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publication  
of Engineers  
Geoscientists  
Manitoba

# THE KEYSTONE PROFESSIONAL

WINTER 2017



**INSIDE**  
THIS ISSUE

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Jonathan Epp**

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A photograph of three students standing in a modern building atrium. On the left is a man with a beard wearing a dark sweater. In the center is a man with a beard wearing a dark suit and tie. On the right is a woman with long blonde hair wearing a dark blazer and pants. The background shows a multi-level building with glass railings and people walking.

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# THE KEYSTONE PROFESSIONAL

The official publication of Engineers Geoscientists Manitoba



## WINTER 2017

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## We are an **Exciting and Vibrant Profession**

I am writing this article having just finished the Ingenium week, and it has served as a reminder of how fortunate I am to be part of such an exciting and vibrant profession. There are three moments that stuck out.

First, at the Professional Development Seminars, I was particularly blown away by the presentations and displays run by the engineering students. The complexity of the projects that they are taking on in their volunteer time is amazing. However, it was their cross-disciplinary teamwork that really impressed me. Great engineers and geoscientists are not formed on their own, but from a combination of mentorship and teamwork. If these students are any indication, the next generation within our professions will be the best and strongest yet.

Second, I had the opportunity to take a tour with the New Product Development Team at Winnipeg-based bus manufacturer, New Flyer Industries, winners of the Team Achievement Award, as they showcased the facility where they build and design battery powered buses. It is inherently risky to go from building the things that clients are directly asking for, to building things

they haven't asked for but you believe will be in their best long-term interests. It was encouraging to see how taking that risk has already begun to shift the industry forward and create a market demand where previously there was none. More surprisingly, perhaps, was the effect that approaching design with that greater purpose had on their team. The team told stories of how understanding the purpose of what they were doing resulted in more motivation and higher job satisfaction. As a science-based profession, we often focus heavily on the quantitative aspects of our jobs, but I believe it is the qualitative aspects, for instance the fact that the work we do makes a difference, that keeps many of us working well past retirement.

Last, during the Awards Gala, Alfred Poetker was given 30 seconds to make remarks upon being given the Honorary Life Membership Award, and in that short time frame he managed to very clearly and succinctly capture Council's vision for its new End (E-5). Speaking of the increased role of women in the profession over the span of his career, Alfred noted that it was wonderful to see that we were now pulling from the

entire population, rather than just half of it, to find the best engineers and geoscientists. The reason we have an End that desires an Association where its "practitioners reflect the diversity of the public", is because it is in the public interest to have the very best engineers and geoscientists practice. When we see an Association whose members do not reflect that diversity, it is a sign that we are missing out.

In particular, Council is focusing on the goal of having over 30% of newly licensed engineers be women by the year 2030 (E-5.2). While this is well short of our ultimate goal of true proportional representation, 30% is achievable and statistically provides a tipping point. Council and staff are working behind the scenes on some exciting new initiatives that will specifically target students. We hope to officially announce those initiatives shortly. However, bringing people into the profession is only half the battle. In order for us to succeed long term we will also need to address our workplace cultures.

Much of our workplace culture, especially in the consulting industry (which I am a part of), is a holdover from a time when a monoculture could be assumed. In particular, the common lack of support for parental leave beyond the government-required minimums. That lack of support is largely based on two contingent assumptions: one that the work force is male, and two that males won't be the ones staying home to provide care for newborns. Neither should be an automatic assumption anymore. If we want to attract the best to our industry, we need to make sure our benefits are the best as well. ☺



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## Know the **Changing Marketplace**

You may be a young professional or new grad just at the beginning of your career. Perhaps an adjustment is taking place, the shift from being a student to now being a worker in the marketplace. Economists say you're now part of the labour market. Within the labour market, some are working, some are looking, and some are wondering "what is happening?". Consider the following (from *The Globe & Mail* writer Rachelle Younglai, September 2, 2017) about the labour market you are entering:

- The US housing market collapsed in 2007 and the ensuing global economic slump wiped out hundreds of thousands of jobs in Canada, including more than 300,000 manufacturing positions (engineers were affected).
- When metal and oil prices plunged a few years later, thousands of high-paid natural resources positions were obliterated (many were engineering and geoscience positions).
- Since 2007, high-skilled jobs such as physicians, dentists, and engineers have increased 15 percent.
- Technical positions, including engineering technicians, are up 20 percent in the same time period.
- Many medium-skilled jobs are not coming back. Automation is replacing routine tasks and the role of the supervising engineer is changing.
- Domestic businesses are competing with foreign companies. Technology has made it easier for businesses to run their operations with fewer people. How are you going to prove it is more valuable to keep engineers on staff locally and convince your boss not to outsource to a cheaper, foreign company?

### Some Advice

Know the changing marketplace. Follow credible news services and try to understand what you need to do to make yourself valuable in the marketplace. Is your engineering education enough? Do you need to supplement your training with something more? What about specialized training in human resources, business administration, labour relations, or a technical specialty in bio-med, high tech, or some other R&D topic? Decide based on factors that you feel could promote your career in the best way. Also, don't be afraid to change locations to seize upon a good opportunity.

Don't accept a low salary. When you do, it devalues the profession. It's hard to say "No thanks" when you've got student loans to pay off and other financial pressures, but you have a good education and great potential. Why accept a low offer?

Although you're at the beginning of your career, an employer who pays a fair salary is worth waiting for. An employer who shows generosity, up-to-date policies on equity, diversity, inclusion, and flex time is the one you want to sign up with.

Get out and participate in a variety of events: networking events, training courses, volunteer organizations, community development activities, and social events. You will meet many new and interesting people. It will add to your experience bank and make you a more mature, balanced, and skilled professional sooner than later. Don't wait. See the events page on the Engineers Geoscientists Manitoba website. See you soon.

## Mark Your Calendars

### 100<sup>th</sup> Anniversary is Coming

The Association will be 100 years old in 2020. The Centennial Committee is planning many fun events and activities for the anniversary year. Mark your calendar for the big birthday party: Saturday, April 4, 2020, at the RBC Convention Centre Winnipeg. Watch the e-news and *The Keystone Professional* for how you can get your tickets to this memorable milestone celebration.

### Season of Celebration

The season of celebration is upon us at this time of year. The tradition my family follows is Christmas. Engineers and geoscientists are a diverse group from all over the world, celebrating different festivals and traditions. Plan to attend a chapter party. The Filipino Members Chapter throw a great Christmas party. Whatever your tradition is, enjoy the food, fun, and fellowship of co-workers, colleagues, and friends during this season of celebration.

Your feedback is invited and welcomed. If you have any thoughts on anything you read in *The Keystone Professional*, please email me at [GKoropatnick@EngGeoMB.ca](mailto:GKoropatnick@EngGeoMB.ca). Have a great day! ☺



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# Thoughts on Engineering Design

## ...Thank you

By Dr. M.G. Britton, P.Eng., FEC

This column, Thoughts on Engineering Design, came into being in 2001 after the Faculty of Engineering at the University of Manitoba was awarded one of the five original Natural Sciences and Engineering Research Council Chairs in Design Engineering. Following that announcement, I was asked to share some of the concepts behind the NSERC program and the University's proposed response. My response eventually became a regular component of *The Keystone Professional*.

In early 2006, I was involved in an extended discussion about engineering philosophy at a Canadian Council of Professional Engineers meeting. When I got home I shared that discussion with the students in a graduate class I was teaching. With encouragement from my students, I approached the editor of *The Keystone Professional* with the idea of alternating an engineering philosophy column with my Thoughts on Design column. The Engineering Philosophy 101 concept was accepted, but the idea of alternating with Thoughts on Design was rejected. Those two bylines became regular components of *The Keystone Professional* until 2017 when I began to 'ramp down' and the alternating format was accepted. That pattern will end with this final column.

About four years ago, when my family was dealing with some health problems, Dr. Doug Ruth began suggesting that my columns should be published as a book. I was reluctant to make that sort of commitment and contacted a number of colleagues, hoping they would agree with me. Probably the most surprising response I received suggested I had a 'body of work' and I was "compelled to preserve it". I gave in. As of this fall, *On Design – A Philosophy of Design and Engineering*, was published. It contains both the design and philosophy columns from 2001 through 2015 (with most of my grammatical errors corrected). It is currently available through either the FriesenPress Bookstore or Amazon.

It has been a privilege to have been given the opportunity to share my thoughts and opinions with *The Keystone Professional* readers for the past 17 years. I have appreciated the reactions I have received, both written and oral, both positive and negative. I am indebted to the staff who have 'delivered' the publication over the years for tolerating my idiosyncrasies and 'academic attention' to deadlines.

As usual, as I work at 'assembling' my thoughts and words, I have music playing in the background. When this page was empty, Frank Sinatra was prodding

me with his rendition of "My Way". Coincidentally, the song that just finished was Louis Armstrong's "It's a Wonderful World". Not a bad musical equivalent to "My life's work makes life work better".

Once again, thank you. I hope I have provided more than material to fill the space between the advertisements.

Ron

### *Note from the Chair of the Keystone Professional Committee*

No, Ron. Thank you! Thank you for sharing your insights with us! Our readership has been truly fortunate to have had a local, yet worldly, patron of engineering philosophy and design to guide us for most of this millennium. I'm sure that some of our newer readers cannot remember a time when we did not receive a regular dose of timeless and sage advice. Over time, these regular tidbits have given us new tools to gain perspective, to examine our own lives and professional practice, and to refocus and rebalance. They certainly will be missed. However, your new book is welcome news. I am most eager to read it, and am surely looking forward to looking back.

D. Strang, P.Eng.

Chair, Keystone Professional Committee

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# Human Factors: A Unique Tool in the Engineer's Toolbox

By A. Rakhra, P.Eng.

**E**ngineers design for humans. Whether it's a smartphone, a computer, a car, a microwave, a house, or an agricultural tractor; humans are the end-users. Human safety, comfort, and productivity are important. The field of human factors and ergonomics ensures safety, health, and productivity by considering various principles and practices based on the knowledge and contribution from other areas of specialization such as physiology, psychology, anthropometry, biomechanics, engineering, and information design.

As an end-user of any product, machine, or system, human safety, comfort, and productivity can be broadly related to two aspects: physical and mental. When the primary consideration is the physical aspects of a product, or system; engineers and designers focus, analyze, and envision the physical interaction of the user with the products, systems, or surroundings. For example, for determining the placement, size, and shape of a gear lever inside a tractor cab, engineers or designers need to consider aspects such as variations of the human body (height, arm length, hand size, movement, etc.), frequency of usage, safety, simplicity, affordances, conventions, and so on. On the other hand, when the primary focus is to address the cognitive aspects of a product or system (e.g. decision making, mental workload, complexity, etc.), engineers need to consider the sensory interaction of the user with the product or environment, and understand a human's mental processes and information processing capabilities.

