

The official  
publication  
of Engineers  
Geoscientists  
Manitoba

# THE KEYSTONE PROFESSIONAL

SUMMER 2016

## INSIDE THIS ISSUE

**Spaghetti  
Bridge  
Competition  
Breaks Record**

What is the  
Anthropocene?

Sometimes  
We Get Stuck



PM#40065075

# whatif

one plan could cover you for life's expenses?



**Up to \$1.5 million in coverage:** The loss of a primary earner can have a major impact on those left behind who may still need to pay for major ongoing expenses. That's why Engineers Canada-sponsored Term Life Insurance Plan was created exclusively for engineers and geoscientists — to help protect those who count on you in more ways than one.

See how the Engineers Canada-sponsored Term Life Plan can help you.

1 877 598-2273 | [manulife.com/apegm](http://manulife.com/apegm)



Underwritten by The Manufacturers Life Insurance Company. Manulife and the Block Design are trademarks of The Manufacturers Life Insurance Company and are used by it, and by its affiliates under licence. © 2016 The Manufacturers Life Insurance Company. All rights reserved.

The Manufacturers Life Insurance Company



# IMAGINE OUR ROADS WITHOUT POTHOLES.

Year after year, road crews spend countless amounts of time and money filling in potholes. Unlike asphalt, concrete is more resilient to extreme weather and harsh conditions. It also requires less maintenance.

Quite simply, concrete roads are built to last.

Learn more at [concretemanitoba.ca](http://concretemanitoba.ca)

**concrete  
manitoba**

**CONCRETE**  
even smarter than you think™

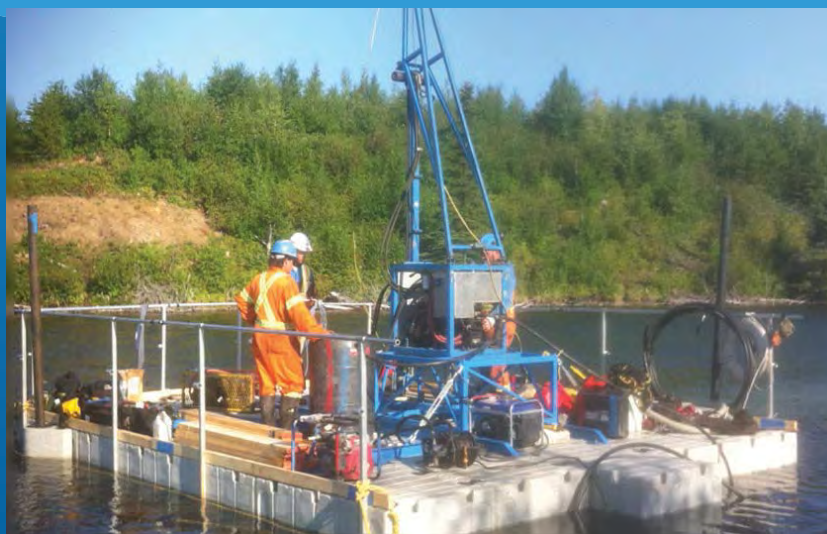


# MAPLE LEAF DRILLING LTD.

Serving Manitoba, Saskatchewan and Ontario since 1967 with safe, competent, year-round drilling services



- ✓ Geotechnical & Environmental Drilling
- ✓ Phase 2 Environmental Assessments
- ✓ Well Decommissioning
- ✓ Commercial & Domestic Water Well Drilling
- ✓ Commercial Pumps



Geotechnical

Environmental



204-224-3084

[www.mapleleafdrilling.ca](http://www.mapleleafdrilling.ca)



## Summer 2016

Published by Engineers Geoscientists Manitoba  
870 Pembina Highway, Winnipeg, Manitoba R3M 2M7  
Phone: 204-474-2736 Fax: 204-474-5960  
Email: [apegm@apegm.mb.ca](mailto:apegm@apegm.mb.ca)  
Cover Image: Leif Anderson

### Engineers Geoscientists Manitoba – Council

L. McFarlane P.Eng. (President)  
H. Procyshyn, P.Eng. (Past President)  
F. Cross, P.Eng., R. Eden, P.Eng., J.A. Epp, P.Eng.,  
M. Friesen, P.Eng., P. Fulton-Regula, P.Eng.,  
J. Guenther, P.Eng., S. Mattheos, LLB, L. Melvin, P.Eng.,  
D. Owens, P.Eng., S. Rosenberg, LLB, D. Spangelo, P.Eng.,  
B. Todd, P.Eng., C. Trenholm, EIT, S. Vieweg, CPA

### Chairs – Boards & Committees

D.S. Jayas, P.Eng. Academic Review  
A. Aftanas, P.Eng. Awards  
K. Myles, P.Eng. Committee for Increasing  
the Participation of Women in Engineering  
J. Gunning, P.Eng. Continuing Competency  
A. Pollard, P.Eng. Discipline  
J. Paliwal, P.Eng. Experience Review  
G. Cook, P.Eng. Heritage  
R.J.J. Herrmann, P.Eng. Indigenous Peoples Initiative  
A.E. Ball, P.Eng. Investigation  
D. Strang, P.Eng. Keystone Professional  
H. Procyshyn, P.Eng. Nominating  
T. Gitzel, P.Eng. Public Awareness  
D.J. Nedohin-Macek, P.Eng. Public Interest Review  
S. Wu, P.Eng. Registration  
S. Quigley, P.Eng. Salary Survey  
R. Petursson, P.Eng. Sports & Social (MLEC)  
D.S. Jayas, P.Eng. Engineers Canada Director  
G. Lodha P.Eng. Geoscience Canada Director  
S. Wu, P.Eng. Chinese Members Chapter  
E. Fernandez, P.Eng. Filipino Members Chapter  
R. Gupta, P.Eng. India Member Chapter  
J. Hilchey, P.Eng. Thompson Chapter  
S. Whaley, P.Eng. Westman Chapter

### Engineers Geoscientists Manitoba – Staff

G. Koropatnick, P.Eng., CEO & Registrar  
S.E. Sankar, P.Eng., P.E., Director of Admissions  
M. Gregoire, P.Eng., Director of Professional Standards  
A. Moore, Manager of Operations  
I. Wiebe, Manager of Finance  
L. Dupas, Professional Standards Coordinator  
C. Shymko, Assessment Officer  
M. Polson, Registration Coordinator  
C. Cabral, Member in Training Coordinator  
D. Kisilowski, Accounting & Membership Coordinator  
D. Vander Aa, Volunteer Coordinator,  
Certificate of Authorization Coordinator  
S. Goldstein, Operations & Events Assistant  
A. Reddoch, Systems Analyst/Programmer  
F. Hillier, Executive Assistant, Council & CEO  
S. Baragar, Administrative Assistant,  
Government Relations  
D. Unett Administrative Assistant/Hospitality

### Keystone Professional Committee

C. Cousin, P.Eng.; A. Kempman, P.Eng.; R. Reichelt, P.Eng.;  
L. Robinson, P.Eng.; A. Smith, EIT; D. Strang, P.Eng., Chair

The Keystone Professional Committee would like to hear from you. Please email your comments to: [amoore@apegm.mb.ca](mailto:amoore@apegm.mb.ca). Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

Although the information contained in this publication is believed to be correct, no representation or warranty, expressed or implied, is made as to its accuracy and completeness. Opinions expressed are not necessarily those held by Engineers Geoscientists Manitoba or the Engineers Geoscientists Manitoba Council.

# THE KEYSTONE PROFESSIONAL

The official publication of Engineers Geoscientists Manitoba



## SUMMER 2016

### FEATURES

▶ <b>What is the Anthropocene?</b>	13
▶ <b>How to Write an MIT Progress Report</b>	14
▶ <b>Spaghetti Bridge Competition Breaks Record</b>	16
▶ <b>GD&amp;T Implementation</b>	18
▶ <b>Sometimes We Get Stuck</b>	20

### DEPARTMENTS

▶ President's Message	6
▶ CEO's Message	8
▶ Engineering Philosophy 101	10
▶ Thoughts on Engineering Design	12
▶ Member Updates	26
▶ News & Notes	28
▶ Closing Notes	32
▶ Advertiser Information Centre	34

Publication management and production by:



3rd Floor - 2020 Portage Avenue  
Winnipeg, MB R3J 0K4  
Ph: 204-985-9780 Fax: 204-985-9795  
Email: [info@kelman.ca](mailto:info@kelman.ca)  
[www.kelman.ca](http://www.kelman.ca)

Managing Editor: Jeremy Brooks  
Art Design/Production: Daniel Goulet  
Marketing Manager: Jeff Kutny  
Advertising Coordinator: Stefanie Hagidiakow

Send change of address to:  
The Keystone Professional,  
Engineers Geoscientists Manitoba,  
870 Pembina Highway, Winnipeg, MB, R3M 2M7  
Email: [apegm@apegm.mb.ca](mailto:apegm@apegm.mb.ca)  
[www.apegm.mb.ca](http://www.apegm.mb.ca)

Publications Mail Agreement #40065075. Return undeliverable copies to: [lauren@kelman.ca](mailto:lauren@kelman.ca)





## Council in Full Swing

Council has accomplished a tremendous amount in the three months since I last wrote an article for the Keystone Professional. We have been continuing the journey I spoke about in the Spring issue, evolving our Association to meet the changing needs of our owners, the public of Manitoba.

I was recently asked whether Council had made any significant changes based on the work we have done to listen to our members and to the broader public. My first reaction was to downplay our work, but several Councillors quickly jumped in to correct me. The correction was most welcome!

Some of the longest serving Councillors indicated that this has been one of the most active years on Council that they have experienced. Here are some of the highlights:

- The Ownership Linkage Committee has been revived and a three-year plan for connecting with our owners has been created and is being implemented
- A plan for Ends review has been created and information gathering is underway, with the Ends review scheduled for mid-September

“ I encourage you to come out and join our Making Links golf tournament on June 16. ”

• An additional meeting for members was held in May, to increase communication

• A communication strategy and plan was developed and implementation started

And it is not just Council which has been busy in 2016. Staff have also been tackling some important work, such as implementing changes introduced by the new legislation approved in November 2015. For example, two stakeholder information sessions were held in spring, to help members understand the new Specified Scope of Practice Licenses. Applications will be accepted starting in January 2017. This new license may be of interest to people without an engineering degree, but with a diploma and experience in a related field.

On a personal level, I found it very fulfilling to be involved in making a difference in our Association. Compared with some other volunteer roles vying for my evening and weekend hours,

I have been inspired by the impressive individuals with whom I have been fortunate to serve. Volunteering with our Association has been an excellent opportunity for my professional development. If you are interested in getting involved in the work our Association, or want to provide feedback, please contact me by email at [lmcfarl@mts.net](mailto:lmcfarl@mts.net), or the Association Volunteer Coordinator, Diana Vander Aa at [volunteer@apegm.mb.ca](mailto:volunteer@apegm.mb.ca).

