THE KEYSTONE PROFESSIONAL

WINTER 2011

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The Foundation of the Aviation Industry in Manitoba

92nd Annual General Meeting

Association of Professional Engineers and Geoscientists of the Province of Manitoba
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APEGM

THE KEYSTONE PROFESSIONAL

WINTER 2011

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The Communications Committee would like to hear from you. Comments can be forwarded to us by email: commfeedback@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 APEGM or the APEGM Council.

Front cover photo by Leif Anderson.
Leif Anderson is an amateur photographer in Winnipeg, MB, who is slowly being pulled into the world of professional photography.
He has been strongly involved in the hobby for ten years and is captivated by the depth of the craft.

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Adam Pawlikewich, P.Eng.
President's Message

Keep Up the Good Work

It has been an interesting year at APEGM. With the finalization of the first Continuing Professional Development (CPD) reporting system, some productive discussion about advocacy, and some advancement in electronic stamping and voting, there should be much interesting discussion over the year to come.

Reading many of the past reports from presidents asking for increased participation in the issues, I feel as though I am lucky to be your president on the upswing of participation of members. In order to help encourage continued participation I felt I could take this message to highlight a few things that you could do over the next year.

Get your login: Over and above the functional issue of being able to easily report your CPD time, the member website provides a host of information for the member including many discussion forums. These are useful to see the ongoing discussion about CPD, as well as other items such as providing feedback on By-Laws, the website and others. If you want to get involved in the workings of APEGM and be a voice in the discussion, this is a great place to start!

Talk about your profession: During my time as an engineer, I have noticed that we in the profession have a tendency to get right into the technical details of a matter. While this is very important, at some point in time, we seem to have lost some of the understanding in society as to what we really do. APEGM has begun an awareness campaign which we will roll out to the public. With this program comes a new motto; "My life's work makes life work better." When I read this, it occurred to me that the grand scale that our work and its impact on life is the one element which is missing from much of our conversations with non-technical folk. This is also the one element that really engages them in the conversation. I, for one, am really excited to discuss the profession in this new light.

Take a little time with your new EIT/GITs: Mentorship of the new EIT/GIT is something which I feel that members do very well. I encourage them to keep up the good work. While students are getting new jobs and grappling with new topics and the current state of practice, some kind words and broad guidance from those of us who have been in the workforce for a while is invaluable. As there is increasing demand on people's time, it may be tempting to push this item a little to the side. I am hopeful though, that everyone will stay the course and ensure that the wisdom of those who have a lifetime of practice will be passed along down to those who do not. And hey, let's not forget, mentorship counts for CPD time!

Enjoy: As engineers and geoscientists, we are involved in some of the world's most interesting projects! (I may be showing some bias…). Take the time periodically to sit back and truly enjoy the work we get to do. It will be great for you and your friends and family.

I truly look forward to the year to come, and I would like to thank the membership, APEGM staff and Council, and my family for all their support. If you have any comments or discussion you would like to initiate, please feel free to e-mail me at president@apegm.mb.ca .

Have a great holiday! ■

NOTICE

Annual dues invoices have been mailed to all members and members-in-training. If you have not received yours, please contact the APEGM office. Payment can be made online or submit the completed forms with payment by December 31, 2011.

Please note that the Declaration of Compliance must be signed annually. The APEGM office will be closed December 23, 2011, at 1:00 p.m. for the holiday season, and reopen on January 3, 2012, regular hours.

Grant Koropatnick, P.Eng.
Secretary

Engineering Philosophy 101

Inspiration from an Unexpected Source

M.G. (Ron) Britton, P.Eng.

A friend told me, "You have to read *The Best Laid Plans*." She was right. It is a work of fiction that was awarded both the 2008 Stephen Leacock Prize for Humour and first place in the 2011 Canada Reads competition. It deserves all of the recognition it has received.

Normally, I look into the background of an author before reading a book. But because this was not a technical book and because it came with the recommendation "you will enjoy it," I simply settled into my easy chair to check it out. Some 300 plus pages later I needed to know more about Terry Fallis, the author.

> "Engineering is a specialized world... Our fascination with technical details tends to cause outsiders' eyes to gloss over."

The back cover of my paperback edition advised that Terry had found it difficult to get the original manuscript published. Rather than accept the collective wisdom of the publishing world, he created a podcast to test the waters. Given a positive reaction on the web, he self published the book and the Leacock Award soon followed. Suddenly the publishing industry discovered a promising new author. To my way of thinking, this sounded like a creative solution to a problem.

But a few lines later in the factual promotional text prepared to introduce Terry to his readers, I found the phrase "...despite an engineering degree...". Wait a minute!