Human cognition is complex. Starting with the perception of the information from the external environment, several cognitive processes are involved to comprehend, and foresee the near future situation. For example, attention, perception, memory, synthesis, analysis,



**■ In designing any product, system, or interface that involve physical interaction or cognitive involvement, an understanding of the human aspects is critical.**

expectations, and mental models (Endsley et al. 2003). Humans' ability to perceive and process information is limited. Whether it's an auditory, visual, somatosensory (touch), olfactory (smell), or a gustatory (taste) 'unidimensional-stimuli'; normally humans are able to judge a maximum of five to nine items at one moment (Miller 1956).

We live in the age of information. Automation, artificial intelligence, the Internet of Things, and big data are leading our way to the future. From handheld devices to home appliances, kiosks, cars, and agricultural equipment, we are bound to interact with information. As end-users, we need to interact through a user-interface to make critical decisions. Depending upon the situation, decisions can be related to buying or selling significant stocks online, remotely controlling a military drone, or recognizing and responding to a hazardous situation in an industrial process; effectiveness of a user-interface is critical in determining the outcome of any situation. The help of a user-friendly interface in information processing and decision-making of a user is a critical factor associated with the safety and productivity of any information-dependent situation.

Not considering human elements inside the 'design of things' is not the

best strategy. In our day-to-day life, a complicated gadget, poorly designed furniture, or a complex interface of a kiosk are sufficient enough to keep us away from the product or the experience. Physical injuries and musculoskeletal disorders are common where physical interactions are involved. Making poor decisions or performing wrong actions leading to disastrous consequences are also not uncommon when human aspects are ignored in the design. The Bhopal gas tragedy in 1984 in India is considered as the world's worst industrial disaster, which affected more than 200,000 people, and killed more than 2,500 due to exposure to poisonous gases and other chemicals (Lorin and Kulling 1986). One of the major contributing factors for this accident was the ineffective interface, as described by Endsley et al. (2003): "The design of the system's interface did not support the operator in detecting significant cues of the building problem or in preventing the events that led to the accident". And please don't think that because this tragedy happened around 33 years ago that it may not be critical in today's better-connected, and technologically advanced world. Humans are still humans; wrong choices and inadequate actions can still be made, particularly when the body is tired, the mind is stressed, and the situation is not clear. A recent example of a dreadful



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consequence due to a human error is the crash of an aircraft transporting a Brazilian rural soccer team on November 28, 2016; 71 people were killed in the accident (Chapecoense crash 2016).

In designing any product, system, or interface that involve physical interaction or cognitive involvement, an understanding of the human aspects is critical. Considering the fields of human physiology, biomechanics, anthropometry, and cognitive psychology along with the engineering acumen can make the difference in designing pleasant experiences, effective interfaces, and safer products. After all, engineers design for humans. ⚡

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**Does YOUR job have an impact on society?**

Though many of us work in technical fields that may seem removed from daily life, work in the engineering and geoscience sectors has a huge influence on our society and its progression and evolution. Taking a step back from our day-to-day work to reflect on how we influence and affect society through our projects, recommendations, and research allows us to recognize the human component of our professions and helps others understand what we do. Directly or indirectly, we all have a hand in shaping our world and its values.

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# EARTHQUAKES

By R. Reichelt, P. Geo., FGC

### Introduction

If you use the term “Mother Earth”, you’re making a logical mistake. Your mother cares about you, whereas the Earth is profoundly indifferent to your fate. Nothing illustrates this more than geohazards. A geohazard is a geological condition that presents a hazard to health and safety of living things. These include earthquakes, volcanoes, landslides, and tsunamis. Geohazards are a big topic, so in this article, we will look at earthquakes and discuss the other geohazards at another time.

### The not-so-solid earth

One of the most important and disturbing insights of geology is that, over time, the earth is not entirely stable. The earth’s crust is subject to all sorts of stresses, and when a portion of the crust moves, an earthquake results.

Another way of looking at it is to recognize that when stresses accumulate in a portion of the earth’s crust, the rock will compress, temporarily absorbing energy. However, over time, the stress increases until it exceeds the shear strength of the rock. When that happens, the earth moves and an earthquake occurs.

### Where, and how, does it move?

The most common locations of earthquakes are along tectonic boundaries. The earth’s crust is made up of a series of tectonic plates (see Figure 1). Convection currents in the mantle underneath the crust push the plates around and where the plates grind against each other, we get earthquakes.

Other kinds of earth movement can also cause earthquakes. These include the movement of the earth during volcanic eruptions; isostatic rebound

after glaciation; and anthropogenic movement, with causes such as injection of fluids into the earth, collapse of mine shafts and galleries, and detonation of nuclear devices.

We will discuss volcanoes in greater detail in another article, but it is sufficient to point out that the phenomenon of earthquakes associated with volcanism is well-documented. The movement of molten magma before, and during, an eruption, as well as the collapse of a caldera after an eruption, can cause earthquakes.

Isostatic rebound is a consequence of relatively recent events in the history of the earth. During the Pleistocene (1.8 million to 10,000 years before present), continental glaciation, with ice sheets up to 5km thick, depressed the crust under the glaciers. After the ice melted, the crust rebounded, but not all at once. When we get earthquakes in Manitoba, the cause is likely to be isostatic rebound.

Anthropogenic earthquakes range from inadvertent to deliberate. Inadvertent anthropogenic earthquakes include those caused by the injection of fluids into formations (for disposal of, or

to liberate hydrocarbons – i.e. fracking) or by the collapse of mines following removal of the ore.

Deliberate anthropogenic earthquakes include the testing of nuclear weapons. Testing these weapons underground achieves the desired results (proving the functionality of the device and intimidating opponents) without exposing the people conducting the tests to increased chances of cancer from the fallout that would result from an atmospheric test. The earthquake resulting from a successful nuclear test is a desired result since it sends a strong signal to everyone that the people conducting the test have a powerful weapon.

### What can we do about it?

Earthquakes present us with a predicament; we cannot prevent them, but we know that they are both inevitable and potentially deadly. However, we can go down two productive paths: a) research to understand earthquakes and characterise the risks; and b) build structures so as to withstand earth movements.

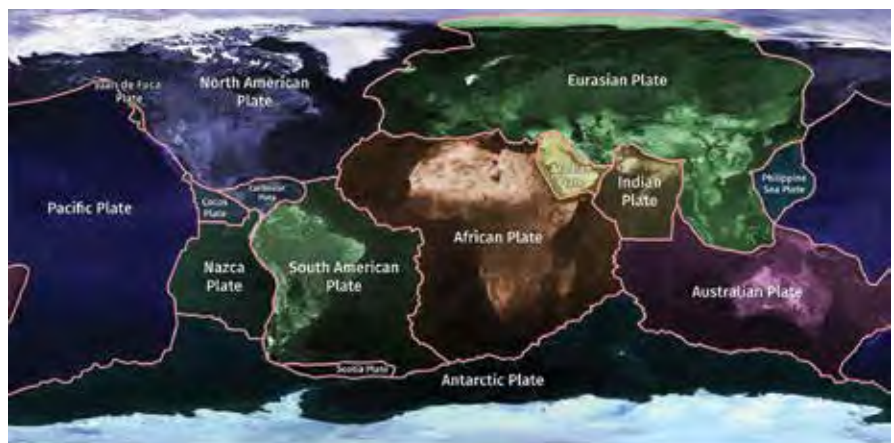


Figure 1, from *How Plate Tectonics Is Connected With Life on the Planet*<sup>1</sup>

The study of earthquakes (seismology) has an important role in characterizing the risks from earthquakes. Natural Resources Canada has published an excellent study called *Geohazards in Canada, Evaluation of the Geohazards and Public Safety Program Sub-activity*<sup>2</sup> that discusses the study of geohazards and the characterization of risks.

One of the most important tools for studying earthquakes is the seismograph, a device that measures vibrations in the earth. The vibrations from an earthquake can travel all around the earth. The magnitude of an earthquake can be measured from the amplitude of the earthquake waves as measured by the seismograph. The Richter scale, published by Charles Richter in 1935, is used to express the magnitude of an earthquake. The Richter scale is logarithmic; an increase in one whole number represents a tenfold increase in the amplitude of the seismograph response, which in turn represents a 31-fold increase in the energy released<sup>3</sup>.

Engineering buildings and other structures to withstand the forces of earthquakes is vitally important where earthquakes are common. This is one

area where engineers and geoscientists collaborate to protect the public. Geoscientists can identify how often earthquakes occur and how severe they can be. Engineers design structures that can move with the earth without collapsing. It is not an easy task.

#### Infamous earthquakes

Throughout history, earthquakes have killed people, usually by buildings collapsing on top of their inhabitants, but also by triggering tsunamis and landslides. Among the most destructive earthquakes in history are the following<sup>4</sup>:

**Shensi, China, 1556:** estimated magnitude 8 on the Richter scale, approximately 830,000 people killed.

**Assam-Tibet, 1950:** estimated magnitude 8.6 on the Richter scale, 1,500 people killed by the earthquake, a further 500 people killed when a dam burst eight days later.

**Chile, 1960:** estimated magnitude 9.5 on the Richter scale, 4,485 people killed by the earthquake and an additional 170 people killed by the resulting tsunami.

**Alaska, 1964:** estimated magnitude 9.2 on the Richter scale, 128 people killed by the resulting tsunami.

**Sumatra, 2004:** estimated magnitude 9.1 on the Richter scale, approximately 227,000 people killed by the resulting tsunami.

#### Final thoughts

We know that life is uncertain, and nothing illustrates this more than geohazards. While we can't prevent earthquakes, we can prevent needless deaths by applying the results of our research into earthquake science and engineering.

For those who have an interest in geohazards, the Canadian Geotechnical Society is holding a conference on geohazards in Canmore, Alberta, June 3-6, 2018. More information on the conference is at [www.geohazards7.ca](http://www.geohazards7.ca).

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4. Miller, R. 2011, *Top 5 Most Destructive Earthquakes in History*, [www.top5.com/top-5-most-destructive-earthquakes-in-history](http://www.top5.com/top-5-most-destructive-earthquakes-in-history) ☺

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The Association's sixth annual Ingenium Conference took place from October 17-20, 2017. Under the theme of 'Change Management', this year's events embraced change with new venues, new entertainment, and lots of new attendees. Thank you to all the staff, volunteers, and sponsors who made the 2017 Ingenium Conference such a huge success!

**TUESDAY, OCTOBER 17**

*New Member Luncheon and Certificate Presentation*

This luncheon, held three times a year to recognize new members and formally present them with their official license certificate, was held at the Norwood Hotel.



New members in attendance pose for their group photo.

**WEDNESDAY, OCTOBER 18**

*Recognition Wine and Cheese Reception*

Held in the stunning Carlton Concourse of the RBC Convention Centre, this reception honoured Association Past Presidents, Life Members, Honorary Life Members, and those receiving their Fellowships of Engineers Canada and Geoscientists Canada. The Association was delighted that both the President of Engineers Canada, Russ Kinghorn, P.Eng., FEC, and the President of Geoscientists Canada, Jeff O'Keefe, P.Geo., could join us for this special occasion.