I encourage you to join our Making Links Engineering Classic Golf Tournament on June 16. If you need a bit more incentive than enjoying the simple pleasure of a day of prairie summer weather with colleagues, this is also a fundraising event that supports the Faculty of Engineering at the University of Manitoba. This will be just one more chance to see for yourself, your dedicated Council in full swing! ☘

WHERE SOME SEE CHALLENGES

# WE SEE A LIFE WITHOUT LIMITS

Set your sights on shaping the future at one of the world's leading engineering firms.

**ENGINEERING A WORLD OF POSSIBILITIES**

f
t
in
[wspgroup.ca](http://wspgroup.ca)






# The new Asper **MBA**

## LEAD THE WAY

The new Asper MBA shapes exceptional leaders in professions across the spectrum. Our experiential learning model and unique, market-driven curriculum enable you to carve your own path, empower those around you and become the leader others want to follow.

TRAILBLAZERS DO.

**Bill Fenton, P. Eng., MBA**  
*President and CEO,  
Melet Plastics Inc.*

REGISTER NOW FOR OUR  
NEXT INFO SESSION

[asper-mba.ca](http://asper-mba.ca)



## Diversity is a **Good Thing**

Our profession is actually reflecting society. We are a growing, diverse group of professionals. In addition to regional chapters, we now have the Filipino, Chinese, and India Member Chapters. I hope that more groups like this will form within our Association in the future.

### Stronger Profession

Learning to embrace others is a desirable quality. Learning to accept fellow engineers from other cultures, nations and backgrounds is an important attribute for our Association. It is one of our Ends. E-5 says "Under-represented groups that reflect the whole diversity of the public are valued as members". When we do a good job of embracing diversity, we end-up with a stronger profession. Learning to

connect with members of the public, government, education, and a wide variety of sectors, is necessary for continuing to provide service with insight and sensitivity.

Diversity is effective in the workplace too. If we don't plan for diversity, we risk hiring only those like ourselves. A homogeneous staff group or project team is risky, because only one style, one approach, one methodology, one line of thinking is possible. Sure, it's easiest to surround yourself with people who think like you, but it is much more effective to choose a diverse staff profile. This way you can ensure that others see what you don't. A better outcome may be achieved if a diverse group is utilized to tackle a problem or project.

### Ethnic Chapters

Sometimes groups fall behind because they become exclusive and separated from those they are attempting to serve. I'm excited about the future of our profession, because we are paying attention to our changing society. We are taking steps to keep up. We are accurately reflecting the society we are serving. In 2011, Engineers Geoscientists Manitoba made the deliberate change to allow ethnic chapters with the start-up of the Filipino Members Chapter. Since then, the Association has welcomed the Chinese Members Chapter and the India Members Chapter. These groups have mobilized hundreds of new member volunteers in the service of the public and professions. Member engagement, outreach, mentoring, and professional development have expanded because of these new chapters.

### Be A Part of Diversity

No matter what your background is, you can play a part in promoting diversity. Were you born in Canada? Educated in Canada? Lived a long time in Canada? Then perhaps you have a Canadian perspective on engineering, geoscience, and life in general. Don't let yourself be monolithic, with one set viewpoint. Branch out. Join-up with one of the chapters. Experience the energy, enthusiasm and variety of people and ideas. You will be surprised at the good things happening in our grand, historic and diverse professions of engineering and geoscience.

Your feedback is invited and welcomed. If you have any thoughts on anything you read in the KP, please email me at [gkoropatnick@apegm.mb.ca](mailto:gkoropatnick@apegm.mb.ca). ☎



**SNC • LAVALIN**

Building what matters

World-class engineering and construction services:

Infrastructure | Mining & Metallurgy | Oil & Gas | Power

☎ 204.786.8080

✉ [robert.cuthbertson-black@snclavalin.com](mailto:robert.cuthbertson-black@snclavalin.com)

🌐 [snclavalin.com](http://snclavalin.com)



**Put your  
projects in the  
rear view  
mirror.**

VERDYOL

# Biotic Earth™

AN ORGANIC APPROACH TO SOIL BUILDING

With Biotic Earth™, a hydraulically applied Biotic Soil Amendment, know that Mother Nature is working for you in the long term. There will be no need to haul in expensive topsoil or to just seed onto poor quality existing soil and hope for vegetation to grow.

With Biotic Earth™ Mother Nature does the work for you by improving your soil, improving your vegetation – and all while reducing your costs!

*The vegetation will grow stronger and you can put your project in the rear view mirror forever!*

VERDYOL  
**Biotic Earth™**  
AN ORGANIC APPROACH TO SOIL BUILDING

MILNER RIDGE CASE STUDY  
(AFTER)

**Fast Forward**  
TO PROJECT COMPLETION

If you want to see more,  
we have many case studies  
from all over North America at:  
[www.biocetearth.com/casestudies](http://www.biocetearth.com/casestudies)

**Toll Free:**  
**866-280-7327**

BEFORE

Verdyol Biotic Earth™ is a trademark of ErosionControlBlanket.com



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

## Requirements and Expectations

While the engineering profession in North America traces its functional roots to the mediaeval European model, time and political opinions, have created significant operational differences between Canadian and American practice. Some would argue that the differences are not great enough to worry about. Others have expressed concerns particularly as it relates to cross border perceptions of 'requirement' and 'expectation'. That, of course, is an ethics issue, and ethics can become complicated.

However, before discussing ethics, we need to consider a more fundamental difference, the right to 'title'. In the United States, graduates of an ABET accredited engineering program are entitled to use the title "Engineer". Here in Canada, an "Engineer" is an individual who is a licensed member of one or more of our provincial/territorial associations. In other words, a Canadian Engineer is a registered professional, P.Eng./Ing. who has progressed well beyond university graduation before claiming their title.

In the United States, a graduate who wishes to become a Professional Engineer (P.E.) can work through the requirements of the National Society of Professional Engineers (NSPE) and then seek registration in a state or territorial Association. For these individuals, the route to professional status may be different from the Canadian route, but the end result is more or less the same. One must remember, however, that the majority of engineering graduates in the United States do not become P.E.s, but they are still called Engineers.

In Manitoba, the practice of Engineering is defined by The Engineering and Geoscientific Professions Act. This Act provides those of us who are members of Engineers Geoscientists Manitoba with the 'right to practice', but it also provides us with the 'right to title'. From the 'right to practice' perspective, it requires that, "the Council shall prepare and publish from time to time a Code of Ethics". Further it requires us to "... subscribe to and ... follow this Code of Ethics in the practice of professional engineering ...". In other words, in Manitoba, if one is an Engineer, one must comply with our specific Code of Ethics. This type of 'requirement' is typical, but not necessarily similar, in all provinces and territories. This is not necessarily the case south of the 49th.

As I pondered the details of cross border differences, I discovered a book called *"Thinking Like an Engineer - Studies in the Ethics of a Profession"*. The author, Michael Davis, is a Professor of Philosophy at the Illinois Institute of Technology. His review of the American view of engineering ethics provided me with a perspective from outside the American profession.

Davis acknowledges that all graduates of ABET accredited undergraduate programs are considered to be "Engineers"

"While the engineering profession in North America traces its functional roots to the mediaeval European model, time, and political opinions, have created significant operational differences between Canadian and American practice."

### PADDOCK DRILLING LTD.

GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATIONS



BRANDON  
WINNIPEG  
SASKATOON

4100 RICHMOND AVE. EAST  
BRANDON, MB R7A 7P8

GROUNDWATER &  
SOIL EXPLORATION

[www.paddockdrilling.com](http://www.paddockdrilling.com)

Phone: 204-725-0657 • Toll Free: 1-800-339-4908 • Fax: 204-727-4926

and then he notes that “. . . in USA – No law binds all engineers to abide by their profession’s code of ethics (as the law does bind all lawyers)”. In other words, American Engineers, licensed or not, have a moral, not a legal, requirement to comply with codes of ethics. He goes on to say that “To claim to be an engineer is not simply to claim to know what engineers know; it is to claim to act as engineers act”. Later he notes that “To be a member of a profession is, . . . to be subject to a special set of standards”. In other words, if one calls oneself an Engineer, there is an ‘expectation’, not a ‘requirement’, that he/she will perform her/his duties ethically.

The ‘expectation’ case is reinforced by the observation that virtually all technical societies publish codes of ethics and members “. . . have a moral obligation . . .” to comply. However, many of these codes are in conflict with one another because each technical society has shaped its specific code as “. . . a certain way of using what engineers know”. Conflicting codes can make compliance impossible. Nonetheless, given his belief that “engineering ethics is a kind of applied, or practical, philosophy”, Davis seems to argue that there is little practical difference between ‘requirement’ and ‘expectation’. Lawyers would, I expect, take exception to this conclusion.

Functionally, if one accepts that “engineering ethics is a kind of applied, or practical, philosophy” and that “. . . the philosophy of engineering focuses on engineers themselves.”, as well as agreeing that a code of ethics is simply “. . . a certain way of using what engineers know” then Davis may have a valid point, particularly as it relates to P.E.s who deal directly with the public. The public expects compliance with professional ethics, and it is in the best interests of the engineers to deliver.

Maybe the best way to look at the issue of ethics was summed up by Samuel Florman in his book *“Good Guys Wise Guys and Putting Up Buildings”*. “Through the years a lot has been written about engineering ethics. In my humble opinion, the philosophers have not given enough credit to simple diligence.” His opinion is based on a lifetime of experience in the construction business in and around the city of New York.

## “In Manitoba, the Practice of Engineering is defined by the Engineering and Geoscientific Professions Act.”

We can, and do, have rules, regulations, codes, and standards. But, it still boils down to doing what is right, and that, at its foundation, amounts to individual decisions, not national origin. Here in Canada there is, theoretically, a legal base with ‘requirements’ upon which disputes can be resolved. Our

American colleagues function on the much less defined base of ‘expectations’.

The mediaeval concept of a profession as a group with specific skills that was given the right of self-regulation, boiled down to trust. Stripped of all the philosophical and legal rhetoric, that is still the case. ⊕



### Centre for Technical and Engineering Leadership

When engineers, technologists and technicians are promoted from within, they have the technical knowledge to excel, but do they have the leadership skills they need to be successful?

#### Courses Specifically Designed for Engineers

- |                                 |                                 |
|---------------------------------|---------------------------------|
| Managing Projects               | Managing Conflict               |
| Listening Skills                | Oral Presentations              |
| Managing Time                   | Ethics and Technology           |
| Understanding Personality Types | Letter and Report Writing       |
| Meeting Skills                  | Data Privacy and Security       |
| Intercultural Communication     | Discovering Your own Innovation |
| Elements of Critical Thinking   | Leadership Models and Icons     |

#### 42 years of experience putting the P in the P. Eng.

CTEL offers open registration and in-house programs. Call for details 866-744-3032 or see [www.rgilearning.com](http://www.rgilearning.com)



# Thoughts on Engineering Design

## ... and potential results of decisions

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

**N**ews headlines in mid-April of 2016 brought our attention to the destructive impact of earthquakes. Within one week, Japan, and then Ecuador, made front page news as they dealt with quakes in the 7 to 8 range on the Richter Magnitude scale. Both of these countries are located on the circum-Pacific belt in an earthquake-prone area that geologists refer to as the Ring of Fire. In that part of the world, it is not a matter of 'if' a quake will occur, but 'when'.

