could lead to failure of the building. These deficiencies included roof beam configuration, roof beam supports and column bases, and were set out in detail in an August 6, 2015 report prepared by Khachi, as well as in his testimony.
4. In his experience, it is a common practice for an engineer to affix a seal to drawings, but not sign them pending review. In his evidence, those that follow this practice would not consider a drawing to be final until it had been signed.

DECISION

The association bears the onus of proving the allegations in accordance with the standard of proof. The standard of proof applied by the panel was a balance of probabilities. Proof must be clear, convincing and based upon cogent evidence accepted by the panel.

Having considered the evidence and the onus and standard of proof, the panel found that the member and licence holder committed an act of professional misconduct, pursuant to sections 72(2)(a) and (d) of O.Reg. 941 under the *Professional Engineers Act*, by preparing structural drawings that were sealed and signed on or about June 16, 2007, which were not compliant with the applicable building code.

However, for the reasons that follow, the panel is not satisfied that the member's actions in connection with the preparation of the October 11, 2007 drawings amounted to professional misconduct.

REASONS FOR DECISION

There was uncontroverted evidence before the panel that both the June 16, 2007 drawings and the October 11, 2007 drawings prepared by Sinha were deficient, lacked sufficient detail to demonstrate compliance with the applicable building code, and contained structural elements that were likely to fail if constructed in accordance with the design prepared by Sinha. This evidence was presented by Au and Khachi with

respect to the June 26, 2007 drawings, and by Holroyd and Khachi with respect to the October 11, 2007 drawings.

In the panel's view, the fact that Sinha prepared deficient drawings is not, in and of itself, sufficient to support a finding of professional negligence. It must also be demonstrated that the drawings in question were not drafts and did not represent incomplete work in progress. It must be shown that Sinha treated the deficient drawings as his final work product—drawings that he held out to his client and to the public as issued for permit and/or construction purposes. On this basis, the panel is required to determine whether or not the evidence shows that the drawings in question were treated as final.

The difficulty faced by the panel was that Sinha did not attend the hearing and, therefore, no direct evidence was available from him regarding the purpose of the various sets of drawings. Furthermore, neither Holroyd nor Khachi had ever spoken to Sinha. Holroyd testified that he believed that both sets of drawings were intended to be final but, in response to questions from the panel, he stated that the basis for this belief was that he was told so by Core Architects. This evidence is hearsay and cannot be relied on by the panel. Khachi, having been retained by the association long after the events in question, had no direct knowledge pertinent to this question.

In the absence of direct evidence, the panel was required to look at the circumstances and correspondence in evidence to arrive at conclusions as to whether or not Sinha treated each set of drawings in question as final.

The June 16, 2007 drawings

With respect to the June 16, 2007 drawings, the panel has the evidence of Priolo and Au.

Priolo testified that Sinha considered the June 16, 2007 drawings to be final and ready for submission. Again, this is hearsay and, on its own, presents very little basis for the panel to make a conclusive finding. However, this contention is supported by the surrounding circumstances. Sinha's conduct in the course of his dealings with Priolo and the city demonstrated that he treated the June 16, 2007 drawings as final.

While there was no explicit statement from Sinha to this effect, nor any explicit statement authorizing those drawings to be submitted in support of a building permit application, the following factors support the conclusion that he considered them to be final and treated them as such:

1. The drawings had Sinha's seal affixed to them, and were dated and signed.
2. There was no notation on the drawings to the effect that these documents were drafts.
3. After providing the drawings to Priolo, Sinha signed the Designer Information form and General Review Commitment Certificate. In doing so, he knew, or ought to have known, that an application was being submitted to the building office.
4. After being advised that the drawings had been submitted, there is no evidence that Sinha objected to their submission after the fact. To the contrary, he continued to advise Priolo that there were no deficiencies in regards of their structural content, and offered to participate in further discussions with city staff towards the issuance of a permit.

Based on the evidence available to the panel, Sinha's correspondence and conduct was consistent with a belief, on his part, that the June 16, 2007 drawings were final and were not drafts.

The October 11, 2007 drawings

The October 11, 2007 drawings had Sinha's seal affixed; however, unlike the June drawings, they were not signed by Sinha. Holroyd's evidence was that Sinha was aware that he would be peer reviewing the drawings prior to their submission to the city. Following Holroyd's review, Sinha revised the drawings, provided detailed calculations and, ultimately, signed the drawings on November 26, 2007. These signed drawings were submitted to the city and, on that basis, a building permit was issued.

This chain of events appears to be consistent with the practice described by Khachi, i.e. that engineers will often affix their seal to drawings as they near completion, but hold back on signing those drawings until all review has been completed and they are satisfied that the drawings are complete.

The panel notes that this is not a best practice, is not consistent with the association's guidelines on the use of a professional engineer's seal, and should be discouraged.

However, the panel finds that Sinha's conduct with respect to the October 11, 2007 drawings did not amount to negligence or professional misconduct of any other kind. Sinha saw to it that any issues with those drawings were resolved prior to their being signed and submitted to the city.

PENALTY DECISION

The panel makes no decision as to penalty at this time. The panel directs that the parties be provided with notice of this decision, and the prosecution is to provide the panel with submissions in writing regarding the appropriate penalty within 14 days of such notice having been given. Sinha and EOA shall have an opportunity to respond in writing to the prosecution's submissions within seven days, following which the prosecution will have three days in which to reply, following which the panel will make a decision regarding the appropriate penalty in this matter.

Bruce Clarida, P.Eng., FEC, signed this Decision and Reasons for the decision as chair of the discipline panel and on behalf of the members of the discipline panel: James Amson, P.Eng., Ishwar Bhatia, P.Eng., David Germain, JD, and Charles M. Kidd, P.Eng.

DECISION AND REASONS ON PENALTY

In the matter of a hearing under the *Professional Engineers Act*, R.S.O. 1990, c. P.28; and in the matter of a complaint regarding the conduct of KANAN K. SINHA, P.ENG., a member of the Association of Professional Engineers of Ontario, and 1523829 ONTARIO LTD. o/a ENGINEERING ONLINE AMERICA, a holder of a Certificate of Authorization.

In its decision dated February 23, 2016, the panel found the member, Kanan K. Sinha, and 523829 Ontario Ltd. o/a Engineering Online America guilty of professional misconduct. Further to that finding, the panel requested that the parties to this matter provide their recommendations with respect to an appropriate penalty.

The panel has carefully considered the submissions of counsel for the association, as well as the responding submissions from Sinha.

Further to the association's request for an award of $10,000 in costs, the panel requested that PEO provide documentation in support of the amount requested. The association provided a detailed outline of costs on March 3, 2016, to which Sinha provided a brief response.

Having considered all of the foregoing submissions, the panel largely accepts the submissions of the association and, for the reason set out in those submissions, imposes the penalties that were requested, with one significant deviation.

The penalties imposed are as follows:

1. Pursuant to subsection 28(4)(f) of the *Professional Engineers Act* (PEA), Sinha shall be reprimanded, and the fact of the reprimand shall be recorded in the register permanently;
2. Pursuant to subsection 28(4)(a) of the PEA, Sinha's licence shall be revoked;
3. Pursuant to subsection 28(4)(i) of the PEA, the findings and the order of the panel shall be published, with reasons therefore, together with the names of the respondents, in the official publication of PEO; and
4. Pursuant to subsection 28(4)(j) of the PEA, the respondents shall pay costs to PEO in the amount of $10,000, within three months of the date of this penalty decision.

The panel finds that the above penalties are appropriate in this matter to ensure that this decision serves as a significant deterrent.

In the matter of the revocation of Sinha's licence, the association had asked that a condition be imposed on the licence prohibiting the member from practising engineering alone. The panel, in its deliberations, concluded that the requested condition would not provide a sufficient level of protection to the public at large. This panel's finding in this matter was the second finding of misconduct against Sinha. Furthermore, the misconduct in this case involved the approval of a design that the evidence demonstrated was likely to fail and, thus, in the panel's view, posed a significant danger to the public.

The panel has determined that the goal of protecting the public would not have been adequately served by the placing of a limitation on Sinha's

licence. The panel finds that the protection of the public is best achieved by the revocation of Sinha's licence.

The panel was advised by email dated March 3, 2016 that Sinha had advised that he is now retired. The panel finds that the need to ensure the protection of the public outweighs any interest that the member may have had in continuing to hold a licence. The panel, therefore, finds that, in the circumstances, it is appropriate to exercise its power pursuant to subsection 28(4)(a) of the PEA to revoke Sinha's licence.

With respect to costs, the panel has granted the association's request in full. The panel notes that the costs awarded represent approximately a third of the association's actual expenditure in this matter. One of the key factors in awarding costs was Sinha's apparent disregard for the Discipline Committee's process. He was fully aware of the hearing of this matter. Nonetheless, he did not appear at the hearing, nor did he plead guilty. Instead, he made submissions by email only, which, in the absence of sworn testimony and an opportunity to ask questions, were of little value to the panel or the discipline process.

Accordingly, the association presented its case in Sinha's absence. This expense could have, and should have, been avoided. Given that these costs were incurred entirely as a result of Sinha's actions, the panel finds that the requested $10,000 award is appropriate in the circumstances.

Bruce Clarida, P.Eng., FEC, signed this Decision and Reasons on Penalty for the decision as chair of this discipline panel and on behalf of the members of the discipline panel: James Amson, P.Eng., Ishwar Bhatia, P.Eng., David Germain, JD, and Charles M. Kidd, P.Eng.

SUMMARY OF DECISION AND REASONS: SANDRO P. SOSCIA, P.ENG., AND SOSCIA ENGINEERING LTD.

In the matter of a hearing under the *Professional Engineers Act*, R.S.O. 1990, c. P.28; and in the matter of a complaint regarding the conduct of SANDRO P. SOSCIA, P.ENG., a member of the Association of Professional Engineers of Ontario and SOSCIA ENGINEERING LTD., a holder of a Certificate of Authorization.

This matter came to a hearing before a panel of the Discipline Committee on August 2, 2012. The Association of Professional Engineers of Ontario was represented by Leah Price. The member (Soscia) and the holder (Soscia Engineering Ltd.) were represented by M. Gosia Bawolska. Sean McFarling provided independent legal advice to the panel.

The parties entered into an Agreed Statement of Facts, and the member and the holder admitted the allegations of professional misconduct set out in the Agreed Statement of Facts.

The member was the president of Soscia Engineering Ltd. (the holder), an engineering firm that held a Certificate of Authorization under the *Professional Engineers Act*. The member was the responsible professional in the application for the Certificate of Authorization. The member entered into an agreement with a client to provide engineering services for a set of structural drawings for a foundation permit for a five-storey residential development with an underground parking garage. The owner applied for a foundation permit with the drawings.

The city did not issue a permit due to a lack of information on this first set of drawings, including the location of existing services and foundation-bearing elevations. The owner was asked to provide a complete set of structural and architectural drawings for review.

Unbeknownst to the member, the owner had proceeded to pour footings and start erecting the concrete block foundation. The city issued an Order to Comply, and a Stop Work Order.

The member signed and sealed a second set of foundation drawings for the owner. The member had told the owner that the drawings were preliminary, but the drawings were not so marked.

The city engaged another structural engineer to review this second set of drawings. He determined the footings were undersized, and noted other deficiencies and omissions as well.

The member issued a third set of signed and sealed drawings for submission to the city.