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**THURSDAY, OCTOBER 19***Professional Development Seminars*

Exploring the theme of 'Change Management', this year's event offered attendees the choice of 19 breakout sessions and two keynote speakers – the largest variety ever offered within the program.

*Sessions included:***Keynote Speakers**

- Change Management: Chaos to Calm... or is it? By Donna Castellano, PMP CCMP
- Road to Manitoba's North: Overcoming Engineering Challenges by Dr. Marolo Alfaro, P.Eng.

**Change Management in the Profession**

- Changing Before We Must: The Evolution of Experience Review Committee's modus operandi by Dr. Jitendra Paliwal, P.Eng., FEC
- Government Relations Panel Discussion: Limitation of Actions - Changing of Legislation featuring James Blatz, P.Eng. FEC, Michael Gregoire, P.Eng. FEC, Allan Silk, P.Eng. FEC, and moderated by C. Scott Sarna
- Changing ABCs by Michael Gregoire, P.Eng., FEC

**Change Management in the Workplace**

- The Three Spaces of LEAN Management by Brent Timmerman, P.Eng. & Steven Spry, P.Eng.
- Just One Last Change... by Saju Sam, P.Eng., PMP
- Resolving Construction Industry Disputes on Our Own Turf by Roy McPhail, P.Eng.

- Leveraging Diversity and Stimulus to Drive Innovation by Rhonda Honke, inVision Edge

**Change Management in the Province**

- Panel Discussion: Partnership Supports Change featuring Kathryn Atamanchuk, P.Eng., Margaret Boyd, P.Eng., Marcia Friesen, P.Eng., FEC, and moderated by Carolyn Geddert, P.Eng.
- Including the Excluded: Engaging Diverse Populations by Jessica Dumas, Prime Image Life Coaching
- WE Design: Students Designing A Greener Future by Benjamin Gibson & Laurissa Bridgeman
- Winnipeg Transportation Centre: It's More Than Traffic! by Ryan Patrick

**Change Management in your Personal Career**

- Taking Your Career Into Your Own Hands by Leanne Bonnar, David Aplin Group
- Communicating Strategically for Change by Rhonda Honke, inVision Edge
- Managing Change in a Technical Environment by Lisa Moretto, RGI Learning
- Your Retirement Income Blueprint by Elliott Einarson, Diamond Retirement Planning

**Change Management in Technology**

- Improving Safety in Bangladesh Garment Factories by Brad Loewen, P.Eng.

- Resilient Design in Our Changing Climate by Melanie Chatfield, P.Eng. & Jordan Lanoway, P.Eng.
- Virtually Possible: An Introduction to Virtual Reality and its Possibilities Within Industry by Chris Hall, The Portal Winnipeg
- Student-Led Innovations Towards Sustainability by Kim Laberinto

*Annual General Business Meeting*

The Annual General Business Meeting is an opportunity for members to become directly involved in the business of the Association, vote on current matters, and acknowledge Councillors completing or just beginning their terms. President Lindsay Melvin, M.Sc., MBA, P.Eng., FEC, ended her term and passed the gavel to incoming President Jonathan Epp, P.Eng., FEC.

Congratulations to the newly elected Councillors for 2017-2019: John Guenther, P.Eng., FEC, Jitendra Paliwal, P.Eng., FEC, Jason Mann, P.Geo., and Florence Lee, EIT.

**FRIDAY, OCTOBER 20***Awards Gala Dinner & Dance*

The spectacular setting of the York Ballroom at the RBC Convention Centre played host to this first-class evening honouring member achievements and corporate contributions to the profession. We hosted 280 guests that joined representatives from industry and government, including Mayor Brian Bowman, for dinner followed by an evening of great entertainment and dancing with the Big City All Star Band. Congratulations to all 2017 nominees and award winners!







## 2017 AGM MEMBER PROFILE

The Annual General Meeting of Engineers Geoscientists Manitoba took place at the RBC Convention Centre on Thursday, October 19, 2017. Here is a profile of those in attendance.

119 professional members signed in (compared to 98 in 2016)

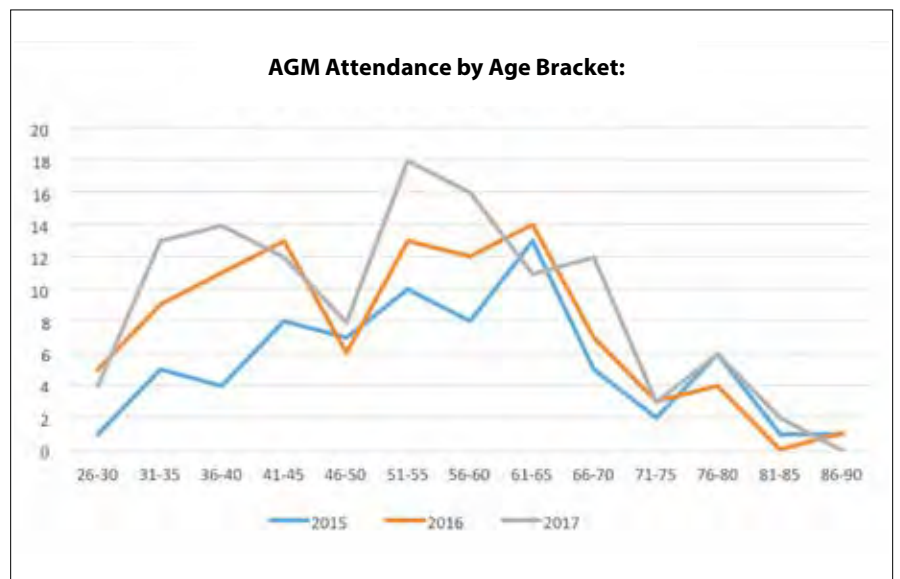
Average age:	52	
Youngest:	28	
Oldest:	85	
Men:	103	87%
Women:	16	13%
Engineers:	114	96%
Geoscientists:	5	4%
Practicing members:	104	87%
Retired members:	15	13%
Past Presidents:	13	11%
Councillors:	9	8%
Staff:	3	3%

Some questions asked following the AGM each year are: Is this representative of the overall membership? Does the AGM format serve the needs of the membership? How can participation be increased? Is there a format which will increase the attendance across all age brackets? Send your comments and suggestions to [President@EngGeoMB.ca](mailto:President@EngGeoMB.ca)

### 2017 Distribution by Age Bracket:

26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90
4	13	14	12	8	18	16	11	12	3	6	2	0

AGM Attendance by Age Bracket:





## INTRODUCING THE NEW PRESIDENT

# JONATHAN EPP, P. Eng., FEC

By Christa Campbell

When Jonathan Epp first joined the Council for Engineers Geoscientists Manitoba in 2013, “being President wasn’t even on my mind”. Fast-forward four years later, and what began as a suggestion from a fellow Councillor, has now come to fruition as Jonathan begins his one-year term as President of the Association. Having had an opportunity to “observe his predecessors,” seeing how their unique skills and experiences have shaped their presidencies – Jonathan plans to use what he learned and “steal a little bit from each of them”.

When asked about changes to the Association during his time as Councillor, Jonathan stated that he feels the Association staff have moved from a “small company feel”, to a larger operation that now services its nearly 8,000 practitioners. With that comes challenges, “that transition inevitably creates growing pains, and that’s something we’ve really

worked through as a Council”, states Jonathan. “When I started as a Councillor, we didn’t have formal monitoring of the Ends, and we didn’t have a formal performance review of the CEO,” says Jonathan. “The improvement is night and day from where we were when I started to where we are now.”

With the roles of engineers and geoscientists continually evolving, Jonathan sees it as critical that the Association maintain the privilege of self-regulation. “Volunteers are key to our regulatory process, because they are practitioners themselves and know firsthand the emerging issues that are facing our profession.” As President, he will ensure that processes are followed and that all voices are heard, with Council continuing to set expectations towards Ends on behalf of the professions.

In addition to his responsibilities with Council, Jonathan has a project

management role on the Bipole III Converter Stations Project with Manitoba Hydro through his employer, Teshmont, which acts as the Owner’s Engineer for the project. This massive infrastructure investment project affords Jonathan the opportunity to work with a wide range of people with many diverse skill sets.

Diversity is also a common factor at his place of employment. In fact, Teshmont (which Jonathan says is a great place to work) was the first ever recipient of the Diversity Employer Award at this year’s Ingenium Awards Gala. The award is intended to recognize an employer that demonstrates support for people defined within the Association’s “diverse employee group”. Jonathan believes that Teshmont is in this position simply because they “picked the best people for the job”. He also sees it as a competitive advantage, “As engineers, sometimes the best solutions come from thinking



“As engineers, sometimes the best solutions come from thinking outside the box, and being able to look at problems from a number of different vantages give us an edge.”

outside the box, and being able to look at problems from a number of different vantages give us an edge”.

Although his workplace is winning awards for diversity, Jonathan recognizes that the Association itself still has a long way to go on that front, but is taking important steps to do so. Council has asked that the Association focus on two key areas, female and Indigenous relative representation within the membership. For female membership the target is that 30% of new members will be women by the year 2030. Even though that number is well short of representing the general public, “it was strategically chosen because 30% represents a tipping point in terms of momentum”, says Jonathan.

In Jonathan’s limited spare time, he is kept busy with his four children aged two to eight. He enjoys “watching them grow up, make mistakes, and overcome them”, and also being able to find technical loopholes in instructions they’re given (he wonders where they got that from...?). Having both a large and very young family hasn’t stopped them from having crazy family adventures together: their youngest turned one on a family road trip to Montreal. With a family that size, getting out of the house is a must, and so biking down Wellington Avenue to Assiniboine Park and over to Sargent Sundae is an important summer tradition.

Outside of winter, Jonathan can also be seen biking to and from work and meetings in a shirt and tie, and occasionally even a full suit. Lately, he has combined his love of biking with an admiration of the local brewery scene, and has really enjoyed getting together with good friends to go on tours of the local breweries. ☺



The advertisement features the CTTAM logo (Certified Technicians and Technologists Association of Manitoba) at the top left. In the center is a white sticky note with the text "C.E.T. CERTIFIED ENGINEERING TECHNOLOGIST". Below the sticky note, the text "The Technology Professional" is displayed in a large, bold font. At the bottom, it reads "THE CERTIFIED TECHNICIANS AND TECHNOLOGISTS ASSOCIATION OF MANITOBA" and the website "www.cttam.com".

## TEAM ACHIEVEMENT AWARD



**NEW FLYER**

PRESENTED TO

### New Flyer New Product Development Team

The Team Achievement Award recognizes engineering or geoscience excellence in, and major contributions to, the concept, design and implementation of an engineering or geoscience project in Manitoba.

The 60ft battery electric bus with a fuel cell range extender was designed, built, and tested by the New Product Development Team at New Flyer, which includes 14 professional engineers and engineering interns.