Here in Manitoba we are, or at least we believe we are, relatively safe from that type of threat. My only exposure to earthquakes was as a part of my graduate program at Texas A&M, when I enrolled in a course on dynamic loads on structures (my advisor's idea, not mine). The course focused on computer analysis of earthquake-induced loads and it was based, almost entirely, on Japanese building code requirements. My 'take away' from that course was a great respect for the close ties I saw between the codes and the research. I came to consider the Japanese codes on design to resist earthquakes to be the international gold standard. The April headlines caused me to reflect on that long past academic exposure, and got me wondering if there are any lessons to be learned that are applicable here in our flood-prone, earthquake 'safe' environment.

In the city of Kumamoto in Japan they dealt with two 7+ quakes within 24 hours. As this column is being written, more than 40 people have been reported to have died and more than 100,000 have been displaced. In addition to widespread collapse of buildings, the area experienced landslides that destroyed roads and much of the local infrastructure. One got the impression those rescue/recovery efforts were well underway before the second 7+ quake struck. Clearly the system knew how to react and what to do.

In Ecuador, on the other hand, the 7+ quake, which was followed by a series of aftershocks, has caused a death toll that is reported to be well past 600 and growing. The number of persons displaced has varied all over the map but it seems to be comparable to the numbers in Japan. Based on impressions from news reports, the rescue/recovery efforts seem to be significantly less effective when compared to those in Japan.

Direct comparison of the outcomes in the two countries may be unfair because there are significant differences in their economic circumstances. Japan is a much older society, and they are world leaders in understanding both causes and effects of earthquakes. But does that justify more than 15 times as many deaths in Ecuador?

As I continued to dig through various reports, most of which were compiled by nontechnical persons, I came across a statement that struck home. "There are stringent building codes in Ecuador, but they are frequently ignored." I cannot prove this statement to be true, but any engineer who has worked in Central or South America will probably be prepared to agree.

Obviously both countries had access to the scientific and technical information relating to earthquakes. So lack of knowledge cannot be blamed for the difference in outcomes. If, as it seems likely, 'the authorities' in Ecuador chose to look the other way when it came to applying that knowledge, or enforcing the Building Codes, the difference in outcomes from the two earthquakes is explainable. That being said, earthquakes will occur in countries located on the Ring of Fire, and elsewhere. The goal is (should be?) to minimize the death toll that will inevitably result.

Thinking back to my question regarding lessons learned that may have Manitoba application, I suspect most of us can cite cases where, for whatever reason, the applicable 'rules' were not quite adhered to. I suspect that many (most?) of those cases are still functioning. I also suspect that the Ecuadorian engineers who chose to ignore the code or the authorities who chose not to enforce the code felt comfortable with their decisions, until April 2016.

Volkswagen chose to 'work around' an emission standard. The after-effects of their decision to use technical capability to create the appearance of complying with a regulation is, when all is said and done, no different from the decision to ignore a building code. Some 'earthquakes' are economic, not physical.

Our profession is charged with the responsibility to protect the public. Does ignoring 'regulations' comply with that responsibility? ⊕

**Bockstael**  
Manitoba's Builder

Construction Manager • Design-Builder • General Contractor

# Geology and Society 2 – What is the Anthropocene?

R. Reichelt, P.Geo., FGC

Geologists divide the geological history of the world into distinct periods of time: eons, eras, periods and epochs<sup>1</sup>. The longest unit, the eon, is divided into eras, which are in turn divided into periods and epochs. The latest period, the Quaternary, has conventionally been divided into two epochs, the Pleistocene (or so-called “ice ages” beginning approximately 2.6 million years ago) and the Holocene (or recent) beginning about 10,000 years ago with the melting of the great continental glaciers. The term Anthropocene first appeared in print in 2000 in a paper by P. J., Crutzen and E. F. Stoermer<sup>2</sup>. The idea behind the “Anthropocene” is that human beings have made a permanent mark on the stratigraphic (rock layer) record of the planet through our industrial activities.

This year, 22 scientists published a paper<sup>3</sup> in the journal *Science* in which they state that “Human activity is leaving a pervasive and persistent signature on Earth” and go on to conclude that: “the Anthropocene stands alone stratigraphically as a new epoch beginning sometime in the mid–20th century”<sup>5</sup>.

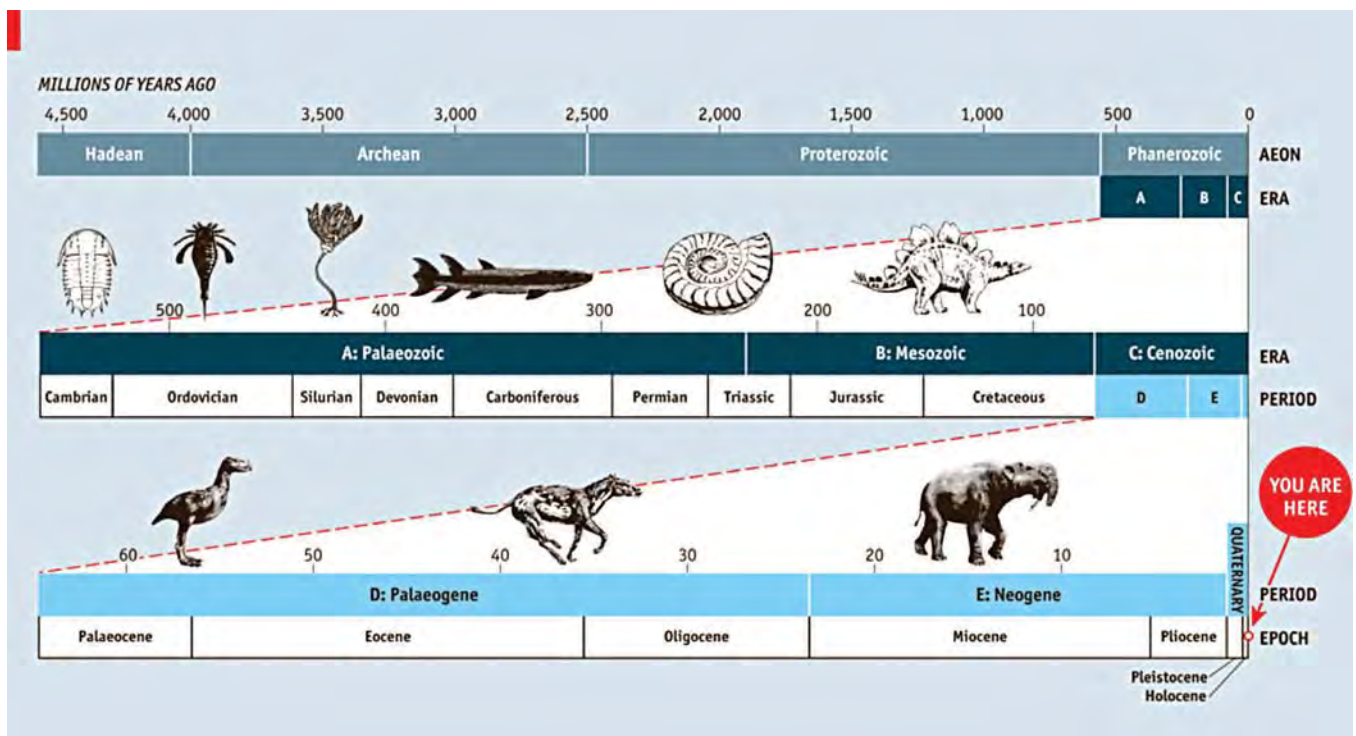
The timeline below, originally published in *The Economist*<sup>6</sup>, shows the relative scales of geological time and the place of the proposed Anthropocene.

As befits its subject matter, the International Commission on Stratigraphy works at a pace that could be called geologic; although it is more charitably described as careful. The term Anthropocene is not yet official, but we can expect to see it used more often. We can also expect lively debate on whether the term is appropriate or not. ⊕

## References

- 1 International Commission on Stratigraphy, (January 2016) International Chronostratigraphic Chart, <http://www.stratigraphy.org/index.php/ics-chart-timescale>
- 2 Crutzen, P. J., and E. F. Stoermer (2000). “The ‘Anthropocene’”. *Global Change Newsletter* 41: 17–18
- 3 Waters et al (January 2016) The Anthropocene is functionally and stratigraphically distinct from the Holocene, 8, *Science*, Vol. 351, no. 6269, <https://www.sciencemag.org/content/351/6269/aad2622.abstract>
- 4 Waters et al, op.cit.
- 5 Waters et al, op.cit.
- 6 *The Economist* (May 26th, 2011) *The Anthropocene, A man-made world*

**“Human activity is leaving a pervasive and persistent signature on Earth”.**



# Writing an Experience Review Progress Report

## – a Guide for MITs (Interns)

By Sharon E. Sankar, P.Eng., P.E. Director of Admissions

**A**t Engineers Geoscientists Manitoba, members of the Experience Review Committee (ERC) review a high volume of reports and the quality expected is high. When submitting your experience reports they should cover the following areas over the 48 month period:

- Application of Theory
- Practical Experience
- Project Management
- Communication Skills
- Professional and Ethical Responsibilities
- Social Implications of Engineering

Long form or point form is acceptable, however, the committee needs details and examples. Vague descriptions are not acceptable, and may result in a request for resubmittal.

To explain, I've developed a fictitious example of three reports describing the same job. Let's call it the Good, the Bad and the Ugly. For brevity, I'm only including the first criteria (Application of Theory):

### **Report #1: Good** **Application of Theory:**

#### **Analysis:**

I performed a site inspection for a retrofit to a heritage building in downtown Winnipeg. The site inspection included reviewing drawings (where they exist) and mapping the layout of the ductwork, plumbing and potable water system.

#### **Design and Synthesis:**

After inspection, I analyzed three possible designs– including a variable volume variable temperature (vvvt)

system, heat pumps and a constant volume system with electric reheat. I determined that vvvt would offer the most flexibility because the retrofit was multi-tenant. I examined heating and cooling requirements and calculated required design air volumes based on proposed occupancies.

#### **Testing:**

During inspection, I had to check the functioning of the existing steam system to determine whether it could integrate with the new system. The steam system was in poor shape and I determined that replacing with a new glycol system would be more effective than repairing this older system.

#### **Implementation:**

After the design was tendered and I then performed site inspections during the different phases of the project. This was challenging since building space was tight and the architect wanted to minimize the bulkheads which would undermine the beauty of the interior. Several tenants requested multiple changes, often in contradiction to the landlord's wishes.

### **Report #2: Bad:** **Application of Theory:**

#### **Analysis:**

I did a site inspection for a retrofit to a Heritage building in downtown Winnipeg.