After the complaint against the member was received by PEO, an independent professional engineer reviewed all three sets of drawings. The design

loads were incorrect in the first two sets, allowable bearing capacities were not clearly noted, and bearing elevations were not marked. All drawings had the same two dates on the seals, regardless of when they were submitted. The lack of detail with respect to the proper soil-bearing capacity and footing location would create a design with undersized footings if placed at the incorrect elevation.

The member, on behalf of himself and the holder, admitted the allegations contained in the Agreed Statement of Facts. The panel conducted a plea inquiry and was satisfied that the admissions were voluntary, informed and unequivocal.

It was agreed that the drawings and the work carried out by the member and the holder fell below the expected standard of practice for engineering work of this type. It was further agreed that the member and the holder were guilty of professional misconduct, and acted unprofessionally.

The member and the holder had signed and sealed two sets of structural drawings that should have been marked "preliminary" since they were based upon incomplete architectural drawings. These drawings had incorrect design loads, which led to undersized footings. The final third set of drawings did not specify elevations based upon two available geotechnical reports, and the potential existed for undersizing the footings.

The parties agreed on a Joint Submission as to Penalty and Costs. The panel accepted that the proposed penalty in the joint submission was reasonable and in the public interest, and the panel accordingly ordered:

(a) The member and holder shall be given an oral reprimand, and the fact of the reprimand shall be recorded on the register for a period of six months;
(b) The member and holders shall submit, within four months of the date of the hearing, a Quality Assurance Plan acceptable to the registrar, and to be thereafter implemented by the member and holder.
(c) The member and holder shall undergo a series of quality control practice inspections in accordance with the terms of reference.
(d) A summary of the Decisions and Reasons, with names, will be published in *Engineering Dimensions*.
(e) There shall be no order as to costs.

The parties waived appeal rights. An oral reprimand was given at the conclusion of the hearing.

This summary of the Decision and Reasons was signed by Michael Wesa, P.Eng., as chair of this discipline panel, and on behalf of the other members of the discipline panel: J.E. Benson, P.Eng., Ishwar Bhatia, P.Eng., Ravi Gupta, P.Eng., and Martha Stauch.

HAMILTON AREA BUSINESS OWNER FINED $6,000 FOR USE OF A FABRICATED PROFESSIONAL ENGINEER'S SEAL

On November 22, Asif Siddiqui of Milton, Ontario, was convicted of breaching the *Professional Engineers Act* by the Ontario Court of Justice and fined $6,000 for use of a fabricated professional engineer's seal.

In March 2015, Siddiqui was undertaking renovations at a SUBWAY restaurant franchise, which he owned through a corporation. Siddiqui submitted a building permit application and a technical drawing bearing a fabricated professional engineer's seal to the building division at the City of Hamilton. A professional engineer with the building division identified the seal as a forgery and notified the affected professional engineer, who then notified PEO.

His Worship Justice of the Peace Jerry Woloschuk convicted Siddiqui of one offence relating to use of the seal. Despite readily apparent flaws with the seal, and the fact that the drawing did not come directly from the affected professional engineer, Siddiqui failed to exercise due diligence and take steps to verify the seal before submitting the drawing to the building department.

Nick Hambleton, associate counsel, regulatory compliance, represented PEO in this matter. PEO would like to thank the affected professional engineer and several persons involved with the renovations, as well as the Hamilton building department for their co-operation in the investigation.

Professional Engineers
Ontario

Order form is online at www.peo.on.ca

PUBLICATIONS ORDER FORM

	$	No.	Total
The Professional Engineers Act, R.S.O. 1990, Chapter P.28	N/C		
Ontario Regulation 941/90	N/C		
Ontario Regulation 260/08	N/C		
By-law No. 1	N/C		
Practice Guidelines			
Acting as Contract Employees (2001)	10.00		
Acting as Independent Contractors (2001)	10.00		
Acting Under the Drainage Act (1988)	10.00		
Acoustical Engineering Services in Land-Use Planning (1998)	10.00		
Building Projects Using Manufacturer-Designed Systems & Components (1999)	10.00		
Commissioning Work in Buildings (1992)	10.00		
Communications Services (1993)	10.00		
Conducting a Practice Review (2014)	10.00		
Developing Software for Safety Critical Engineering Applications (2013)	10.00		
Engineering Evaluation Reports for Drinking Water Systems (2014)	10.00		
Engineering Services to Municipalities (1986)	10.00		
Environmental Site Assessment, Remediation & Management (1996)	10.00		
Forensic Engineering Investigations (2015)			
General Review of Construction as Required by Ontario Building Code (2009)	10.00		
Geotechnical Engineering Services (1993)	10.00		
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Mechanical & Electrical Engineering Services in Buildings (1997)	10.00		
Professional Engineer as an Expert Witness (2011)	10.00		
Professional Engineering Practice (2012)			
Professional Engineer's Duty to Report (1991)	N/C		
Project Management Services (1991)	10.00		
Reports for Pre-Start Health and Safety Reviews (2001)	10.00		
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Membership #

April 2017

COMMITTEE LOOKS FOR OPPORTUNITIES TO UPDATE ACT AND REGULATIONS

By Michael Mastromatteo

One of the most significant moments in the recent history of Ontario's engineering regulator occurred back in 2005 with PEO's successful legal challenge of a provincial government initiative aimed at imposing an additional qualifications scheme on certain practitioners in the building design and construction sector.

What eventually became known as the Bill 124 episode established a new era of vigilance within PEO to ensure any proposed acts of provincial or even municipal government do not come into conflict with the *Professional Engineers Act* (PEA) in Ontario.

Today the role of guardian or custodian of the PEA falls in large measure to PEO's Legislation Committee, which, since its rebirth in 2009, has acted to provide oversight and guidance on statutory matters.

"The committee sees itself as a clearinghouse for legislative changes to the *Professional Engineers Act*, its regulations or council's bylaws," says 2016-2017 Legislation Committee Chair Ewald Kuczera, P.Eng. "It ensures the proper vetting of proposed changes and seeks clarity from council and other committees on policy intent. It also ensures that the rationale for such changes is evidence-based. It does not act without council's explicit approval."

Kuczera, who also recently served as one of PEO's Western Region councillors, came to the Legislation Committee chair position following PEO's 2016 annual general meeting (AGM). Traditionally, committee chairs are elected at the first council meeting following the AGM. At PEO's 2017 AGM in April, new President Bob Dony, PhD, P.Eng., FEC, was elected as the 2017-2018 chair.

Dony was previously vice chair of the committee since 2015. Past chair is Councillor-at-Large Roydon Fraser, PhD, P.Eng., FEC.

Johnny Zuccon, P.Eng., FEC, PEO's deputy registrar, tribunals and regulatory affairs, and Jordan Max, manager of policy, serve as committee advisors. Under current roles, membership on the committee is limited to current members of PEO council.

Adding some urgency to the Legislation Committee's work is a new directive from the Ontario attorney general's office that any proposed changes to the regulator's enabling legislation stand up to the evidence-based policy test. Act or even regulation changes must satisfy the attorney general that such changes are fully warranted and that they be accompanied by a full analysis of the ramifications of what is being proposed.

Secondary duties for the Legislation Committee include acting as custodian for PEO, identifying policies, rules and operational issues that affect PEO legislation, and providing guidance as to which of these issues or concerns should be put into legislation.

It also reviews any potential changes to PEO statutes and keeps council members up to date on any external legislative initiatives that might impact on PEO's work in regulating the profession and licensing practitioners.

Typical stakeholders of the Legislation Committee include PEO council and the Ontario attorney general's office, as well as PEO statutory committees, such the Experience Requirements and Academic Requirements committees.

Over the course of 2016, the committee has been involved in preparing at least eight legislative changes in relation to the recommendations stemming from the 2014 Elliot Lake Commission of Inquiry. "These have been submitted to the attorney general's office for review and this has been the most high-profile work of the committee," Kuczera says.

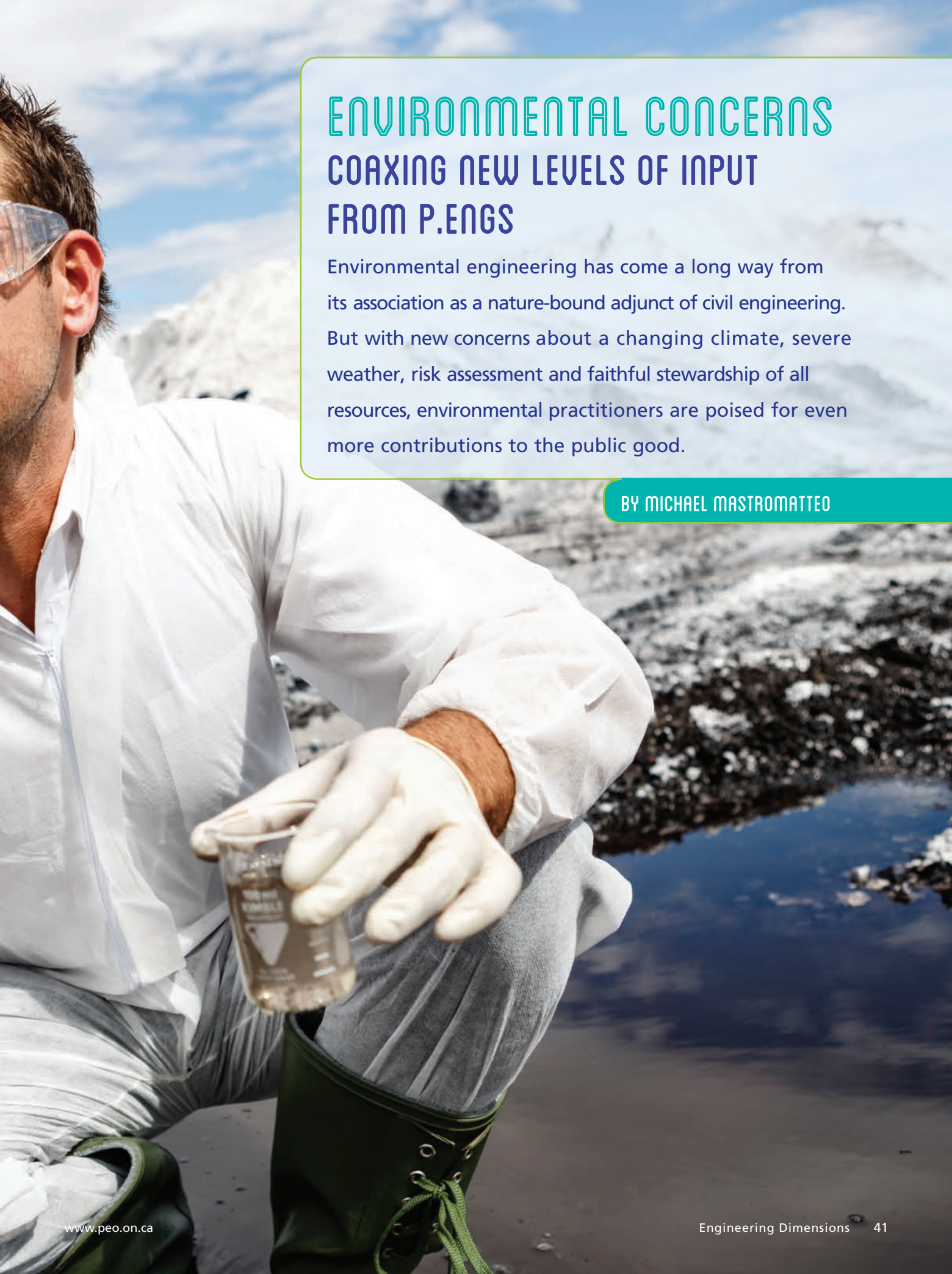
In addition, however, the committee has been active establishing protocols for any act and regulation changes. Most interesting of late has been a review of other acts and regulations that reference activities involving engineers or engineering.

