The official publication of Engineers Geoscientists Manitoba

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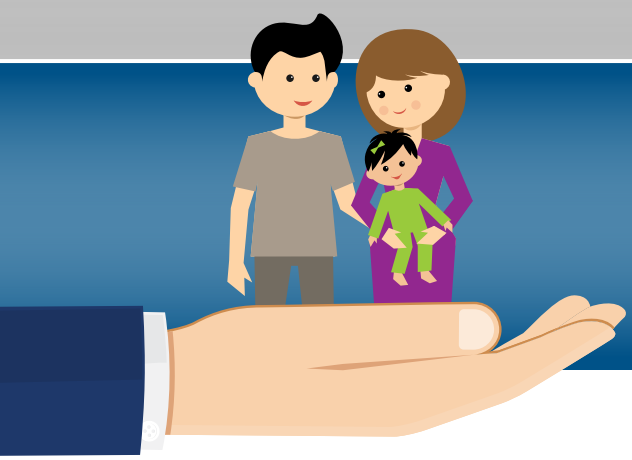

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† www.moneysense.ca, "The real cost of raising kids," April 15, 2015.
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The Keystone Professional Committee would like to hear from you. Please email your comments to: *GKeatch@EngGeoMB.ca.* Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

THE KEYSTONE PROFESSIONAL

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ENGINEERS GEOSCIENTISTS MANITOBA

AUTUMN 2018

FEATURES

DEPARTMENTS

Publication management and production by: Craig Kelman & Associates

3rd Floor - 2020 Portage Avenue
Winnipeg, MB R3J 0K4
Ph: 204-985-9780 Fax: 204-985-9795
Email: info@kelman.ca
www.kelman.ca

Managing Editor: Christa Campbell
Art Design/Production: Tracy Toutant
Marketing Manager: Jeff Kutny
Advertising Coordinator: Stefanie Hagidiakow

Send change of address to:
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Jonathan Epp, P. Eng., FEC, President 2017-2018

Closing Remarks

In only a short time the 2018 Annual General Meeting will be upon us, and I will hand the Scott Gavel over to my successor. Serving as your president over the past year has been a privilege. Of all the moments I will take with me, the ones I have enjoyed the most have been with members.

I have enjoyed meeting the volunteers. In particular, being able to see them in their element, doing what they do best and so obviously enjoying it themselves. Of all the member groups I meet, our volunteers are consistently the most cheerful and also the most diverse, in age, gender, and nationality. Their enthusiasm and dedication to our profession always inspires, and I am grateful for the opportunities I have had to witness the breadth of ways our volunteers support us.

I have also enjoyed the conversations and debates I have had with members. Sometimes those discussions have centred on points of agreement, and we have jointly identified the challenges we face and schemed about the best ways to address them. Sometimes those discussions have centered on points of disagreement, and I have gained new perspectives and discovered new ways to approach the issues our professions face. In all cases, I have been convinced that we are proud of our professions and passionate about doing what we can to make them better.

The presidency is filled with many planned events and engagements: go to this event; provide remarks; smile and wave; introduce yourself to this person; go to that event; pose for a photo. As an introvert, it can feel overwhelming, so I have especially appreciated the unscripted moments I have encountered: the member who waited long after the event just to say thanks; spending time with staff in the lull between events; the out-of-the-blue and unsolicited words of support or encouragement. These moments were small and quiet in the general busyness, but they still resonate loudly and are greatly appreciated.

Over the last year I have gotten to know the professions better. Getting to know the professions better results in being able to see both the challenges and our achievements in starker detail. Of all the events I attended, I can think of none more representative of that dichotomy than the Engineering Access Program (ENGAP) graduation dinner. The potential challenges facing our young Indigenous engineers are numerous: blatant racism, unconscious racism, economic challenges, cultural differences, educational differences, and systematic effects passed on from previous generations, to name a few. Yet the ENGAP graduation dinner is one of hope, pride, and celebration. The emcee at that event, James Harper, himself a recent grad, summed it up succinctly with his closing remarks: "Globally speaking, we have some tough problems to solve, and I'm excited to see eight more engineers entering that space to contribute meaningful ideas and a lasting legacy." Those words have stuck with me, and I think speak more broadly to the way we, as professions, see our world.

We do have tough problems to solve, but solving problems is what we, as professions, are known for. We have not solved all our problems, but it gives me hope to have seen so many of you be that one more engineer or geoscientist doing your part to contribute and create a legacy of which we can be proud. Thank you.

It has been an honour to serve as your president.
Jonathan Epp, P. Eng., FEC

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G. Koropatnick, P.Eng., FEC, CEO & Registrar

Let's **Talk Price**

An axiom is "an established rule or principle or a self-evident truth".[1] Consider the following axioms about price.

Axioms of Price

1. When something is offered for free, the buyer may quickly say "It's not really worth anything. No thanks, I'm not interested".
2. If the price is too low, it's probably cheaply made and not worth the money.
3. If the price is low and the perceived value high, the buyer is suspicious of a rip-off. Some will recite the old adage: "If it seems too good to be true, it probably is" or "Better read the fine print".
4. If the price is low and the perceived value is low, the buyer won't buy. When forced to buy, the buyer becomes indignant.

Local Mindset

Winnipeggers like a bargain. We're tough on price and quality. Our city is known to be a test market for major corporations like McDonalds, KFC, and Walmart. If it sells in Winnipeg, it'll sell anywhere.

What about within the membership? We're tough on price too. Engineers like efficiency. There's a tendency toward minimalism, least path, and optimization, leading to lower cost and the best pricing. We're sometimes ridiculed for being cheap.

Reluctance

Some members are reluctant to endorse their membership. They express the attitude: "I wouldn't register if my employer didn't make me." This fits the axiom: "If the price is low and the perceived value is low, the buyer won't buy. When forced to buy, the buyer becomes indignant." For a large majority (83%) of members, their annual fee is paid by their employer, so the question about value is disregarded or deferred. But if their employer stops paying, then paying any amount is all of a sudden too much.

> We're tough on price too. Engineers like efficiency. There's a tendency toward minimalism, least path, and optimization, leading to lower cost and the best pricing.

Low Member Fee

The Association's member fee is low. Engineers Geoscientists Manitoba has the lowest professional fee of all regulators in the province. Nurses, doctors, dentists, lawyers, accountants – they all have higher member fees (ranging from $630 to $3,500). Some think a low fee is a good thing, but it actually hurts the profession. As stated above, when price is low, the perception is that there is no value. See the Value Proposition on the Association website (*www.enggeomb.ca/pdf/Registration/ValueProposition.pdf).* It shows many benefits of being a member. So why is the fee so low?

The valuation of engineering is low because members don't give themselves credit for the value they bring to society. The profession has allowed a culture defined by low price and low expectation. It is a crisis of identity. Does this date back to Martha from the Rudyard Kipling ritual about engineers? Martha was basically complaining: "No one is paying attention to all the work I'm doing." Kipling called engineers the "Sons of Martha." This has been a theme for engineers in Canada for a long time and it defines the culture.

Devil's Advocate

Here are some "devil's advocate" arguments I hear frequently.

"What are we getting for what we are paying?"
The member meeting last spring at Holiday Inn South cost $5,384 for 24 members to attend (not including councillors and staff). Cost per member: $224. Is this justifiable? What would the rest of the membership think?

"You're spending the members' money, so price is important."
Because we're spending the members' money, we must show the lowest price on everything. In the

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consulting industry, it's called the "commodification of services". The lowest price gets the job. Some call it a "race to the bottom." There are some who will do the work for nothing. Do members want a low price – heading to the bottom?

"I don't think you should raise the member fee if there is a surplus." This statement is like your boss saying: "I'd give you a raise but you can only spend it on groceries, gasoline, and rent. You can't save any for a home, purchasing new golf clubs, or going to Disney World with your family." How do you get ahead if you don't save some money? Putting savings away ensures stability and sustainability for the Association.

"A low member fee shows that the work is getting done efficiently." Keeping the member fee low is like the government forcing the university to keep tuition fees low. It hurts the quality of education. Short term gain for long term pain. Similarly, a low member fee hurts the quality and stature of the profession. Who wants to be a part of an underfunded, low status organization? How do you build anything on a bare-bones budget?

Fee Increase

At its June budget meeting, Council raised the membership fee to $436, beginning January 1, 2019. The $36 dollar increase will pay for some important projects over and above the basic operating expenses. Four projects comprise the $36: (1) Indigenous outreach program - $16, (2) online ethics module in ProDev - $4, (3) advertising campaign - $15, and (4) ERP – enterprise resource planning study - $1.

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*. Have a great day!

Reference

[1] Source: *https://www.merriam-webster.com/dictionary/axiom*

IT PAYS TO COLLABORATE. DON'T LEAVE MONEY ON THE TABLE!

By C. Geddert, P.Eng., and K. Atamanchuk, P.Eng.

As engineers we know that when we work with others we develop more ideas and better solutions. The provincial and federal Governments agree! Both levels of government have funding mechanisms that will provide financial support for collaboration with post-secondary institutions. They have set a table with subsidies, tax credits, and grants to support industry, and our experience in Manitoba indicates that some leave the table without taking their share or they ignore the table altogether because of misunderstood requirements or confusing processes. This is where collaboration with post-secondary institutions can help industry maximize their share of available government funding.

For many engineers in industry, the conversations about research and development are focused on in-house labs within an organization that verify the quality or operational output of new or existing products and processes. This type of testing and problem-solving research is enhanced when industry collaborates with the expertise that lives in post-secondary institutions. These facilities are staffed with technically excellent researchers, engineers, and technicians, with the latest state-of-the-art equipment. This environment can provide additional objective points of view and new approaches to a problem. Having more new ideas and approaches to a problem leads to more potential solutions to be developed. The government support for this is intended to help companies develop operational excellence and product and service innovation. It supports advancement of industry and technology overall. Funding is available to support problem-solving research, innovative research, new product development, technical talent capacity building, training on selected topics for existing staff, and partnership to gain brand awareness in the technical community to solve ongoing problems within the organization.