#### **Design and Synthesis:**

I analyzed three possible designs for this retrofit – including a vvvt system, a heat pump system and a constant volume system with electric reheat.

#### **Testing:**

During inspection, I had to determine the functionality of the existing steam system to see whether it would work with the new system. It couldn't.

#### **Implementation:**

After the design I tendered and then performed site inspections during the different phases of the contract.

### **Report #3: Ugly:** **Application of Theory:**

#### **Analysis:**

I did a site inspection.

#### **Design and Synthesis:**

I examined alternate designs for the air handling system.

#### **Testing:**

I reviewed the existing steam system. It wasn't very good.

#### **Implementation:**

I tendered the design and then visited the site regularly.

The first report would normally be accepted, the second one MIGHT be accepted but only at the very beginning of your program. For the third – we would request a resubmittal.

While Engineers Geoscientists Manitoba staff cannot always predict how a report will be received by the Experience Review Committee, we are able to see when a report is poor, and due to the high volume of reports received, we must return those that are obviously not acceptable. Sometimes, a report

will be accepted by the ERC, but additional details may be requested. If you can give the information, provide it.

In conclusion, remember the following:

1. Follow the Acceptable Engineering/ Geoscience Guide, found at <http://apegm.mb.ca/pdf/Registration/ProgressReports/05engexp.pdf>, as much as possible.
2. Details and examples – we want lots of them. “I did design” tells us nothing.
3. You don’t have to report only on your spectacular successes. We want to hear about your challenges and how you’ve overcome them. In fact, this gives insight into your growth as a professional member, in comparison to your “easier jobs”.
4. We want to hear about what YOU do, not what your company does. The fact that you’ve worked for a two person consulting company, or a multi-national, is interesting, but somewhat irrelevant. What did YOU do there?
5. Personal statements like “I’d like to thank my supervisor for all he’s done for me...” – keep to a minimum. Even if they were fantastic, stating it in a report looks odd. If you really liked them, tell them offline or take them out for coffee or a beer.
6. We recognize that report writing style, even in English, varies from one country to another, but you are going to be judged by people who are working as engineers/ geoscientists in Canada (though they may have come from elsewhere...). If you are not familiar with business writing in Canada, you could ask someone who is more familiar– even a non-member could be helpful.
7. The longer the time frame, the more detail we expect. Also, more detail is expected from those nearing their 48 month mark, than those starting their first six month report.
8. Don’t try to be funny in a report ... humor can be taken differently by different people. Play it safe...
9. Finally – DON’T copy and paste...! It’s tempting to do that – but a report that is similar to a previous report will be rejected. Yes, you may still be working on the same project, but hopefully the project is progressing and you are actually doing new work. The same work repeated for 48 months does not show progression.

If anyone has comments please feel free to contact me at [ssankar@apegm.mb.ca](mailto:ssankar@apegm.mb.ca). ☎



**Metallurgists and Forensic Engineers**  
We Investigate What Happened and Why

EXPERT WITNESS TESTIMONY  
CORROSION ENGINEERING  
FIRE & EXPLOSION INVESTIGATION

**204-953-3800**  
[www.testlabs.ca](http://www.testlabs.ca)

Testlabs International Ltd.  
1797 Logan Avenue  
Winnipeg, Manitoba, R3E 1S9

- Metals and Plastics Failure Analysis
- Corrosion Engineering
- Forensic Engineering
- Fire & Explosion Investigation
- Product Litigation - Insurance Losses
- Materials Testing
- Non-Destructive Testing
- Cathodic Protection Inspection
- Coating Inspection



**Tt TETRA TECH**

## Smart Solutions for a Complex World

From water and transportation projects, to renewable energy and mining services, Tetra Tech provides clear solutions in consulting, engineering, program management, construction management, and technical services worldwide.



tetratech.com | [f/tetratech](https://www.facebook.com/tetratech) | [t/tetratech](https://www.twitter.com/tetratech)

# Spaghetti Bridge Competition BREAKS RECORD

By G. Keatch

**2**016 marked the biggest year ever for the annual Engineers Geoscientists Manitoba Spaghetti Bridge Competition. For the first time, the competition was held over three consecutive days, making it easier for school groups to attend. A record 737 students competed, building over 340 trusses which were tested to their breaking point during the event. Prizes were awarded for the strongest structures from each grade, and a team from Menonite Brethren Collegiate Institute earned the top spot when their truss bore a load of 221.6 kg before breaking.

"It's great to see so many students and teachers joining us this year to build strong entries in support of Winnipeg Harvest," said Grant Koropatnick, P.Eng., FEC, Engineers Geoscientists Manitoba CEO & Registrar. "Many bright, young minds applied a lot of engineering ingenuity with glue and spaghetti; participation has quadrupled since 2015. This year's contest entries held up 26,252 lbs!"

The Association donates \$1per-lb to Winnipeg Harvest, who multiply it around 20x with their buying power. With matching food donations from partners Canada Safeway and Peak of the Market, Winnipeg Harvest will receive



over 500,000 lbs of food from the 2016 Spaghetti Bridge Competition!

"I'm absolutely thrilled to see we've set a new record for weight – and a new record for donations!" says David Northcott, Executive Director at Winnipeg Harvest. "This event brilliantly educates young people on the value and importance of engineering, while teaching the virtues of compassion and empathy for those in need. Considering that nearly 42% of the 63,000 monthly food bank users we assist are children, we are not only building bridges to span distances, but bridges to a better future. I thank Engineers

Geoscientists Manitoba once again for their continued support for the families Winnipeg Harvest serves, and for continuing to inspire youth to excel in engineering."

The Spaghetti Bridge Competition was part of a series of events to celebrate Provincial Engineering and Geoscience Week (PEGW). Hundreds of families took part in volunteer-led children's activities, including building gumdrop structures, flying balsa wood gliders, and digging for Manitoba mineral samples. The celebration was part of the National Engineering Month occurring across Canada throughout March 2016. ⚡







# Geometric Dimensioning & Tolerancing: Beyond the Implementation – Proficiency and Excellence

J. Sykes, P.Eng.



**T**here's a bit of a euphoria you feel after a successful initial implementation. ISO 9000, Lean, Six Sigma, a manufacturing process, an inspection technology, ISO 14000, my specialty of Geometric Dimensioning and Tolerancing (GD&T) ... it doesn't matter what you implemented, you earned that moment for a tough job done well. Then what? On to the next thing? Usually that's the case, but too often when the implementation team moves on to something new, whatever they implemented loses some momentum and fails to evolve or move along to the eventual milestones of proficiency and excellence.

Proficiency, *then* excellence.

Your implementation focused on achieving functionality; but to wring the full potential of your technology investment, you need to attain excellence and that means pushing the technology to its limits. That's a problem for most because it takes time, and because you have to develop a significantly higher level of expertise.

You can't jump from functionality to excellence without attaining proficiency first. Proficiency means integrating the new technology into your corporate culture. It means that particular technology becomes an immediate thought, not a secondary consideration or afterthought. You need proficiency before you can pursue excellence.

To be clear, excellence doesn't mean perfection. It means doing things at the highest level possible. Attaining your greatest efficiencies, productivity and quality, for example. It means achieving the full benefits of your technology. In today's global-sourcing economy, it can mean that you have a competitive edge against low offshore labor rates. Excellence requires the commitment of time and resources beyond the limits of convenience. Small companies can develop a culture that allows them to redirect their focus and blaze along a new path with short notice. Their workforce can be dynamic in meeting the changing needs; but the commitment of resources to achieve excellence can

be crippling. Mid-size companies can often spare the necessary resources, but changing direction means risking their comfort zone, risking what they have built. Large companies can be best suited to committing the resources, but too often focus on the immediate rather than the long-term outlook. This means that they pursue bite-sized change, and may find excellence too daunting a task. Large enterprises are also more susceptible to the trap of believing that their success to date means they have attained excellence. In large industrialized regions most companies, regardless of size, believe they have to go it alone. This makes attaining excellence overwhelming for most. When you are afraid of losing your most skilled people to competitors, it makes you reluctant to invest in those people.

Industries in and around Winnipeg, however, have a few advantages. Industry here draws largely from the same pool of engineers, designers, machinists and inspectors. I've heard more than a few stories of people circulating around,

# Geometric Dimensioning & Tolerancing

returning to the same companies several times during their careers, and this seems to be a normal and accepted practice in this market. And that, a stable resource pool, can be an advantage in developing proficiency and attaining excellence. That shared labor pool presents an opportunity to raise the general proficiency level in many technologies. But it then takes the collective effort of this community of industries to pursue and achieve this evolution of market skillsets.

The University of Manitoba's Center for Engineering Professional Practice and Engineering Education (CE2P2E) already runs a course on operational excellence, and I start teaching Advanced Graphical Communications (primarily a GD&T course) there in September 2016. Both of these programs are industry-supported, and participants are drawn from the student body and our industry partners. This means that industry gains by having a training resource for those already in the workforce, and by having knowledgeable, if not yet proficient, grads entering the workforce. But that's still just addressing the functionality level of capability. Next is proficiency.

In a small market, proficiency can be gained in two ways. You can foster a slow self-evolution of in-house skills, or focus on and accelerate skills development through mentoring. Proficiency in GD&T means getting the GD&T applied correctly, performing tolerance analyses, manufacturing understanding and using clear communications to make acceptable parts more often, and inspection having a clear understanding of how to inspect. Excellence in this context means using GD&T to establish machine and process capabilities, feeding that data back into the design for optimizing tolerances, performing statistical tolerance stack-ups, and rationalizing inspection and quality controls. Excellence means integrating GD&T throughout your entire process chain, including your customers and external suppliers. The net result of excellence in GD&T is optimal part functionality, which makes your customers happy, and cost reductions in development, scrap, rework, inspection, and warranty, which make your investors happy.

Companies can try to muddle their way through a GD&T implementation on their own, but it's a long and difficult undertaking. Most companies will call in outside help to make sure things are pointed in the right direction. Going it alone means that you will never gain proficiency. For that, you need feedback, reinforcement, and challenges that stretch your use of GD&T. That's where Manitoba's shared resource pool offers a unique opportunity. The diversity, specialization, technologies and

capabilities within this region provide an ideal opportunity for a *GD&T User's Group* not just to develop and institutionalize GD&T within the area, but to lead the way to proficiency for all and make excellence achievable for those who seek it.

Two large companies are already interested in a *Manitoba GD&T User's Group*; now we'll see who else recognizes the need and value. If your company is interested in this opportunity, contact me at [jim.sykes@umanitoba.ca](mailto:jim.sykes@umanitoba.ca). We'll see where we can go from there. ☒

## THE PIPE THAT FITS IN SO MANY WAYS.



### NovaForm™ PVC Liner

**The sewer & culvert rehabilitation solution in the sizes you need.**

Aging sewer and water infrastructure has led to ever increasing maintenance costs for municipalities. The engineers at IPEX recognized this development and responded with NovaForm PVC Liner, a product that brings the benefits of factory-made PVC pipe to the North American trenchless pipe rehabilitation industry.