"This may be referred to as demand-side legislation," Kuczera adds. "The committee has reviewed 94 such identified pieces of legislation, some of which infringe on the PEA or otherwise are in conflict with or require clarification, and categorized these by type. At its March 24, 2017 meeting, PEO council approved a regulatory conflict protocol, devised by the committee, which sets out an approach for staff to proceed in seeking correction of these depending on the degree of regulatory conflict" (see In Council, p. 62).

Another recent project completed by the Legislation Committee involved drafting an amendment to a bylaw that would transfer all references to fees from the regulations to complete the proclamation of changes to the act under the *Open for Business Act, 2010*. The final revision has been forwarded to the attorney general's office for coordination of the changeover and amendments to Regulation 941.

Although the Legislation Committee interacts with the attorney general's office, it is not considered a policy-making body, nor does it have any direct working relationship with PEO's Government Liaison Committee. "However, the chair and vice chair of the [Government Liaison] committee came as observers to the February 2017 meeting to see first-hand how the committee is functioning," Kuczera reports.

"The ambiguities found in other provincial legislation highlights the importance of ensuring that our own act and regulations are properly structured and carefully worded," he adds. "In this manner, the Legislation Committee is committed to its role in responding to the profession's regulatory needs." **e**



ENVIRONMENTAL CONCERNS

COAXING NEW LEVELS OF INPUT FROM P.ENGS

Environmental engineering has come a long way from its association as a nature-bound adjunct of civil engineering. But with new concerns about a changing climate, severe weather, risk assessment and faithful stewardship of all resources, environmental practitioners are poised for even more contributions to the public good.

BY MICHAEL MASTROMATTEO

Back in 2010, when the Ontario government brought in legislation aimed at increasing administrative efficiency and reducing bureaucratic red tape, PEO managed to work in a few changes to the *Professional Engineers Act* (PEA).

One of the less heralded changes at the time was adding the word "environment" to the list of things to be safeguarded by the engineering profession. Previously, the engineering act only cited life, property, economic interests and the public welfare as among the engineer's protective domain.

It was the first time the environment was explicitly stated as within the purview of engineering in Ontario. Semantically, the change might not have been necessary, especially if one assumes that care for the environment is effectively captured in the engineer's commitment to "life, property, economic interests and the public welfare." In a symbolic sense, however, the change engendered fresh thinking on what constitutes environmental engineering today, and if this area of practice has come to mean more than water quality, ecosystems, air emissions and pollution abatement.

Increasing public concern about climate change, greenhouse gas emissions, severe weather incidents, alternatives to fossil fuels and the emerging carbon economy have also put the spotlight on environmental engineers and precisely what it is they do.

Engineering Dimensions sought the views of several professionals, both within environmental engineering and from the outside, as to what may be at stake in this sensitive and politically-charged area.

On the climate change front, for example, there has emerged one school of thought contending that professional engineers could face charges of professional misconduct if they fail to warn policy-makers and government leaders to the dangers of greenhouse gas buildup in the environment. While this might seem alarmist to some, it adds a sense of urgency to the profession's duty of care in matters of environmental protection and preservation.

Engineers Canada, the national association of Canada's provincial and territorial regulators, has responded to this concern in a couple of ways.

Just last October, Engineers Canada released its *National Guideline on Sustainable Development and Environmental Stewardship for Professional Engineers*, which highlights the changing priorities in this sector.

"A purely environmental approach is insufficient, and increasingly engineers are required to take a wider perspective, including goals such as poverty alleviation, social justice and local and global connections," says the guideline. "This practice of sustainable development can be expected to evolve and engineering education and continuing professional development will need to include an understanding of sustainable development."

In linking environmental engineering with the requirements of sustainable development, Engineers Canada sees significant changes on the horizon for the way environmental engineering is understood and practised. Says the same guideline: "Sustainable development is an emerging aspect of engineering practice, which is more comprehensive and anticipatory and in many areas is overtaking the more narrow discipline-specific activity of 'protection of the environment.'"

David Lapp, P.Eng., FEC, practice lead, globalization and sustainable development at Engineers Canada, was one of the first to draw attention to the vital link between sustainability and environmental engineering practice. He says emerging concepts of asset management, life-cycle assessment and risk avoidance require new thinking on environmental engineering in practice.

INCREASING PUBLIC CONCERN ABOUT CLIMATE CHANGE, GREENHOUSE GAS EMISSIONS, SEVERE WEATHER INCIDENTS, ALTERNATIVES TO FOSSIL FUELS AND THE EMERGING CARBON ECONOMY HAVE ALSO PUT THE SPOTLIGHT ON ENVIRONMENTAL ENGINEERS AND PRECISELY WHAT IT IS THEY DO.

"I think the big thing that is relatively new is the whole notion of risk and vulnerability assessment and bringing that to the engineering process," Lapp says. "Basically, in the past, we have been designing on the basis of past performance, and so forth, and now with one of our foundational elements shifting on us—and we don't know how fast or how much is it shifting—it begs a different approach. Now we are seeing a focus on life-cycle thinking and how to get infrastructure to last a long time, taking into account shifting climate patterns. We need to find a way to deal with this and how it applies to practice."

ACHIEVING A BALANCE

This need to take a fresh look at environmental engineering practice is reflected in one of the key recommendations of the Engineers Canada stewardship guideline: "[Engineers] should seek and disseminate innovations that achieve a balance between environmental, social and economic factors while contributing to healthy surroundings in the built and natural environment."

An earlier Engineers Canada guideline on climate change also underscored the impact climate change and sustainability have on traditional thinking in the environmental engineering sector.

This guideline suggests it is critical the profession create conditions where climate change adaptation is not only an accepted part of daily practice, but also a guiding principle of professional practice. Individual engineers should make reasonable efforts to incorporate adaptation into their personal professional practice through continuing professional development and experience.

This, in turn, calls on engineers to communicate more effectively with decision makers about climate change adaptation issues and the associated risks. As part of this professional responsibility, the engineer should clearly communicate the costs and benefits of recommended actions and how those actions mitigate the identified risks. It is important the engineer clearly articulate the economic benefits of the adaptation measure and the potential costs of not adapting to the identified risks.

Jeanette Southwood, P.Eng., FEC, vice president for strategy and partnerships at Engineers Canada, agrees that climate change, sustainability, resilience, and better use of natural resources continue to influence what's expected of the environmental practitioner. "We must look through a broad lens that includes sustainability and resilience and, with our teams, be fully attuned to the social and economic considerations involved, as well as the environmental aspects," says Southwood, a former global sustainability leader at an international consulting firm, and a recipient of engineering awards from both PEO and the Ontario Society of Professional Engineers (OSPE).

Lapp says Engineers Canada intends to engage with engineering school deans across the country concerning environmental engineering curricula to reflect the growing importance of this line of study.

One environmental engineer monitoring developments in the field is Tom Markowitz, P.Eng., of PEO's West Toronto Chapter and current chair of its long-standing environment committee.

Markowitz, formerly of the Ontario government's environment ministry, says it's a good idea to set up an environmental committee at the chapter level. "Environmental problems (and opportunities) are becoming increasingly important at the local level, he told *Engineering Dimensions*. "The environment committee reminds chapter members to include

environmental considerations in their traditional endeavours. The committee organizes seminars and site visits that broaden the environmental knowledge of chapter members."

PEO itself had an environment committee until 2006. It was disbanded when the environment came to be seen as an advocacy issue and was thus given over to OSPE.

Since retiring from the environment ministry, Markowitz remains active with chapter work and as head of EnerHope, an online education service on greenhouse gas emissions trading that also offers professional services to companies and organizations.

As an engineer with a keen interest in energy and environmental issues, Markowitz agrees there is symbolic value in adding environmental protection to the Ontario engineering act.

"This revision was absolutely essential considering the stress that our growing society is placing on the natural environment in Ontario. The application of this principle is not always easy, because some engineers and some members of the general public may not always agree on the balance between economic growth and environmental protection. Every human endeavour has environmental consequences."

ROLE OF P.ENGS IN POLICY

For its part, OSPE has weighed in on the engineering-environment link with some of its recent research papers. A study of the Ontario government's electricity generating strategy was featured in a recent Queen's Park debate as an example of how engineers can bring more evidence-based research to bear on issues of major public importance.

An October 2015 OSPE research report on the role of innovation in the emerging carbon economy also spelled out some of the new constraints facing the profession in tackling environment, energy and sustainability-related problems. "Society has granted engineers a custodial monopoly of technology through the licensing system, in exchange for imparting a regulatory and ethical duty to assess potential repercussions of climate disruption," the OSPE report reads. "As a result, engineers are depended on to use their expertise to develop solutions to combat the problem. Consequently, engineers are tasked with designing structures

AN OCTOBER 2015 OSPE RESEARCH REPORT ON THE ROLE OF INNOVATION IN THE EMERGING CARBON ECONOMY ALSO SPELLED OUT SOME OF THE NEW CONSTRAINTS FACING THE PROFESSION IN TACKLING ENVIRONMENT, ENERGY AND SUSTAINABILITY-RELATED PROBLEMS.

and facilities in light of a 'climate future,' which is not equal to the climate past. But while the role of engineers in combatting the effects of climate disruption have typically been limited to adaptive measures, the effect of climate change on engineering practice goes well beyond the notion of adaptation, and touches on the engineer's ethical responsibility for mitigation—for being part of the global effort to reduce greenhouse gas emissions."

Individual engineers practising in the environment sector agree that the field is ripe for fresh and innovative thinking.

Sangeeta Chopra, P.Eng., is director of engineering services for the Ontario Clean Water Agency (OCWA). OCWA is an organization established in 1993 as an Ontario Crown agency committed to ensuring all Ontario communities have access to a provider of safe and reliable water and wastewater services.

Chopra, who came to her role after completing an undergraduate degree in chemical engineering, followed by a masters in civil (environmental) engineering, says it might be time to review the training and development of future environmental practitioners both by universities and by consulting engineering firms hiring new graduates.

"Environmental engineering is seen as a mix of chemical and civil, which are largely concerned with straightforward processes. Is this the same as for environmental engineers?" Chopra asks.

"To build a solid foundation as a project manager or engineer in environmental engineering, gaining hands-on experience is key to professional development. Many consulting engineering firms encourage mentorship by teaming new graduates and junior engineers with a seasoned professional to gain such invaluable experience. At present, unfortunately, the industry is experiencing increased retirements of seasoned professionals, which limit the ability of new graduates to obtain hands-on experience from folks who have spent significant time in the profession."

She suggests a more integrated environmental engineering undergraduate program, combining chemical and civil studies, might better prepare graduates for the new environmental work challenges. "At present, environmental engineering is a specialization that sits in the civil engineering department at most universities," she says. "This division trains engineers on a broad level of physical infrastructure to meet the needs in society and focuses primarily on soils, structures, hydraulics and the design and construction of tanks, roads, etc. The environmental engineering profession, specifically water and wastewater treatment, however, includes much more than implementation of the capital/infrastructure piece. Some of this training and knowledge is gained through chemical engineering at most universities. Chemical engineers focus on research, assessments and studies, process, optimization and innovation in their program. These elements are related to improvements and can be translated to establishing the best, cost-effective solution for the public. My perception is that a more integrated environmental engineering program under both departments of civil and chemical engineering would better prepare undergraduate students for the working world."