It has been reported that although this funding is widely available and relatively easy to access, Manitoba companies in particular are not accessing these funds. They are "leaving money on the table". Government agencies use the engagement in funding programs as an indicator of the support for innovation and the health of the industry sector. If no one is accessing money to support research or problem solving, the sector may be seen as "lagging" or even in decline. This can lead to less money being set out in the following years or the cancellation of funding programs. Governments want to support healthy sectors. They want the money they make available to support innovation and growth to be well used. The best way to ensure the money stays on the table is to use what has been put out to your best advantage. When the table is cleared, like an embarrassed party host, the government may choose to put out more the next time.

The University of Manitoba's Faculty of Engineering wants to help you clear your plate and get even more. A new position has been created to help facilitate these activities with a mindset of finding the best options for collaboration and funding for your organization. The Faculty of Engineering's Industry Partnership Facilitator, Kathryn Atamanchuk, P.Eng., can provide assistance in connecting your organization to the various ways in which it can collaborate with the Faculty of Engineering. These strategic partnerships can include:

- Problem-solving and innovative collaborative research projects through NSERC (National Science and Engineering Research Council), MITACS (Mathematics, Information, and Complex Systems, a non-profit organization that manages funds to support student collaboration with industry and government), and other provincial and federal government programs.
- Participation in the capstone design courses, where students are introduced to the needs of your organization and solve an engineering design problem.
- Student and graduate hiring programs and incentives to support your recruitment efforts and labour market strategies for technical hiring.
- Industry-partnered courses and programs that allow you to develop your existing staff and develop new engineering graduates that meet your needs, such as the Operational Excellence group or Advanced Graphical Communication course.
- Opportunities to contribute to and engage with the Faculty of Engineering through membership in Friends of Engineering.
- Opportunities to support newcomer engineers through the Internationally Educated Engineering Qualification Program (IEEQ).
- Opportunities to support and collaborate with Indigenous engineering students and graduates through the Engineering Access Program (ENGAP).

All of these programs are intended to bring value to industry. They are an opportunity to leverage the skill and ability of university students, researchers, and other staff to benefit Manitoba industry. These collaborations come with partial or full funding and/or tax credits from government. Through strategic partnerships with the Faculty of Engineering you can demonstrate to the government that your organization is advancing technology and that Manitoba is an innovative province. The Faculty of Engineering has people in place to help facilitate these partnerships and get you access to the funding. Don't leave money on the table!

We invite you to contact Kathryn Atamanchuk at *kathryn.atamanchuk@umanitoba.ca* (204-480-1414) or Carolyn Geddert at *carolyn.geddert@umanitoba.ca* (204-474-8948) to find out how partnering with the Faculty of Engineering at the University of Manitoba can benefit your organization. Your questions and input are always welcomed.

There are opportunities for funding and collaboration with the U of M Faculty of Engineering on the table for your organization. For more information, please attend the "Don't Leave Money on the Table" session at Ingenium 2018!

Groundwater

By R. Reichelt, P. Geo., FGC

Introduction

Water is one of the necessities of life. Where surface water is in short supply, of poor quality, or both, people have turned to the use of groundwater, from either natural springs or water wells. Groundwater is a large subject, so this article is intended as an introduction to those unfamiliar with it. After covering some of the basic concepts, we will look at the main issues with groundwater: quantity and quality.

Groundwater Basics

Except where there are caverns, groundwater is not found in "underground rivers" or "underground lakes". Groundwater is found in porous media such as permeable rock or unconsolidated sediments. A saturated permeable geologic unit that can transmit significant quantities of water is called an *aquifer*. The unsaturated zone above an aquifer is called the *vadose zone*. The boundary between the vadose zone and the saturated zone is called the *water table*. If an aquifer is enclosed within impermeable materials, sometimes called *aquitards*, the aquifer is called a *confined aquifer*. Where there is no confining layer over an aquifer, it is referred to as an *unconfined aquifer*. Groundwater in aquifers flow from *recharge* areas to *discharge* areas. Discharge areas often have natural springs.[1]

Darcy's law describes the flow of a fluid through a porous medium. Henri Darcy was a hydraulic engineer who combined his study of the wells in Dijon, France, with experimental observations to derive his law, which he published in 1856.[2] Darcy's law states that the quantity of water flowing through a porous medium (Q) is proportionate to the hydraulic gradient (dh/dl), the hydraulic conductivity of the medium (K), and the cross-sectional area (A) through which the water is flowing or:

$$Q = -K \frac{dh}{dl} A$$

The function h in the equation for hydraulic gradient is called the *hydraulic head* and is measured over the distance l. The hydraulic head can be seen as an elevation at which the water would stabilize in a well completed in the aquifer and is synonymous with the water table in an unconfined aquifer.

Groundwater Quantity

As noted above, one reason to use groundwater is that it may be more readily available than local surface water sources. People studying water wells use pump tests to define the quantity of water that a well can produce. Pump tests consist of pumping water out of the well, measuring the volume produced, and measuring the decline in hydraulic head in both the pumped well and a nearby observation well.[3]

The results of a pump test can be used to determine the hydraulic conductivity (K) of the aquifer, which, in turn, can be used to calculate the ability of water to be transmitted through the aquifer, transmissivity (T), and the ability of the aquifer to store water, storativity.[4]

Transmissivity (T) is simply hydraulic conductivity (K) multiplied by the thickness of the aquifer (b) or $T = Kb$. Storativity (S) is the volume of water that an aquifer releases from storage per unit surface area of the aquifer per unit decline in the hydraulic head during the pump test.[4]

Storativity and transmissivity are most applicable to confined aquifers. For unconfined aquifers, the concept of *specific yield* is more useful. Specific yield is the volume of water an unconfined aquifer releases from storage per unit surface area of the aquifer per unit decline in the water table.[4]

The practical use of measuring the characteristics of an aquifer is to determine if an aquifer is adequate for the job of supplying the water that we wish to withdraw from it. Ultimately, if more water is withdrawn from an aquifer than is recharged into the aquifer, the aquifer will eventually run dry. This appears to be the fate of the High Plains Aquifer (also called Ogallala Aquifer) in the United States.[5]

Groundwater Quality

Let us say that you have found a groundwater source that can produce all the water you think that you will need; how do you know if its quality is suitable for use? If you are going to use the water for domestic water supply in Canada, you should test the water and compare the results to the *Guidelines for Canadian Drinking Water Quality*.[6] These are guidelines for bacteriological, chemical, and radiological parameters. You should study your groundwater source and decide which parameters need to be analyzed.

Guidelines for agricultural water use are also available. The Canadian Council of Ministers of the Environment has published guidelines in the *Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses*.[7]

It is important to get this right when developing groundwater sources. For example, in Bangladesh and the West Bengal state of India, thousands of water wells were developed and used before someone decided to check the water for arsenic. The results showed significant arsenic contamination in many wells, but not until after millions of people had suffered arsenic poisoning.[8]

Final Comment

"Whiskey's for drinking, water's for fighting" – quote falsely attributed to Mark Twain.[9] I have only scratched the surface of groundwater issues here and there will be more articles on more specific issues in future. As the above quote indicates, the issue of allocation of water rights is often contentious and will certainly be addressed in a future article.

I invite you to follow up on the references listed below for further education. As well, if anyone has an article on groundwater that they would like to see published in the *The Keystone Professional*, please forward it to our committee via *GKeatch@EngGeoMB.ca*.

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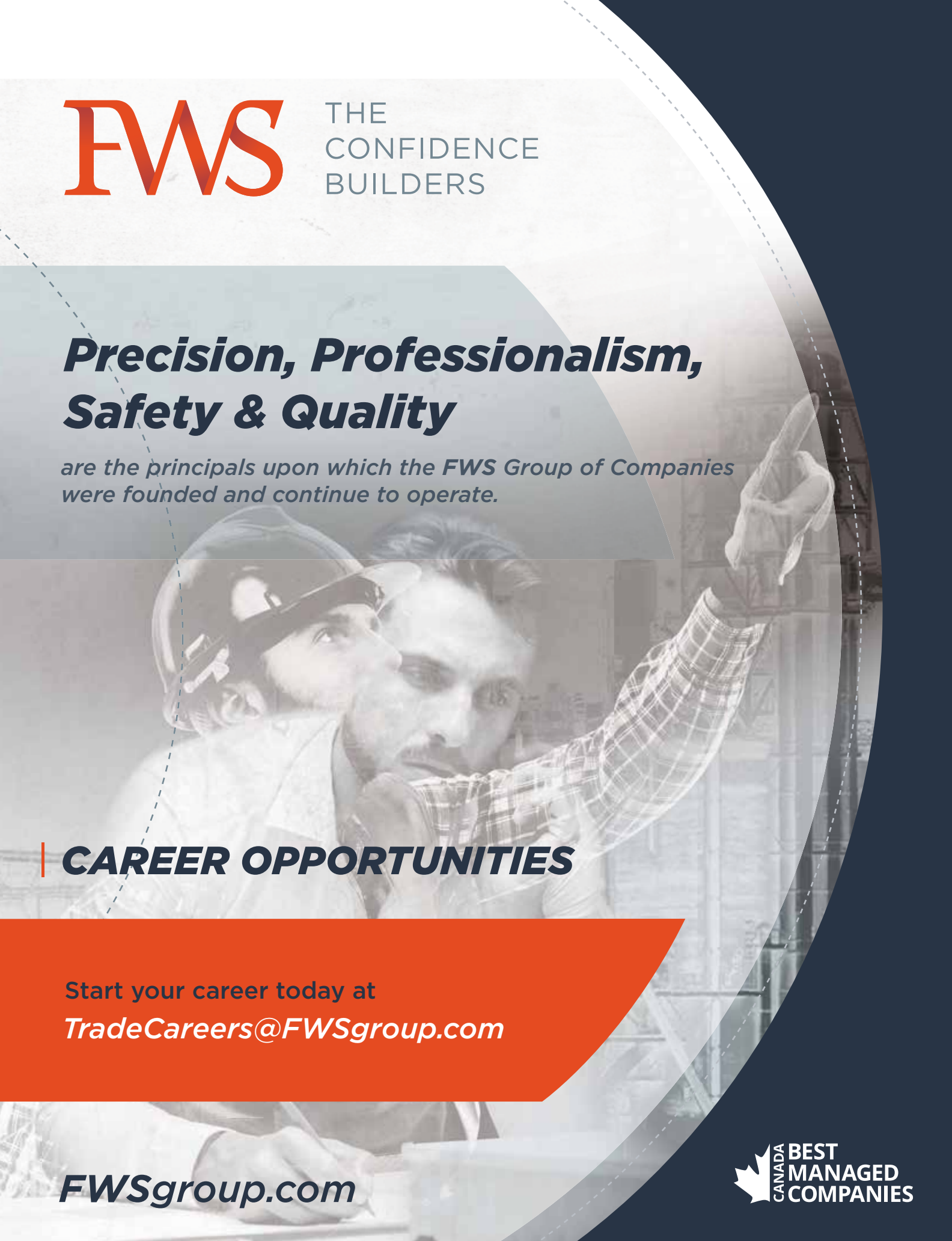

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2018 Highlights

PROFESSIONAL DEVELOPMENT SEMINARS

Now focusing on five strands rather than one overall theme, this year's Professional Development Seminars delivers attendees the choice of 20 breakout sessions, offering a wide variety of professional development topics suited to all interests and experience levels. The addition of two keynotes maximizes professional development through exposure to the current topics of Innovative Disruption and Unconscious Bias.