A first of its kind project in the world for transit buses, this 60ft articulating bus incorporates a centre driven axle and a completely stainless steel frame. The uniqueness of this project is the use of a fuel cell as an on-board battery charger or range extender to manage overall vehicle energy demands and designating the batteries as the only source for power and short/medium term energy such as a hill climb or a short high speed run. The centre driven axle allows two axles to provide forward power when needed and doubling of the regenerative braking potential. New Flyer's innovative

approach is also in efficiency and reliability improvements by using simple and robust batteries for micro-cycling loads and operating the highly complex fuel cell in a more steady state mode.

The major advantage that the addition of a fuel cell extender to an electric bus provides is the increase in range from 120 miles to over 300+ miles, and that it is not limited to routes that have charging stations at key locations. This range is very comparable to diesel buses.

The team spent a lot of time designing and integrating various new systems some of which include fuel cell range extender, interior battery compartment, battery management system, 60ft stainless steel frame, centre driven axle, hydrogen fueling station, and fuel transportation trailers. A number of prototype assemblies were build and changes were made based on manufacturability. Commissioning and testing was performed and finally the bus has been delivered to a test track facility in Altona, where it is undergoing structural durability tests which will qualify the bus for customers. Safety was also a major factor that was taken into consideration when designing the hydrogen fuel storage and distribution system as well as the interior battery compartment.

This project has the potential of having a profound effect on the environment. The bus is a direct replacement for diesel and compressed natural gas (CNG) buses and therefore can reduce greenhouse gases from their fleets. This development is significant as it shows that a fully zero emissions transit bus not only requires very little compromise, but in some cases actually outperforms conventional

technologies, which has been a major barrier for adoption of zero emissions vehicles.

In recognition of the engineering excellence demonstrated in their innovative design and implementation of this outstanding project for the future of transit buses, Engineers Geoscientists Manitoba is pleased to present the Team Achievement Award to New Flyer's New Product Development Team.

## DIVERSITY EMPLOYER AWARD



PRESENTED TO

### Teshmont Consultants LP

The Diversity Employer Award recognizes engineering and geoscience employers that have demonstrated, in action and spirit, support for recruiting, training, retaining, fostering respect for, and/or advancement of career opportunities for people from diverse backgrounds. In celebrating these accomplishments, the award has the intended purpose of encouraging involvement of organizations in diversity-related activities, regardless of company size.

Teshmont Consultants LP is committed to continually advancing diversity within their organization. Their workplace is an exemplary model of diversity, with an employee base comprising of many ages, genders, races, and religions. Each day, Teshmont employees come to work in a fair and safe environment where differences are viewed as a source of collective strength. For employees for whom English is a second language, external and in-house language training has been provided to guide them to success.

New international employees benefit from the close working relationship that Teshmont has with integration and advancement programs such as the Success Skills Centre and the IEEQ Program at the University of





Manitoba. Teshmont has supported and helped shape the IEEQ Program since its inception in 2003. The program provides a pathway for internationally-educated engineers to meet licensing requirements for professional engineering practice in Manitoba. When government support ceased for the program, Teshmont advocated for its continuance as they saw the inherent value that it brought to the lives of international engineers and their ability to find gainful employment. Teshmont has also hired a number of engineers that have completed the program.

Diversity is one of the company's core strengths and emphasis placed on the diversity of the workforce and hiring practices are a testament to that commitment. Of Teshmont employees, 30% are female and 48% are visible minorities from entry level positions to senior management, and the company is committed to continually leverage this diversity to provide value to clients. Over 23 different languages are spoken by employees, and individuals from over 20 countries are represented.

Teshmont believes that having equity within the team is one of the key factors in their success. As an equal opportunity employer, candidates are hired and promoted based on their contributions to the company and are evaluated on their individual merits. The company has strived to build a performance based culture that encourages diversity in the workplace, rewards contribution, and enables employees to succeed. The result is a welcoming environment where employees flourish and achieve their full potential.

Over the last 50 years, Teshmont has created a diverse work environment that welcomes and retains (in many cases, for decades upon decades) talented individuals from all corners of the globe, and from many walks of life. As a celebration of company diversity, teambuilding activities dedicated to rich and diversified cultural backgrounds are observed, such as an International Day where employees come together and sample cuisine from around the world. The cultural holidays and observances of a few employees are celebrated and recognized by the company as a whole.

In recognition of their commitment to advancing diversity within their organization, Engineers Geoscientists Manitoba is pleased to present the 2017 Diversity Employer Award to Teshmont Consultants LP.

## INTERN AWARD

PRESENTED TO  
**Timothy Klaas, EIT**

The Intern Award bestows distinction on those training to be engineers or geoscientists, specifically those demonstrating exceptional work achievement in their early EIT/ GIT years who enhance society's knowledge of our professions.



Timothy's primary goal has always been to use his skill set to improve people's lives, but it was the two years he spent in Sudan doing humanitarian work that led him down the path of engineering. During his time in Sudan, Timothy worked alongside a number of engineers; it was here that he had the opportunity to see firsthand how engineering technical skills can make a dramatic impact on the lives of people in

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developing countries. Motivated to help make the biggest impact possible, he was inspired to return to school to study engineering. While in school, Timothy took a position with Neegan Burnside, performing asset condition inspections on First Nation Reserves in Manitoba. Timothy travelled to First Nation Reserves to inspect and report on the conditions of schools, water & sewer treatment plants, roads, and band council buildings. He also did work on Phase 1 Environmental Site Assessments to determine the extent of soil contamination on several First Nations Reserves.

In 2014, Timothy accomplished the next step in his long term goal by graduating from the University of Manitoba with a B.Sc. in Civil Engineering. After graduation, Timothy started working for Manitoba Hydro. Timothy started in the Engineering-in-Training program with the Water Resources Engineering Department where he did climate analyses to characterize climate along specific transmission corridors and predict possible future climate scenarios. At the end of his rotation, he moved to the Keeyask Project team where he worked as a cost engineer. At the end of this term, Timothy found his permanent home as a project manager within the Power Projects Department. Some of Timothy's recent projects include completing security upgrades at Manitoba Hydro's generating stations and working on replacing the Unit Control Systems at Limestone and Jenpeg generating stations. In 2015, Timothy became a Project Management Professional through the Project Management Institute.

In his free time Timothy is heavily involved in his community. Timothy sits on the executive committee of the Manitoba chapter of the Association for the Advancement of Cost Engineering (AACE), serving as the group treasurer. In addition to his work with AACE, Timothy volunteers his time to help teach Excel skills to journalism students at Red River College. Timothy's latest endeavour has been setting up the support required to sponsor a refugee family of four from Syria. To date he has worked with a group of fellow humanitarians and

the Government of Canada to set up a joint sponsorship. His group has been responsible for raising nearly \$20,000, securing furniture and other donations, preparing support systems such as language training and school for the children, and finding an affordable place to live. The Syrian family is currently in Jordan awaiting final health and security checks. Timothy and his group of humanitarians are looking forward to their arrival so they can start helping them integrate into Canadian society.

Timothy has been recognized by numerous awards, including the 2014 Landsdowne Award for Academic Achievement in Engineering and the 2008 World Vision Humanitarian Assistance Award. In the future Timothy is hoping to return to doing international work, until then he will continue to build his skills and work to improve the quality of life of Manitobans.

In recognition of his exceptional achievements as a trainee, Engineers Geoscientists Manitoba is pleased to present the 2017 Intern Award to Timothy Klaas, EIT.

## EARLY ACHIEVEMENT AWARD

PRESENTED TO  
**Kristina Koenig, P.Eng.**

The Early Achievement Award bestows distinction on outstanding engineers and geoscientists and recognizes exceptional achievements in the early years of their careers.



Kristina Koenig received her B.Sc. and M.Sc. degrees in Civil Engineering from the University of Manitoba in 2005 and 2008 respectively. She was awarded the Doupe

Memorial Gold Medal on completion of her bachelor's degree and was recipient of the NSERC CGC Scholarship during her graduate studies. Kristina was admitted to the EIT (now Engineering Intern) program while she was in her master's program working at Manitoba Hydro's Water Resources Engineering (WRE) Department. During the last 10 years she has achieved professional engineer status (2011) and advanced her career to the level of Section Head for the Hydrologic and Hydroclimatic Studies Section in Manitoba Hydro's WRE department.

Kristina's graduate research involved statistical downscaling of climate model data from regional to local grid levels for the use in Canadian Climate Impact studies. Her work has been instrumental in establishing physically based hydrological models and she is responsible for leading the implementation of the inflow forecasting system within Manitoba Hydro. She is the lead for the team involved in the hydroclimatic study of large capital projects in support of regulatory hearings (environmental & economic). Research and development remains an important component of her work with focus on practical research to support the impact of climate change on flood forecasting. She has co-led a project studying climate change impact on probable maximum floods in Canada, to better understand changing extreme events important for dam safety and design.

Kristina participates in several multi-disciplinary national committees involving physical measurement based hydrological models and adaptation to climate change forecasts in engineering design of the projects. Her committee involvement includes groups such as FloodNet NSERC Strategic Network group, Ouranos Energy Program group, Natural Resource Canada Energy Program working group, and Province of Manitoba interdepartmental Climate Change Adaptation working group. Kristina represents Manitoba Hydro as well as the engineering profession at these groups.

In her role of Section Head, Kristina has mentored several young professionals, EIT, IEEQ, and summer students. She facilitates annual tours for University

of Manitoba undergraduates to the Manitoba Hydro building. She also volunteers with various youth educational outreach initiatives including science fairs and after school programs. She genuinely finds pleasure in inspiring students by talking about how class work connects to real life engineering work.

In recognition of exceptional achievement at the start of her career, Engineers Geoscientists Manitoba is pleased to present the 2017 Early Achievement Award to Kristina Koenig, P.Eng.

## CHAMPION OF ENGINEERING EDUCATION AWARD

PRESENTED TO

**Chris Parker, P.Eng.**

The Champion of Engineering Education Awards recognizes an outstanding supporter and champion of the Faculty of Engineering at the University of Manitoba.



Chris Parker, P.Eng., is the plant manager of Winpak, and in this position has made great contributions to the education of engineering students. Chris has been an engaged, forward-thinking employer who has consistently contributed to multiple areas of engineering education within the Faculty of Engineering at the University of Manitoba, including the Operational Excellence course, as well as providing unique experiential opportunities to Co-op students through our Co-operative Education and Industrial Internship Program.

By creating 11 new Co-op/IIP engineering student positions within Winpak, Chris has provided excellent opportunities for the experiential

education of engineering students. All of the positions have provided students with valuable exposure to production engineering and have provided development of students across a wide range of experience levels. The range of positions spanned from hands-on production floor student positions, which provided production experience to those with no previous engineering-related work experience, to student positions that were a key part of the production-engineering department.

The unique breadth of roles available at Winpak has created great opportunities for engineering students to continue advancing within Winpak, or to gain valuable production experience before moving on to engineering student roles elsewhere in future work terms. The production experience has provided students with great exposure to lean manufacturing and operations management principles. The inclusion of production floor jobs as part of the engineering co-op job opportunities from a company is unique compared to the opportunities typically offered.