I don't know who selected that phrase, and that really doesn't matter. What does matter, to me at least, is the inference that an engineering degree is, in some way, a handicap that constrains such graduates to functioning within the mysterious world of technology. Apparently it is acceptable marketing policy to demean engineering education and engineers.

OK, I might be overreacting. I must admit that most people, including many engineers, would not take exception to the inference. They might even see it as humour on the cover of the book to match the humour between the covers. But, can you imagine a similar phrase on the back of a book written by a law graduate, an education graduate, a med school graduate? Why is it acceptable to pillory engineers?

Unfortunately, engineering is widely misunderstood. It is a specialized "world" and those of us who inhabit that world do tend to communicate in jargon. Our fascination with technical details tends to cause outsiders' eyes to gloss over. Does this suggest that the infamous swamp philosopher, Pogo, was correct when he observed, "We have met the enemy and he is us." (Check out www.pogopossum.com/walt.htm if Pogo wasn't a part of your misspent youth).

The provincial legislation under which we practice in Manitoba requires us, among other things, to "advocate where the public interest is at risk," Other provincial and territorial acts say much the same thing. In Manitoba, our Code of Ethics explicitly states that we "... shall regard the physical, economic and environmental well-being of the public as a prime responsibility...". Again, this sort of requirement is not unique to Manitoba. These responsibilities have broader implications than being technically correct. These responsibilities require that we take the broadest possible view of situations we address.

The most recent CEAB requirements for accredited undergraduate engineering programs provide a broad base of subject matter beyond the traditional math, science and technical applications topics. These are requirements imposed by the profession to provide graduates with the necessary base to become professionals. This suggests that, within our own sphere, we realize that an engineering education must go well beyond training. It confirms the need for a base upon which we are able to develop that broadest view.

It is all well and good that we take this approach within our club, but apparently we aren't bothering to get the message out to the public. Time and again, in public debate, we allow single purpose groups to keep the focus on their issue and accuse us, directly or implicitly, of ignoring their facts. Quoting endless numbers will, within moments, cause most audiences to check their cell phones. Providing stories based on numbers can maintain attention.

Our profession provides the base competence upon which our society can grow. We know that to be the case. But, we need to remember Pogo's observation, and work to defeat that enemy.

And in the meantime, take my friend's advice, get a copy of The Best Laid Plans, sit back and enjoy a good read. ■

Grant Koropatnick, P.Eng.
Executive Director's Message

CPD Vote Strengthens Self-Regulation

Self-regulation is a privilege that is sometimes threatened by the opinions of those who believe that regulation by government is necessary to ensure public safety. Politicians make laws to keep society safe. In the recent elections, voters were asking politicians, "What are you doing for me?" Politicians are trying to respond, "We're providing a safe society for you". If safety is in doubt, they will toughen the laws. I don't believe a tougher Engineering & Geoscientific Professions Act is necessary if self-regulation is carefully done by APEGM members.

CPD VOTE

Recently, APEGM held an online election and By-Law approval vote. A majority of members voted to approve the Continuing Professional Development (CPD) program (55% in favour; 44% opposed). This important outcome is significant to protecting and maintaining our ability to self-regulate the professions of engineering and geoscience. If APEGM was perceived to be doing a poor job at self-regulating, it could result in a backlash from the public and legislators who might say, "Fine, we'll do it for you!" If this ever happened, the professions would lose the privilege of self-regulation and be reduced to a set of government departments in a brick building on a downtown street. That would be a sad day. I hope it never happens. Work with me, APEGM Council, and other peer professionals to ensure that we do a good job of self-regulating.

SOME VOTED NO

Some members who voted "No" perhaps missed the importance of the CPD program. Sure, it takes a few minutes to sit down and fill in the report, but the CPD program demonstrates to the public that we know what's good for us. When we willingly show that we are maintaining competency, we prove to the public of Manitoba that we are worthy of the privilege of self-regulating. Conversely, by not participating in a self-reporting system like the CPD program, we send the wrong message to the public. I worry about public opinion. We want Manitobans to recognize and appreciate what we do. **Our life's work makes life work better.**

THE CCC

The Continuing Competency Committee (CCC) is a newly created committee of Council. It's purpose is to administer the new CPD program and to assist members with the details. In reality, it's members helping members. Self-assessment is the central pillar of the program, but the CCC can't create self-awareness for us. They can only create an opportunity for a member to have a look in the mirror. The CPD Program is one opportunity. Some members are already self-aware, while some are not. Some are deluded by years of bad judgement. Like the member who was using a design table from 36 years ago; thinking his design met current standards. You think I'm making this up? I'm not. All of us need to take an occasional look in the mirror and ask the question, "Am I keeping up with current standards in my scope of practice?" Our profession is dependent on you asking this question at least once in a three year period. The CPD program is easy and with a little effort on your part, will make a significant contribution to strengthening our professions. The future of the professions is dependent on you. The privilege of self-regulation is maintained and strengthened when members strive to keep up their competency and are willing to show it.