WANT EVEN MORE?

Registered attendees also receive exclusive post-conference access to Professional Development Seminar recordings. Listen to the sessions you couldn't attend on the day, log additional ProDev hours, and expand your knowledge even further!

LOOKING TO LOG PRODEV HOURS?

DID YOU KNOW... that attending the Annual General Business Meeting counts as hours towards your 'Participation' category for ProDev? So if you stay all day, you'll be earning hours for both 'Informal Activity' and 'Participation', while gaining valuable knowledge and being an active member of the Association.

FRIENDS OF ENGINEERING NETWORKING RECEPTION

After the Annual General Business Meeting, join students from the University of Manitoba and Association members for a relaxed networking event before you head home for the evening. Enjoy a complimentary drink and some appetizers while mingling with representatives from a variety of student engineering groups, who will be showcasing their recent work.

AWARDS GALA DINNER

Don't miss the grand finale of Ingenium 2018! This annual black tie event highlights exceptional member achievements through the Engineers Geoscientists Manitoba Awards and showcases some of the best local entertainment. This year, the world is coming to Winnipeg with outstanding performances by multicultural Folklorama groups.

SPONSORSHIP OPPORTUNITIES

There are multiple sponsorship opportunities available for Ingenium, offering companies a variety of in-person and media-based marketing benefits. From a booth at the Professional Development Seminars to the naming rights of one of the conference's high-profile events, there is a sponsor package to suit your company's needs and objectives.

For sponsorship information, please email *GKeatch@EngGeoMB.ca* or visit *www.EngGeoMB.ca/Ingenium*

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Professional Development Seminars ▸ THURSDAY, October 18

7:30–8:30	**Registration & Continental Breakfast**				
8:30–9:15	**Welcome and Keynote** Fast Future: Disruptive Innovators – *Jim Harris*				
	Professional Practice	***Better Business***	***Environment & Climate***	***Technical Innovations***	***Workplace Skills***
9:20–10:05	PANEL DISCUSSION: Diversifying the Engineering Profession – How Does Engineering Compare to Law and Medicine?	Holding Others Accountable the Positive, Principled Way *– Stephan Brandt, DOOR Training*	Designing Systems for Local Sustainability *– Peter Denton*	Zero-Carbon Emission Air Transport for Northern Canada: The Electric Airship *– Dr. Barry Prentice, Asper School of Business*	Rogue Manageering *– Imran Khan, P.Eng.*
10:05–10:25	**Coffee Break and Booths**				
10:25–11:15	Manitoba Building Code Requirements for the Design of Deep Foundations *– Norman Garcia, P.Eng.*	PANEL DISCUSSION: Concrete Actions Manitoban Employers Are Taking to Reach 30 by 30	A Resilient City: Making Cities More Resistant to Impacts and Risk *– Doug Froese, Veolia*	Electrical Safety in Patient Care Areas *– Monte Raber, P.Eng.*	Oh No, Not Another Meeting! *– Ann Christoffersen, RGI Learning*
11:20–12:10	Aircraft Certification *– Roger Mussard, P.Eng.*	PANEL DISCUSSION: Don't Leave Money on the Table! *– Faculty of Engineering, UofM*	Pandora's Box: Tempted by Geo-Engineering *– Peter Denton*	Manitoba Hydro High Voltage Test Facility *– Valeria Pevtsov, P.Eng.*	Improving Performance and Execution with Feedback *– Stephan Brandt, DOOR Training*
12:10-1:30	**Lunch and Keynote** Unconscious Bias – *Jaclyn Henkelman, P.Eng.*				
1:35-2:20	Practice Notes and Guidelines *– Michael Gregoire, P.Eng., FEC*	How Manitoba's Accessibility Laws Affect Engineers and Geoscientists *– Yutta Fricke, Disabilities Issues Office*	Northlands Dënesųłiné Leads Renewable Energy Transformation *– Bruce Duggan, Boke Consulting*	UMSAE Aero: Finding Success *– Julian Audette*	So You Have to Give a Talk… *– Lisa Moretto, RGI Learning*
2:30	**Annual General Business Meeting**				
	Friends of Engineering Networking Reception				

For details of each session, visit *www.EngGeoMB.ca/Ingenium*

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OPENING KEYNOTE ▸ THURSDAY, October 18

DISRUPTIVE INNOVATION

Disruptive Innovation is affecting most industries. Uber is worth more than every taxi cab company in North America combined. Tesla, which produced 100,000 cars in 2017, is worth more than GM, which turned out 10 million. Skype facilitates more international long-distance calls than all the world major telephone companies added together. Netflix blindsided Blockbuster. In China, 15 trillion dollars of cashless payment transactions were made using smartphones in 2017 – and not a single bank is involved! Alipay (the financial arm of Alibaba) has 54% of the market and WeChat, an app, has 40%.

This provocative, fun, interactive, dynamic session will examine how technologies are reshaping entire industries and challenging conventional business models. What are the implications for engineers and geoscientists in Manitoba?

And it's not just about technology – ultimately, it's about people. If the rate of change outside your organization is greater than the rate of change inside your organization disaster is imminent. Your organization needs to be changing as fast as customer preferences are changing, technology is changing and as fast as new competitors are entering your market.
Learn practical, proven tips, techniques and strategies to cope with the challenges of change.

JIM HARRIS

Jim Harris is a one of North America's foremost thought leaders, management consultants, and authors on disruptive innovation. *Association* magazine ranked him as one of the nation's top ten speakers. He works internationally conducting strategic planning sessions with executive teams focusing on future trends, smart technologies and cities, mitigating risk, employee engagement, and change.

Jim's last book, *Blindsided!* is published in 80 countries worldwide and is a #1 international bestseller and was named one of the best business books of the year by a number of organizations. His second book, *The Learning Paradox*, was nominated for the National Business Book Award, and has appeared on numerous bestseller lists. Books for Business ranked it as one of the top 10 business books in North America. Mr. Harris co-authored the national bestseller *The 100 Best Companies to Work for in Canada*. As a management consultant, Mr. Harris works with leading businesses, Fortune 500 companies, and organizations aspiring to join these ranks. From 1992-1996 he represented the Covey Leadership Center in Canada teaching Dr. Stephen Covey's work, *The Seven Habits of Highly Effective People.*

LUNCH KEYNOTE ▸ THURSDAY, October 18

UNCONSCIOUS BIAS

Even the most well-meaning person unwittingly allows unconscious thoughts and feelings to influence seemingly objective decisions. If our decision-making is being driven by things that we're not aware of, it might go in directions that we didn't necessarily intend. For example, if our bias is causing us to only hire people like us, or to only promote people like us, then that is where bias can begin to impact the larger organization.

The practical advantage of diversity boils down to this: a group of people with different perspectives usually makes better decisions and finds more creative solutions than those who have largely similar views, backgrounds, and skill sets.
This lunch keynote will facilitate an open dialogue about unconscious bias, create a shared understanding of how bias can impact the workplace, and discuss mitigation strategies in order to lead more inclusively.

JACLYN HENKELMAN, P.ENG.

Jaclyn Henkelman, P.Eng., has worked in the agricultural industry for the past 15 years and currently holds the role of the Canadian Health, Safety and Environmental Lead for the Crop Science division of Bayer.

Jaclyn holds a degree in Biosystems Engineering from the University of Manitoba. While attending university, she worked part time for WISE Kid-Netic Energy, which is an outreach group that educates and motivates youth into pursuing careers in engineering and science, regardless of their background, gender, or socio-economic status. Ms. Henkelman is currently the chairperson of Bayer Crop Science's Employee Inclusion and Diversity Council. This committee was responsible for training 100% of their people leaders across Canada this past year on the topic of Unconscious Bias.

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AWARDS GALA DINNER ▸ FRIDAY, October 19

The grand finale of Ingenium 2018 is the Awards Gala Dinner and, this year, the world is coming to Winnipeg! Taking place in the prestigious Fort Garry Ballroom, this annual black tie event honours member achievements and corporate contributions to the professions. Guests are joined by representatives from government and industry on this special evening, featuring inspiring multicultural performances from Folklorama groups including Viva Brasil, Rusalka Ukrainian Dance Ensemble, La Troupe Jeunesse de la Ensemble Folklorique de la Riviere-Rouge, and more!

Tickets are available for $80 each, or $720 for a table of 10. For further information and to purchase tickets, visit *www.EngGeoMB.ca/Ingenium*.

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La Troupe Jeunesse


Viva Brasil


Awards Gala Dinner


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Watering the Seeds of Aspiration

By R. Lemoine, P.Geo., FGC

On a sunny Saturday morning in April, I was reading the *Winnipeg Free Press* as I always do. I came across an article about a young Winnipeg boy who had just received an award for a school project involving Habitat for Humanity. As a former youth coach of some 35 years, I was naturally drawn to read more about this young man's accomplishment.

Ryan Mota is a 10-year-old grade 4 student at St. Alphonsus School in Winnipeg. He entered a national contest called The Meaning of Home, which saw more than 7,000 children across Canada, including 1,100 from Manitoba, submit poems, short stories, or videos expressing what 'home' meant to them. Ryan won first prize in this contest, which saw him receive an iPad for himself, a pizza party for his classroom, $1000 for his school and, most significantly, he was given the authority to direct a $50,000 donation to Habitat for Humanity put forth by the mortgage company Genworth Canada, who sponsored the contest.