These jobs offer a valuable introduction to manufacturing and have been demonstrated to have a great impact on the future careers of engineering students. For many students that were having difficulty finding their first engineering-related work term, the

production positions at Winpak have proven to be an important step in their development and has enabled them to obtain highly competitive engineering student positions elsewhere in future work terms. Following the innovative example set by Winpak, many other organizations are now also considering expanding their Co-op/IIP job offerings to include production level job opportunities.

Chris has also contributed to the experiential education of engineering students through sponsoring a Winpak project for the Operational Excellence course. The participation of companies such as Winpak within this course is essential to providing students with real industry problems through which the students gain exceptional experience. Chris has taken this project one step further by using Co-op students to continue to work on these projects and implement some of the recommendations made through the Operational Course. This experience has been valuable for our Co-op students to experience and learn lean manufacturing principals.

In recognition of his dedication to providing engineering students with great opportunities for experiential education, through both the Co-op/IIP program and the Operational Excellence course, Engineers Geoscientists Manitoba, together with the Faculty

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of Engineering at the University of Manitoba, is pleased to present the 2017 Champion of Engineering Education Award to Mr. Chris Parker, P.Eng.

## JUDITH WEISZMANN WOMEN IN ENGINEERING CHAMPION AWARD

PRESENTED TO

**Izabela Witkowska, P.Eng.**

The Judith Weiszmann Women in Engineering Champion Award recognizes a woman who through engineering and career achievements has demonstrated the qualities that enabled Judith Weiszmann to be an outstanding engineer, role model, and influencer of the profession for the advancement and support of women in engineering.



Izabela graduated from the Technical University of Lodz (Poland) with a master's degree in Material Science/ Metallurgy in 1986. She has been employed with StandardAero for over 20 years, and is recognized within the organization, as well as across the industry, as a Subject Matter Expert on both aerospace materials and component failure analysis. Izabela is fluent in English, Polish, Russian, and Spanish, and is conversant in German.

For the past 10 years, Izabela has held the position of Senior Airworthiness Engineer at StandardAero. Izabela is one of few women in the country who have obtained delegation from the Minister of Transport to make 'Findings of Compliance' on matters related to aircraft certification (i.e. major repairs), and is an active member of StandardAero's Design Approval Organization. She was previously qualified by the Royal Australian Air Force (RAAF) as a Deputy Senior Design Engineer, and in 2016 was selected for the role of 'Senior Design Engineer' for StandardAero's Approved Engineering Organization by the Defence Aviation Safety Authority (DASA). Her knowledge, experience, and judgment are highly valued within StandardAero. Izabela has coached and mentored a large number of junior engineers, technologists, and materials laboratory technicians at StandardAero. She's an

ambassador for StandardAero at many public functions, and continues to promote StandardAero as an attractive place to work for women in the aerospace engineering profession.

Izabela recognizes that women are vastly underrepresented in the aviation and aerospace sectors in Canada and believes that it is critical to inspire girls and young women to enter her field. She understands the importance of acting as a role model and mentor to young engineers in the aerospace profession. Izabela volunteers and sits on the organization committee for Girls in Aviation Day (GIAD), a Women in Aviation International event established in 2015, and was interviewed on television (CTV Live) regarding this initiative. Izabela helped to organize and participated in the Women in Aviation GIAD 2015 and GIAD 2016 events which were a success, attracting over 120 attendees. Izabela has volunteered as a mentor with the University of Manitoba's WISE Kid-Netic Energy event Make Your Move, in which girls are paired with a female engineer for the day to learn about engineering and compete in design-build challenges. She has also attended high school events as a guest speaker promoting aerospace and engineering, and was recently scheduled to present at WomenFly 2017 in Winnipeg.

Izabela is passionate about employment equity: she is a member of StandardAero's employment equity committee and, since 2013, has chaired the company's women in engineering subcommittee. Izabela also actively participates in the Manitoba Employment Equity Practitioners Association of Manitoba (MEEPA), is a member of the StandardAero's Recreational and Wellness Committee (SARA) and has served as the President of the Manitoba chapter of ASM International, which is the world's largest association of metals-centric materials engineers and scientists.

In recognition of her outstanding advancement and support of women in engineering, Engineers Geoscientists Manitoba is pleased to present the 2017 Judith Weiszmann Women in Engineering Champion Award to Izabela Witkowska, P.Eng.



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## OUTSTANDING SERVICE AWARD

PRESENTED TO

**Dr. Ganpat Lodha, P.Geo., FGC**

The Outstanding Service Award recognizes outstanding service rendered to, or on behalf of, Engineers Geoscientists Manitoba, by a member of the Association.



Since obtaining his first degree in Geology from Rajasthan University in 1959, Dr. Ganpat Lodha has worked tirelessly in the field of geoscience for over 50 years, working in India and Canada and collaborating on projects in Europe and Scandinavia. Ganpat's early career allowed him to spend some time immersed in bush work, carrying out exploration for minerals and related research, while working at the Geological Survey of India.

His M.Sc. in Applied Geophysics brought him to the University of Toronto in the mid-seventies, where he later also completed his Ph.D. in Geophysics. During his long career he has worked as a Senior Staff Geoscientist, and a Manager of Projects related to hydrocarbons, minerals, and groundwater exploration.

After obtaining his Ph.D., Ganpat then moved to Calgary, Alberta, where he was involved in the exploration of oil and gas prospecting areas Canada wide. The work involved developing drill targets using a project management approach, and working with a diverse group of people. The work also involved acquisition and interpretation of potential field data and modeling of subsurface structure integrating geological hypothesis with interpreted seismic sections.

On moving to Manitoba, Ganpat

joined Atomic Energy of Canada (AECL) in Pinawa where he was responsible for supervising 15 multidisciplinary geoscience staff and coordinating research related to the safe disposal of nuclear waste in underground repositories. During this period he was also Canada's representative on a committee of the UN International Atomic Energy Agency (IAEA).

Ganpat joined Engineers Geoscientists Manitoba in 2000, when geoscientists were legally required to be registered in the province, and has since volunteered for numerous committees of the Association, as well as serving on Council in his appointed role of Manitoba Director of Geoscientists Canada. Since his retirement, he continues to extensively volunteer his time both with Engineers Geoscientist Manitoba and non-profit socio-cultural organizations such as Folklorama and the Hindu Society of Manitoba. He is an active ambassador for Engineers Geoscientists Manitoba and its public at large. Ganpat is a member of numerous professional organizations and maintains many community affiliations.

In recognition of his commitment to the Association, the profession, and the public, Engineers Geoscientists Manitoba is pleased to present the 2017 Outstanding Service Award to Ganpat Lodha, P.Geo., FGC.

## LEADERSHIP AWARD

PRESENTED TO

**David Krahn, P.Eng.**

The Leadership Award recognizes an individual, not necessarily a member of the Association, with outstanding, long-range vision and/or achievement(s), usually in a senior leadership, management, or governance role. This award honours visionaries who have directly influenced major engineering or geoscientific works for the long term benefit of society or improved quality of life in Manitoba.



In 2016, David Krahn celebrated his 40th anniversary with Dillon Consulting Limited, the Canadian employee-owned engineering firm where Dave began his career in 1976. In 1985, he was appointed as an Associate and in 1988 he became a Partner, a position that he has held ever since.

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In addition to his role at Dillon, Dave has provided guidance to other engineering organizations including being a Board Member of the Association of Consulting Engineers Canada (ACEC)-Manitoba, Chair of the ACEC-Manitoba Transportation Committee and Treasurer of ACEC-Manitoba. He has also been an active participant of Engineers Geoscientists Manitoba's certification review for the IEEQ program, Canadian Public Works Association, Transportation Association of Canada, and the Institute of Traffic Engineers.

Dave has volunteered and fundraised for a number of organizations outside of the engineering community including Siloam Mission and Union Gospel Mission, MS Society of Canada, and the Variety Club. He also served as Secretary Treasurer, Chair, and Moderator for a 300 member church congregation.

Throughout his career, Dave has had the opportunity to work on many challenging and stimulating projects, encompassing a large number of the province's major transportation infrastructure. A particular passion of Dave's has been sustainable transportation development and the advancement of modern urban mobility. Winnipeg's rapid transit system, for example, has been largely planned and developed under his passion and guidance. This system has the ability to transform neighbourhoods by encouraging denser development, connectivity, and reduced reliance on single occupancy vehicles, which is recognized as one of the keys to healthy and vibrant cities.

Dave is a professional engineer currently registered in the provinces of Manitoba, Saskatchewan, Ontario, and British Columbia. His experience includes planning, design, and construction administration of a broad range of transportation facilities, including highways, interchanges, arterial roads, transit, airport runways, taxiways, and aprons.

His major projects include the planning, design, and construction of Winnipeg's first rapid transit corridor, Stage 1 of the Southwest Transitway; functional design, P3 business case/value

for money analysis, and P3 procurement for Stage 2 of the Southwest Transitway; functional design, detailed design and construction of all-weather roads on the east side of Lake Winnipeg; detailed design and construction of the Waverley West Arterial Roads Project – Part III, including the Kenaston fly-over; PTH1 and PTH16 interchange at the Yellowhead Highway; and design and construction of Transitway Priority Measures along Winnipeg's twelve Quality Corridors.

Dave's commitment to engineering excellence is evidenced through the numerous awards and accolades received including Canadian Public Works Association 2013 Project of the Year and Canadian Consulting Engineering 2013 Award of Excellence for Southwest Transitway (Stage 1) and ACEC-Manitoba 2011 Award of Excellence for the Southwest Transitway Tunnel.

In recognition of his outstanding leadership, commitment to the profession, and service to the community at large, Engineers Geoscientists Manitoba is pleased to present the 2017 Leadership Award to David Krahn, P.Eng.

## TECHNICAL EXCELLENCE AWARD

PRESENTED TO

**Dr. Jitendra Paliwal, P.Eng., FEC**

The Technical Excellence Award recognizes outstanding achievement, including the direct advancement of the engineering or geoscience professions, by an individual member during his or her career.



Dr. Jitendra Paliwal graduated with a bachelor's degree in Agricultural Engineering from G.B. Pant University

(India) in 1994 and then M.Sc. (1997) and Ph.D. (2002) degrees in Biosystems Engineering both from the University of Manitoba. He is now a Professor in the Department of Biosystems Engineering at the University of Manitoba, where his research team develops techniques to modernize and automate post-harvest handling and storage of grains, oilseeds, and pulses.