"Environmental engineers need to answer very difficult and intelligent questions asked by the public, city councils and politicians on infrastructure spending," Sangeeta Chopra says.

However future practitioners are developed, Chopra and other present-day practitioners believe environmental specialists will only grow in importance as governments and communities struggle with climate change, severe weather, asset management, infrastructure resilience and risk assessment concerns.

"Environmental engineers need to answer very difficult and intelligent questions asked by the public, city councils and politicians on infrastructure spending," Chopra says. "There are increasing demands and limited availability. As a result, the education needs to respond by providing a holistic education that involves the ability of graduates to assess options through research and development and evaluations, which will prepare them to improve, innovate and optimize the functionality of existing infrastructure before recommending major capital investments be undertaken."

William Lubitz, PhD, P.Eng., environmental engineering leader at the University of Guelph, also sees the development of a new breed of environmental specialist as a boon for society and for the profession.

The University of Guelph was one of the first Canadian universities to establish a free-standing environmental engineering program and, in many ways, its growth and reputation have reflected the increasing importance of this sometimes misunderstood discipline.

"I think it is natural for environmental engineering to have emerged as a recognized field," Lubitz told *Engineering Dimensions*. "It is a multidisciplinary field, and long before you could get a degree in environmental engineering, there were many mechanical, civil and chemical engineers extending their skills and knowledge to do this work. The problems environmental engineers solve are unfortunately ubiquitous and not going away anytime soon, so it is only logical for environmental engineering to have evolved as its own field of practice. It allows focused training of students and then a common framework for practitioners."

ALTHOUGH SOME PROFESSIONAL ENGINEERS AND POLICY-MAKERS DEBATE THE URGENCY OF CLIMATE CHANGE AND THE NEED TO MAKE A SUDDEN TRANSITION TO A CARBON ECONOMY, THERE APPEARS LITTLE DOUBT ENVIRONMENTAL ENGINEERS ARE POISED FOR A NEW PROMINENCE.

ENVIRONMENTALIST IN ALL ENGINEERS

Lubitz suggests there is a hint of the environmentalist in every professional engineer, and given the growing interconnectedness of the environment and sustainability, there will be ongoing incentive for future practitioners to come up with new approaches and innovation.

"As a P.Eng., our ultimate responsibility is to the health of the society in which we live and practise," Lubitz says. "Once you consider the ripple and follow-on effects of any engineering endeavour, it is difficult to not recognize that negative impacts on the environment will ultimately have negative impacts on people."

But if environmental engineering becomes more meaningful in light of new constraints, will it add new pressure on the profession to prepare and license practitioners? New PEO President Bob Dony, PhD, P.Eng., FEC, believes climate change and risk assessment will certainly bring opportunities for the next round of practitioners. "There is going to be a lot opportunity in that field as there is recognition of what more we need to do to deal with climate change and carbon reduction," Dony says. "As carbon reduction plans become more a part of the regulatory process, I think the expertise of environment engineers is definitely going to be in high demand."

It could also promote a greater voice for engineers at policy-making tables as communities marshal all resources for the sake of sustainability and environmental stewardship. "Calling in the expertise of the people who understand the mass balances and energy balances involved in these discussions would allow, hopefully, more evidence-based policy development," Dony adds.

Although some professional engineers and policy-makers debate the urgency of climate change and the need to make a sudden transition to a carbon economy, there appears little doubt environmental engineers are poised for a new prominence. "Engineers are the people with the knowledge about how to solve our climate change problems," says Markowitz. "Unfortunately, governments are not listening to engineers enough. Simple, necessary solutions to our climate change problems are being ignored."

But to make themselves heard, practitioners now and in the future will be required to communicate their expertise and their solutions more forcefully. "This is a great area for young engineers," says David Lapp of Engineers Canada. "There is a lot of innovation and creativity required. And it's not just about engineers working within themselves, but with other professionals. This really fosters the notion that we're all in this together and we need to look at things from different angles."

It's a challenge that Engineers Canada—working with universities, provincial and territorial regulators, consulting engineers and other associations—is prepared to tackle head on. "There's added urgency to include environmental practitioners at the policy-making table, and this connects directly to opportunities for environmental engineers," says Jeanette Southwood. "The profession is up to the challenge of participating in, meeting and surmounting these issues. The question is, how do we? How do we access the opportunities? That's part of the work that Engineers Canada is doing—ensuring that engineering and engineers are involved in the dialogue concerning this issue, and in communicating that it's urgent that engineers be involved and that our voices are heard." **e**

PRACTITIONERS SURVEY THE CURRENT—AND FUTURE—ENVIRONMENTAL LANDSCAPE

BY SHARON ASCHAIEK

As part of its examination of environmental engineering, *Engineering Dimensions* sought out some frontline practitioners to find out what they're doing in the field, and their views on what may be in store for this all-important but not easily understood discipline.

HELPING BUSINESSES GAIN A SUSTAINABILITY EDGE

As more and more companies in Canada seek to operate sustainably, many are drawing on the considerable expertise and insights of environmental engineer Mike Gerbis, P.Eng.

A 25-year practitioner in the field, Gerbis helps companies reduce harmful emissions, cut down on their waste and be more energy efficient—all in ways that are cost effective and can increase profitability. The company he leads, The Delphi Group, provides large- and medium-sized businesses with support in sustainability strategy development, policy analysis and environmental risk management. Featuring offices in Toronto, Ottawa, Calgary and Victoria with 20 staff and 40 associates, Delphi has served major brands in Canada, such as Canadian Tire, RBC, Loblaws, CN and McDonald's.

"Climate-friendly is about more than just risk mitigation," says Gerbis. "The trend of companies becoming more responsible and seeing the benefits to their market share, brand and profitability has significantly increased opportunities for firms like ours."

In the late 1980s, while Gerbis was a chemical engineering undergraduate at Queen's University, a geography professor exposed him to the possibility of addressing climate change in a business-friendly way. Afterward, he completed a master's degree in environmental engineering at McMaster University, and his thesis project involved helping a local furniture maker identify how to reduce its waste, create a safer work environment and save money. The experience made clear to Gerbis the kind of positive social, environmental and business impact he could make as an environmental engineer. After running his own engineering consulting firm for five years, he joined Delphi in 1997 as its director of environmental technology and services and has been its CEO since 2006.

One way Delphi helps companies go green is through Trident, its customizable tracking and forecasting tool that enables organizations to reduce their greenhouse gas emissions and energy use at the lowest possible cost. The tool creates easy-to-understand and visually appealing reports that quantify the organization's greenhouse gas emissions, energy use and associated costs. It also allows for analyzing business-as-usual and compliance scenarios, and identifying business processes and technologies to operate more sustainably.

"Companies are trying to make decisions that make financial sense, and at the same time, deal with climate change. This offers a way for them to put investments into reducing greenhouse gas emissions in a way that minimizes their costs and enhances their profitability," says Gerbis, noting that some Trident users have decreased their emissions by as much as 20 per cent.

Gerbis views his work as fulfilling his professional responsibility to protect the public interest—in his case, by helping companies reduce their environmental impact while enhancing their profitability. Outside of Delphi, he has co-founded two environmental non-profits, volunteers for an association promoting good air quality, and regularly speaks about sustainability to youth and business leaders across Canada.

"I think engineers can play a significant role in tackling issues such as climate change and advancing sustainable energy," Gerbis says. "Many engineers are now CEOs or business managers, and many are innovators, so we have the capacity to understand these issues in a technical way and come up with solutions that make good sense for business and for the planet."

TESTING THE WATERS

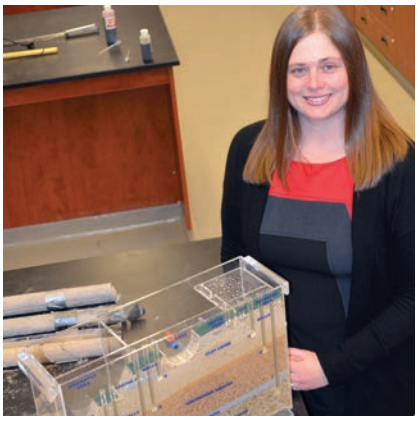
When it comes to investigating how human activities pollute our water supplies, Jana Levison, PhD, EIT, is making some waves.

The University of Guelph researcher is examining the impact of agricultural activity on aquifers. Containing freshwater in the form of groundwater that can be accessed by wells, aquifers are a primary source of drinking water for a third of Canada's population. However, the increasing use of fertilizers and pesticides by farms to increase crop yields may be leaching chemicals into aquifers at levels that make groundwater unsafe to drink.

What's unique about Levison's approach is she is among the first researchers to use ocean monitoring technology to study groundwater contamination, and it's providing much more detailed results.

"Normally, we would pump a well once a month or a few times a year, collect samples and send them to the lab for testing," says Levison, an assistant professor in the university's School of Engineering. "Now, we have sensors that can measure water contaminants in more detail over a longer time period, so we're getting a better picture of what's happening below the surface."

In 2014 and 2015, sensors were placed inside multiple wells in southern Ontario where there are sandy aquifers to monitor nitrate levels, and how they fluctuated in quantity and location according to changes in precipitation. While the findings are still confidential until the study publishes, Levison says they reflect a connection between land activity and nitrate concentrations in aquifers, adding that consumption of water with excessive nitrates can cause health problems, especially in babies. She says the detailed data will help with developing predictive numerical models that can be used to investigate the impact of climate change on contaminant transport in groundwater.



Clockwise from top left:
Mike Gerbis, P.Eng., head of The Delphi Group, a company promoting sustainability and environmental risk management for medium- to large-sized businesses.

Groundwater specialist Jana Levison, PhD, EIT, in her lab at the University of Guelph.

Nicolas Rutikanga, EIT, an environmental advisor at Ontario Power Generation, spoke about his work at the 2017 Internationally Educated Professionals Conference in Toronto.

Erin Bobicki, PhD, P.Eng., holds a rock about to be submitted to a dose of electromagnetic radiation.

Environmental and water resources engineering was a natural career choice for Levison, who grew up on a dairy and horse farm near Lake Simcoe, and loved exploring the outdoors. At age 11, she visited family in Zimbabwe and observed women carrying jugs of water across great distances to bring to their families, and the experience left a lasting impression about the importance of groundwater. She went on to study the topic at Queen's University, first in a course during her civil environmental engineering degree, and then during her PhD in civil engineering, for which she specialized in hydrogeology.

Soon after completing her doctorate, Levison spent two years at PEO's (now discontinued) Ontario Centre for Engineering and Public Policy, which worked to raise the profile of the engineering profession and conducted research in areas affected by engineering. Serving first as a junior fellow and then as its acting executive director, Levison focused on encouraging engineers to participate in public policy discussions relating to the profession.

Levison has also worked on drinking water protection for the Cataraqui Region Conservation Authority in Kingston, Ontario. Currently, she is an associate editor for *Hydrogeology Journal*, a peer-reviewed scientific journal published by the International Association of Hydrogeologists.

"I enjoy the technical aspects of what I do, but I also enjoy that there is lot of practicality to it, because water is essential to life, so we need to protect it as best we can. Thinking about that keeps the work interesting."

MAKING THE CASE FOR MICROWAVING METALS

To determine how to make mining more sustainable, Erin Bobicki, PhD, P.Eng., has used some out-of-the-box thinking—but her solution is decidedly in a box.