Ryan, Rick Lemoine, P.Geo., FGC, Edan, and Naya "on the rocks"!

Naya and Edan pondering the protolith.

Ryan Mona with rock hammer in hand!

As I read on, I saw that young Ryan aspires to become a geologist. My initial thought was that this was a pretty young age to be making such a declaration but, after some reflection, I came to realize that I myself made that same decision back in the fifth grade of elementary school, indeed quite similar to Ryan. Well, that was it.

I contacted Ryan's school, spoke to the principal and ultimately got in contact with Ryan's mom, Tara Mota, who herself is a student teacher here in Winnipeg. I introduced myself as a member and former councillor of Engineers Geoscientists Manitoba and made the offer to take Ryan, his mom, his younger sister Naya, and older brother Edan to the Wallace Building at the University of Manitoba and then out to the Whiteshell Provincial Park for a geology field trip.

On the morning of Saturday, May 5, we were on our way. I quickly came to realize that Ryan and, in fact, both of his siblings, were not your run-of-the-mill youngsters. Inquisitive and cerebral describes all three of these amazing young people, exemplified best when we entered into the Ed Leith Cretaceous Menagerie at the Wallace Building. Here you find skeletal reconstructions of a meat-eating Tyranosaur and a carnivorous Mososaur, reconstructed in life positons and menacingly staring you down from above. The vast majority of 8, 10, and 12-year-old kids immediately jump into comments such as "Wow, a T-Rex, look at those teeth, would they eat me if I was alive with them?" Not the Mota family. I was greeted with questions regarding the age, where the fossil remains were found, and in what type of sedimentary deposits?

After 30 minutes of questions, which taxed my knowledge and ability to correctly answer, we were back in the car and headed out to the Whiteshell area. As good fortune would have it, the University of Manitoba Geological Sciences Field Mapping School was underway at Star Lake, West Hawk Lake, and the surrounding areas and our group was able to meet up with several graduate students and U of M geology professor, Alfredo Camacho.

HOME

To me, home is a special place
A place where all dreams come true.
A place that everyone matters
And everyone is involved.
A place for old friends to reunite
And new friends are made.
A place where the river calls me
Outside my door,
A place that far back Ojibwe and Cree,
Yes, they once lived here, and now... me
To me a home is where I am loved the most,
Where I am recognized,
My talents, my hopes.
A home is a place to be encouraged,
A place to encourage
When others are discouraged.
A home is a place where we share ourselves and our space
In hopes of seeing joy
On One another's face.
To me a home is a place where I feel secure
From the rain, the snow
And all of my fears.
A home is a place where I am free to play
And would love for all others
To have fun in this way.
A home is a place where I am warm,
A place of comfort during a storm.
When I think of the thought not having a home,
I begin to cry and in sadness I roam.
So every night before I sleep,
I thank God for my home
Which is mine to keep
And maybe with luck this poem has grown
Into something that will help a child have a home.

– Ryan Mota

Ryan was genuinely intrigued by the concept of having to coax knowledge and answers from the rocks in the required detective-like manner, right down to the micro-scale details. Pretty soon, mom Tara was riddling the corps of professional geologists with questions, like all great teachers do.

After a few hours of hiking through the woods, we were headed back to Winnipeg where the question and answer period continued, and Naya took the time to produce some amazing works of pencil-sketch art. This also provided ample time for Tara and I to discuss our careers, school, society, and our mutual love of kids and family life.

The accolades for Ryan continue, as both he and Tara were off to Toronto and Hamilton to attend the Habitat for Humanity annual general meeting, where Ryan would be invited on stage to read his poem to the attendees and join Habitat for Humanity Canada in thanking Genworth for their generous donations. A side trip to Niagara Falls was on the itinerary as well, so I gave them a few points of geological interest to see at the falls.

All four of the Mota family learned a great deal that day, but what did I learn? I learned that, since leaving the coaching profession, I miss working with kids. I reconfirmed that it is imperative that we, as professionals, nurture the aspirations of youth with our support and our time. I learned that today's young people are of exceptional intellect and have the ability to absorb knowledge at a far greater rate and much easier than those of the past decade or so. My own son and daughter introduced me to this transition, but the Mota family have confirmed it. We are in good hands. I hope one day to place the Earth Ring on Ryan Mota's finger.

I wish to leave you with a quote from young Ryan from the *Winnipeg Free Press* article and also his award-winning poem.

"I just want (people) to know about the contest, so that maybe they can do it and raise more money for Habitat. Having a home means so much. I'm so fortunate to have a home here in Winnipeg, when there's lots of families around Canada and Winnipeg that don't. So I want to do what I can to help them."

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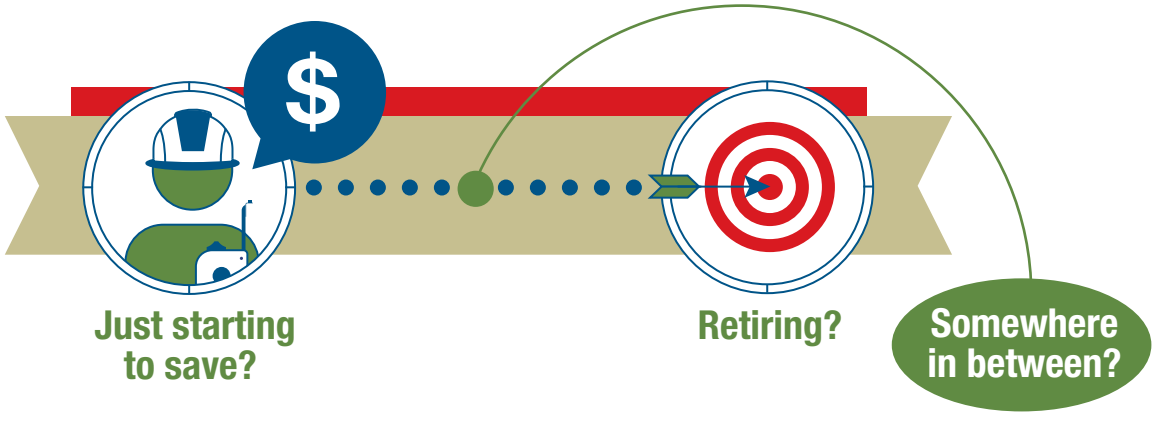

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First Place Team: Graeme Crawford, P.Eng., Ryan Cook, EIT, Cam Mazurek, P.Eng., and Jared Boguski, EIT.

Second Place Team: James Betke, P.Eng., FEC, Troy Hengen, P.Eng., Kyle Heroux, P.Eng., and Ron Weatherburn, P.Eng.

Third Place Team: Cam Ward, P.Eng., Robert Taylor, P.Eng., Kevin Breukelman, and Graeme Loeppky, P.Eng. (not pictured)

Great-West Life representative, Dean Sansom (left), and Sports Committee Chair, Roger Petursson, P.Eng., FEC (right), present cheque to Dean of the Faculty of Engineering, University of Manitoba, Dr. Jonathan Beddoes, P.Eng.

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Some of the tournament's 51 teams head out on the course

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An Inventory of Manitoba's Historic Bridges

By G. Cook, P.Eng., FEC

How many different types of road bridges do you think were constructed in the early 20th century as part of the development of the road network in the province of Manitoba?

The Heritage Committee and the Manitoba Historical Society (MHS) recently concluded a four-year collaborative historical research project to document as many of the early road bridges in Manitoba as possible, as an indication of transportation history during the early 20th century. Dr. Gordon Goldsborough from MHS and the Association's Heritage Committee was the principal researcher, collaborating with Dave Ennis, P. Eng., FEC, also from the Heritage Committee.

The rationale for the project was that bridges enabled faster and more efficient crossing of rivers than previous technologies such as ferries, thereby making it possible for roads to extend throughout much of rural Manitoba. A better understanding of bridge history would, therefore, contribute to a better understanding of the development of Manitoba's road network. Both subjects are clearly of interest to the Heritage Committee and to the MHS. MHS have been undertaking a comprehensive "Historic Sites of Manitoba" inventory project for a number of years, into which the bridge inventory project fit perfectly.

The bridge project identified ten different types of bridges that remain from those early works, which can be found in the up-to-date inventory on the MHS website (*www.mhs.mb.ca*). The inventory contains a list of 128 bridges, the municipality (and town, if relevant) in which each is located, latitude and longitude, photographs including historical ones (if found), the river crossed by the bridge (if known), the year of construction (if known), and the use category and bridge type.

The research wrapped up in January of this year with a summary report submitted to the Manitoba Historical Resources Branch, who provided some funding for the research.

The Manitoba Good Roads Association was established in 1909 to promote the development of a good road network throughout Manitoba. In February 1914, the provincial government passed *The Good Roads Act* to foster development of rural roads. It created a three-person Good Roads Board led by Manitoba's first Highway Commissioner, Archibald McGillivray (a civil engineer for whom Winnipeg's McGillivray Boulevard is named), along with former Winnipeg Mayor Thomas Deacon (a civil engineer for whom Deacon Reservoir is named), and Virden-area farmer and municipal Reeve Charles Ivens. One of the Board's first actions, in April 1914, was to hire Manson A. Lyons (1879-1965) as its Chief Engineer. A native Nova Scotian, Lyons came to Manitoba in 1912 to design drainage works and bridges for the government, and he would go on to succeed McGillivray as Highway Commissioner and later become Deputy Minister of Public Works. Lyons was also the first president of Engineers Geoscientists Manitoba, in 1920.

Construction of bridges in rural Manitoba began in earnest shortly after Lyons' hiring, limited somewhat by shortages of materials and labour during the First World War. Seventy-nine bridges were built in 1916 and 90 were built in 1918. By the end of 1919, the Good Roads Board had overseen the construction of 384 bridges around the province in the five years since it was established. By 1936, the total stood at 1,578 bridges, 49% of which were made from concrete and 44% of which were made from timber. The Good Roads Board maintained lists of bridges built, detailing their cost, location, and type, for the sake of reporting to provincial officials.