Upon joining the University of Manitoba in 2002, Jitendra initiated the establishment of an Imaging and Spectroscopy Laboratory in the Department of Biosystems Engineering with a vision to use non-destructive optical techniques to assess grain's quality post harvest. His first major project was in collaboration with a leading European instrument manufacturer to integrate visible and near infrared (NIR) imaging modalities for their next generation of grain analyzers. Since then, Jitendra's research group has developed hardware and software solutions that are widely referred to by the designers of grain quality monitoring and assessment instruments. These include low-cost NIR analyzers, integrated Raman-NIR instruments, grain bin monitoring systems, and techniques to detect precursors to spoilage and non-invasively monitor grain health. Considering 12% of Manitoba's GDP comes from agri-food operations, the economic impact of Jitendra's work is substantial.

Jitendra's engineering achievements have been published in the form of over 60 peer-reviewed technical papers in international scientific journals. In addition, he has written five book chapters. His research work has been funded through federal and provincial granting agencies as well as private corporations, which have directly benefitted from his work. He is considered a leading researcher of international fame and was thus appointed as Visiting Professor by South China University of Technology, one of China's prestigious institutions located in Guangzhou. Another important aspect of his work has been to train the next generation of highly qualified engineers.

Through his research program, Jitendra has contributed to the training of over 60 undergraduate, master's, and doctoral engineering students and post-doctoral researchers.

Jitendra became a professional member of Engineers Geoscientists Manitoba in 2002 and is the current Chair of the Experience Review Committee. To recognize his service to the profession of engineering, he was inducted as a Fellow of Engineers Canada in 2016. He is also a member of the Canadian Society for Biological Engineering (CSBE) and American Society of Agricultural and Biological Engineers. He is an Associate Editor of CSBE's journal Canadian Biosystems Engineering

and the winner of its John Clark Award for 2017. Jitendra is also serving as Vice-President (Technical) of the Association's India Chapter.

In recognition of his outstanding leadership, mentorship, service to the profession and technical contributions to the field of engineering, Engineers Geoscientists Manitoba is pleased to present the 2017 Technical Excellence Award to Dr. Jitendra Paliwal, P. Eng., FEC.

## HONORARY LIFE MEMBERSHIP AWARD

PRESENTED TO

**Alfred Poetker, P.Eng., FEC**

The granting of Honorary Life Membership (By-law Clause 7.1.4) recognizes many years of meritorious service rendered to the Association or the profession.



Alfred Poetker is a Senior Project Consultant with WSP Canada and is a specialist in water and wastewater

treatment systems. He first registered with Engineers Geoscientists Manitoba 50 years ago in 1967 and was a member of Council from 1998 to 2002. Alf also served on the Registration Committee for 12 years, the MMA-APEGM Joint Board Committee for one year, the EGAIAR Joint Board Committee for nine years, and the Continuing Competency Committee for three years.

Alf graduated from the University of Manitoba in 1965 with a B.Sc. in Civil Engineering and completed his Graduate Studies in Environmental Engineering in 1972. He started his career with the Government of Manitoba, Water Services Board shortly after receiving his undergraduate degree and worked there from 1965 to 1978. From 1968 to 1978 he was the Chief Engineer of the Manitoba Water Services Board (MWSB).

In 1978, Alf established A.J. Poetker & Associates and in 1981 he partnered with two other engineers to form Poetker Engineering Consultants Ltd. In 1990, the company merged with another firm to form Poetker MacLaren, which later became Cochrane Engineering. Alf was President of Poetker MacLaren/ Cochrane Engineering until 1995. In 1995, he stepped down to focus more on his technical projects until his retirement in 2007.

Alf has held leadership positions in other organizations including the Association of Consulting Engineers of Canada (ACEC). He was a Board member of ACEC-Manitoba from 1983 to 1990 and was President from 1988-1989. From 1991 to 1994 he represented Manitoba on the national Board of Consulting Engineers of Canada. In 2007, he was presented with the ACEC Lifetime Achievement Award.

Some of Alf's major achievements include the development of the Cartier Regional Water System and the Pembina Valley Regional Water System. He has been instrumental in facilitating the provision of water treatment for many rural Manitoba communities including the Red River Regional Water Treatment Plant, the Municipality of Macdonald Water Treatment Plant, and the Town of Killarney Water Treatment Plant, to name just a few. He has also helped deliver safe drinking water to several communities in

Northwestern Ontario including the Town of Atikokan, Fort Francis, and Fort William First Nation, as well as abroad in Mexico and Venezuela.

On the wastewater side, Alf has provided similar expertise for a number of centres including the City of Brandon and the City of Portage La Prairie. He has also worked on the two largest wastewater treatment plants in the Province of Manitoba: the City of Winnipeg's North End Water Pollution Control Centre (NEWPCC), and the South End Water Pollution Control Centre (SEWPCC).

In addition to the above, Alf has also volunteered as a lecturer at the Manitoba Waste Water Association (MWWA)'s Annual Operators' School, and has been involved in church councils and various church ministries and committees, school parent committees and fund raising initiatives, a truly fine citizen and professional.

In recognition of his meritorious service to the profession and the Association, Engineers Geoscientists Manitoba is pleased to present the 2017 Honorary Life Membership Award to Alfred Poetker, P.Eng., FEC.

## Do you know a worthy nominee?

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Nominations are now open for the 2018 Engineers Geoscientists Manitoba Awards.

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Please complete your nomination form and send to the Awards Committee by February 1, 2018. Your initiative and recommendations are essential to recognize and honour deserving practitioners at the next Awards Gala ceremony.



# U of M ENGINEERING *Progressing Toward Diversity*

By Dr. J. Beddoes, P.Eng.

The Autumn 2017 issue of *The Keystone Professional* highlighted the enrolment growth in the Faculty of Engineering so far this decade – 60% growth in undergraduate students to nearly 1800, and 40% growth in graduate students to nearly 500. Within this growth, the Faculty has focused on increasing diversity, consistent with the Faculty vision statement that “We aim to provide engineering programs ... whose participants reflect societal diversity especially with respect to gender balance, First Nations, Métis and Inuit participation, and geographic origin”, and the 30 by 30 goal of both Engineers Canada and Engineers Geoscientists Manitoba to increase the number of newly licenced engineers who are women to 30% by 2030.

Although the foregoing quote was only added to our vision a few years ago, this focus on diversity is not new to the Faculty, which for decades has supported innovative programs including WISE Kid-Netic Energy that supports STEM outreach programming throughout Manitoba; the Engineering Access Program (ENGAP) that provides academic, financial, and social support to Indigenous engineering students; and the Internationally Educated Engineers Qualification (IEEQ) program that supports new Canadians with international engineering credentials to confirm their engineering knowledge and qualify to register as engineering Interns with Engineers Geoscientists Manitoba. If you are unfamiliar with these programs, please visit our website ([www.umanitoba.ca/faculties/engineering](http://www.umanitoba.ca/faculties/engineering)). The outcomes from these programs are impressive: WISE is one of the largest STEM outreach programs in Canada, reaching more than 25,000 Manitoba youth each year; because of ENGAP, more Indigenous engineers have graduated from the University of Manitoba than any other Canadian engineering program; and IEEQ is approaching 250 graduates.

To bring the diversity vision to the forefront, in the last few years *Celebrating Women in Engineering* and ENGAP wall tributes have been installed in the EITC



## UNIVERSITY OF MANITOBA

Atrium. Hopefully these act as beacons to prospective students, prompt collective thinking about how to achieve the diversity goal of our vision and what aspects of engineering culture may be deterring greater diversity. Additionally in recent years, together with Engineers Geoscientists Manitoba and Friends of Engineering (Manitoba) Inc., the Faculty has supported the development of the CIPWIE (Committee for Increasing Participation of Women in Engineering) mentorship program, the Manitoba Community for Women in Engineering Science, Trades and Technology (MCWESTT) conferences, and multiple student initiatives to enhance diversity in engineering.

These actions are helping us move to our diversity Vision; in the last 10 years enrolment of women in engineering programs at the University of Manitoba

has increased 141%. In 2008, enrolment was 13.8% women, but for the 2017 fall term this has grown to 21.1%. More importantly, in the last two years the direct entry preliminary year engineering class averaged 24.5% women, which, if continued, will grow the enrolment of women to nearly 25% in the next few years. Women now make up 18% of faculty members in engineering, which is several percentages higher than the national average for engineering programs. Indigenous student enrolment continues to grow, now at more than 6% of undergraduate enrolment, possibly more than any other Canadian engineering program.

These numbers might be impressive if compared to the 3% enrolment of women in engineering programs of the mid-1970s when I started as a first year student, or by comparing Indigenous enrolment at the University of Manitoba to elsewhere, but

they still fail to achieve the 30 by 30 target or the vision to have participants reflect societal diversity.

Despite decades of considerable effort aimed at improving gender balance in engineering, progress remains incremental and removing the barriers that prevent Indigenous participation in engineering to levels that reflect societal diversity may well make achieving gender balance look easy! The 2011 census indicated that less than 9% of the Indigenous population of Manitoba has a university credential, compared to 25% for the non-Indigenous Manitoban population. The National Truth and Reconciliation Commission of Canada calls to action include development of a “strategy to eliminate educational ... gaps between Aboriginal and non-Aboriginal Canadians”. Likewise, *Taking Our Place: University of Manitoba Strategic Plan 2015-2020* seeks to “increase undergraduate and graduate Indigenous enrolment as a percentage of the total student population” and “close the gap between Indigenous and non-Indigenous students in retention and graduation rates”.

We have made, and continue to make, progress to our diversity vision, but this vision is a clear challenge and requires constant attention. The participation rate of women should approach 1 in 4 in the next few years, but would still be far off societal diversity of 1 in 2, and Indigenous student participation of 1 in 16 is even further from societal diversity in Manitoba of 1 in 6; we still have a long way to go in the Faculty and, by extension, in the engineering profession. A future engineering profession that does not reflect societal diversity will be less able to contribute to solving the complex problems that face society, and will be doomed to irrelevancy to a large segment of the population. Accordingly, despite the obvious challenges, the Faculty of Engineering will continue efforts to achieve our vision diversity statement so that our graduates can collectively contribute their engineering knowledge to improve the well-being of everyone.

If you have ideas or would like to assist us in initiatives that support Indigenous students, foster the inclusion of Indigenous knowledge, perspectives, and design principles, or improve gender balance in our programs, please contact me at [jonathan.beddoes@umanitoba.ca](mailto:jonathan.beddoes@umanitoba.ca), I will be pleased to hear from you. ☺

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# The Passing of a Pioneer

## William Leslie (Les) Wardrop

By The Heritage Committee

The Association received sad news on Tuesday,

September 19, with the passing of one of its pioneers, Les Wardrop, at the age of 101. Les was a pioneer in many areas of the profession, particularly in the consulting engineering field, and in community affairs where he generously gave of his time and expertise. Much has already been written about Les over his career, including some humbly by Les himself.

Les passed away three months shy of his 102nd birthday, prompting many revealing tributes from colleagues and friends: 'truly one of the great ones', 'exemplary engineer', 'a true gentleman', 'a loyal friend', 'one of a kind', 'force for good will', 'left the world a better place', 'such a wonderful soul', 'what an amazing life, full of accomplishment!'. These kind compliments are but small samples of the full story about Les.