To learn more, call us toll free at 1-866-473-9462 or visit [www.ipexna.com](http://www.ipexna.com)



NovaForm™ is manufactured by IPEX Inc.

# Sometimes



# We Get Stuck

G. Koropatnick, P.Eng., FEC

**I** do a lot of reading. There are many good journals, publications, websites, and news feeds sending me content that is worthy of my time. The Saturday *Globe & Mail* is my weekend guilty pleasure. I also enjoy reading books (remember those paper pages glued between two thick pieces of cardboard?). I'm sure you have similar reading times with your iPad, favorite newspaper, or best-selling book.

The topics of human behavior and psychology make it onto my reading list at least once-per-year. Best-selling author Malcolm Gladwell accurately describes our human experience in his books. I have read *The Tipping Point*, *Blink*, and *Outliers*. I find human behavior both fascinating and mysterious – a riddle to be solved. I have sometimes called this peculiar scope

of practice “psychological engineering.” Others use the more recognizable terms “management” or “HR”.

## **Are You Stuck?**

Sometimes we get stuck. Our personal habits, attitudes, and thinking are set. Change doesn't happen. We are closed to any new thought, idea, or opportunity. We are stuck. This happens to individuals and it also occurs with groups, organizations, and professions too. How do we get un-stuck; regaining an open mind?

Strongly held values can lead to trouble for the one who holds on too tightly. Are we afraid of losing our grip on the situation? Losing hold of something we deem precious? Are there ways we are stuck as a profession? Are there habits,

attitudes and thinking that are set like concrete that we need to pulverize? I can't think of too many examples but there must be a few. Consider the following:

## **Take Pride**

Why is it that after all these years, people don't know what we do? Some call us the “profession hidden in plain view”. Is it because engineers are everywhere? So common in everyday life that “what we do” is taken for granted? Perhaps. It may be that engineers are sometimes self-deprecating; we diminish the importance and magnitude of our contribution to daily life. We need to take pride and greater confidence in the role that we play. Remember our slogan: “*My life's work, makes life work better.*”

Are engineers truly cheap? Not really, but the public has this perception and we're often pinned with that criticism. I don't like it. There's only one way to silence the comments – be generous. For example, the difference between a good tip and a poor one (depending on the restaurant) is a buck or two. So add another toonie to your usual tip when you pay for your next meal. The server will appreciate it and you'll feel good too. Being generous takes practice and like many things in life, it gets easier the more you do it.

How come we have so many men and so few women in engineering? That's not the case in the geosciences. How will we retain those few women? How will we encourage more to select engineering as a career? Other professions have overcome the gender imbalance. Law, accounting, medicine: all were male-dominated in the past. Today, they enjoy gender balance and greater equity. I believe engineering can achieve the same, but we have to be intentional about including women in our future plans. Regulators, educators, and employers can be part of the solution if we keep an open mind.

### Things Change

Sometimes we get stuck on old ideas and forget that we are able to move on if we open-up to new ideas, new realities, and take deliberate steps toward a new goal. After all, things change as we get older. The Association is 96 years old and change has happened every decade since the beginning in 1920. No, it's not like it was back then or 50 years ago or 5 years ago. But as I say to my adult children: every generation has its own unique attributes, innovations, trends, and topics. No one can say that one period of history is better than another – they're just different.

If we're to move forward as a profession we have to accept the present reality first. Psychologist David Benner<sup>1</sup> says acceptance "must take place first; then the next stage of transformation is made possible". So let's stop talking about the lack of recognition, failure to be understood fully, and joking about "cheap engineers". Let's do more to implement

workplace policies that support gender equity instead of ignoring it. Let's begin a deliberate program of advertising and promotions in the public spaces. Let's form a new habit of generosity to others; both individually and corporately.

### Goals

We have many goals that we're working on. Council, on behalf of the members has a vision for three strategic priorities: recruitment and retention of new professionals,

improving the public's perception of the professions, and government relations. Exciting progress is being achieved in all three areas. View the Association's website for news, events, and upcoming changes that will carry us forward toward our 100th anniversary year. It's a great time in history to be an engineer or geoscientist. ☺

### Endnotes

- 1 Benner, David G., *The Gift of Being Yourself*, Intervarsity Press, 2004.

# ASHER ENGINEERING LTD.

offering EPCM services to  
the oil & gas industry

2016  
marks  
23 years

AT ASHER ENGINEERING, WE APPLY OUR  
**KNOWLEDGE AND EXPERIENCE** AS A GROUP  
OF MULTIDISCIPLINED PROFESSIONALS TO  
TO PROVIDE **QUALITY ENGINEERING**, WITH  
ATTENTION TO IMPORTANT **DETAILS** TO  
**COST EFFECTIVELY** MEET THE NEEDS OF  
OUR CLIENTS.



**Experienced in Manitoba**

Suite 300, 630 – 6<sup>th</sup> Avenue SW Calgary, Alberta T2P 0S8  
Tel: 403-264-2526 • Fax: 403-264-9512 • [www.asherengineering.com](http://www.asherengineering.com)



## Specializing in

- Asphalt Paving/Concrete Paving
- Site Development
- Sewer & Water Services
- Diamond Grinding




**COR Certified  
Gold Seal Employer  
& Supporter**





777 Erin St. Winnipeg, MB R3G 2W2 | Phone: 204-783-7091 | Fax: 204-786-3106 | [www.mapleleafconstruction.mb.ca](http://www.mapleleafconstruction.mb.ca)



# Make Your Move

N. Masood and B. Lavallee, EIT

**M**arch 12, 2016 marked the day of the third annual “Make Your Move” (MYM) event, organized and hosted by the WISE (Women in Science and Engineering) Kid-Netic Energy group at the University of Manitoba.

Make Your Move is an outreach event designed to teach girls in their early teens about engineering – in general, and as a career. This year, Grade 8 girls from each school division were selected for having displayed leadership in a community, student government, sport, or academic capacity. Each girl was invited to bring two of her friends to the event, and each group of three young women, along with a female engineer mentor, made up one team. The day was set up to be an engaging way to meet new people and learn new things.

Many teams were sponsored by local engineering companies; sponsors included Engineers Geoscientists Manitoba, MTS, Price Industries, KGS Group, Magellan, Standard Aero, Faculty



of Engineering, NSERC Chair for Women in Science and Engineering, ENGAP, FWS Group and Emergent BioSolutions. Teams that weren’t sponsored by a company were named after important historical women in the engineering field.

The all-day event featured one large design challenge. The design challenge involved building a canoe large enough for a team member to sit in and paddle with the supplies provided, and then racing the canoe



in heats in the University of Manitoba indoor pool. The teams with the fastest times won prizes.

Local comedian Dana Smith kept the day moving from opening remarks to design challenges to lunch, prize announcements, and closing remarks. The use of social media was heavily promoted, and everyone was encouraged to use #MYM2016 on Twitter and Instagram. Music was played throughout the day, and a photo booth (with props!) and photographer were onsite to record the event.

Feedback from the participants was almost entirely positive. Here are some of their responses:

**Q:** What did you like most about the “Make Your Move” event?

**A1:** My favourite part was being part of a team and building an original idea. It really empowered me to do more and pursue an engineering career.

**A2:** I liked building the boat, being with an engineer, and the ‘crew’ was nice. I liked watching everyone race the boats, and I liked that we could pretty much customize our boats.

**Q:** What did you like the least about the “Make Your Move” event?

**A1:** Writing this very survey! LOL

But perhaps the biggest indicator of whether or not WISE Kid-Netic Energy achieved their goal with this year’s Make Your Move event comes from the answers to the following questions:

**Q:** How much did you know about engineering prior to this event?

- A lot: 11.54% (six responses)
- Some: 57.69% (30 responses)
- A little: 30.77% (16 responses)

**Q:** Before coming to the “Make Your Move” event, had you ever considered becoming an engineer?

- Yes: 40.00% (20 responses)
- No: 60.00% (30 responses)

**Q:** Now that you have attended the “Make Your Move” event, would you ever consider becoming an engineer?

- Yes: 76.60% (36 responses)
- No: 23.40% (11 responses)

**Q:** I thought the “Make Your Move” event was:

- Excellent: 90.38% (47 responses)
- Good: 7.69% (4 responses)
- Average: 0.00% (0 responses)
- Fine: 1.92% (1 response)
- Poor: 0.00% (0 responses)

It is obvious by the remarks shared, and the many images of happy and engaged girls, that the annual event commemorating International Women’s Day was successful and enjoyable for the students and the female mentors that graciously volunteered.

The event is of strategic importance to Engineers Geoscientists Manitoba and aligns well with the strategic priorities set by the group to increase diversity. The annual event encourages young teens to select math and science electives that are prerequisites for entrance to the Faculty of Engineering at the University of Manitoba. There are plans in place for WISE Kid-Netic Energy to hold another “Make Your Move” event on March 11, 2017. Readers interested in sponsorship or volunteer opportunities can contact Nusraat Masood by email ([nusraat.masood@umanitoba.ca](mailto:nusraat.masood@umanitoba.ca)). ☎





# Engineers Geoscientists Manitoba and Manitoba's New Provincial Government

S. Baragar

**O**n April 19, 2016, Manitobans elected a new provincial government. Premier Brian Pallister and 40 members of his Conservative Party were elected into the Legislative Assembly in a historic win over the province's long-time governing New Democratic Party of Manitoba, garnering attention nationwide.

Four Association members ran in the provincial election, and two were elected as Members of the Legislative Assembly (MLAs) for Manitoba. Professional Engineer and former Member of Parliament for the Federal Government, Honourable Steven Fletcher was elected as MLA in the riding of Assiniboia. Professional Engineer Kelly Bindle, successfully ran in the riding of Thompson, winning a seat as MLA from previous Infrastructure and Transportation Minister Steve Ashton, and was also announced as the Legislative Assistant to Honourable Cliff Cullen, Minister of Growth, Enterprise, and

Trade, on May 4. Professional Engineer Jeanette Montufar, and Professional Engineer Malli Aulakh, ran campaigns in the ridings of Fort Garry-Riverview and Rossmere respectively. Montufar ran a particularly competitive campaign, losing to incumbent MLA James Allum by only 298 ballots and 3.3% of the vote.

With Professional Engineer Doug McNeil as the Chief Administrative Officer (CAO) for the City of Winnipeg, Professional Geoscientist and Federal Minister of Employment, Workforce Development and Labour, Honourable MaryAnn Mihychuk representing the riding of Kildonan - St. Paul nationally, and now Professional Engineer Honourable Steven Fletcher and Professional Engineer Kelly Bindle elected as MLAs provincially, the Association is proud of its member presence in all levels of Manitoba's government.