Unfortunately, the research determined that many of those early bridge records had been lost in the ensuing century. To keep the project manageable within the scope of available time and funds for field work and archival research, the following criteria were used to determine if a bridge was to be included in the inventory:

1. Consider only bridges on provincial highways and municipal roads. That meant explicitly excluding railway bridges except in cases where a highway bridge was replaced by a railway bridge, such as one over the Wilson River or the Daly-Whitehead Centennial Bridge.
2. Emphasize bridges built before 1930. In a few cases where it was not possible to date a bridge with certainty, a conservative date estimate was made if it was believed to date from the early 20th century, based on its construction style.
3. Focus on bridges made from concrete or steel, rather than wood, on the thinking that wooden bridges were less likely to have survived to the present day.

The structural condition of the bridges were not assessed, as there was not the necessary expertise for this work to be undertaken, and a valid assessment would have required far more time than was available.

The location of old bridges was determined through a combination of field work and archival research. Field surveys of sample municipalities were undertaken during the summers of 2014, 2015, 2016, and 2017. When visiting a bridge, the bridge was photographed, geo-referenced with a Global Positioning System waypoint (at the bridge midpoint, using averaging to achieve local precision of about two metres), assessed whether it was in use or abandoned, and the type of bridge was determined according to the following categories:

Bridge Type	Description	Manitoba Example
Concrete culvert (40 found)	A reinforced concrete conduit through a roadway or other embankment. The shape of the opening is usually rectangular and often has more than one "barrel."	
Concrete beam (27 found)	A bridge that has the deck (and load) supported by reinforced concrete beams. The beams can have various shapes and the top flange can be integral with the bridge deck (travel surface).	
Concrete arch (10 found)	A bridge with arch(es) supporting the deck. There are two main types. In the first, the arch is like a half-barrel and earth is placed on the barrel to support the deck (travel surface). In the second, there are multiple arches and a concrete framework extends above them to support the underside of the concrete deck.	
Concrete bowstring (7 found)	Concrete arches on each side of the bridge rise above the deck, which is constructed of cross beams, usually supported on the bottom chord of the arch.	
Steel pony truss (15 found)	Steel trusses on each side of the bridge rise above the deck and there are no cross connections between the top chords. The deck is supported on cross beams that are usually attached at the bottom chord of the truss, or higher.	
Steel through truss (14 found)	Steel trusses on each side of the bridge rise above the deck and there are cross connections between the top chords. The deck is supported on cross beams that are usually attached at the bottom chord of the truss, or higher.	

The location of old bridges was determined through a combination of field work and archival research.

Steel beam (5 found)	A bridge that has the deck (and load) supported by steel "I" beams. The beams can have various shapes and the top flange can be integral with the bridge deck (travel surface).	
Steel culvert (3 found)	A steel conduit through a roadway or other embankment. The shape of the opening is usually round, oval, or egg shaped, and often there are multiple culverts. The steel is usually corrugated and galvanized.	
Timber beam (6 found)	A bridge that has the deck (and load) supported by timber beams, sometimes called stringers. The beams are rectangular. The deck is made of transverse planks or 2 x 4 boards on edge.	
Timber through truss (1 found)	Same as a steel through truss, but with the structural components made of timber and connected by bolts.	

*See more examples by searching the MHS database (*www.mb1870.org/mhs-map/search*) with the bridge type as the keyword.*

84 bridges were made of concrete, 36 of steel, and seven of wood.

Category	Number of bridges	Percentage of total
1. In use and conspicuous	73	57%
2. In use and inconspicuous	36	28%
3. Abandoned and conspicuous	19	15%
4. Abandoned and inconspicuous	0	0

The year of construction for a bridge was determined from either 1) on-site evidence, such as the date moulded into the concrete of an abutment or a metal plate affixed to a truss, or 2) archival research.

One hundred and twenty-eight historic bridges around the province that met the pre-1930 criterion were mapped and photographed, including nine bridges that could not be dated exactly but, based on various evidence, were believed to be pre-1930.

Eighty-four bridges were made of concrete, 36 of steel, and seven of wood. There were geographic "bridge hot spots" in the Rural Municipalities of Wallace-Woodworth (16 bridges), Glenella-Lansdowne (eight bridges), and Oakland-Wawanesa (eight bridges). The ages of 103 bridges (80% of the total) were determined. The oldest extant bridge found was built in 1893 at Asessippi, although the oldest bridge in active use was the former Kirkham's Bridge at Birtle, which dates from 1906. The average year of construction was 1922.

Where possible, each bridge was placed into one of four use categories: 1) bridge still in use and conspicuous i.e. readily visible at the site; 2) bridge still in use but inconspicuous i.e. not readily visible from the roadway, 3) bridge abandoned and conspicuous, and 4) bridge abandoned and inconspicuous. It is recognized that some inconspicuous bridges were probably overlooked so the number of bridges in category 2 is likely an underrepresentation. No bridges were found for category 4 because they would likely be found only with a systematic search or pure luck.

ASSOCIATION ARCHIVE

Reading from left to right: I. W. Thomas, Garden Editor; C. R. McBain, Fashion Editor; R. C. Sommerville, Editor; J. C. Gillespie, Managing Editor; [illegible] Reporter; K. [illegible]lson, Puzzle Editor; W. A. Corbett, Sports Editor, and Miss Lyn Smith, Entertainment Page.
—Picture by Staff Photographer G. A. Tough, P. Eng.

Under the Disraeli Bridge

By R. Kirk, P. Eng.

At least one professional engineer has some doubt regarding the usefulness of the Disraeli Bridge. To the mailing department of the E.I.C. Journal he is known once as J. C. Gillespie, P. Eng., and also as J. Chris Gillespie, P. Eng., but he is probably better known to the public as Captain Gillespie of the "St. Peter." The St. Peter is a forty foot, two masted sailing boat with one mast thirty-seven feet high and it was this mast which caused the problem.

Captain Gillespie can assure all other Red River navigators that at high water the clearance under the bridge is NOT thirty-seven feet. Faced with this problem while attempting to bring his craft upstream to its winter berth, the Captain arose to the occasion with a true sea captain's stubbornness and announced "I have the right of way." Unfortunately unlike the story from the *Arabian Nights* these words did not have the desired effect and Captain Gillespie was forced to resort to some engineering know-how.

Seeing that it was unlikely that he could cause the bridge to go up, short of using a small charge of T.N.T., he concluded that the boat would have to go down. Shanghaing all available personnel he took on fourteen hefty men. As this was not enough he opened up the sea cocks and let in a couple of tons of water until he had converted his engines from an air cooled system to a water cooled one, all in the space of a few minutes. Even this was not quite enough so he had all personnel shift to the starboard side and slackened off all port stays while tightening down all the starboard ones. At first it appeared that this was not going to work either but he noticed that over to the left there was a difference in the bridge plate thickness which would give him approximately another inch. Then very carefully guiding his mast between the rivet heads he managed to bring his boat through. He now has all winter to contemplate the return trip next spring.

Permanent Quarters

After attending meetings, and hearing reports connected with proposals for permanent quarters, it becomes increasingly obvious that any building proposal tied to a substantial increase in annual fees is not going to get very far off the ground.

Some of the reasons for this appear to be that—

1. Any expansion of business office facilities, which may be foreseen in the immediate future, can most economically be provided by rented office space.
2. Our members do not seem at all impressed by either the "prestige value" of the proposed building, or by the somewhat intangible "extended services" which, it is suggested, could be provided due to the existence of such a building.
3. Out of town members and a large number of city members would receive little, if any, benefit from facilities provided by the proposed building, which contains no provision of a possible source of revenue to reduce the upkeep.
4. Council does not favor any building proposal until the Association membership has increased to an undefined level.

However, it is known that there are many members interested in the establishment of permanent quarters, but not in the form of the recent proposals. They point out that the original scheme for the purchase of the Roslyn Road property, had it been worked up as a more complete and detailed proposal, could have been shown to have an excellent chance of becoming completely self-sustaining by the combination of business, catering and accommodation facilities.

They suggest that the general membership would be much more enthusiastic towards a similar proposal at this time. The argument presented that the Roslyn Road type of proposal was good investment and stepping stone to a future new building still applies.

Since the Association appears to be unable to fully finance permanent quarters, further investigation seems indicated into acquiring an existing building, suitable for the necessary revenue-producing facilities.

To those who have expressed interest in this matter it is suggested that they make this interest known at the forthcoming Annual General Meeting, or, if their interest is strong enough, a special meeting can be called on receipt by Council of a request signed by at least six members of the Association.

As pointed out elsewhere in this Bulletin, our members have had few constructive comments to offer at recent meetings. It is impossible for Council to take action on members' wishes if these are not expressed.

—I.W.T.

+ + +

Vice-President Chant is shown presenting the Sullivan Cup to winner Don Simpson.

+ + +

WHEN VOTING FOR MEMBERS OF COUNCIL MARK YOUR BALLOTS 1, 2, 3, 4, 5

DO NOT USE AN X OR YOU WILL LOSE YOUR VOTE

Government Relations Department Strategic Plan 2018-2020 Overview

On August 17, 2017, the Premier announced changes to the provincial cabinet to ensure a strong focus on key government priorities. The announcement included a restructuring to create two new departments – Municipal Relations, Indigenous and Northern Relations – and other changes to the provincial cabinet. The Premier noted that the overall size of the cabinet increased by one, from 12 to 13.

Soon after the government reshuffle, the Government Relations Department offered congratulations via email, letter, and in person to Minister Jeff Wharton, who was sworn in as the new Minister of Municipal Relations and Hon. Eileen Clarke, the Minister for Indigenous and Northern Relations. Several additional relationships were created with Members of the Legislative Assembly (MLAs) and government staff over the course of the last two fiscal years. Relationships with government will continue to be developed going forward.

Association brand and name recognition are critical to ensuring familiarity of the Association amongst government officials. Engineers Geoscientists Manitoba successfully held its fourth annual MLA Reception on Thursday, May 17, 2018, in Winnipeg. The reception provides opportunities for the Association members, including Council, past presidents, and committee chairs, to get to know government officials and build positive relationships between one another. Government representatives from federal, provincial, and municipal levels attended the reception this year to show their support for the professional engineers and professional geoscientists of Manitoba. The reception attracted over 120 attendees and has created a platform for many one-on-one conversations related to the engineering and geoscientific professions.