THANK YOU

Thank you to all the members who participated in the recent online election and By-Law approval. Thanks to the four members who mailed in their ballots. Your participation exceeded my expectations. Okay, tell me I didn't have enough faith. About 19 per cent of the membership cast a vote. This is almost double the typical participation rate garnered by the old paper-based ballot system. I accept that one member made an eloquent speech at the AGM about the potential flaws of an internet based online voting system, but no system is perfect and I think the risk of tampering is low for our APEGM elections. Once more, to all the members – thank you!

Your feedback is invited and always welcomed. If you have any thoughts on anything you read in the KP, please email me at gkoropatnick@apegm.mb.ca. ■

APEGM is is asking members to promote the APEGM

Call for Nominations

for the following APEGM awards to be presented at future Annual APEGM Awards Dinners.

- Certificate of Achievement
- Early Achievement Award
- Member-in-Training Award
- Honorary Life Membership
- Leadership Award
- Merit Award
- Outstanding Service Award

If you are aware of Manitoba engineers or geoscientists who are deserving of an award, please submit your completed nomination form, available through the APEGM office or website.

Your help in this regard is pivotol to the ongoing success of the awards program, and to ensure Manitoba's most worthy engineers or geoscientists are recognized for their contributions to our professions and society.

www.apegm.mb.ca

M.G. (Ron) Britton, P.Eng.

Thoughts On Design

. . . and a design spec for grads

The autumn environment here in Manitoba was congested with messages. The most prominent messages, of course, were provided by the political parties as they strove to gain voter support. Within the engineering community, there were less public messages that relate to our profession and the breadth and depth of our core function, design. Those messages were addressed directly to those who deliver engineering education.

Here in Canada, the look and feel of engineering education is defined by the profession through requirements of the Canadian Engineering Accreditation Board. The most recent CEAB Accreditation Criteria and Procedures[1] manual identifies a shift in thinking about how engineering programs are going to be evaluated. There are two significant "messages" within that document. First, is a specific list of a dozen "Graduate Attributes" that each graduate is expected to possess. The second is notice that by 2014, programs will be assessed on the basis of outcomes, not inputs. Both the design specifications and the specification compliance process have changed.

The full list of attributes includes: a knowledge base for engineering, problem analysis, investigation, design, use of engineering tools, individual and team work, communication skills, professionalism, impact of engineering on society and the environment, ethics and equity, economics and project management, and life-long learning. Each attribute is defined to clarify the Board's intent.

As you might expect, the definition of design, the fourth attribute on the list, attracted my attention. In a typically circuitous manner, design has been defined as, "An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations." The concept of being "open-ended" and meeting "specified needs" at the same time complicates the issue, but nonetheless it seems to me this definition could be interpreted as a skill in "sizing parts." Certainly this is a skill that is necessary, but not sufficient.

However, a couple of pages later, in a section relating to curriculum content, it is noted that "Engineering design integrates mathematics, natural sciences, engineering sciences, and complementary studies in order to develop elements, systems, and processes to meet specific needs. It is a creative, iterative, and open-ended process, subject to constraints which may be governed by standards or legislation to varying degrees depending upon the discipline. These constraints may also relate to economic, health, safety, environmental, societal or other interdisciplinary factors."

Maybe it is just me, but doesn't this definition suggest that design requires all the other attributes in order to be functional? It does state that design is the integration of the skills and knowledge associated with most of the other attributes. It doesn't specifically identify teamwork or life-long learning, but the other nine are, from my perspective, clearly incorporated. The real question when designing a curriculum is, should design be taught as a specific measurable skill, or as a process that incorporates the other 11 attributes? The answer to this question will have a significant effect on the shape of the resulting curriculum.

It is safe to assume that academic committees will resolve the issues of conflicting definitions and multiple targets, and acceptable curricula will be crafted. In the days when CEAB visits involved assessment of inputs, the input accounting could be done and judgement passed. But under the new accreditation system, programs will be judged on outcomes. If you are going to assess outcomes relative to defined attributes, you need to understand the inputs that were used. In other words, curriculum content is no longer the exclusive preserve of academics.