The University of Toronto researcher's solution for using less energy during mineral processing is preheating rocks with microwaves. Essentially, the electromagnetic radiation produced by microwaves help to more efficiently separate valuable minerals from undesirable material in ore by reacting with the minerals' dielectric and magnetic properties. It's a discovery Bobicki made as a PhD student at the University of Alberta: In studying how to store carbon in ultramafic rocks for climate change mediation, she tested her ideas by literally putting rocks in a standard kitchen microwave.

"I was working with a mineral called serpentine, which can react with CO_2 to form magnesium carbonate, but on geological time. One way to speed up the reactivity is heat treatment, so I thought of using the microwave in my lab. It turns out you can do neat things when you microwave serpentine," say Bobicki, an assistant professor in the departments of materials science and engineering, and chemical engineering and applied chemistry, who's also affiliated with the university's Lassonde Institute of Mining.

What Bobicki learned from her experiments is that microwaving ores can not only change the mineral composition, but also promote cracks at the boundaries between high-value minerals and commercially valueless material. These cracks make it easier to then liberate minerals during the process of comminution—breaking up huge slabs of rock into tiny particles—and separate minerals during froth flotation, and so ultimately less energy is required. Currently, about 1 per cent of energy used during comminution goes to breaking up rock, while the rest is lost to noise, heat and friction. Conversely, microwaves can convert electric energy with efficiencies of up to 80 per cent.

"The industry tends to use old technologies that do not efficiently concentrate energy into particle breakage," says Bobicki, who observed these processes first-hand when she worked for three years as a metallurgist at Brazilian mining company Vale. "Microwaves can significantly

enhance the efficiency of grinding so that less energy is used in the process."

Much of Bobicki's current research involves studying the microwave properties of minerals like pyrrhotite, magnetite, olivenite and serpentine. She is also examining other ways to make mineral processing more sustainable, like reducing water use, increasing the use of recycled water, using salt water instead of fresh water (which is scarce in many areas), and extracting valuable minerals from tailings. For Bobicki, deeply investigating these complex technical matters that could positively transform the mining sector is inherently rewarding. She also enjoys inspiring students to become problem-solvers in the field, and keeping her finger on the pulse of a sector that fascinates her.

With mining companies facing many pressures to be more sustainable, including rising energy costs, increasingly lower-grade ores, limited water resources, declining metal prices, global competition and greater public demand for environmentally respectful business practices, Bobicki expects her research will become increasingly relevant.

"The mining industry likes to say it is innovative, but it is really slow to adopt new technology," she says. "It needs to go beyond making incremental change and take some risks so that it can reduce its ecological footprint."

ADVANCING CLEAN ENERGY IN ONTARIO

Harnessing electricity in Ontario involves taking great care to operate sustainably, and among those we can thank for that effort is Nicolas Rutikanga, EIT.

An environmental advisor with Ontario Power Generation (OPG), Rutikanga helps the company fulfill its goal to minimize its environmental footprint. His work involves developing, implementing and monitoring the company's environmental management system, and identifying ways to improve it. One of several environmental advisors at OPG, Rutikanga may be involved in interpreting environmental legislation, correcting environmental performance issues and building productive relationships with environmental regulators.

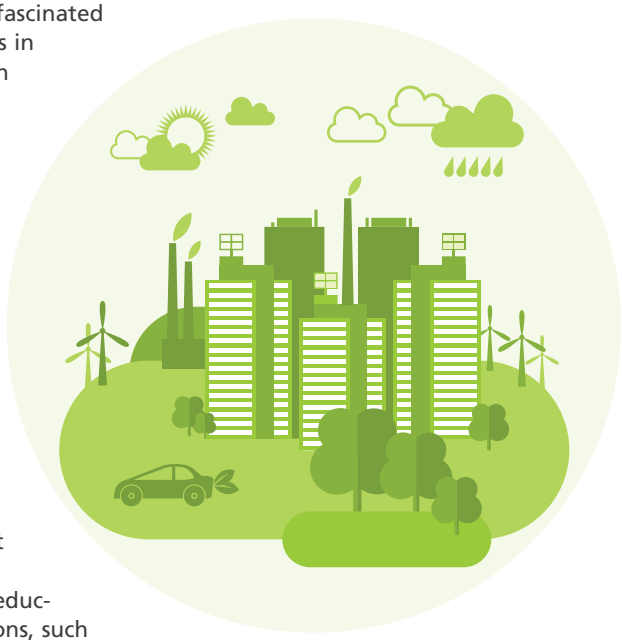
"The environmental considerations of any task or project are at the centre of the work process, from conception of a product, to the decommissioning, and the management of impacts after decommissioning," Rutikanga says.

Rutikanga is based at the Darlington Nuclear Generating Station in Bowmanville, ON, where he provides guidance on ensuring the site's water and air emissions comply with provincial environmental regulations and best operating practices. He is also responsible for securing environmental approvals for various work activities from the Ministry of the Environment and Climate Change.

His work often involves engaging in technical problem solving with other types of engineers at the company, including civil, mechanical and electrical engineers.

This is Rutikanga's first formal job as an engineering intern since he immigrated in 2012 to Canada from his home country of Rwanda, where he completed a bachelor of science degree in civil engineering and environmental technology at the Kigali Institute of Science and Technology. He completed the University of Toronto's Licensing International Engineers into the Profession Program in 2014, and joined OPG in February 2015, first as an intern, and then as a management and professional trainee, before starting his current role last November.

The process of producing electricity has always fascinated Rutikanga. He says in courses he took on electricity, it was "liberating" to learn about harnessing the existing potential energy of moving electrons. He's just as jazzed about new innovations for producing electricity in more eco-friendly ways, and says at OPG, there is a constant flow of new ideas and projects for reducing carbon emissions, such as promoting the use of electric vehicles, restoring environmental habitats, using technology to preserve biodiversity, and reducing and recycling wastes. He is also encouraged by OPG's collaboration on environmental projects with various conservation groups, which have included the Bruce Trail Conservancy, Earth Rangers and the Toronto Wildlife Centre.



"OPG's environment group has a wide range of partners that all aim at protecting the environment," Rutikanga says, adding that his team members also regularly consult with organizations from other industries to stay current on sustainable practices. "Sharing experiences among practitioners and partners really helps improve the quality of environmental protection on a regular basis."

As Rutikanga progresses in his career at OPG, he plans to learn more about the company's work in the areas of renewable energy, including wind and solar. Meanwhile, he says he's proud to help OPG sustainably generate nuclear energy, which, since it produces virtually no carbon dioxide or air pollution, is one of the cleanest sources of electricity.

Says Rutikanga: "Managing natural resources is crucial for human survival, and this can't be achieved without closely monitoring the environmental aspects that are associated with business decisions." **e**

END OF REPEAL OPENS NEW DOORS

By Howard Brown and Blake Keidan

It's fair to say PEO was disappointed when the Ontario government passed Bill 27 in March 2017, which cancelled the repeal of section 12(3)(a) of the *Professional Engineers Act*—or the industrial exception, as it is commonly known.

The industrial exception allows certain acts of engineering on production equipment or machinery to be carried out by unlicensed individuals in a manufacturing workplace.

The government had originally announced its plan to repeal the unsafe policy on October 25, 2010, in the *Open for Business Act*. But on June 12, 2013, the government removed its previously announced proclamation date of September 1, 2013, without setting a new implementation date. On March 2, 2017, the repeal was cancelled.

"We believe the government missed the opportunity to make the workplace safer," says PEO Manager of Government Liaison Programs Jeannette Chau, P.Eng. "But we have an agreement now to work directly with the Ministry of Labour going forward to have information-sharing and regular meetings to discuss best practices and health and safety issues. This, at least, is a step in the right direction."

So what happened?

On June 9, 2016, the *Burden Reduction Act* was presented in the legislature. It included cancellation of the repeal. The repeal became a topic of lengthy discussions at many formal and informal meetings with MPPs throughout the year as PEO sought to have the act amended to remove the cancellation.

On November 29, Bill 27, the *Burden Reduction Act, 2016* passed second reading in the legislature and was sent to the Standing Committee on General Government. Prior to the committee hearings, PEO met with all the MPPs on the committee over the months of December, January and February to present PEO's position and provide them with new research data from PEO's *Repeal of the Industrial Exception Data Gathering and Analysis Research Report*.

Hearings to review the *Burden Reduction Act* were held on February 22 and 23, 2017. PEO President George Comrie, P.Eng., FEC, presented on behalf of the association on February 22 and did an excellent job presenting PEO's case. He was joined by PEO Registrar Gerard McDonald, P.Eng., Past President and Chair of the Ontario Society of Professional Engineers (OSPE) Karen Chan, P.Eng., CEO of Consulting Engineers of Ontario (CEO) Barry Steinberg, P.Eng., PEO Deputy Registrar of Regulatory Compliance Linda Latham, P.Eng., and Jeannette Chau.

"Workplace safety in Ontario is being needlessly compromised," Comrie told the MPPs on the committee. "Not requiring engineers to carry out work in this narrow area is not a red tape reduction; it's a significant missed opportunity to protect the public.

"New research has linked at least four incidents of workplace injury and [two] deaths in Ontario to this legislative exception," said Comrie. "Repealing the industrial exception is not a partisan issue, but one of good public policy."

Catherine Fife, MPP (Kitchener-Waterloo), NDP early years, childcare, economic development, employment, research and innovation critic, spoke eloquently on PEO's position and voted to remove the reference.

"After listening to delegations, New Democrats have an ongoing concern that by having those who are not engineers, who do not have the qualifications to be an engineer, to conduct their work on and in manufacturing and industrial settings—we maintain that this is still a safety concern for us," said Fife. "We've done extensive research and consultation on this issue."

On March 2, Bill 27 was presented for third reading, voted on, and passed, which means the repeal is now cancelled.

PEO made its case solidly and was successful in several other aspects. The association:

- Developed stronger connections with ministers and MPPs of all parties, in particular with the Ministry of Labour and the New Democratic Party. NDP MPPs Fife and Taras Natyshak, MPP (Essex), NDP community safety, correctional services, digital government and international trade critic, have stood by PEO's side on this issue since first writing the government in support in 2013;
- Increased public interest in workplace issues in regards to the need for more transparency in making accident data available to PEO. The Ministry of Labour will be working with PEO to provide more transparency in workplace accidents; and
- United with OSPE, CEO and the Professional Engineers Government of Ontario (PEGO) to showcase the issue and the need for support.

With a new and enhanced relationship with the Ministry of Labour, PEO will continue to work to serve the public and fulfill its regulatory mandate. e

Howard Brown is president of Brown & Cohen Communications & Public Affairs and PEO's government relations consultant, and Blake Keidan is Brown & Cohen's account executive and PEO's government relations coordinator.

TO THE MEMBERS OF THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ONTARIO

We have audited the accompanying financial statements of the Association of Professional Engineers of Ontario, which comprise the balance sheet as at December 31, 2016, and the statements of revenue, expenses and changes in net assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the financial statements present fairly, in all material respects, the financial position of the Association of Professional Engineers of Ontario as at December 31, 2016 and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Deloitte.