From 2018 to 2020, the Association's Government Relations Department and the Government Relations Advisory Committee (GRAC) will continue to oversee and provide the necessary direction to engage with government on selected topics and initiatives. Updates will be provided to Council by the Committee along with any changes and proposed new topics moving forward.

New Initiatives 2018-2020

- Engineering Changes Lives – 30 By 30
- Introduction of Legislation, Regulation, Policy, and Codes – Amendment to the Limitation of Actions Act for Manitoba
- Increase the number of Indigenous Practitioners – Indigenous Professionals Initiative Committee (IPIC)
- Sustainable Development for Manitoba – Concrete Actions Taken by Engineers

Engineering Changes Lives – 30 by 30

In December 2017, Council approved $795,000 of funding for the 30 by 30 initiative to help achieve the goal that 30% of newly licensed engineers will be women by 2030. The initiative was structured into three phases to be executed over two years, from January 2018 to December 2019. Phase One is the development of a marketing plan to reach 30 by 30; Phase Two comprises the hiring of staff, the forming of the Provincial Steering Committee, the completion of an environmental scan and the development of a strategic plan; and Phase Three will be the execution of the strategic plan. The first Provincial Steering Committee meeting was held on March 27, 2018, with a total of four meetings having taken place into June.

The Environmental Scan (ES) is the exploration phase of the 30 by 30 strategic plan process. To create the ES, published literature and information was examined to identify social, economic, technological, and political/legal context and trends which may offer evidence for short- and long-term decision making for reaching 30 by 30. The ES includes a review of relevant findings and recommendations. Using cross-provincial, cross-territorial, cross-national, and cross-professional comparisons, as well as intersectional and vertical segregation analysis, the ES offers a foundation of up-to-date knowledge for directing the 30 by 30 initiative and any further research it may involve. Begun in May 2018, the first working draft of the ES is set to be complete by Fall 2018.

Introduction of Legislation, Regulation, Policy, and Codes - Amendment to the Limitation of Actions Act for Manitoba

In 2017, the Association identified *The Limitation of Actions Act* of Manitoba as the top priority for the Government Relations Department. The Limitation of Actions Task Group was created in November 2017, with the purpose of engaging stakeholders who have the knowledge, expertise, and enthusiasm to support and advocate on this initiative. The task group worked with Association staff for six months to advise on the development and drafting of a proposal for changes to the Act.

The resolution for this act change was completed by the Government Relations Department, reviewed by the Limitations of Actions Task Group on June 7, 2018, and emailed to MLA Kelly Bindle. The resolution was sent to Association President Jonathan Epp, P.Eng., FEC, for the purpose of including it on the agenda for the council meeting on June 14, 2018, for approval to proceed with the Manitoba government to include the amendment to *The Engineering and Geoscientific Professions Act* for the purpose of reducing the limitation period to 10 years.

MLA Kelly Bindle will be proceeding to make a presentation to the Legislation and Regulation Committee for the purpose of requesting the amendment to *The Limitation of Actions Act* be placed on the order paper for the legislature.

Increase the number of Indigenous Practitioners – Indigenous Professionals Initiative Committee (IPIC)

In the IPIC meeting held on June 5, 2018, in which time was allocated to finalize the Indigenous Members Chapter Constitution and By-laws and it was submitted to President Epp for addition to the Council agenda for June 14, 2018. Formation of the Indigenous Members Chapter was unanimously approved by Council.

The Indigenous Professionals Initiative Committee (IPIC) suggests ways to improve opportunities for young Indigenous Manitobans to become engineers or geoscientists. The committee develops promotional and educational materials that properly reflect Manitoba's population.

Sustainable Development for Manitoba – Concrete Actions Taken by Engineers

Engineers Geoscientists Manitoba welcomes the provincial government's recent announcement of *A Made-in-Manitoba Climate and Green Plan,* which is built on the strategic pillars of climate, jobs, water, and nature, and includes 16 keystones for priority action that will support Manitoba's economy and sustain the environment for future generations.

The Association's Government Relations Department has been working collaboratively with Manitoba's Department of Sustainable Development since May 2017 to provide engineering expertise in addressing climate change and providing knowledge and ideas when government seeks out the professions. The Sustainable Development Task Group was formed to assist in further developing the infrastructure resiliency component of the BRACE (Building Regional Adaptation Capacity and Expertise) proposal initiated by the Department of Sustainable Development. As one of the key external stakeholders for Manitoba government, the Association's Sustainable Development Task Group is working to create the BRACE project summary form for submission to the Association's Council Meeting on September 14, 2018, with the purpose of obtaining approval from Council to formally accept the PIEVC (Public Infrastructure Engineering Vulnerability Committee) initiative and BRACE climate resiliency courses as appropriate for inclusion in the Association's professional development for practitioners.

The Government Relations Department is also engaged in and provides continuing staff support to three other projects led by the Sustainable Development Task Group:

- **Public Infrastructure Engineering Vulnerability Committee (PIEVC)**
  PIEVC will align with the *A Made-in-Manitoba Climate and Green Plan, endorsed by Manitoba government, in addressing climate change and making climate resiliency and climate impact analysis a key pillar in federal infrastructure programs and provincial government, allowing Manitoba to better predict, prepare for, and respond to weather-related emergencies.*
- **NSERC Chair in Design Engineering for Sustainable Development and Enhanced Design Integration**
  This project aims to provide engineering students in all undergraduate programs with a mastery-oriented approach to learning design, while embedding a vision of engineering design as professional practice in a changing world. This will support students by providing enhanced design knowledge, skills, and values to address complex engineering design problems and support their readiness for professional practice.
- **Centre of Excellence for Waste Materials Recovery and Utilization (C-WMRU)**
  C-WMRU contributes to environmental sustainability by increasing the efficiency and innovation of the recycling and recovery process, slowing the depletion of natural resources, and investing in a circular economy by the development of new eco-friendly high performance valued-added materials.

Conclusion

The Government Relations Department looks forward to further stakeholder engagement for the Strategic Plan 2020-2025. The plan is under construction and will be released online upon approval by Council. If you would like further information about the strategic plan or to provide recommendations, please send an email to C. Scott Sarna at *SSarna@EngGeoMB.ca.*

Welcome New Members

T.O. Adelani
S.D. Anderson
V. Andrisani
R. Arabjamaloei
C.J.M. Aranas
S. Azam
A.H. Azzouz
A. Bahl
G.C.E. Barker
K.D. Bartlett
A.W. Blanchette
D. Bonavota
J.N. Borch
J.R. Bruce
T.J. Button
G. Charlebois
M.J. Clendenan
S.D. Cockrem
J.N. Coey
D.K. Compton
J.P. Cuthbertson
K.T. Cuthbertson
A.K. Das
S. Dau
H.E. Davis
R.D. De Koninck
A.M. De Silva
T.A. Defoort
I.L.I. Dennett
T.R. Denton
P. Dessureault
T.T.J. Devlin
J.P. Dufresne
M. Dupere
C.R.A. Ellis
T. Ernst
J.P.T. Estrella-Legal
S. Fatemiardestani
M. Fereydoon
N. Firoozy
S.D. Florko
D.M.V. Froese
R.E. Geisler
C.C. Gheorghe
R.P. Goguen
R.S. Grewal
A.P. Grin
K.W.C. Hamilton
D.K. Hebb
S. Heidari
C.P. Holbrook
J.P.C. Hunter
M. Izadpanahi
A. Jha
D.J. Kasunic
P.H. Kerridge
S. Khalili Ghomi
A. Kiayee
A.J. Kneale
C.M. Knight
W. Koos
S.D. Kyle
J.E. Lacoste
J.M. Lambert
P. Lamy
D.A. Landsberg
E.J.N. Lavergne
C.W. MacGillivray
A. Major
H.A.A. Massoud
S.T. Mazur
R.J. McMillan
F. Menard
E.M. Miranda Sanchez
J.W. Muirhead
V.L.M.A. Munro
D.J. Murdock
C.J. Nabanoba Musoke
V. Nazimov
B.M. Nelligan
S.F. Newton
T.L. Norton
T.M.C. Omichinski
G.E. Ormberg
W.R. Parsons
A.S. Paseschnikoff
S.J. Penner
T.J. Perkins
R.A. Peterniak
M.R. Peters
T.B. Phillips
M.R. Piper
N. Popovic
A. Rabaev
A.E. Ribeiro
J.J. Saj
D.M. Salem
R. Samadi
A.L. Samson
W. Saunders
M.L. Seiferling
A.B. Shah
S.A.H. Sherif
Z. Shi
M. Singh
E. Siu
M. Soung
J.E. Spence
E.D. St-Georges
K.J. Strom
S. Suchkov
B. Vernik
M.R. Villanueva
M.G.J. Vogt
J. Wang
X. Wang
K.S. Waraich
L.N. Wheeler
P.R.J. Whelan
J. Winter
A.C. Wright
Q. Wu
T. Yamegam Pouassi
X. Yang
A. Yazdani
J.A. Zacaruk
S. Zheng
R. Zhou

Interns

C.R. Abellanosa
M.A.M. Adam
M.J.A. Arbeau
T.G.J. Arnal
K.S. Arnold
B.M. Barber
T.J. Beavis
B.L. Blight
N.C.J. Bray
R.A. Castro
L.R. Catipon
B.J.T. Chastko
S. Chekurthi
A.D.G. Chua
B.T. Coey
J.R. Coleman
B.C.J. Cornelsen
L.H. Da Silva Fernandez
C.M. Dacquay
R.A. Davis
R.M. De Jesus
S. Delaquis
J.A. Durand
S.S. Duynisveld
K.A. Edwards
Q. Fang
K.A. Fanstone
A. Farhoudpour
M. Farooq
Z. Feng
M. Frutuoso de Freitas
H. Gerami
M. Glavonjic
J.L. Gordon
J. Grewal
I.L. Griffin
B. Hajesfandiari
M.G. Harrison
H. Hassanzadeh Khakmardani
A.M. Hawrysh
S. Huq
A.M.H. Hussein
I. Idris
T.M. Irvine
J.N. Jebbin
C.M.T. Kornik
J.D. Lapsley
S.S.Y. Leung
T.D. Linney
S. Liu
X. Luo
J.B. Mackinnon
R. Manafi
O.V. Mateo Salas
A.E. McAllister
K.T. Meese
M.B. Miner
O.P. Odunbaku
O.M. Ojekudo
R.D. Ortega
B.M. Osiowy
J.B.S. Partaker
G.J. Pavon Mejia
R.D. Plett
K.L. Pogue
K.S. Rajeev
C.L.M. Rivard
A.L. Samson-Lagman
D.L. Sankar
J.L.A. Sawatzky
R.E. Schimnowsky
B.M. Scott
L.R. Sharkey
N. Sharma
N. Singh
B.W. Slater
A.O. Sowunmi
S.D. Symons
W.J.M. Tan
N.L. Taylor
F. Timyati
R.C. Unruh
R. Vaid
G.M. Wolk
B. Yu
C.A. Zulkoski