I think of outcomes evaluation as the academic equivalent of field testing in the machinery business. The profession, and the industries in which its members are employed, will be called upon to determine if the CEAB specified outcomes have been met. You are, after all, the field in which our machines will be tested. There is time to develop outcomes assessment processes. ABET accredited schools in the United States have been involved with this process for some time

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Plans for action

with Habitat for Humanity Winnipeg's

ARCHITECTS & ENGINEERS BUILD

Designing Brighter Futures

Calling all Architects and Engineers to come together and help Habitat for Humanity celebrate its 25th year in Winnipeg by supporting the 2012 Architects & Engineers Build. Collectively you can raise the funds required to build a home for a low-income working family to purchase. Turn your plans into reality by also helping construct a home – a fabulous team building experience. For more details on this exciting new venture, please contact kwilson@habitat.mb.ca or visit: http://www.habitat.mb.ca/get-industry.cfm

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Tetra Tech WEI Inc, (formerly Wardrop Engineering), a wholly owned subsidiary of Tetra Tech, is part of the Canadian family of Tetra Tech companies. Tetra Tech has grown to become the sixth largest engineering firm in Canada. In Canada, Tetra Tech WEI Inc has been named consistently as a Top 100 Employer, and a Best Employer of New Canadians.

Due to our continued success, we have exciting opportunities in our Energy Division in Winnipeg. We are currently seeking **Electrical Engineers** at all levels with experience in, or interest in the fields of **Transmission & Distribution; Power Generation; and Protection and Control systems**. In addition, we have several great roles available for Mechanical Engineers. All positions will be based in our new office located at Portage and Main in Winnipeg.

To find out more about our organization and these exciting career opportunities please visit our web site: www.tetratech.com/careers OR contact Ugo Santone at 289-242-2299 or ugo.santone@tetratech.com

Chantal Guay, P.Eng., M.Env.
Engineers Canada
CEO Message

Working with Policy Makers for a Sustainable Future

Politically, it has been a very active time in Canada. In May, Canadians elected a majority Conservative federal government and the New Democratic Party became the official opposition. The public sent a clear message to parliamentarians that they want a stable government and a fresh perspective on how to run the country. At Engineers Canada, we're excited about the opportunity this presents to become even more engaged with government on issues that directly affect the engineering profession and the well-being of Canadians, such as infrastructure, climate change and research and development and innovation.

We're looking forward to a productive and active fall for our Government Relations and Public Affairs Committee and staff as we build on the momentum from the work we have already accomplished. We are eager to continue working with a variety of stakeholders, including Infrastructure Canada, the Federation of Canadian Municipalities, and our partners with the Canadian Engineering Leadership Forum.

Currently, one of the most pressing issues concerning the profession is the worsening state of Canadian infrastructure. Unfortunately, more and more we are witnessing the risk to public safety that comes from the absence of a plan for, and investment in, infrastructure. The deteriorating condition of some of Canada's older infrastructure continues to pose a risk to public health, safety and the environment. These infrastructure problems highlight the need for a strategic approach to sustainable infrastructure funding in Canada, something Engineers Canada has long called for.

Engineers Canada believes the government's commitment in the 2011 federal budget to addressing existing and future infrastructure gaps is a start. The profession looks forward to contributing the expertise of professional engineers to develop a consistent and planned national strategy that ensures ongoing funding for infrastructure, and ensures the safety, health and welfare of the public and their environment.

The impact of climate change is also an important consideration for infrastructure. Engineers Canada has shown leadership in this area though the creation of an Infrastructure Climate Risk Protocol. The engineering profession has the most current technical expertise on adaptation and mitigation for infrastructure required by government to develop the right climate change policies and implementation strategies.

In terms of other national issues, Engineers Canada is pleased that the federal government has recognized that it needs to consistently invest in research and development and innovation in order for Canada to achieve a sustainable economy that is accessible, reliable and globally competitive.

We are eagerly awaiting the response of the Expert Review Panel on Research and Development on our submission to them in February 2011: Putting the Pieces Together: A Response to the Review of Federal Support to Research and Development. We also look forward to continuing the discussion on a strategy for research and development and innovation that encourages long-term commitments and partnerships across sectors.

The government's intent to promote enrolment in post-secondary science, technology, engineering and math (STEM) programs demonstrates a real commitment to fostering qualified talent in Canada. The engineering profession has been a vocal supporter of Canada's need for diverse and highly skilled workforce to compete on a global scale and to contribute to the country's prosperity. Encouraging, investing in, and promoting STEM education in Canada at a young age would help solidify the foundation of our future profession.