Since the election, the new Conservative majority government has been transitioning to leading

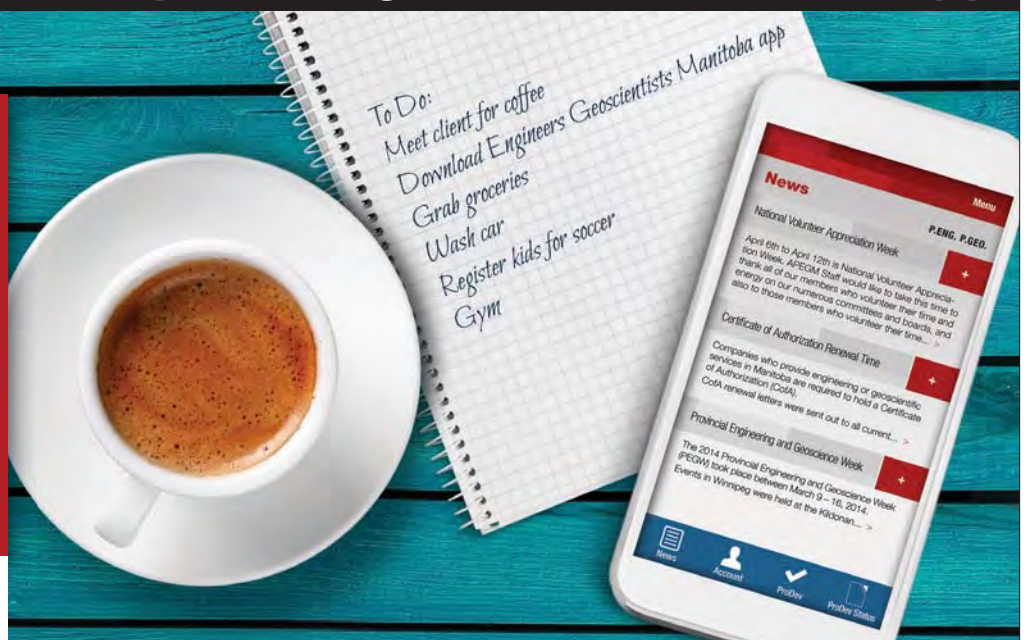
Party and actively working to fulfill the change in Manitoba it promised. Lessening government presence and salary expenses was one of the Conservative Party's election promises and was targeted right off of the bat. Reorganizing the number of Ministerial roles and Departments held by the government from 19 to 13 amalgamated and redefined a number of areas, including the previous government's Department of Labour and Immigration which oversaw *The Engineering and Geoscientific Professions Act*. Portfolios overseen by the previous Department of Labour and Immigration are now administered by Manitoba's newly established Department of Growth, Enterprise and Trade, or Department of Education and Training.

Engineers Geoscientists Manitoba looks forward to inviting Premier Pallister to Ingenium in the fall, and to working with the new provincial government for the next four years to come. ☕

## Mobile Membership: The Engineers Geoscientists App

We've put the benefits of your Engineers Geoscientists Manitoba membership in the palm of your hand with our convenient app, available through iTunes and Google Play. Available for both Apple and Android devices, our app lets you update your member profile, read current member news and access your ProDev account anytime, anywhere.

Visit iTunes or Google Play and download the app today!







Science  
Imagination  
Collaboration

ENGINEERING INDUSTRY LEADERS IN:  
Hydraulics • Structural • Geotechnical • Environmental • Hydrogeology • Municipal  
• Mechanical • Electrical • Geographic Information Systems (GIS)

[www.kgsgroup.com](http://www.kgsgroup.com)

WINNIPEG

REGINA

MISSISSAUGA

THUNDER BAY

THE HOTTEST SUMMER  
IN HALF A CENTURY.



WINNIPEG  
2017

[canadagames.ca/2017](http://canadagames.ca/2017)

FUNDING PARTIES



WINNIPEG  
—JEUX DU—  
CANADA  
—GAMES—  
2017

## Welcome New Members

J.O. Aina	J.A. deBeer	N.J. Kehler	M. Nabipaylashgari	J.D. Spence
B. Al-Bayati	N.E. Denboer	A.G. Kempthorne	G.G. Nadeau	E. Spetter
R.M. Arnold	D. Desai	A. Khan	O.I. Nzimako	A. St-Pierre
G.A.A. Baxter	E. Deskin	J. Klimczak	M.J. Opresnik	R.J. Swanson
A.W.D. Bell	B.C. DeSmet	J.R. Larmer	M.K. Osypchuk	J.L. Taylor
S.H. Bhuiyan	D. Di Modica	J.T. Larsen	K.P. Owusu	M. Tetreault-Friend
E.K. Birir	B.S. Dupont	R.M. Lay	Y. Pageau	T.T. Tran
R.P.C. Blackwood	Z.M.J. Durand	L.T.S. Lee	A.J. Parsons	A. Turkewitsch
G.J. Blondahl	C.F. Edwards	N.L. Legal	A.H. Patel	M.A. Uehara
B.T. Bolingbroke	S.V. Elimban	P. Leroux	R.C. Pedersen	B.D. Van Heest
A.L. Bonnet	K. Elzein	Y.S. Li	G.E. Peters	B.P. vanderHoofft
E.S. Borisova	K.S. Esau	Z.X. Li	S.K. Pokharel	S.F. Versteegen
J.A. Boscow	M. Forand	Q. Liu	D.A. Povolo	M.F. Waters
P.L. Bouchard	B.T. Fortier	I.A. MacMillan	M.J. Powless	T.J. Weiers
I. Braculj	B.J. Fuhr	P. Maghoul	D.H. Prajapati	S. White
R.S. Brar	D.C. Gibson	C.L. Mahoney	K.D. Radesh	L.T. Willer
A.C. Brayley	L.D. Gilbey	T. Majani	J.H. Reimer	M.T. Winters
W.J. Brocklebank	J.D. Gillick	N. Maleki	M.J. Reimer	M.C.Y. Wong
S.K. Burmi	M.A. Guberman	M. Mameri	M.J. Rempel	W. Wu
A. Buttner	M.A. Habib	E. Manning	L.M. Roy	J. Yang
H. Chateaneuf	Y. Han	J.P. Marsh	M.L. Rule	R.A. Yaworsky
P.E. Choloniuk	N. Handa	B.M. Marzley	S. Said	E.D.R. Yazon
V. Churilov	M.A. Hatch	J.J. Masmela	S.J. Sam	T. Yebra Vega
H. Cote	J.R.T. Hobbs	B.A. McEwen	T.R. Schick	J.T.H. Young
R.E.G. Coudiere	A.W. Hogeveen Rutter	S.P. McInnis	K.T.A. Schrader	M.F. Younger
R.M. Couto	E.S. Hong	F. McKoy-Perreault	D.A. Senbeta	X. Zhang
D.D. Cudiamat	K.D. Hoyles	W.S. McLean	S. Sharma	K.Y. Zhao
A. Das	J.D. Hubbert	L.S. Melfi	P.L. Shilling	F. Zhou
D.K. Das	T. Huynh	S. Mihhailenko	D.S. Shook	
J.A. De Castro	K.S. Johnston	J.M. Minkevich	R.A. Sinclair	
K.B. Dean	A. Jose	A. Moaaz	W.L. Smith	

## Members-in-Training

O.A. Abob	D.M. Dela Cruz	A.M. Hesketh	A.S. Paseschnikoff	M.J. Stephens
O.A. Aladatan	L.D. Desilets	A.M. Houssin	F.A. Peracha	M.R.C. Storozinski
A. Alimujiang	S.C. Dewi	J.P.C. Hunter	L.M.M. Pike	G.J. Stubson
N.D. Amarasinghe	D.E. Diaz Torres	T.R. Ingelbeen	A. Prakash	A.R. Subramaniam
J.M. Anastacio	A.U. Dobariya	T. Khalid	B.S. Randhawa	D. Suh
E. Asibor	M.S. Driedger	S.Y. Lee	C.A. Reyes	J.E. Timog
V. Banthia	T.E. Duke	R.U. Lepa	N. Rezazadeh	E.S. Tintiman
J.S. Baylis	A.W. Duma	B.L.V. Liyanage	I. Robinson	K.J. Turanli
A.V. Bigsby	D.T. Duncan	K.A.A. Mahmoud	J.E. Safiniuk	K.M. Turner
K.K. Calvadores	M. Fereydoon	K.T. Mak	R.K. Saini	L. Uppal
J.R. Cappello	B.D. Fletcher	S. Malektaji	E.M. Salinas Escarcega	E. Ustundag
J.M. Carandang	L.L. Gallagher	K.B. Martens	K.C. Samarawickrama	X. Wang
J.P.V. Cenerini	A.F. Gamble	C.J. Matthews	J.Y. Santos	J. Wu
X. Chen	J.D. Gelineau	K.B.S. Meadows	M. Sharafi	B.J. Yakimishen
R.R.A. Cooke	A. Gholamzadehabolfazl	Y. Mouzahem	M.H.M. Shenouda	K.E. Yamamoto
V.L. Cormier	L. Giritharan	C.A. Noiseux	S. Singh	A.S.S. Youssef
A.C. Dayanghirang	C.A. Gomez Casanova	B.T. Ocaj	M.K. Sitter	
M.M.J. de Rocquigny	R. Gonzalez Avila	O.C. Olagbuji	G.E.P. Smith	

## Certificates of Authorization

ACR & Associates Inc.  
 Alan Auld (Canada) Ltd.  
 Alstom Renewable Power Canada Inc.  
 ANDA Engineering Ltd.  
 AP Dynamics Inc.  
 Avantier Construction Services Inc.  
 Barrette et Fils Ltee  
 Brar Project Solutions Ltd.  
 Building and Environmental Engineering Ltd.  
 Canadian Stebbins Engineering & Mfg. Co. ULC  
 Catterall & Wright  
 Civelec Consultants Inc.  
 Colliers Project Leaders Inc.  
 Corrosion Probe, Inc.  
 COWI North America Ltd.  
 Dave Shook & Associates Ltd.  
 David Nairne & Associates Ltd.  
 Deskin Structural Consultants Inc.  
 DOKA Canada Ltd.  
 Dragon Engineering Ltd.  
 Envirosearch Ltd.  
 Evolve Traffic Solutions Ltd.  
 Fort Richmond Construction Inc.  
 Greenhouse Engineering  
 HGS Limited  
 HLC Consulting Ltd.  
 IBI Group Professional Services (Canada) Inc.  
 IDOM, Inc.