Chartered Professional Accountants
Licensed Public Accountants
March 24, 2017

STATEMENT OF REVENUE, EXPENSES AND CHANGES IN NET ASSETS
year ended December 31, 2016

		2016	2015
REVENUE	P.Eng. revenue	$ 15,300,492	$ 15,134,271
	Application, registration, examination and other fees	6,186,429	6,064,234
	Building operations (Note 4)	2,044,589	2,127,016
	Advertising income	437,187	292,679
	Investment income	171,538	97,219
		24,140,235	23,715,419
EXPENSES	Staff salaries and benefits/retiree and future benefits	11,262,243	10,708,685
	Building operations (Note 4)	2,485,858	2,444,678
	Purchased services	1,402,475	1,352,825
	Amortization	1,242,064	924,528
	Engineers Canada	977,311	938,579
	Occupancy costs (Note 4)	857,468	765,874
	Chapters (Note 13)	765,181	793,066
	Volunteer expenses	660,736	786,767
	Computers and telephone	628,847	715,813
	Postage and courier	626,926	475,676
	Legal (corporate, prosecution and tribunal)	614,293	567,744
	Transaction fees	500,306	508,253
	Consultants	410,711	362,605
	Contract staff	399,882	496,237
	Recognition, grants and awards	196,051	162,239
	Professional development	168,011	155,251
	Office supplies	132,379	131,955
	Insurance	111,637	105,784
	Advertising	107,711	83,942
	Printing	98,841	128,446
	Staff expenses	83,808	104,307
		23,732,739	22,713,254
Excess of revenue over expenses before the undernoted		407,496	1,002,165
Council discretionary reserve expenses (Note 8)		36,871	70,989
Excess of revenue over expenses		370,625	931,176
Remeasurement and other items		1,342,820	(2,136,510)
Net assets, beginning of year		14,326,143	15,531,477
Net assets, end of year		16,039,588	14,326,143

BALANCE SHEET
as at December 31, 2016

			2016	2015
ASSETS	CURRENT	Cash in interest-bearing accounts	$ 1,449,325	$ 1,851,432
		Marketable securities at fair value	6,552,646	6,403,767
		Accounts receivable	499,016	527,314
		Prepaid expenses and deposits	265,014	225,778
		Other assets	401,365	390,279
			9,167,366	9,398,570
	Capital assets (Note 3)		37,061,925	37,711,302
	TOTAL ASSETS		46,229,291	47,109,872
LIABILITIES	CURRENT	Accounts payable and accrued liabilities (Note 15)	1,813,785	2,174,710
		Fees in advance and deposits	8,862,418	9,067,119
		Current portion of long-term debt (Note 5)	952,000	928,000
			11,628,203	12,169,829
	LONG TERM	Long-term debt (Note 5)	6,587,000	7,539,000
		Employee future benefits (Note 6)	11,974,500	13,074,900
	TOTAL LIABILITIES		30,189,703	32,783,729
	Net assets (Note 7)		16,039,588	14,326,143
	Total liabilities and net assets		46,229,291	47,109,872

Approved by the board

STATEMENT OF CASH FLOWS
year ended December 31, 2016

			2016	2015
	OPERATING	Excess of revenue over expenses	$ 370,625	$ 931,176
		Add (deduct) items not affecting cash		
		Amortization	2,171,172	1,798,805
		Amortization–other assets	63,914	67,395
		Employee future benefits expensed	1,445,000	1,274,700
		Change in unrealized losses on marketable securities	(23,259)	98,181
		Loss (gain) on disposal of marketable securities	10,736	(22,636)
			4,038,188	4,147,621
		Change in non-cash working capital items (Note 10)	(576,564)	963,043
			3,461,624	5,110,664
	FINANCING	Repayment of mortgage	(928,000)	(901,000)
		Contributions to employee future benefit plans	(1,202,580)	(1,489,410)
			(2,130,580)	(2,390,410)
	INVESTING	Net change in marketable securities	(136,356)	(147,608)
		Additions to capital assets	(1,521,795)	(2,447,378)
		Additions to other assets	(75,000)	(13,722)
			(1,733,151)	(2,608,708)
	(Decrease) increase in cash		(402,107)	111,546
	Cash, beginning of year		1,851,432	1,739,886
	Cash, end of year		1,449,325	1,851,432

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2016

1. NATURE OF OPERATIONS

The Association of Professional Engineers of Ontario (PEO) was incorporated by an act of the legislature of the Province of Ontario. Its principal activities include regulating the practice of professional engineering, and establishing and maintaining standards of knowledge, skill and ethics among its members in order to protect the public interest. As a not-for-profit professional membership organization it is exempt from tax under section 149(1) of the *Income Tax Act*.

2. SIGNIFICANT ACCOUNTING POLICIES

These financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations and reflect the following accounting policies:

a) Financial instruments

PEO initially recognizes financial instruments at fair value and subsequently measures them at each reporting date, as follows:

Asset/liability	Measurement
Cash and marketable securities	Fair value
Accounts receivable	Amortized cost
Accounts payable and accrued liabilities	Amortized cost
Long-term debt	Amortized cost

Financial assets measured at amortized cost are assessed at each reporting date for indications of impairment. If such impairment exists, the asset shall be written down and the resulting impairment loss shall be recognized in the statement of revenue and expenses and changes in net assets for the period.

Transaction costs are expensed as incurred.

b) Hedge accounting

PEO entered into an interest rate swap in order to reduce the impact of fluctuating interest rates on its long-term debt. The policy of PEO is not to enter into interest rate swap agreements for trading or speculative purposes.

The interest rate swap held by PEO is eligible for hedge accounting. To be eligible for hedge accounting, an instrument must meet certain criteria with respect to identification, designation and documentation. In addition, the critical terms of the derivative financial instrument must match the specific terms and conditions of the hedged item. The fair value of derivative instruments eligible and qualifying for hedge accounting is generally not recognized on the balance sheet. Gains and losses on such instruments are recognized in income in the same period as those of the hedged item.

Interest on the hedged item is recognized using the instrument's stated interest rate plus or minus amortization of any initial premium or discount and any financing fees and transaction costs. Net amounts receivable or payable on the interest rate swap are recorded on the accrual basis of accounting and are recognized as an adjustment to interest on the hedged item in the period in which they accrue.

PEO may only discontinue hedge accounting when one of the following situations arises:

a) The hedged item or the hedging item ceases to exist other than as designated and documented;
b) The critical terms of the hedging item cease to match those of the hedged item, including, but not limited to, when it becomes probable that an interest-bearing asset or liability hedged with an interest rate swap will be prepaid.

When a hedging item ceases to exist, any gain or loss incurred on the termination of the hedging item is recognized as an adjustment of the carrying amount of the hedged item.

When a hedged item ceases to exist, the critical terms of the hedging item cease to match those of the hedged item, or it is no longer probable that an anticipated transaction will occur in the amount designated or within 30 days of the maturity date of the hedging item, any gain or loss is recognized in net income.

c) Revenue recognition

License fee revenue, excluding the portion related to the building fund, is recognized as income on a monthly basis over the licence period. Building fund revenue is recognized into income at the commencement of the licence period. Other revenues are recognized when the related services are provided.

d) Donated services

The association receives substantial donated services from its membership through participation on council and committees and as chapter executives. Donations of services are not recorded in the accounts of the association.

e) Employee future benefits

Pension plans

The cost of PEO's defined benefit pension plans are determined periodically by independent actuaries using the projected benefit method prorated on service. PEO uses the most recently completed actuarial valuation prepared for funding purposes (but not one prepared using a solvency, wind-up, or similar valuation basis) for measuring its defined benefit pension plan obligations. A funding valuation is prepared in accordance with pension legislation and regulations, generally to determine required cash contributions to the plan.

Other non-pension plan benefits
The cost of PEO's non-pension defined benefit plan is determined periodically by independent actuaries. PEO uses an accounting actuarial valuation performed every three years for measuring its non-pension defined benefit plan obligations. The valuation is based on the projected benefit method prorated on service.
For all defined benefit plans PEO recognizes:
a) The defined benefit obligation, net of the fair value of any plan assets, adjusted for any valuation in the statement of changes in net assets;
b) The cost of the plan for the year.

f) Capital assets
Capital assets are recorded at cost. Amortization is calculated on the straight-line basis at the following annual rates.

Building	2%
Building improvements	5%
Building improvements–common area	3.3% to 10%
Computer hardware and software	33%
Furniture, fixtures and telephone equipment	10%
Audio visual	20%

The association's investment in capital assets is included as part of net assets on the balance sheet.

g) Use of estimates
The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates. Accounts requiring significant estimates and assumptions include capital assets, accrued liabilities, and employee future benefits.

3. CAPITAL ASSETS

			2016	2015
	Cost	**Accumulated amortization**	**Net book value**	Net book value
	$	**$**	**$**	$
Building	**19,414,668**	**3,031,193**	**16,383,475**	16,771,768
Building improvements	**8,803,365**	**2,398,668**	**6,404,697**	6,871,857
Building improvements–common area	**9,648,456**	**2,464,206**	**7,184,250**	6,806,236
Land	**4,366,303**	**-**	**4,366,303**	4,366,303
Computer hardware and software	**4,549,920**	**2,568,627**	**1,981,293**	323,283
Furniture, fixtures and telephone equipment	**1,428,008**	**901,151**	**526,857**	638,836
Audio visual	**1,008,315**	**793,265**	**215,050**	345,285
Work in progress	**-**	**-**	**-**	1,587,734
	49,219,035	**12,157,110**	**37,061,925**	37,711,302

4. BUILDING OPERATIONS

PEO maintains accounting records for the property located at 40 Sheppard Avenue West, Toronto, ON as a stand-alone operation for internal purposes. The results of the operation of the building, prior to the elimination of recoveries and expenses related to PEO, are as follows:

	2016	2015
	$	$
Revenue		
Rental	**742,060**	748,664
Operating cost recoverable–tenants	**1,052,318**	1,120,249
Parking	**124,035**	130,500
Miscellaneous	**126,176**	127,603
	2,044,589	2,127,016
Operating cost recoverable–PEO	**752,467**	708,282
	2,797,056	2,835,298
Recoverable expenses		
Utilities	**570,506**	516,349
Amortization	**540,813**	485,984
Property taxes	**446,086**	449,510
Payroll	**246,932**	236,916
Janitorial	**195,000**	204,674
Repairs and maintenance	**157,446**	179,295
Property management and advisory fees	**84,856**	82,618
Security	**35,928**	34,070
Administrative	**23,781**	20,045
Insurance	**18,104**	18,691
Road and ground	**14,040**	18,720
	2,333,492	2,246,872
Other expenses		
Interest expense on note and loan payable	**396,398**	441,172
Amortization of building	**388,293**	388,293
Amortization of deferred costs	**63,916**	61,172
Other non-recoverable expenses	**56,226**	15,451
	904,833	906,088
	3,238,325	3,152,960
Excess of revenue over expenses	**(441,269)**	(317,662)

For purposes of the statement of revenue, expenses and changes in net assets, the operating cost re-imbursements from PEO have been eliminated. The portion of costs allocated to PEO is reallocated from building operations and is included in occupancy costs.

	2016	2015
	$	$
Building revenue per above	**2,797,056**	2,835,298
Eliminated PEO portion	**(752,467)**	(708,282)
	2,044,589	2,127,016
Building expenses per above	**3,238,325**	3,152,960
Eliminated PEO portion	**(752,467)**	(708,282)
	2,485,858	2,444,678

5. BUILDING FINANCING

In 2009, the association financed $14,100,000 of the cost of its building acquisition with a credit facility from the Bank of Montreal, Capital Markets Division. The facility is secured by a first mortgage on the property located at 40 Sheppard Avenue West, a general security agreement, and a general assignment of tenant leases. The facility is repayable in monthly installments of principal plus interest maturing on March 11, 2019 and bears a floating interest rate based on variable bankers' acceptances. The balance outstanding at December 31, 2016 is $7,539,000.