The engineering profession looks forward to continuing to demonstrate its leadership and proactive contributions to public policy through offering government its professional experience and engineering expertise to help shape the Canada we all want to live in. ■

"South Americans are always late," and other ways to misunderstand cultural diversity

by Marcia Friesen, P.Eng., Ph.D. & Sandra Ingram, Ph.D.

"What we've learned in hiring internationally-trained engineers is that our idea of 'good interpersonal skills' and 'good communication' is a very Canadian idea. For newcomers, this is a cultural adjustment, no matter how senior a position they had before they came or where they end up here."

- Senior manager in a Winnipeg consulting engineering firm, discussing the firm's experiences with hiring internationally-educated engineers.

Perhaps you are a newcomer experiencing cultural differences in the Canadian workplace. Perhaps you are a long-time Canadian experiencing differences with culturally-different colleagues and employees. The differences in question go beyond food, music, or clothing. Rather, cultural differences in the workplace are complex expressions of how people think of themselves as a professional, interact with one another, and how work gets done. For immigrant professionals, adaptation to the Canadian workplace carries a high potential for misunderstanding and lost career opportunities.

Our ideas of good communication, good interpersonal skills, and good team skills are indeed tied to culture. The characteristics that define a strong letter, an appropriate email, a well-handled conflict, a persuasive conversation, and a productive meeting differ from culture to culture. In Canada, there are characteristically Canadian ways of defining what it means to be a self-starter, a team player, or a good communicator.

These differences can be understood in terms of several cultural categories. The descriptions that follow are extensively discussed by Lionel Laroche, P.Eng., Ph.D.[1] The first category on which cultures vary widely is power distance. Power distance is a continuum indicative of hierarchy, or the relative psychological space between individuals in an organization and in society. In a low power distance culture (low hierarchy), individuals strive for a highly democratic and interdependent society. The 'social pyramid' in an organization is relatively short and squat. In a high power distance culture, society is organized in steep hierarchies with individuals bounded by clearly defined roles. The 'social pyramid' is tall and narrow.

Power distance dictates unwritten rules of appropriate employer–employee interactions. In general, employees in low power distance cultures such as Canada and the U.S. are expected to begin and carry out tasks with minimal initial instruction and ongoing supervision. This is considered to be 'taking initiative' and is a highly valued professional characteristic. In return, employees in a low power distance culture expect a degree of flexibility and independence in carrying out their work, without the close supervision that would be negatively considered 'micro-management' in North America. In contrast, in highly hierarchical or high power distance cultures more representative of South America and Asia, appropriate professional behaviour entails working within a scope clearly detailed by the superior. In a high power distance culture, employees instinctively expect that going beyond the scope without prior instruction or approval to do so would be a sign of insubordination and disrespect. When low power distance and high power distance individuals work together, these differences can lead to incorrect perceptions of the other's character, competence and personal investment in their responsibilities.

A second cultural category that illuminates differences in behaviours and potential for misunderstanding is the continuum ranging from individualism to collectivism. Individualism does not mean that an individual is selfish or self-serving. Rather, individualistic societies such as the U.S. and Canada believe that society's collective priorities (stable, productive, and efficient social, political, and economic systems) are best supported when rights and responsibilities are embedded with the individual. Thus, people in individualistic cultures value personal accomplishment, autonomy, independence, and individual rights. We allow our friends and colleagues their successes and we don't feel personally invested in their failures either. In contrast, in highly collectivist societies such as Asia and South America, the group (family, organization, political party, etc.) is seen as the focal point of social relations, and society's collective priorities are thought to be best supported when the rights and responsibilities of the group

outweigh those of the individual. Thus, collectivistic societies value identity with, accomplishments of, and loyalty to the group to a degree that is unfamiliar to North Americans.

The characteristics of a strong team player are vastly different in individualistic vs. collectivistic cultures. For example, in an individualistic culture like Canada, information is provided to and shared among team members on an as-needed basis. To a collectivistic person, this level of information flow appears insufficient and is therefore distressing. In a collectivistic culture, information is shared extensively beyond those directly impacted by or in need of the information. To an individualistic person, this appears unnecessary and irrelevant.

Collectivistic individuals are also often 'high context' individuals, seeing relationship building and personal interaction as a necessary preamble to conducting business, in order to establish rapport and trust. Low context people - more typical in Canada and the U.S. – will often consider such endeavours to be wasted time, preferring to get right to the point with a colleague or client.