Licensees

I.N. Alshawi
R.S.R. Anupindi
J.T. Boyer, Sr.
J.F. Duntemann
C.H. Moore

In Memoriam

Brian Robert Hughes
John Douglas Ashton Mollard
Harold Michael Surminski

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Ag Growth International Inc.
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Blue Lake Construction Corporation
Candor Engineering Ltd.
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Concentric Geoscience Inc.
Consertek E4Energy Inc.
Cougar Concrete Global Inc. o/a Skyline Group
Dave Bernardin Consulting Inc.
Dave Shook & Associates Ltd.
Echols, Lindsey & Moore Structural Engineers, Incorporated
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Enbridge Employee Services Canada Inc.
GeoMetrix Group Engineering Ltd.
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ModularTec Engineering & Procurement Inc.
Permacorp Group of Companies Inc.
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Polar Racking Inc.
RDH Building Science Inc.
RYG Engineering Services Ltd.
St-Georges Structures et Civil Inc.
Thermodesign Inc.
Valmont West Coast Engineering Ltd.
Wesbell Technologies Inc.
Wood Environment & Infrastructure Solutions, A Division of Wood Canada Limited
Zacaruk Consulting Inc.

Fool's Gold for Manitoba Mining and Minerals Convention

By L. Stewart, P.Geo.

The Manitoba Mining and Minerals Convention has historically served as a gathering place for Manitoba's mining community. The annual event welcomed all Manitobans, connecting the public with stakeholders from geoscience, the exploration and mining industry, service and supply providers, Indigenous and northern communities, investment firms, academia, and, principally, government.

In the early years, an event known as "Meeting with Industry" was presented by the Manitoba Geological Survey, conceived as a half-day presentation of the public release of the Annual Report on Activities. In 1992, the event was expanded into the "Manitoba Mining and Minerals Convention" in an effort to include industry representation. The Filmon Progressive Conservative Government's intended to create a platform to showcase new incentives to attract exploration and mining investment from around the world to Manitoba. Some of the incentives introduced included the New Mines Tax Holiday, the Mineral Exploration Incentive Program (later transitioned into Manitoba Exploration Assistance Program), and the Prospector's Assistance Program.[1] Over the last 25 years, the convention has hosted senior speakers from Canada's mining industry leaders, which attracted attendance and investment in Manitoba, leading to successes throughout the province. In recent years, the convention has developed into an opportunity for networking, professional development, and industry engagement, as well as a showcase of the ground-breaking geoscience activities and exploration highlights occurring in the province.

En route to the golden 50th anniversary of this annual mining community gathering, the Government of Manitoba has announced that it will not be organizing the convention for 2018.

"Going forward, the department intends to host smaller representative gatherings that allow our staff to share their geoscientific research and provide stakeholders the opportunity to come together and share their views directly with government to help shape a prosperous future for mining and exploration in Manitoba", states the convention's website.[2]

As the primary engagement opportunity for the mineral resources community, the forfeiture of this event presents an opportunity to the mineral resources industry to reinvigorate the sector in Manitoba. Armed with the belief that Manitoba is an important mining jurisdiction that should be on the world stage, the Manitoba Prospectors and Developers Association (MPDA) has engaged to develop an industry-led reincarnation as the Central Canada Mining Exploration Conference (CC-MEC), to be held on November 22, 2018, at the Victoria Inn, Winnipeg. This event aims to focus on promoting the potential of exploration opportunities in Manitoba through sessions directed toward fostering the relationships amongst stakeholders. With rejuvenated support from the mining community, Manitoba can stimulate new projects, generate positive change, and develop the mineral industry of the province to become a world leader for exploration and mining.

For more information on CC-MEC, please contact the MPDA at *www.mpda.ca/contact.*

1 *http://news.gov.mb.ca/news/archives/1992/11/1992-11-23-mining_and_mineral_convention_draws_250_delegates_from_industry.pdf*

2 *https://www.manitoba.ca/iem/convention/index.html*

New Members Luncheon

New members in attendance at the New Members Luncheon on June 12, 2018, where they received their official licence certificates.

The University of Manitoba ITE Student Chapter Receives International Award

The Institute of Transportation Engineers (ITE) has selected the University of Manitoba ITE Student Chapter as this year's recipient of the International Award for Student Chapter Excellence. Founded in 1930 in New York as an association for transportation specialists to improve the mobility and safety in their field, ITE has grown to over 15,000 members in more than 90 countries around the world.

"This is an exciting achievement as there are over 60 international chapters of ITE and the University of Manitoba is the only Canadian university ever to be selected for this award, which they have now won twice", said Dr. Jeannette Montufar, founder of the U of M Student Chapter and current Chapter Advisor.

Karalee Klassen-Townsend, current Chapter Vice-President, shared her excitement about this award. "All of our hard work has paid off. We put in a lot of time and effort over the last year, which really benefited the community, the profession, and our members," said Klassen-Townsend.

The U of M ITE Student Chapter began in 2003 and conducts over 50 events and activities each year. According to the ITE website, the overall goals of the organization are to educate and facilitate the professional development of members and to improve transportation safety and awareness throughout their surrounding communities.

As for the International Award for Student Chapter Excellence, the award is designed to recognize excellence in technical activities, professional involvement, public service, social events, and fundraisers.

This year, the chapter has organized events such as a blood donor clinic, school education program, technical workshops with industry speakers, conferences, various social events, a technical tour of transportation facilities in Colombia, and many others.

The chapter will be recognized with the award during the Joint ITE International and Midwestern/Great Lakes Districts Awards Lunch on Tuesday, August 21, at the Hilton Minneapolis and will be receiving a free student registration, two tickets to the awards lunch, and up to $1,000 as a travel stipend.

Klassen-Townsend stated that there will be five chapter members representing the U of M to accept the award. "We are all very excited about this great opportunity and are very much looking forward to joining hundreds of transportation professionals and student members from other universities at the conference," she said.

Annual Volunteer Appreciation Event

On Wednesday, June 27, the Association held its Annual Volunteer Appreciation event at The Royal Aviation Museum of Western Canada. The event was once again well attended, with about 150 guests taking in the museum exhibits and partaking in guided tours of the planes in the hangar with a museum volunteer who was also a professional engineer! Kids were entertained by a scavenger hunt and the Skyways Discovery Zone. Guests enjoyed food stations served by Urban Prairie Cuisine upstairs on the Flight Deck, while taking in the sights and sounds of planes taking off and landing on the runways below.

The Association once again thanks all of its members and volunteers who volunteer their time on the numerous committees, task groups, chapters, and special events throughout the year.

Bike to Work Day

In support of Bike Week Winnipeg, Engineers Geoscientists Manitoba and Dillon Consulting co-hosted a pit stop for Bike to Work Day on Monday, June 18. It was a beautiful day for commuting by bike and the pit stop, located just outside the Association office on Pembina Highway, saw over 140 cyclists. Many cyclists stopped to say hi, pick up Bike Week Winnipeg information, and enjoy the pastries, coffee, and water provided.

GET BIKING BIKE WEEK WINNIPEG JUNE 18-24

Association Team Builds with Habitat for Humanity

Nine staff from Engineers Geoscientists Manitoba volunteered a day with Habitat for Humanity in May, helping to build a new home on Bannatyne Avenue in Winnipeg. With temperatures in the high 20s, it was a hot day's work framing interior walls and adding insulation to the exterior of the home, and all the volunteers were pleased with the progress that took place in just a few hours. Many of the staff were first-time volunteers with limited building experience, who were taught new skills by the onsite leaders.

"Volunteers are an integral part of a Habitat build and are one of our most precious commodities. The impact that they have on our organization is immeasurable. When we say 'we couldn't do this without them', it's absolutely true!" says Kelly Kluger, Manager of Volunteer Services for Habitat for Humanity Manitoba. "Our build volunteers, who come to us with skills ranging from no experience to lots of experience, often find themselves doing things they never thought they could do. That might include framing, installing insulation, building scaffolding, or putting up siding on a home, just to name a few things. Volunteers are always willing to give new things a try, and we love working together with them to accomplish great things every day!"

Visit *www.habitat.mb.ca/get-volunteer.cfm* for more information about volunteering as an individual or signing up a group for a team build.

NOTICE TO MEMBERS: Annual General Meeting

The 2018 Annual General Meeting of Engineers Geoscientists Manitoba will be held at 2:30 p.m., on Thursday, October 18, 2018, at the RBC Convention Centre Winnipeg, 375 York Avenue, Winnipeg, MB.

ENGINEERS GEOSCIENTISTS MANITOBA

Local Transportation Engineer Honoured With National Award

Winnipeg transportation engineer and Engineers Geoscientists Manitoba member, Dr. Jeannette Montufar, P.Eng., was presented with Engineers Canada's Award for the Support of Women in the Engineering Profession at a ceremony in Saskatoon on Thursday, May 24. The award recognizes engineers who, through their engineering and career achievements, have demonstrated outstanding support for women in the profession and have established a benchmark of engineering excellence.

Whether it's empowering women in STEM programs at the university or developing national guidelines to make crosswalks safer for pedestrians with limited mobility, Jeannette has proven time and again that, with enough vision, accessibility for all is achievable. The civil engineer, who is internationally renowned for her leadership and expertise in the field of transportation engineering, has been a champion of accessibility for women in engineering, supervising and empowering a large proportion of female graduate students and creating a fund to encourage underprivileged women to pursue engineering or science in university. Recently, Jeannette has helped drive Engineering Changes Lives, a bold initiative between the Manitoba provincial government and Engineers Geoscientists Manitoba that aims to ensure Manitoba meets the 30 by 30 target set out by Engineers Canada.