Les was born in December 1915, and grew up in Whitemouth, Manitoba. He spent a year in Port Arthur Collegiate in Ontario to complete his high school, a year that would play a later role in his career. The next year he returned to Whitemouth to help his father with the family farm and brickyard. A few years later, he was able to realize his dream and graduate with a degree in electrical engineering from the University of Manitoba in 1939, but more twists and turns awaited.

Since employment as an electrical engineer in Winnipeg, Manitoba in 1939 was unlikely, he decided he should also get a civil engineering degree to improve his chances of employment. However, he first worked another year with his father back in Whitemouth. He put 23,000 miles on their two-ton Ford truck and trailer hauling bricks to Winnipeg before he was able to return to the University of Manitoba to take civil engineering. It was during this time that he met his future wife,

Olive McLean, at the boarding house where they were both staying. They were later married in Kingston, Ontario on November 29, 1941. He completed his first year in 1941 before World War II interrupted his studies. With his electrical degree he joined the Signal Corps. Second Lieutenant Wardrop saw postings in Victoria, British Columbia; Kingston, Ontario; Delbert, Nova Scotia; London, England, and Darwin, Australia. Les played for the Signal Corps hockey team and scored an overtime goal in a final game at Maple Leaf Gardens.

After the war, Les took a part time job with the City of Winnipeg Engineers office as a draughtsman while completing his civil engineering degree in 1947. He immediately joined the City engineering department, completed special projects, and became Engineer of Waterworks and Sewage with a staff of 250 in 1949. Six years later in 1955, convinced there was an opportunity for additional engineering consulting services throughout Canada, he founded W. L. Wardrop & Associates with a staff of four, promising them one year's work.

One of the new company's first assignments was the 750-acre Windsor Park residential development. In 1956, he opened a second office in Port Arthur, Ontario, and, shortly after, a third office in Regina, Saskatchewan. It was his vision to have a national company. Under Wardrop's leadership, the company continued to grow and offer new services. He was legendary for his attention to detail and grasp of new technologies and disciplines. Les would personally delve into each new field, spending countless hours researching the discipline, learning the intricacies of the technology, determining user-sector needs and formulating a marketing and business plan.

Wardrop's vision was for his company to be a leader in its field. In 1966 he attended an IBM-sponsored seminar on a new "1130" computer. He saw the value in the new tool and had the company's first computer installed

in a 6m x 6m air-conditioned room. The company was at the forefront of using computers for engineering in Winnipeg for many years.

In the 1970s, Wardrop launched projects in West Africa and the international division was created. The Edmonton office opened and services expanded to include pulp and paper, nuclear, and solar energy.

After his retirement from full time employment in 1980, Les served on the board of directors and as a consultant.

Besides Windsor Park, among the firm's early recognizable projects are the Portage Avenue overpass at Polo Park, the Pembina-Jubilee interchange, Bishop Grandin Boulevard and related bridge projects over the Red River, the Pinawa townsite, as well as the servicing of Winnipeg Beach, the Selkirk Water Treatment Plant, and the radar station at Gypsumville.

Les was very active in the Association of Professional Engineers (APEM, now Engineers Geoscientists Manitoba), serving as President in 1959-60 and 1960-61. He also served on many committees. In 1970, he received the Meritorious Service Award from APEM for his extraordinary engineering achievements and community involvement.

Les maintained a close relationship with the University of Manitoba Faculty of Engineering. He served as principal organizer of the homecoming events for each of his two graduating classes. Notably, he was one of the first volunteers, in 1988, to join the unofficial campaign for the new Engineering and Information Technology Complex, which opened in 2005, when he was 90. In 1990, the Faculty dedicated the "Les Wardrop Reading Room" at its library in his honour.

In 2002, the Consulting Engineers of Manitoba paid tribute to Les by naming him the first honorary presenter of its prestigious Keystone Award for consulting engineering excellence and awarding him the Lifetime Achievement Award in recognition of his leadership, achievements, and contribution to consulting engineering and the community.



The University of Manitoba presented him with an honorary Doctor of Science degree at its spring convocation in 2006, and this was one of his proudest moments. Dr. Doug Ruth, Dean of the Faculty of Engineering, said "Les Wardrop has made an enormous contribution to the advancement of science and engineering throughout the nation, and has brought distinction to himself, his profession, his community, his country, and the University of Manitoba".

In January 2007, Les became an honorary chair of the committee to celebrate the 100th Anniversary of the Faculty of Engineering.

While he was overseeing his growing engineering business, Les returned to his rural roots and took over the family farm in Whitemouth, Manitoba in 1963. He spent many weekends building shelters and re-fencing the land to accommodate a commercial herd of Herefords. The initial herd of 16 young heifers grew to more than 100 head of cattle. In 1971, he and Olive moved to East Selkirk to be closer to their farm. They bought the 216 acres and house that belonged to Olive's grandparents, Woodhaven Farm. Olive passed away in 1986 and Les continued to enjoy his rural refuge until moving to the Canoe Club, where he lived for the past several years.

Throughout his career, Les gave generously of his time serving in numerous Canadian engineering and community associations and boards, often in the role of president or chairman. For a full listing of his involvement and more on Les, check out the Heritage Committee Wiki site at [www.heritage.apegm.mb.ca/index.php/les\\_wardrop](http://www.heritage.apegm.mb.ca/index.php/les_wardrop). ☒

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# Engaging New, Bold Initiatives

## GOVERNMENT RELATIONS STRATEGIC PLAN 2018-2025

By C. S. Sarna

The overarching goal of the Association's Government Relations Department is to build a relationship that causes government officials in all areas to think "engineering and geoscience means Engineers Geoscientists Manitoba". Creating this healthy and effective government relationship requires the formation and execution of a strategic plan and a clear and thorough communications strategy. Following the Association's 2018-2025 Government Relations Strategic Plan, new, bold initiatives will be taken throughout the year to achieve its broader goals and bolster communications and public relations efforts.

### Changes to the Limitations of Actions

Statute of limitations legislation varies across Canada's provinces and territories. As part of signing on to the New West Partnership Trade Agreement, the Manitoba government has committed to removing barriers to trade between the partnering provinces, and variations in practice legislation applying to professional engineers have been suggested as a possible barrier.

The Association will determine the feasibility of requesting a legislation change to *The Limitation of Actions Act* of Manitoba, which addresses engineers' and geoscientists' liability, by engaging with various government officials and relevant stakeholders. The Association has formed a task group to execute the development of the strategic plan through the creation of an environmental scan as well as stakeholder engagement and assessment in order to determine the feasibility of implementing the required changes in legislation to reduce the limitations from its current timeframe of six years for the Statute Limitation Period and 30 years for the Ultimate Limitation Period.

The purpose of the legislation change reducing the limitations on our members will be to harmonize the limitation periods across the country, making it an equal playing field for all engineers and geoscientists.

### CURRENT STATUTE OF LIMITATIONS & ULTIMATE LIMITATION PERIODS

Province	Statute of Limitation	Ultimate Limitation Periods
Alberta	2 years	10 years
British Columbia	2 years	15 years
Manitoba	6 years	30 years
Saskatchewan	2 years	15 years

### Sustainable Development –

#### PIEVC (Public Infrastructure Engineering Vulnerability Committee)

Extreme weather, natural disasters, and man-made service disruptions can bring a community to a halt and cost millions of dollars. Making climate resilience and climate impact analysis key pillars in federal infrastructure programs and federal government contracting will allow Canada to better predict, prepare for, and respond to weather-related emergencies.

Engineers Canada has developed a protocol that assesses risk to infrastructure in the event of extreme weather. The Public Infrastructure Engineering Vulnerability Committee Protocol (PIEVC) was created in 2005. Since that time, it has been applied to more than 45 infrastructure projects across Canada and several internationally.

Investing in the capacity to assess and adapt our community's risks in the face of a changing climate and unpredictable events, and leading municipalities, provinces, and non-government infrastructure owners toward resilient infrastructure are in the public interest.

The Association's Government Relations Department is advocating this initiative to provide ongoing advice and collaboration with government to increase awareness, knowledge, and the acceptance of infrastructure climate risk assessment and utilization of PIEVC. Starting in 2018, Mr. Tom Gouldsbrough, P.Eng., FEC, will chair a task group on this issue, to commence the stakeholder engagement and environmental scan to determine the feasibility of implementation of PIEVC within Manitoba.

### Diversity in Engineering:

#### The Status of Internationally Educated Professionals in Manitoba's Labour Market

As one of the important components of diversity, internationally educated engineers are beneficial to the overall competitiveness of this province, and a significant economic contribution can be achieved by more immigrant professionals working to their fullest potential.

There are 6,500 internationally educated professionals applying annually to register with provincial engineering regulatory bodies in Canada, and nearly half of the newly registered applicants have multicultural backgrounds, according to Engineers Geoscientists Manitoba. However, immigration and integration are often complex matters and the challenges facing immigrant professionals can be barriers to them re-entering the engineering profession upon arrival in Canada; lack of recognized education credentials; lack of career-related Canadian experience; and communication and language difficulties, for example.

Given the current situation, the Association's Government Relations Department proposes a study to examine the status of internationally educated professionals in Manitoba's labour market, to identify the challenges and obstacles impacting their career satisfaction and success, the factors that lead individuals to leave engineering in Manitoba, the disconnects in policy and regulation, and actions that can be put into place to address those deficiencies. By working collaboratively with various government officials, Manitoba Fairness Commission, other Association departments, and relevant stakeholders and experts, solutions will be sought that will help internationally educated professionals make the most of their skills and experience, to benefit not only themselves, but also the engineering profession in Manitoba. ⊕





## SPORTS Committee

By R. Petursson, P.Eng., FEC

**T**he Sports Committee is the largest fundraising committee within Engineers Geoscientists Manitoba. Through the hard work of its volunteers they plan, organize, and host the Making Links Engineering Classic golf tournament in association with the University of Manitoba Faculty of Engineering. This year, a new event will be added with the Engineers Geoscientists Manitoba Curling Funspiel.

In 2018 we mark the 15th anniversary of the Making Links Engineering Classic golf tournament, which is held on the third Thursday in June at the magnificent Quarry Oaks Golf Course. Along with the four-person best ball tournament, golfers are offered the opportunity to participate in various contests throughout the day including the chipping contest, putting contest (hosted by KidSport), longest drive, straightest drive, and closest to the pin competitions.

The Making Links Engineering Classic golf tournament wouldn't be such a great success without the generosity of our sponsors, especially Great-West Life, the long-standing major sponsor. Great-West Life has been the major sponsor for the tournament for over 10 years; they have also volunteered as the golf shirt sponsor for the past two years. In total the Sports Committee, through the Making Links Engineering Classic, has raised and donated over \$200,000 to the University of Manitoba Faculty of Engineering.