Whether they are characteristics of power distance, individualism vs. collectivism, or context, none of the behaviours are inherently wrong. These cultural categories are simply the lenses through which we see the world. They are the glasses that we wear without realizing that we are wearing them. More importantly, we simply assume that everyone else is wearing the same glasses. However, when a person's cultural expectations differ on one or more of these categories, then the instinctive behaviours and actions that are highly appropriate in one culture may be seen as highly inappropriate, unprofessional, or perceived as incompetent in the Canadian context. These misunderstandings translate into lost time and lost opportunities for all.

"We got a new CEO, and I had met him only once before, in a meeting with seven other department managers. In my first one-on-one meeting with him, he invited me into his office, turned his chair to face me, took his notebook, and started our meeting by saying, 'Thanks for coming, James. There were a few things I wanted to go over with you regarding your department.' I chuckled inside, thinking, 'wow, now that's a low context approach to meetings', but at the same time I thought it was completely appropriate and efficient."

- Department manager in an organization of approximately 80 professionals.

When cultural differences exist and are causing confusion and misunderstanding in the workplace, who needs to change? Typically, newcomers understand that most of the adaptation task rests with them. At the same time, long-time Canadians typically agree that they are also responsible to understand cultural differences, and to be willing to make some adaptations in their behaviours and interactions with culturally different colleagues and employees. In quantitative terms, most newcomers and Canadians seem content to split the adaptation task 80/20, respectively.

When we move beyond stereotypes to a greater awareness of the fundamental nature of cultural differences, we improve our understanding of someone culturally-different from ourselves. With awareness and understanding, we can move beyond assumptions of another person's motives or intentions and focus on the cultural perspectives that shape a particular behaviour or action. With an understanding of how deeply engrained our own ways of thinking and acting are and the extent to which they are tied to culture, we can move toward changes in how we relate to culturally-different colleagues, supervisors, and employees. ■

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[1]Managing cultural diversity in technical professions, by Lionel Laroche, P.Eng., Ph.D. © 2003 by Butterworth Heinemann.

Recruiting, retaining, and promoting culturally different employees, by Lionel Laroche, P.Eng., Ph.D., and Don Rutherford. © 2007 by Butterworth Heinemann

Marcia Friesen is the Director of the Internationally-Educated Engineers Program (IEEQ Program), University of Manitoba. IEEQ staff are available for discussions and workshops with employers managing issues of cultural diversity.

Sandra Ingram is an Associate Professor in Design Engineering at the University of Manitoba who conducts research on the development of non-technical skills among engineers.

engineers without borders
ingénieurs sans frontières
Canada

Positive Impact...
Served Frozen, at 100 mph

A few months ago, some EWB staff got together with their friends at Public Inc. to think up some smart ways to connect Canadians to Africa. During a lull in the conversation, when people were running out of energy, EWB's CEO George Roter shared a story about driving by GM Place in Vancouver in October 2009, and smiling at the thought of a puck made of fair trade rubber being used to score the winning goal of the 2010 Olympic gold medal hockey game.

Flomo, a rubber tapper from MARCO (Morris-American Rubber Company) taps a rubber tree at the company's plantation. MARCO is one of Liberia's largest rubber producing and processing companies. Courtesy Arthur Kong/EWB.

Everyone laughed. Then slowly, brows furrowed, it got very quiet in the room, and you could see eyes lighting up as the idea took root.

Today, EWB is well on the way to making that idea a reality, and we'll hit a major milestone this weekend when RUBR pucks will be used at university hockey games nationwide (there's also a good chance they'll be coming to a major Canadian retailer very soon). RUBR's slogan is "it's better with RUBR," and that's not just marketing:

It's better for Canada. Check your hockey bag. There is a very good chance your pucks are manufactured outside Canada. RUBR pucks are proudly made in Canada in partnership with Viceroy, makers of quality hockey pucks for more than 40 years.

It's better for Liberia. RUBR is not charity. Our plan is to create a global business that will create jobs, grow the local economy and spur redevelopment, especially for local rubber farmers. They're not fair-trade certified yet, but that's our goal.

It's better for the environment. There are plenty of pucks made of synthetic rubber, which is derived from petroleum. RUBR is tapped naturally from rubber trees, helping to address a major environmental concern.

HOW RUBR HAPPENED

In the feasibility phase, EWB took the lead in researching, sourcing, importing, and manufacturing the pucks, while Public Inc. focused on the brand, marketing, communications, and partnership development.

EWB alumni David Damberger and Arthur Kong went to Liberia to make connections and learn about the rubber industry and value chain, and their new-found knowledge guided the production of this first batch of pucks. The partnership with Canada Interuniversity Sport (CIS) happened quickly afterwards — they recognized the value of the idea and wanted to get on board immediately.