Inland Screw Piling Ltd.  
 IRC Building Sciences Group Inc.  
 Kiewit Engineering & Design Co.  
 Klohn Crippen Berger Ltd.  
 L.P. Engineering Inc.  
 Lanmark Engineering Inc.  
 LeighFisher Canada Inc.  
 Mirkwood Engineering  
 OEL Projects Ltd.  
 Opresnik Engineering Consultants Inc.  
 Outcome Consultants Inc.  
 Peterson Structural Engineers, Inc.  
 Powell Canada Inc.  
 Premier Environmental Services Inc.  
 PT&C-LWG Forensic Consulting Services Ltd.  
 PWA Engineering (2013) Ltd.  
 Ramboll Environ Canada Inc.  
 RFS Engineering Services Ltd.  
 Sacramento Engineering Consultants, Inc.  
 SD Consulting Group, LLC  
 Spectrum Engineering Inc.  
 The AME Consulting Group Ltd.  
 Tower Hills Consulting Ltd.  
 Transystems Corporation  
 True Grit Consulting Ltd.  
 Voith Hydro Inc.  
 Westeel Canada Inc.  
 XCG Consulting Limited

## Licensees

A. Boracchini  
 J.T. Boyer, Sr.  
 T.A.S. Fatouh

M.M. Ouabira  
 P.G. Schweiger

## In Memoriam

Ross Allen Madder  
 John Purcell Patterson



**Ingenium**  
**APEGM CONFERENCE 2016**

**Ingenium 2016 is  
 October 25–28**

Save the date and visit our events calendar  
[www.apegm.mb.ca/Events.html#Ingenium](http://www.apegm.mb.ca/Events.html#Ingenium)  
 for more details.

## Notice to Members

### Annual General Meeting

The 2016 Annual General Meeting of Engineers Geoscientists Manitoba will be held at 2:00 p.m., on Thursday, October 27, 2016 at the Fort Garry Hotel, 222 Broadway, Winnipeg, MB.

### Nominations for Election to Council

The Nominating Committee of the Association requests recommendations from members and members-in-training for nominees who they consider to be qualified to participate in the governance of the Association and who are willing to so serve the engineering and geoscience professions in Manitoba. There will be four professional engineer positions, and one professional geoscientist position, to be filled as of October 2016.

The Committee will consider recommendations received by the secretary up to the close of business

on Thursday, September 15, 2016. In the event insufficient recommendations are received, the Committee may exercise its prerogative to put forward a slate of candidates for election that is equal to the number of positions to be filled. Persons submitting a recommendation are required to obtain the consent of the professional member being recommended and to provide a curriculum vitae or biographical sketch.

Members can also be nominated directly and be on the ballot for the 2016 election by the completion of the prescribed nomination form. Nomination and resume forms may be downloaded or may be obtained from the Association office. Persons submitting a recommendation are required to obtain the consent of the nominee.

### By-Law Changes

By-Law 17.1 prescribes that any proposal to introduce new By-laws, or to repeal

or amend existing By-Laws, must, unless initiated by the Council, be signed by not fewer than six members. Proposals must be given to the secretary at least 42 days before the meeting. In this case, the date for the receipt of a proposal is Thursday, September 15, 2016.

### Resolutions

By-law 5.1.4 prescribes that resolutions put forward at an Annual General Meeting must be in writing, signed by the mover and seconder, and received by the Secretary no less than 48 hours prior to the commencement of the meeting. Either the mover or the seconder must be present in person or by distance conferencing at the meeting for the resolution to be considered.

Grant Koropatnick, P.Eng.  
Secretary

## Association Booth Wins Award at Career Symposium

At the 2016 Rotary Career Symposium, visitors to the Association booth were encouraged to engage with a variety of hands-on activities, including using a

robotic arm to manipulate objects in a maze, and guessing the identity of rock samples.

After a busy few days with a lot of interested and engaged visitors, the

Association was honoured to be recognised as the 'Most Interactive, Entertaining & Fun' booth, as voted for by their student judges.



## New Members Luncheon



Sixty-eight new members of the Association were formally presented with their professional certificates at the New Members Luncheon held on Tuesday April 19, 2016, at The Norwood Hotel.

## Congratulations Award Winners

### **Diana Nicholson – engineer, global partner, innovator wins UM alumni award**

Congratulations to Diana Nicholson, P.Eng. for winning the 2016 Distinguished Alumni Award for Outstanding Young Alumni! The award, presented by the University of Manitoba at its award celebration on May 5, recognizes a young alumnus who has achieved outstanding accomplishments in professional and personal life. As a water and sanitation specialist with Médecins Sans Frontières/Doctors Without Borders, Nicholson designed and built structures to bring clean water, along with hope and dignity, to communities in turmoil. Her work in delivering clean water has taken her to refugee camps in Chad, the Central African Republic, and South Sudan (see Winter 2014 *Keystone Professional*), and more recently to

the hot zone of the Ebola virus disease outbreak in Sierra Leone.

### **KGS, Teshmont, Crosier Kilgour, AECOM top winners in consulting association awards**

KGS Group was awarded this year's top award from The Association of Consulting Engineering Companies – Manitoba. The Keystone Award was presented to the firm at an awards celebration on April 5 for the firm's work on the Pointe du Bois Spillway Replacement Project. At the annual ceremony, KGS was also presented with an award of excellence for its Flood Mitigation study for the Assiniboine River and Lake Manitoba Basins (municipal and water category).

Other awards of excellence went to Teshmont Consultants for the Western Alberta Transmission Line project (energy), Crosier Kilgour & Partners for the RBC Convention Centre Winnipeg expansion (buildings) AECOM Canada

for the Bowness Sanitary Offload Trunk serving Calgary (municipal and water technology). Individual awards were also presented to Lin Watt of Dillon Consulting (Rising Star), Cameron Dyck of Stantec Consulting (Engineering Action), and Jerry Cousin of J.R. Cousin Consultants (Lifetime Achievement).

**Andre Marchildon**, Engineers Geoscientists Manitoba student member wins the Gold Medal Student Award at the Engineers Canada Awards Gala in Charlottetown, PEI. This award is given to an engineering student who displays outstanding contributions to societal issues through community involvement, outstanding achievements, leadership in the profession at the student level, and impact on the image of the engineering profession in Canada.

Congratulations to all of the distinguished award winners!

Visit us online  
[www.apegm.mb.ca](http://www.apegm.mb.ca)

## Engineers Geoscientists Manitoba's 2016 MLA Reception

S. Baragar

Since the creation of a designated Government Relations department at Engineers Geoscientists Manitoba in 2014, the Association has incorporated the presence of government relations at a number of existing annual events, including the Government Relations Panel Discussion at the 2015 Ingenium Conference and through inviting government officials to attend Association events, such as the 2015 Making Links Engineering Classic Golf Tournament. Last year, the Association hosted its first MLA Reception, an event mandated by Council and dedicated solely to government relations – attracting interest in, and acknowledging the key relationships between, the government and professional engineers and geoscientists in Manitoba.

This year, the Association held its second MLA Reception in February. The total attendance at the event was just over 80 individuals, including 38 government representatives, which is more than double that of last year. Thirty-two Association members, a number of stakeholders, and Association staff were also in attendance. Both municipal and provincial government officials were present, as well as representatives from each of Manitoba's three major political parties.

The overarching goal of government relations for Engineers Geoscientists Manitoba continues to be to support and encourage government dialogue with the professions in developing public policy, codes, and standards, and to spread awareness to government

of the leading role professionals in engineering and geoscience have in protecting the public interest.

The success of events such as this year's MLA Reception shines light on the interest government officials and engineering and geoscience professionals have in one another. This interest is essential for protecting the public, and is the foundation for government relations at Engineers Geoscientists Manitoba.

Whether it be over a glass of wine and a plate of cheese, or in an official meeting, Engineers Geoscientists Manitoba looks forward to continuing to increase interest in, and provide opportunity for government relations, to attract interest in, and acknowledge the key relationships between the government and the professions.

## Correction

On page 24 of the Spring 2016 issue of The Keystone Professional, M.L.A. Dennis Smook was incorrectly referred to as M.L.A. Dr. Dennis Smook. On behalf of Craig Kelman & Associates, we apologize for this error. ⊕

Serving Manitoba, Saskatchewan and Ontario

# DACO Piling

40 Years of Innovation

Steel Piles, Screw Piles, Sheet Piles, Timber Piles and Rock Anchoring

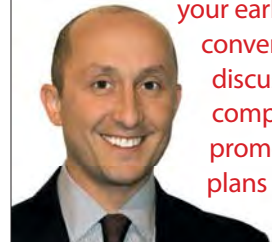
Damon Friesen - Neil Friesen

P: 204-392-5122 F: 204-388-4384 E: [damon@getdaco.com](mailto:damon@getdaco.com)

[www.dacopiling.com](http://www.dacopiling.com)

THE **KEYSTONE**  
PROFESSIONAL

To reach professionals through *The Keystone Professional* magazine and its targeted readership, contact Jeff at your earliest



convenience to discuss your company's promotional plans for 2016.

Jeff Kutny, Marketing Manager  
[jeff@kelman.ca](mailto:jeff@kelman.ca) | 866-985-9789

**Our concern for the environment**



## is more than just talk

As we continue to deliver valuable information through the pages of this magazine, in a printed format that is appealing, reader-friendly and not lost in the proliferation of electronic messages that are bombarding our senses, we are also well aware of the need to be respectful of our environment. That is why we are committed to publishing the magazine in the most environmentally-friendly process possible. Here is what we mean:

- We use lighter publication stock that consists of recycled paper. This paper has been certified to meet the environmental and social standards of the Forest Stewardship Council® (FSC®) and comes from responsibly managed forests, and verified recycled sources making this a RENEWABLE and SUSTAINABLE resource.
- Our computer-to-plate technology reduces the amount of chemistry required to create plates for the printing process. The resulting chemistry is neutralized to the extent that it can be safely discharged to the drain.
- We use vegetable oil-based inks to print the magazine. This means that we are not using resource-depleting petroleum-based ink products and that the subsequent recycling of the paper in this magazine is much more environment friendly.
- During the printing process, we use a solvent recycling system that separates the water from the recovered solvents and leaves only about 5% residue. This results in reduced solvent usage, handling and hazardous hauling.
- We ensure that an efficient recycling program is used for all printing plates and all waste paper.
- Within the pages of each issue, we actively encourage our readers to REUSE and RECYCLE.
- In order to reduce our carbon footprint on the planet, we utilize a carbon offset program in conjunction with any air travel we undertake related to our publishing responsibilities for the magazine.

*So enjoy this magazine...and **KEEP THINKING GREEN.***

# Engineering and Geoscience Licensee – Ethical Responsibilities

With the update to the *Engineering and Geoscientific Professions Act* of Manitoba last November, there were some significant new changes made to our organization. Arguably the most significant change is the modifications to our Act that allow for issuance of Specified Scope of Practice Licenses. This will be a brand new provision for Manitoba, and understandably raises several questions. Among these are questions regarding the standards that will apply to these new licensees.

For those who are new to the concept of a specified scope of practice license, it is helpful to begin with a look at the definition. The key highlights of the definition (available at: <http://web2.gov.mb.ca/laws/statutes/ccsm/e120f.php#1>) are that the license:

1. provides a right to practice
2. to a natural person
3. within a defined scope.

Through these licenses, the right to practice engineering and geoscience

is being extended to people who are not professional engineers and geoscientists. In order to practice, these licensees will be provided with a title and a stamp. In Manitoba, the titles will be 'Engineering Licensee' and 'Geoscience Licensee'.

This extension of practice rights will not be provided to corporations or other business entities. For now, only a natural person can be provided a specified scope of practice. That work must be carried out directly by the individual or under the auspices of an organization holding a Certificate of Authorization with Engineers Geoscientists Manitoba.