Currently the Sports Committee is working to plan and host an Engineers Geoscientists Manitoba Curling Funspiel. Planning is well underway for the Funspiel, which will be held on January 24, 2018 at the St. Vital Curling Club. In addition to a hot lunch and a wonderful roast beef dinner, curlers of all skill levels can slide out onto the ice for a series of fun, two end curling games. They will also enjoy a draw to the button competition and will have the opportunity to win one of several team prizes. All proceeds raised from the Engineers Geoscientists Manitoba Curling Funspiel will be donated to assist with the education of geoscientists in Manitoba. ☺



Join the fun at Engineers Geoscientists Manitoba's **2018 Curling Funspiel!**

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A. Al-Shawwa	M.A. Croft	O.D. Jegede	J. Martinez	O.M. Sparrow
D. Andres-Molina	J.C. Dasanayake	O.A. Jerez	D.A. McEwen	M. Spasojevic
A.D. Arevalo	J.C. de Oliveira	K. Jin	N.P. McLean	M.A. Sungaila
V. Arkadyev	S.R.C. Dickson	M. Jradi	S. Mikhail	H. Tabassum
N. Auger	D.R. Domenichini	D. Kattan-Methot	S.C. Minty	J.A. Tapia
M.P. Awang	C. Dos Santos	J.P. Kearley	M. Najari	T. Tolat
C.G. Babuin	F.L.A. Ermitanio	H. Khalid	C.E. Nicholson	T.K.O. Tran
B. Bashiri	J.S. Faustino	D. Kim	N.R. Penner	R.N. Vachon
K.D. Baylis	D.C. Fencott	B.C. King	A.E. Perry	A. Viau
C.S. Beaudoin	S.J. Ganser	F. Koomson	F. Pitre-Joyal	C.C. Vuong
R. Beaulieu	P.C. Gaudet	J.W. Korczak	S.A. Raitthatha	B.M. Wallin
E. Belanger	D. Gendron	M. Kzebra	S. Rasmussen	C.M. Wanner
J. Binette	H.S. Gill	P. Labonte	J.M. Ribon Acosta	I.M. Wesch
P.J. Biro	S.D. Goldstine	D. Lafreniere	E.M. Richardson	M.G. Wilson
P. Bisson	S.M. Gordon	P.A. Lakomski	E. Robert	H.M. Xia
T.R. Bohrn	M. Grenier	D. Lee	J. Robillard	G.M. Zajac
B. Boikanyo	D.G. Gruber	N. Lemire	A.F. Rolo Naranjo	A.R. Zawadzka
J.C. Bolster	R.N. Haddad	B.E. Lewis	S. Roy	Y. Zhao
R.A. Bonham	Y.S. Hamdy	M.J.R. Linatoc	H. Safavian	J. Zhu
C.O. Boudrias	M.M. Hawkeye	S. Liu	R.V. Santiago	K. Zhu
S.F. Buchko	R.W. Hickey	Y.Q. Liu	T.L. Schellenberg	
M.R. Bye	J.T. Hirst	D. Lokke	D.W. Schnarr	
T.M. Camana	K.R. Hosaluk	C.C.W. Loo	M. Sharafi	
S. Chai	D.C. Hunchak	P.S. Lowrie	S.M. Skitch	

## Interns

A. Alizadeh	P.R.L. De Mesa	J.C. Impey	A. Mohiuddin	A.R. Scaletta
W.A. Ambach	A.N.P. Desilets	V. Karpisek	M.D. Monte	C. Schoinas
W.R.M. Andryou	S.A. Desrosiers	A. Kaur	A.K. Muthoka	V. Shalini
Q.A. Artates	J.S. Dhillon	P.S. Khangura	T.A.B. Neirinck	S. Singh
L.A.M. Asaad	J. Digbe	J. Kim	K. Netzer	A.W.J. Skorpad
A.P.D. Augellone	C.J. Dueck	K.L. Klassen-Townsend	T.D. Neusitzer	A.T. Skrabek
M.F. Azmy	D.M.T. Dy	R.M.R. Kostynuik	M.T. Newman	D.M.J. Stafford
K.J.S. Bedi	A.A. Emmanuel	A. La	R.W. Officer	Y.A. Stakhovskyy
C.D. Bell	N. Esmaeili	K.J. Lamothe	A.O. Ogundipe	S. Stillier
S.L. Benko	K.M. Falkowski	W. Lee	R.P. Olson	L.A. Stoffel
O.A. Bloch	H.J.J. Fast	D.A.L. Leslie	P.P. Page	J.M. Thompson
B.K. Borschawa	T.R. Fennell	K.N. Levesque	M.M. Patel	S.S. Tidwell
A.M. Bredin	A.J. Finley	J. Li	T. Patel	N.M. Villegas
M. Broumand	N.T. Gedder	E.Z. Liu	K. Pejhan	J.M. Ward
K.G. Brown	D.K. Gitzel	M.F.S. Manaol	R.E. Peters	Y. Wei
D.J. Broza	F.X. Goetz	J.S. Marquez	B.A. Poirier	B.J.P. White
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J. Chen	S.B.N. Grimshaw	N.F. Masood	M.J. Rabena	M. Wu
J.R. Chunesingh	M.J. Harper	C.J.A. McQuarrie	S. Rajesvaran	M. Yudelevich
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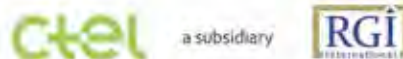
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## CBC Manitoba Names Jonathan Foord, EIT, to 2017 Future 40

CBC Manitoba has named Jonathan Foord, EIT, to its annual Future 40 list, a list of accomplished people under the age of 40 in the province.

Jonathan is nominated in the science and technology category, and has worked to design and implement Winnipeg's first Transportation Management Centre, rapidly introducing unprecedented citywide tools and unprecedented capabilities.

Driven by the desire to improve peoples' lives, his vision extends to improved planning, better and

faster emergency response to save lives, and much more. His revolutionary and visionary work is attracting international attention and he was recently invited to speak at the Waze Global Summit, livestreamed from the Google offices in New York City.

Cities around the world are now looking to Winnipeg and seeking insight from Jonathan on how they too can start to realize rapid transformation of their transportation systems. He is redefining transportation on a global stage, and doing it from Winnipeg. ☕



## Professional Engineer Sworn In As Governor General

On October 2, 2017, Ms. Julie Payette became Canada's 29th Governor General.

At 54 years old, Ms. Payette is an exemplary human being with an incredible list of accomplishments that began with a degree in Electrical Engineering from McGill University. She went on to earn a

Master of Applied Science in computer engineering at the University of Toronto, focusing on computational linguistics in the field of artificial intelligence (AI). She plays piano, has sung with a number of professional orchestras, and communicates easily in French, English, Spanish, Italian, Russian, and German.

In 1992, Ms. Payette was selected as one of four astronauts from 5330 applicants. She has logged more than 25 days in space, served as chief astronaut for the CSA, was the second Canadian woman to participate in the NASA space shuttle program, and the first Canadian to board the International Space Station.

She is an incredible ambassador for the field of engineering and now has an even greater platform to continue her promotion of scientific and technological fields. Ms. Payette was awarded an honorary doctorate from the University of Manitoba in 2013, one of 27 she holds currently.

After being sworn in, she urged Canadians to work together on issues such as climate change, migration, and poverty:

"Anyone can accomplish anything and rise to the challenge as long as they are willing to work with others, to let go of the personal agenda, to reach a higher goal and to do what is right for the common good. This is exactly what I hope my mandate as the Governor General will reflect." ☕



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# Code of Ethics & By-law Changes

This year has marked the beginning of some significant changes to the Association's by-laws. This transition is notably accompanied by improvements to the methods for engaging members and ensuring that the best final product is presented to the membership for voting. The method used over the past year for re-writing all of By-law 17 will be used for future changes, including the ongoing project to review the entire set of by-laws.

In 2016, Council made the decision to review all of the by-laws with the aim of improving this key component of our legislative documents. As a starting point, a task group for reviewing all of By-law 17 was created. This group worked with staff and members over the past year to establish the version that was approved by members in October 2017.

The process that was used in 2017 has been embedded into the new By-law 17, which is the by-law describing the process by which future by-laws will be changed. To develop this new version, Council's task group started by engaging directly with members, through meetings at the Engineers Geoscientists Manitoba office, to develop high-level principles that would guide the rest of the process. These principles addressed questions such as:

- Who can propose by-law changes?
- Who can approve by-law changes?
- How are by-laws finally approved?
- What process should be used, and how can proposals be improved?

The guiding principles were then used by legal counsel to draft a proposal for the new by-law. This proposal by councillors aimed to fulfill all of the principles that were developed in conjunction with interested members. Some members disagreed with the approach, but could not dispute that the proposal maintained the high-level principles.

The draft version was presented in an engagement session to interested members. It was also posted to the website in conjunction with an email notice to members inviting comments and suggested edits to the proposal. Some of these suggested edits were incorporated into the final version by Council in June 2017.

The final step in the process was to put the proposal to a vote by the general membership. This requirement followed the old model for by-law approvals and was maintained in the version that members ultimately approved in October.

**“In 2016, Council made the decision to review all of the by-laws with the aim of improving this key component of our legislative documents.”**

**Next Steps:** Council's plan to review all of the by-laws will continue for the next two cycles of annual general meetings. This coming year will see a focus on By-laws 13 & 15, which encompass the Code of Ethics and the Complaints and Discipline procedures.

Engagement begins at the end of 2017 and will continue through the winter and spring of 2018. Due to the nature of these by-laws, engagement will include both general meetings with members at large and a focus on the Investigation Committee, the Discipline Committee, and Council.

Do you have a canon from the Code of Ethics that you'd like to see changed? Is there a key piece missing from our legislation? Please, drop us a line with your thoughts.

*As always, I appreciate comments and discussion about standards issues. If you'd like to talk about the above topic or any other area of concern, please do not hesitate to contact me at: [MGregoire@EngGeoMB.ca](mailto:MGregoire@EngGeoMB.ca).* ☎

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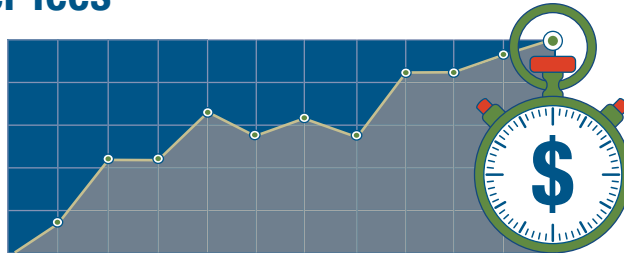
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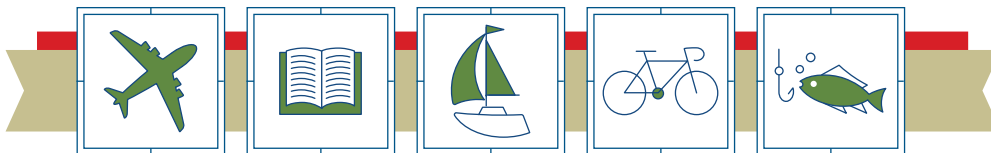
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