Principal repayments are due as follows:

	$
2017	952,000
2018	980,000
2019	5,607,000
	7,539,000

The association has entered into a swap agreement related to this loan, whereby the floating rate debt is swapped for a fixed rate debt with an interest rate of 4.95 per cent and settled on a net basis. The notional value of the swap is $14,100,000. The start date of the swap was March 11, 2009 with a maturity date of March 11, 2019.

6. EMPLOYEE FUTURE BENEFITS

The association's pension plans and post-retirement benefits plan covering participating employees (full-time and retirees) are defined benefit plans as defined in section 3463 of the *CPA Canada Handbook*. The pension plans provide pension benefits based on length of service and final average earnings. The post-retirement benefits plan provides hospitalization, extended health care and dental benefits to active and retired employees. Participation in the pension plans and benefits plan (for post-retirement benefits) has been closed to all new employees as of May 1, 2006. All employees joining after this date have the option of participating in a self-directed RRSP (registered retirement savings plan). During the year, the association recorded $214,512 (2015—$202,951) in employer contributions to the self-directed RRSP.

The funded status of the association's pension plans and post-retirement benefit plan using actuarial assumptions as of December 31, 2016 was as follows:

	Basic pension plan	**Supplemental pension plan**	**Other non-pension benefit plan**	**Total**
	$	**$**	**$**	**$**
Accrued benefit obligation	**(23,686,100)**	**(1,617,100)**	**(13,692,400)**	**(38,995,600)**
Plan assets at fair value	**25,152,300**	**1,868,800**	**-**	**27,021,100**
Funded status–plan surplus (deficit)	**1,466,200**	**251,700**	**(13,692,400)**	**(11,974,500)**
Valuation allowance				**-**
Defined benefit asset, net of valuation allowance	**1,466,200**	**251,700**	**(13,692,400)**	**(11,974,500)**

The funded status of the association's pension plans and post-retirement benefit plan using actuarial assumptions as of December 31, 2015 was as follows:

	Basic pension plan	Supplemental pension plan	Other non-pension benefit plan	Total
	$	$	$	$
Accrued benefit obligation	(22,882,200)	(1,596,800)	(12,402,500)	(36,881,500)
Plan assets at fair value	22,024,600	1,782,000	-	23,806,600
Funded status–plan surplus (deficit)	(857,600)	185,200	(12,402,500)	(13,074,900)
Valuation allowance	-	-	-	-
Defined benefit asset, net of valuation allowance	(857,600)	185,200	(12,402,500)	(13,074,900)

PEO measures its defined benefit obligations and the fair value of plan assets for accounting purposes as at December 31 each year. The most recently completed actuarial valuation of the pension plans for valuation purposes, was as of December 31, 2014. The most recent completed actuarial valuation of the non-benefit plan for accounting purposes was as of December 31, 2014.

7. NET ASSETS

The net assets of the association are restricted to be used at the discretion of council and includes the association's investment in capital assets of $29,522,925 (2015—$29,244,302).

8. COUNCIL DISCRETIONARY RESERVE

The council discretionary reserve is an internal allocation from the operating reserve used at the discretion of council to fund expenses related to special projects approved by council. Expenses from the discretionary reserve were as follows:

	2016	2015
	$	$
Legal reserve–Elliot Lake/other	-	45,061
Privacy policy review	-	24,689
Emerging Discipline Task Force	1,790	1,239
Council Term Limits Task Force	30,276	-
Council Composition Task Force	4,805	-
	36,871	70,989

9. FULL-TIME SALARIES AND BENEFITS

During the year, the association incurred a total of $11,286,681 (2015—$10,734,613) for salary and benefits costs for its full-time staff of which $24,438 (2015—$25,928) was directly attributable to special projects approved by council and disclosed under Note 8.

10. CHANGE IN NON-CASH WORKING CAPITAL ITEMS

	2016	2015
	$	$
Accounts receivable	28,298	(29,155)
Prepaid expenses and deposits	(39,236)	(21,446)
Accounts payable and accrued liabilities	(360,925)	789,656
Fees in advance and deposits	(204,701)	223,988
	(576,564)	963,043

11. CUSTODIAL ACCOUNT

The association maintains a separate bank account for the Council of Ontario Deans of Engineering. Cash totaling $138,330 in this account (2015—$134,852) is not reported on the association's balance sheet, as it is held in trust for the Council of Ontario Deans of Engineering.

12. COMMITMENTS

The association has obligations under non-cancelable operating leases for various service agreements. The payments to the expiry of the leases and agreements are as follows:

	$
2017	734,114
2018	351,550
2019	291,634
2020	189,008
	1,566,306

13. CHAPTERS OF THE ASSOCIATION

The financial information of the 36 chapters of the association are individually not material and, therefore, have not been consolidated in these financial statements. Furthermore, management believes that the effort and cost required to prepare financial statements for each chapter for consolidation purposes far exceed the benefits of doing so.

During the year, the association paid chapter expenses totaling $765,181 (2015—$793,066), including $545,555 (2015—$510,000) in chapter allotments and $219,626 (2015—$283,066) in other disbursements to individual chapters. In 2016, the association also incurred additional costs of $495,694 (2015—$518,375) related to chapter operations, including staff salaries and benefits, and for various support activities. These amounts have been included in the various operating expenses reported on the statement of revenue and expenses and changes in net assets.

14. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

Interest rate risk

PEO is exposed to interest rate risk, which is the risk that the fair values or future cash flows associated with its investments will fluctuate as a result of changes in market interest rates. Management addresses this risk through use of an investment manager to monitor and manage investments.

Liquidity risk

PEO's objective is to have sufficient liquidity to meet its liabilities when due. PEO monitors its cash balances and cash flows generated from operations to meet its requirements. As at December 31, 2016, the most significant financial liabilities are: accounts payable and accrued liabilities, and long-term debt.

15. GOVERNMENT REMITTANCES

Accounts payables and accrued liabilities include $294,338 (2015—$206,097), with respect to government remittances payable at year end.

REGISTRAR'S FINANCIAL REPORT

FOR THE YEAR ENDED DECEMBER 31, 2016

PEO generated an excess of revenue over expenses of $407,496 before council discretionary reserve expenses for the 2016 fiscal year, as compared to a budgeted surplus of $316,919. Highlights having an impact on performance include a reduction in expenses over budget of $1,472,013, as management continued to control costs in light of economic conditions, offset by a decrease in revenues of $1,381,436, attributable to lower application, registration, exam and other fees than planned and lower building revenues due to tenant vacancies.

The excess of revenue over expenses was reduced by council discretionary reserve expenses of $36,871. The investment in capital assets for the year was $1,521,795 ($2,447,378 in 2015) and PEO incurred no additional debt for these expenditures in 2016, as they were funded from PEO's cash reserves.

The closing balance in cash/investments was $8,001,971 at the end of the year and net assets increased to $16,039,588.

REVENUE

Total revenue was $24,140,235, which is 5 per cent below budget largely due to lower than expected application, registration and exams fees and also due to lower rental resulting from vacant space that is yet to be leased. Approximately 63 per cent of revenue comprised P.Eng. licence revenue, which is consistent with budget expectations.

COST MANAGEMENT

Total expenses were $23,732,739, which is $1,472,013 or 6 per cent lower than budget. Major expense variances from budget are:

- Staff salaries and benefits/Retiree and future benefits were $614,127 lower than planned;
- Volunteer expenses were $268,554 lower than budget;
- Costs for purchased services were $173,865 lower than budget;
- Amortization costs were $159,689 lower than budget;
- Costs for chapters were $136,914 lower than budget;
- Computer and telephone expenses were $102,468 lower than budget; and
- Professional development was $81,989 lower than budget.

2016 BUDGET VARIANCES BY BUSINESS UNIT

Corporate Services

Expenditures were $1,177,329 or 11 per cent under budget. The key variances within the department include lower than planned costs for staff salaries along with retiree and staff future benefits ($644,073); lower than budgeted costs for purchased services ($175,024) due to lower costs for audiovisual rentals, meals and catering for various events such as the AGM, Order of Honour, etc.; lower than budgeted costs for chapters ($136,731) due to lower allotments and lower accommodation and meal expenses for attending regional congresses; lower than budgeted volunteer expenses ($115,106) due to lower meal, mileage, parking and accommodation costs for attending various committee meetings and events; and lower than planned expenses for professional development. These reductions were partially offset by higher than budgeted costs for advertising related to staff recruitment ($27,297) and higher costs for office supplies ($21,293).

Executive

Expenditures were $132,048 or 9 per cent above budget, largely due to higher salaries and benefits costs ($61,273); higher costs for the yearly Engineers Canada contributions ($48,885) and higher than budgeted costs ($34,533) for legal fees for litigation and related matters. These were partially offset by lower than budgeted staff ($16,068) and volunteer business expenses ($14,867) for attending various events to represent PEO.

Finance

Expenditures were $71,156 or 5 per cent below budget in 2016. Salaries and benefits costs were lower than budgeted ($59,641) due to the elimination of a managerial position and lower postage costs ($51,028) related to the mailing of fee renewal, application and other administrative correspondence. This decrease was offset partially by higher costs for contract staff ($24,507) and higher costs for office supplies ($8,653).

Information Technology

Expenditures were $154,109 or 7 per cent below budget. This was due to lower costs for contract staff ($302,450) largely due to the departure of the IT director; lower amortization costs ($170,302) due to delayed spending and cancelled capital projects; and lower than budgeted costs for computers and telephone-related expenses ($85,343) resulting from lower costs for support and maintenance contracts, communications link costs, web portal costs, software non-capital upgrades, etc.

Licensing

Expenditures were $47,305 or 1 per cent below budget. This was largely due to lower than budgeted staff salaries and benefits ($113,911), lower volunteer travel expenses ($61,859) for attending various committee meetings and lower than budgeted costs for consultants ($27,057). These were offset by higher than budgeted costs for contract staff ($125,084) and higher costs for purchased services ($49,845) related to catering costs for various committee meetings and an increase in scanning costs for applicant records.

Communications
Expenditures were $214,309 or 16 per cent above budget. The key variances include higher than budgeted salaries and benefits ($262,132) and higher postage costs ($46,586) due to the mailing out of hard copies of the *Engineering Dimensions* magazine. These increases were partially offset by lower than budgeted costs for purchased services ($59,954) largely due to lower printing costs for the *Engineering Dimensions* magazine and lower than budgeted advertising costs ($23,586) for corporate communications.

Regulatory Compliance
Expenditures were $105,636 or 5 per cent above budget in 2016. Legal expenses ($63,621), including costs for complaints investigations, were higher than budgeted; costs for contract staff ($46,233) were higher due to staff being away on maternity leave. These were partially offset by lower than expected costs for purchased services ($6,765) and lower staff travel and business expenses ($5,336).

Tribunals and Regulatory Affairs
Expenditures were $474,860 or 23 per cent below budget. The key variances include lower than budgeted salaries and benefits ($345,735) due to unfilled positions; lower than budgeted volunteer expenses for meals, travel and accommodation for various committee meetings and events ($74,209); and lower expenses ($56,237) for legal costs, including tribunal fees, court reporters, and independent legal counsel for registration hearings, complaints review councillor and discipline hearings.

COUNCIL-DIRECTED INITIATIVES

For 2016, the net expenditures for the projects approved by council amounted to $36,871. This includes $30,276 for the Council Term Limits Task Force, $4,805 for the Council Composition Task Force and $1,790 for the Emerging Disciplines Task Force.