WHAT WE'RE TRYING TO ACHIEVE

We've already been asked if we think a puck is going to save the world. Our answer is a resounding "no." Still, we hope that as the demand for RUBR grows, it will make a big difference to Liberian farmers, both directly with this product, and hopefully later through influence on the entire Liberian rubber industry. But our focus with RUBR right now is here in Canada.

The pucks illustrate two important things for Canadians:

1. Just how easy it is to turn purchasing power into positive social impact.
2. That we should see countries and people in Africa differently, and that our relationship between Canadians and Africans must go beyond charity.

So no, hockey pucks aren't going to "end" poverty. But Canadian consumers can make great strides in that direction by buying

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BUILDING ON ENGINEERING KNOWLEDGE
ENGINEERS CANADA NATIONAL SCHOLARSHIPS PROGRAM

Professional engineers are invited to enter the 2012 Engineers Canada National Scholarship Program competition.

Deadline : March 1, 2012

Manulife Financial Scholarships

Field: **Engineering**
Value: **$12,500**
Criteria: Canadidates must be accepted or registered in a faculty of engineering, beginning their studies no later than September 2012.

TD Insurance Meloche Monnex Scholarships

Field: **A field other than engineering.** The field of study chosen should favour the acquisition of knowledge pertinent to enhancing the performance of the candidate in the engineering profession.
Value: **$7,500**
Criteria: Candidates must be accepted or registered in a faculty other than engineering, beginning their studies no later than September 2012.

TD Insurance Meloche Monnex Léopold Nadeau Scholarship

Field: **Public Policy Development.** The field of study can be engineering or another subject area.
Value: **$10,000**
Criteria: Candidates must be accepted or registered, no later than September 2012, in an acceptable program that will greatly enhance their expertise, abilities and potential to influence the development of public policy.

Refer to the application form for the complete list of eligibility requirements.

Application forms are available at:
www.engineerscanada.ca/e/pr_awards_2_1.cfm

Contact the Engineers Canada National Scholarship Program:
awards@engineerscanada.ca

engineerscanada ingénieurscanada

Engineers Canada is the business name of the Canadian Council of Professional Engineers.

*The term ENGINEERING is an offical mark held by the Canadian Council of Professional Engineers.

EDUCATIONAL PROGRAM INNOVATIONS CENTER EPIC

EPIC Educational Program Innovations Center

Upcoming Course Schedule	PDHs*	Location	2012				
Civil			**Jan**	**Feb**	**Mar**	**Apr**	**May**
Design of Equipment Foundations	18	Regina		15-17			
Stormwater Management - Design, Inspection and Operation/Maintenance of Stormwater Control Facilities	12	Regina			27-28		
Protecting and Repairing Concrete Structures	18	Winnipeg				16-18	
Building Condition Assessment	18	Winnipeg				23-26	
Construction			**Jan**	**Feb**	**Mar**	**Apr**	**May**
Foundations of Construction Law	18	Winnipeg		14-15			
Bidding, Evaluation, Negotiation and Contract Award - For Construction Projects	12	Winnipeg				19-20	
Electrical			**Jan**	**Feb**	**Mar**	**Apr**	**May**
Fire Alarm Systems: Design, Installation, Inspection and Testing	12	Regina				23-24	
Environmental			**Jan**	**Feb**	**Mar**	**Apr**	**May**
Understanding Environmental Regulations	18	Winnipeg	25-27				
Environmental Site Assessment and Remediation (2 days)	12	Winnipeg				30	1
Mechanical			**Jan**	**Feb**	**Mar**	**Apr**	**May**
Pumps: Selection, Operation and Maintenance	12	Winnipeg			19-20		

PDHs*: Continuing professional education for licensed engineers is measured in Professional Development Hours (PDHs). A PDH is one contact hour of instruction or presentation.