The third aspect is what makes these licenses unique. Professional members are afforded the general right to practice in any area where they are competent. The reliance is on the member to self-assess their competency, particularly when it comes to changing areas of discipline. For an engineering



or geoscience licensee, the scope of competency is defined and approved by Engineers Geoscientists Manitoba prior to being given the right to practice.

Two stakeholder information sessions were held in April to speak with members and the public about this new provision. In one of those sessions, a member asked the question, "How will Engineers Geoscientists Manitoba know if a specified scope of practice licensee is practicing in an area outside of their approved scope?" Another member asked, "When a specified scope of practice licensee that was originally licensed in another province takes on new work in Manitoba, how can we be assured that they are aware of the different codes and standards in our province?"

The reality is, that along with the right to practice, comes responsibility. In the same way that members of Engineers Geoscientists Manitoba (professional engineer or professional geoscientist) must adhere to our Code of Ethics, so too must specified scope of practice licensees. Similarly, members and specified scope of practice licensees alike must avoid behaviour that is 'conduct unbecoming'.

The Association has always relied on the ethical conduct of members and licensees. For example, members have been bound to only practice in areas where they are competent since our first Code of Ethics in



210-1821 Wellington Avenue  
Winnipeg, MB R3H 0G4  
Tel: (204) 779-7900  
Fax: (204) 779-1119  
[www.mcw.com](http://www.mcw.com)

**INNOVATIVE | EFFICIENT | PROVEN | QUALITY**



1921. Yes, there is a potential risk that a specified scope of practice licensee will practice outside of their scope. That risk, however, is not new.

That potentially unethical behaviour is also subject to the disciplinary process we have in place. We all know that members are subject to complaints, investigations, and penalties for unethical behaviour. It's worth pointing out that the same processes will apply to specified scope of practice licensees.

To mitigate that risk, Engineers Geoscientists Manitoba screens all applications. Before being granted the right to practice engineering or geoscience in Manitoba, applicants must not only demonstrate technical competence, but must also demonstrate that they are of good character, that they understand ethical requirements and that they have a history of applying themselves ethically. An application for a specified scope of practice licensee differs from an application for membership only with regard to the scope of their technical capabilities.

**“The reality is, that along with the right to practice, comes responsibility.”**

Change can be hard sometimes, but rest assured that the addition of the specified scope of practice licensee category is being done prudently. These types of licenses have been in place for several years in six provinces across Canada (including B.C., Alberta, Saskatchewan, and Ontario). With the specified scope of practice licensee application process coming into effect in January, Manitoba will join the rest of Canada in recognizing those who have demonstrated the capability and good character required to practice engineering or geoscience.

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@apegm.mb.ca](mailto:mgregoire@apegm.mb.ca). ☎



**ENGINEERING AND TESTING SOLUTIONS THAT WORK FOR YOU**

Unit 6-854 MARION STREET, WINNIPEG, MANITOBA, R2J 0K4

PHONE: (204) 233-1694 FAX: (204) 235-1579 [ENG\\_TECH@MTS.NET](mailto:ENG_TECH@MTS.NET) [WWW.ENG-TECH.CA](http://WWW.ENG-TECH.CA)

# FWS Group of Companies

AG-INDUSTRIAL | ENERGY | BULK MATERIAL HANDLING



## CAREER OPPORTUNITIES

Engineers	Project Planners
Drafters	Project Coordinators
Schedulers	Project Managers



**PRECISION, PROFESSIONALISM, EFFICIENCY and QUALITY**

are the principles upon which the FWS Group of Companies were founded and continue to operate.



1-800-553-0007

Start your career today at [TradeCareers@FWSgroup.com](mailto:TradeCareers@FWSgroup.com)

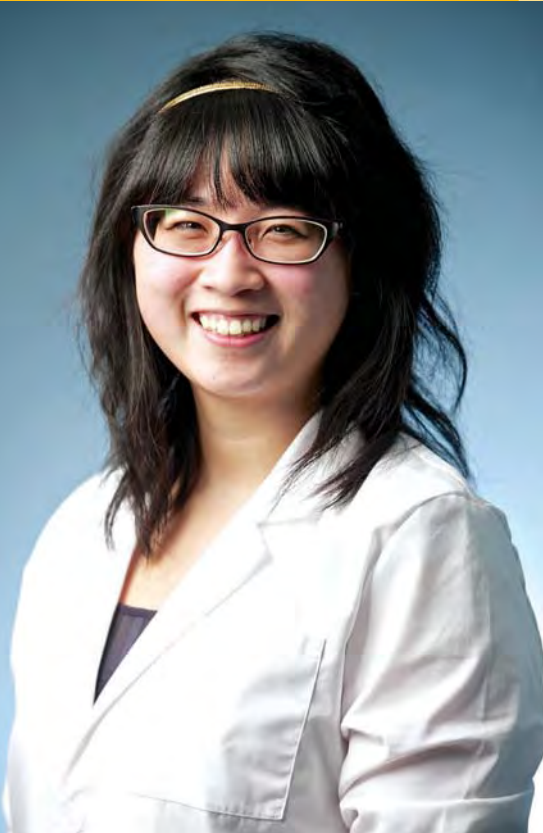
## AdvertiserInformationCentre

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 [apegm.mb.ca](http://apegm.mb.ca) and access direct links to any of these companies.

Company	Page	Phone	Web address
Asher Engineering	21	403-264-2526	<a href="http://www.asherengineering.com">www.asherengineering.com</a>
Asper MBA Program Asper School of Business University of Manitoba	7	204-474-9221	<a href="http://www.umanitoba.ca/asper/mba">www.umanitoba.ca/asper/mba</a>
Bockstael Construction Limited	12	204-233-7135	<a href="http://www.bockstael.com">www.bockstael.com</a>
Centre for Technical Engineering Leadership	11	866-744-3032	<a href="http://www.rgilearning.com">www.rgilearning.com</a>
Concrete Manitoba	3	204-667-8539	<a href="http://www.concretemanitoba.ca">www.concretemanitoba.ca</a>
CTTAM	36	204-784-1088	<a href="http://www.cttam.com">www.cttam.com</a>
Daco Piling	30	204-392-5122	<a href="http://www.getdaco.com">www.getdaco.com</a>
Eng-Tech Consulting Limited	33	204-233-1694	<a href="http://www.eng-tech.ca">www.eng-tech.ca</a>
FWS Group of Companies	33	800-553-0007	<a href="http://www.fwsgroup.com">www.fwsgroup.com</a>
IPEX	19	866-473-9462	<a href="http://www.ipexinc.com">www.ipexinc.com</a>
KGS Group Consulting Engineers	25	204-896- 1209	<a href="http://www.ksgsgroup.com">www.ksgsgroup.com</a>
Manulife	2	877-598-2273	<a href="http://www.manulife.com/apegm">www.manulife.com/apegm</a>
Maple Leaf Construction Ltd.	21	204-783-7091	<a href="http://www.mapleleafconstruction.mb.ca">www.mapleleafconstruction.mb.ca</a>
Maple Leaf Drilling	4	204-224-3084	<a href="http://www.mapleleafdrilling.ca">www.mapleleafdrilling.ca</a>
MCW/AGE Consulting Professional Engineers	32	204-779-7900	<a href="http://www.mcw.com">www.mcw.com</a>
Paddock Drilling Ltd.	10	204-725-0657	<a href="http://www.paddockdrilling.ca">www.paddockdrilling.ca</a>
SNC-Lavalin Inc.	8	204-786-8080	<a href="http://www.snclavalin.com">www.snclavalin.com</a>
Testlabs International Ltd.	15	204-953-3800	<a href="http://www.testlabs.ca">www.testlabs.ca</a>
Tetra Tech	15	905-369-3000	<a href="http://www.tetrattech.com">www.tetrattech.com</a>
University of Manitoba Faculty of Engineering	35	204-474-9034	<a href="http://www.umanitoba.ca/engineering">www.umanitoba.ca/engineering</a>
Verdyol Biotic Earth	9	866-280-7327	<a href="http://www.bioticearth.com">www.bioticearth.com</a>
WSP	6	204-477-6650	<a href="http://www.wspgroup.com/en/wsp-canada">www.wspgroup.com/en/wsp-canada</a>



*DON'T LEAVE  
MONEY ON  
THE TABLE!*



# FACULTY OF ENGINEERING STUDENTS AVAILABLE NOW! Hiring Incentive Programs:

## Co-op Education Tax Credits

The CEATC family of tax credits provide qualified employers with a percentage of the wages and salaries paid to co-operative education students and recent graduates working in Manitoba.

**Co-op Students Hiring Incentive:** for placement of co-op education students into employment in Manitoba, lasting ten weeks or more, and linked to their studies. The credit has recently increased to 15% (from 10%) of net wages and salaries, up to a lifetime maximum of \$5,000 per student. The credit is earned when the student completes a placement.

**Co-op Graduates Hiring Incentive:** for hiring recent co-op education graduates into permanent employment in Manitoba, linked to their area of study. The credit has increased to 15% (from 5%) of net wages and salaries, earned on completion of each of the first two consecutive years of full-time employment, to a maximum credit per year of \$2,500 per graduate. There is no limit on the number of co-op graduates for which an employer may be credited.

For full details, visit: [http://www.edu.gov.mb.ca/ald/tax\\_credit/index.html](http://www.edu.gov.mb.ca/ald/tax_credit/index.html)

## NSERC Funds

### **Industrial Undergraduate Student Research Awards (IUSRA)**

The IUSRA helps companies hire an undergraduate-level student to undertake a research and development project. These awards are designed to give students practical experience in an industrial setting that complements their studies.

The awards are valued at \$4,500/student/16 week term and suitable projects can include design, operations research, mathematical analysis, computer programming, data collection and testing. For further information go to: [http://www.nserc-crsng.gc.ca/Students-Etudiants/UG-PC/USRAI-BRPCI\\_eng.asp](http://www.nserc-crsng.gc.ca/Students-Etudiants/UG-PC/USRAI-BRPCI_eng.asp) or contact the regional office rep, Kathleen Lorenzo at 204-984-6301 or [Kathleen.lorenzo@nserc-crsng.gc.ca](mailto:Kathleen.lorenzo@nserc-crsng.gc.ca) to discuss your project and eligibility.

*For more information and assistance with regards to your eligibility, applications, and forms required, our administrative staff in the Engineering Co-op/IIP office would be pleased to assist you in taking advantage of these financial incentives.*

## **Did You Know?**

Employers can take advantage of over \$2,000 in tax credits and wage subsidies by hiring a Faculty of Engineering Co-op/IIP student. It's good business!



**CTTAM**

Certified Technicians and Technologists  
Association of Manitoba

**C.E.T.**

CERTIFIED  
ENGINEERING  
TECHNOLOGIST

**The Technology  
Professional**

---

THE CERTIFIED TECHNICIANS AND TECHNOLOGISTS  
ASSOCIATION OF MANITOBA

---

[www.cttam.com](http://www.cttam.com)