Association CEO & Registrar, Grant Koropatnick, P.Eng., FEC, joins Dr. Digvir Jayas, P.Eng., FEC, FGC(Hon), award winner Dr. Jeannette Montufar, P.Eng., and Association President Jonathan Epp, P.Eng., FEC, at the Engineers Canada Awards Gala in Saskatoon.

Notice Under The Engineering and Geoscientific Professions Act and the Association's Discipline By-law

This is Notice that on May 1, 2012, Phillip M. Dorn, P.Eng., was issued a reprimand following a conviction on a charge of professional misconduct, in accordance with Section 15.6.3.10 of the By-laws of the Association. The conviction arises from the design and development of the mechanical design for an HVAC system for a dental centre in Brandon, Manitoba. In addition to the reprimand, Mr. Dorn's practice of professional engineering is restricted to Structural Engineering until such time as he satisfies the Association that he is qualified to practice in an area outside this discipline. Mr. Dorn was required to pay costs in the sum of $20,000.00 and write and pass the National Professional Practice Exam.

All avenues for appeals were exhausted as of June 11, 2018.

This Notice is provided in accordance with Section 50 of *The Engineering and Geoscientific Professions Act* and Section 15.6.6 of the By-laws.

Grant Koropatnick, P.Eng., FEC
CEO & Registrar

Practice Guidelines & Practice Notes

This past spring, Engineers Geoscientists Manitoba engaged an independent company to conduct focus groups. Through these focus groups, it became apparent that many members do not fully understand the importance of practice notes and guidelines. A noticeable number are not even aware that practice notes and guidelines exist, which came as a surprise to Engineers Geoscientists Manitoba's Council and staff.

At the time, the purpose of the focus groups was to discuss the Code of Ethics, as well as investigation and discipline procedures. All of these regulatory elements are under review as the by-law re-write project continues through its second year. The use of focus groups was new this year and was intended to ensure that Council heard from members who might not otherwise provide their opinion on these fundamental matters.

During the focus groups, one element that was discussed was the move towards adopting Engineers Canada's Model Code of Ethics. This modern code attempts to simplify ethical requirements by starting from broad statements. For example, the third canon of the Model Code of Ethics states that:

"Practitioners shall act as faithful agents of their clients or employers, maintain confidentiality and avoid conflicts of interest, but, where such conflict arises, fully disclose the circumstances without delay to the employer or client."

By contrast, the existing Engineers Geoscientists Manitoba Code of Ethics contains many prescriptive elements such as Canon 3.9, which directs that:

"Each practitioner shall not receive, directly or indirectly, any compensation, financial or otherwise, from other than a client or employer, for specifying the use of any materials, proprietary products, processes or systems for work for which he or she is professionally responsible, without the prior written authorization of the client or employer for the receipt of such compensation."

It is Council's desire to ensure that a transition to the new code doesn't create a gap in the support that practitioners can reference regarding professional misconduct. To that end, Council explored moving some elements from the existing code into practice notes and guidelines. During the focus groups, specific existing canons were discussed with members at large in order to ask whether or not they would support moving these elements into a practice guideline or practice note. It was during this conversation that the lack of clarity regarding the purpose of practice guidelines and practice notes became evident.

Practice notes and guidelines are intended to provide practitioners with direct guidance on expected conduct in particular scenarios. They range from broad issues that affect all practitioners to specific issues that only pertain to those practising in a specific field. For example, the new Returning to Active Practice Guideline provides information about how any practitioner can seek to move from a non-practising category back into full practising rights. At the other end of the spectrum, the practice note from December 1998 provides guidance on snow loads for buildings.

Practice notes and practice guidelines are prepared and approved by the Investigation Committee and Council, respectively. Their purpose is to give guidance to practitioners on matters that arise regularly and where common guidance will prove helpful in ensuring professional conduct in the professions.

Guidelines and practice notes differ from regulation in that they give direction as to the normal steps to be taken by practitioners. To that end, these documents intentionally make language choices such as use of the word 'should' instead of 'shall'. Their format follows the philosophy that actions which contravene a practice note or guideline are not necessarily, in and of themselves, evidence of professional misconduct.

As with any standard, ignorance of the standard's existence is not a valid reason for contravention. If a practitioner must take action that opposes a recommended guideline or practice note, they should be aware that they are doing so, they should be able to provide good reason for doing so, and they should be able to prove that they did so while still maintaining the principles of the Code of Ethics. If time permits, the practitioner should also consult with Engineers Geoscientists Manitoba.

Over the next few months, watch for several draft guidelines and notes that will be circulated to practitioners. These new, modified guidelines and notes will support the transition to the adoption of Engineers Canada's Model Code of Ethics. When you see these, take the time to discuss them with your fellow practitioners and contact us with any questions or comments you may have.

All practice notes and practice guidelines can be found at: *www.EngGeoMB.ca/PracticeNotes.html*

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.*

The Keystone Professional wishes to thank the following companies and organizations for their advertising support. Please think of them when you require a product or service. We have tried to make it easier for you to contact these suppliers by including their telephone numbers and websites. You can also go to the electronic version at *www.EngGeoMB.ca/Keystone.html* and access direct links to any of these companies.

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Asper MBA Program Asper School of Business University of Manitoba	7	204-474-9221	www.umanitoba.ca/asper/mba
Bockstael Construction Limited	9	204-233-7135	www.bockstael.com
Centre for Technical Engineering Leadership	22	866-744-3032	www.rgilearning.com
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E.F. Moon	34	204-857-7871	www.efmoon.ca
Eng-Tech Consulting Limited	43	204-233-1694	www.eng-tech.ca
EPIC Training	34	877-238-0432	www.epictraining.ca
Fastnet Communications	43	204 289 9654	www.fastnet.me
FWS Group of Companies	14	800-553-0007	www.fwsgroup.com
Great West Life	25	800-724-3402	www.greatwestlife.com
Industrial Technology Centre (ITC)	46	204-480-3333	www.itc.mb.ca
KGS Group	13	204-896-1209	www.kgsgroup.com
L.V. Control Manufacturing Ltd.	9	204-669-3600	www.lvcontrol.com
Lawson Consulting & Surveying Ltd.	11	204-414-3169 403-774-4071	www.lawsonsurveys.com
Manulife	2, 27	877-598-2273	www.manulife.com/apegm
Maple Leaf Construction Ltd.	42	204-783-7091	www.mapleleafconstruction.mb.ca
Maple Leaf Drilling	4	204-224-3084	www.mapleleafdrilling.ca
MCW/AGE Consulting Professional Engineers	42	204-779-7900	www.mcw.com
National Bank of Canada (Winnipeg Branch)	44	204-233-4983 ext 35157	www.nbc.ca
Oldfield Kirby Esau	28	204-943-1441	www.oldfieldkirby.com
Paddock Drilling Ltd.	28	204-725-0657	www.paddockdrilling.ca
Postech Screw Piles Manitoba and NW Ontario	48	204-793-0679	www.screwpiling.ca
Ron Britton, P.Eng.	31	204 736 2252	www.ronbritton.ca
Stantec	39	204-489-5900	www.stantec.com
Tetra Tech	6	905-369-3000	www.tetratech.com
The Personal Insurance Company	39	888-476-8737	www.thepersonal.com/apegm
Titan Environmental Containment	34	204-878-3955	www.titanenviro.ca
University of Manitoba Faculty of Engineering	47	204-474-9034	www.umanitoba.ca/engineering
University of Winnipeg PACE	3	204-982-1701	http://pace.uwinnipegcourses.ca/executive-training
Wood Environment & Infrastructure	41	204-488-2997	www.woodplc.com

THE UofM FACULTY OF ENGINEERING IS GROWING

Since the beginning of this decade undergraduate and graduate enrollment in engineering programs at the University of Manitoba are among the fastest growing engineering enrollment of any Province. The Engineering and Information Technology Complex is full to capacity and beyond with nearly 1800 undergraduate and more than 500 graduate engineering students. In efforts to support our growing student population and to produce the highest quality research we are pleased to have welcomed 10 new faculty members over the last 12 months.

DR. AHMED ASHRAF
Electrical and Computer Engineering

DR. GUO-ZHEN ZHU
Mechanical Engineering
Canada Research Chair in Mechanical and Functional Design of Nanostructured Materials

DR. FAOUZI BELLILI
Electrical and Computer Engineering

DR. PHILIP FERGUSON
Mechanical Engineering
NSERC / Magellan Aerospace Industrial Research Chair in Satellite Engineering

DR. XIHUI LIANG
Mechanical Engineering

DR. JILLIAN SENIUK CICEK
Centre for Engineering Practice and Engineering Education

DR. MOHAMMAD KHOSHDARREGI
Mechanical Engineering

NISHANT BALAKRISHNAN
Centre for Engineering Practice and Engineering Education

DR. BABAK MEHRAN
Civil Engineering

DR. FARHOUD DELIJANI
Centre for Engineering Practice and Engineering Education

Full bios of our new Faculty members can be found online: http://news.umanitoba.ca/engineering-new-hires/

To connect with the Faculty of Engineering on research initiatives please contact:
Kathryn Atamanchuk, P.Eng., MBA, PMP
Industry Partnerships Facilitator
kathryn.atamanchuk@umanitoba.ca

University of Manitoba
Faculty of Engineering

POSTECH
SCREW PILES

No Soil Assumptions

$Q_{ULS} = Kt * 10{,}000lbs/ft$

$Q_{SLS} = 35{,}000lbs$

Only Field Verified Results

Invented in the 1830's, re-popularized in the 1960's. Helical screw piles benefit from a simple empirical formula that allows properly trained installers to predict individual pile performance reliably and safely, and compare results against your specifications. This remains true for all soil types, including clay.
In fact, the US Army Corps of Engineers relies heavily on helical screw piles in areas of expansive clay soils. To discover more about the strengths and limitations of screw piles, give us a call.

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Postech Screw Piles Manitoba & Kenora
204.793.0653 / dale@screwpiling.ca