BUILDING OPERATIONS

The building generated $2,797,056 in revenue, including PEO's share of recoverable expenses, but excluding the base rent that would have been paid if PEO had paid market rent for its space. Total recoverable expenses were $2,333,492 and other expenses totalled $904,833, thereby creating a deficiency of revenue over expenses of $441,269 (after all expenses, including loan interest), as compared to a budgeted surplus of $97,041. Total revenues were lower than budgeted by $364,250 or 12 per cent due to a delay in the leasing of available space. Total expenses were under budget by $20,021 or 0.6 per cent. PEO's share of expenses totalled $752,467. These costs were reclassified from building operations to occupancy costs in the financial statements. Since PEO is a not-for-profit organization, it received a preferred property tax rate (residential rate instead of commercial rate), thereby reducing PEO's overall occupancy costs. Total occupancy costs for 2016 were $857,468, which includes security, storage and other occupancy costs. PEO's total accommodation expense (including interest) was $1,253,866.

PEO occupied 39,100 square feet at December 31, 2016. The market rent of this space is approximately $15 a square foot and operating costs are $21.86 a square foot. Therefore, PEO's equivalent costs for rent and operating costs would have been $1,441,226 for 2016, leading to a net value to PEO of $187,360.

CAPITAL EXPENDITURES

Capital expenditures for the year totalled $1,521,795, compared to $2,447,378 in 2015.

Base building improvements totalled $918,829, which are recoverable from tenants. This includes costs for pedestrian paving carried over from 2015 ($298,496), replacement of an emergency generator also carried over from 2015 ($225,274) and mechanical upgrades on the parking garage elevator ($140,453). Other projects include window replacement ($59,598), underground garage wall painting ($59,120), insulated window glazing units ($54,232) and other improvements. Non-recoverable building improvements, which are improvements made to PEO's space, totalled $1,560 for the year. This was to replace PEO's exterior ground floor signage. PEO invested $560,155 in computer hardware and software during 2016, including the Aptify software project ($282,240), LAN room hardware upgrade ($246,091), upgrade PCs and laptops ($31,824) and several smaller projects. Spending on audiovisual and furniture upgrades totalled $41,281.

All of PEO's capital expenditures in 2016 were funded from PEO's cash reserves.

CONCLUSION

The association has managed its affairs responsibly and has produced a sizable surplus for the year, leaving 2016 with a healthy reserve to carry out its regulatory mandate in the public interest. **e**

COUNCIL APPROVES NEW REGULATORY CONFLICT PROTOCOL

By Nicole Axworthy

**511TH MEETING,
MARCH 23, 24, 2017**

Council has approved a new regulatory conflict protocol for PEO to use to address current and future regulatory conflicts between external provincial statutes and regulations, and the *Professional Engineers Act* (PEA) and its regulations.

Over the last few months, PEO's Legislation Committee (LEC) has undertaken a review of all external legislation that refer to or involve the practice of professional engineering, and that may conflict with PEO's exclusive authority under the PEA to regulate the practice in the public interest.

The review identified 94 separate statutes and regulations aside from the PEA that refer to "engineer" or "engineering." The LEC analyzed those references and developed five objective, principle-based categories or levels of potential regulatory conflict: infringement, overlap, non-alignment, practice guidance and no apparent conflict.

Based on those categories, the regulatory conflict protocol addresses PEO's required actions pertaining to external legislation that appear to conflict with the PEA. The LEC will work with PEO's registrar to determine the necessary steps and priorities for action, and the registrar will consult with the Enforcement, Complaints or Professional Standards committees as needed. Funds for legal opinions and possible court actions will be drawn from PEO's existing budget for legal services.

COUNCIL TERM LIMITS REPORT

At its March meeting, council received the Council Term Limits Task Force Report and Recommendations and, after a long discussion among councillors, referred the matter back to the task force for further deliberation and to reflect on council members' opinions, and to report back to council at the June 2017 council meeting. Many councillors voiced their concerns about certain recommendations in the report, such as the lifetime limit to the number of terms an elected councillor can serve.

As per its terms of reference, the task force was directed to analyze the practices at other self-regulating organizations and engineering associations in Canada and provide a report establishing term limits and succession planning to council before the 2017 annual general meeting.

In fulfilling its mandate, the task force analyzed the membership of PEO council for the past 20 years, which covered the period since the last major review of election procedures in 1997. In addition to surveying the practices of other regulators, it also surveyed the literature on the governance of non-profit boards, and consulted with two experts in the field. The results of the task force's research were reviewed in an "if, then" exercise and subsequently summarized in a conclusions and rationales matrix to ensure that conclusions were logically based. Council also heard a presentation of its preliminary results at the February 2017 plenary meeting.

NEW AND REVISED ACADEMIC SYLLABI

Council has approved the recently revised syllabi for chemical, civil, mechanical and naval architectural engineering and a new mechatronics engineering syllabus for use as of the May 2017 technical examinations sitting.

PEO's Academic Requirements Committee is mandated to assess the academic preparation of applicants whose education from engineering programs have not been accredited by the Canadian Engineering Accreditation Board (CEAB), to determine if they meet PEO's academic requirements for licensure. It does so by comparing the applicants' transcripts and courses studied to a syllabus of a particular discipline. Most syllabi are developed and maintained by the Engineers Canada Canadian Engineering Qualifications Board (CEQB) and PEO adopts them for its own examinations.

PEO DIRECTORS OF ENGINEERS CANADA BOARD

At the March meeting, council appointed Danny Chui, P.Eng., FEC, as a PEO director on the Engineers Canada board for a three-year term, effective May 27 at the Engineers Canada annual meeting of members. Council also re-appointed Annette Bergeron, P.Eng., FEC, as a PEO director, beginning her new term May 27. Bergeron has served on the Engineers Canada board since 2014. **e**

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Deadline for July/August is May 30, 2017. Deadline for September/October is July 25, 2017.

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Part-time work option

Heather Amundrud, P.Eng.,
Ottawa, ON

I read "Retaining female talent across all levels" with interest (*Engineering Dimensions*, March/April 2017, p. 10). My response: YES!

I have a degree in electrical engineering. I worked in high tech for 15 years before voluntarily leaving my job to stay home with my two kids. Why did I leave? Because the choice was either full-time worker with full-time childcare expenses (at the time, approximately $1000/month per kid in the Ottawa area), or full-time mother. There was no in-between. The company I worked for was unwilling to let me work part-time (20 hours/week instead of 40+ hours/week). So I quit.

I have loved my time "at home" with my kids. I've been doing this job for seven years now. My kids are in school full-time and now I am ready to go back to work. However, I am still facing the same challenge: I am not finding meaningful part-time work! I've been saying for years that companies in my part of the world are incapable of wrapping their collective brains around part-time employment for skilled people. Yes, I can work at a coffee shop or as a cashier; that is well and good. But come on, Corporate Canada, please realize that many of us (mothers, fathers and others!) with education and experience would like to work 15 or 20 hours/week!

Kudos to PEO for this article! Fingers crossed employers in this country wake up and take note.

A closer look

Stephen Jack, P.Eng., Toronto, ON

Mark Bowling's article "Retaining female talent across all levels" (*Engineering Dimensions*, March/April 2017, p. 10) provides some reasons for a "noticeable gap in base pay between men and women (engineers) at the senior levels" but his explanation lacks the details necessary for a closer and more pragmatic look and whether inequalities are real or just apparent. Bowling does caution that "it is important to consider other factors that contribute to setting pay levels" but does not explain what they might be.

During my tenure at PEO and the Ontario Society of Professional Engineers (OSPE), I oversaw the conduct of both engineering pay surveys, employers and PEO membership (at the time), and published gender pay data (only then available from the membership survey) in *Engineering Dimensions*. Here's an important factor that seemed to contribute to a pay gap at the time: An analysis of pay differences across major industry sectors compared to those sectors where female engineers were mostly employed showed that those sectors had lower average salaries. There are other factors as well that were found to show an apparent gender discrepancy but further analysis provided no credible evidence of pay discrimination. Perhaps Mercer could prepare and publish (in ED) a more thorough analysis on whether gender wage discrimination does indeed exist in our profession.

Incidentally, the graph on "Figure 3: Average pay of female and male engineers by years since graduation" shows median cash compensation numbers. "Average" and "median" have different meanings; medians are generally considered more statistically reliable especially when considering smaller sample sizes.

On-the-job learning

Duncan J. Gibbons, P.Eng.,
Stittsville, Ontario

There is a current push in PEO to make CPD (continuing professional development) courses mandatory. It is believed that engineers would be maintaining professional standards and be looked upon more favourably by the public. However, my experience has been that the public does not care how many courses a person takes. They only care that you are doing your job honestly and to the best of your abilities. Example: For a project at my work, I had to figure out how to mix agar agar powder to a consistency that mimics the thermal conductivity of human vaginal tissue. There are absolutely no CPD courses that could have taught me how to do this. Nor did I really track how long it took me to research, correlate and interpolate any and all data I could find, even before working out a recipe.

When I am at work, I am on the company's clock, not PEO's. Sometimes I have my hand in seven projects in a single day at my company. I could easily claim any hours I needed for yearly PEAK satisfaction based on the variety of exposure I have access to, but not all engineers have this kind of daily opportunity. Clearly, this indicates a need for PEO to be able to reconcile on-the-job learning and satisfactory job performance against the artificial construct of CPD learning.

Perhaps, with hindsight view on a mall collapse in Elliot Lake, where an engineer has duties involving inspection, verification, certification or other work directly in the public sphere, mandatory updates make sense. But most practising engineers are somewhat removed from direct public interaction in the course of their work. Consistent job performance and satisfied managers become more significant—and, most of all, satisfied clients of the company.

CORRECTION

On pages 23 and 29 of the March/April 2017 issue, we failed to include the verb "planning" in the definition of professional engineering. According to the *Professional Engineers Act*, a person is considered to be practising professional engineering if he or she is carrying out any act of planning, designing, composing, evaluating, advising, reporting, directing or supervising, or the managing of any of these acts as well as acts that involve the safeguarding of life, health, property, economic interests, the public welfare or the environment, and require the application of engineering principles.

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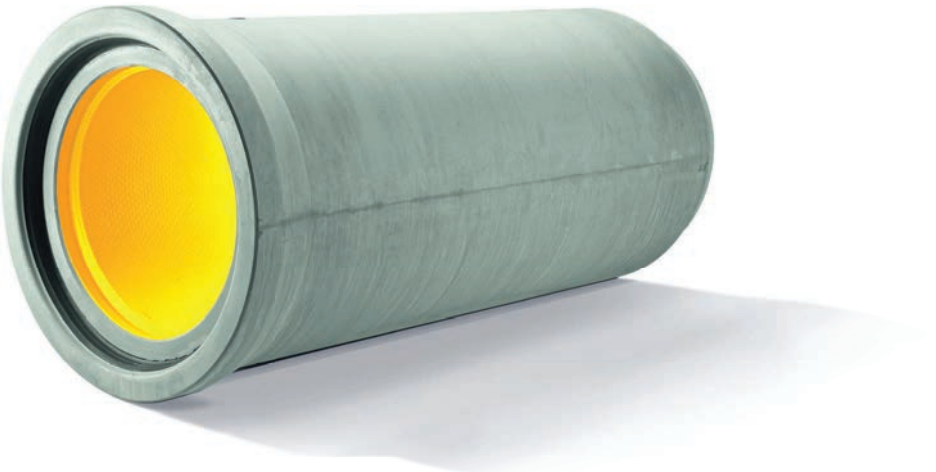

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