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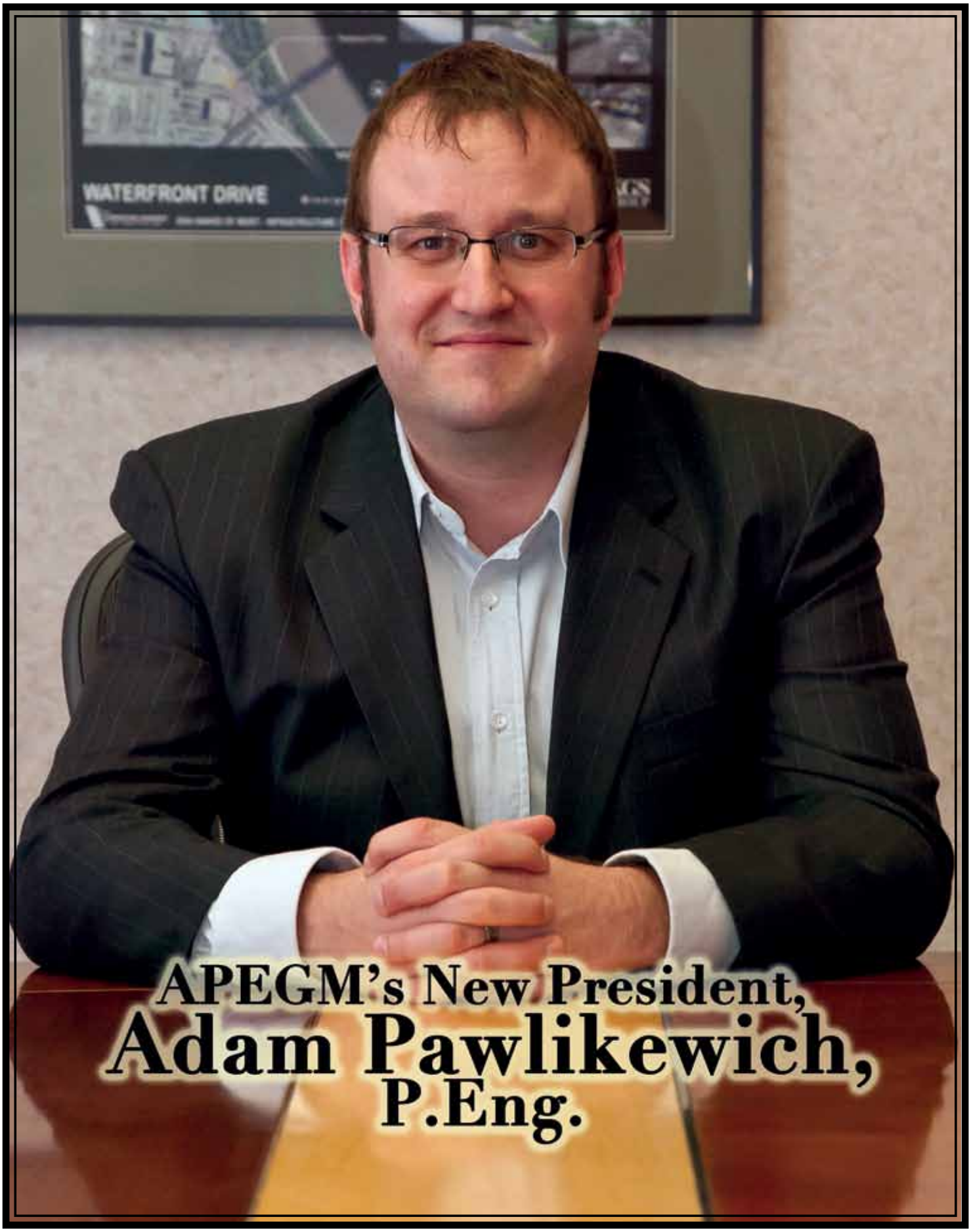


APEGM's New President, Adam Pawlikewich, P.Eng.

At its recent Annual Meeting, the Association of Professional Engineers and Geoscientists of Manitoba declared Adam Pawlikewich, P.Eng., President.

Mr. Pawlikewich is employed with KGS Group.

The Association is the licensing authority for all Professional Engineers and Geoscientists in Manitoba.

Mr. Pawlikewich will lead the Association's Council in regulating the practices of engineering and geoscience on behalf of the people of this province.

The Council of the Association comprises 13 members: nine engineers, two geoscientists, and two appointed public members. The Council members for 2011 – 2012 are:

Adam Pawlikewich, P.Eng. (President); William Girling, P.Eng. (Past President); Rajib Ahsan, P.Eng.; Chris Beaumont-Smith, P.Geo.; Luis Escobar, P.Eng.; Marcia Friesen, P.Eng.; Rick Lemoine, P.Geo.; Dawn Nedohin-Macek, P.Eng.; James Nicholson, P.Eng.; Roger Rempel, P.Eng.; Sheryl Rosenberg, LLB; Donald Spangelo, P.Eng.; Steven Vieweg, CMA.

AN INTERVIEW WITH ADAM PAWLIKEWICH

1. Why did you choose to go into Engineering?

As a kid I always found math and sciences to be the most interesting. I think that interest really grew as school progressed and engineering really seemed like the next logical step. I think it is just the way my brain works, I likely didn't have a conscious choice in the matter.

2. What were your favorite classes? Why?

In school, my favorite classes usually related to system organization and interaction. Those that come to mind were Digital System Organization, Interfacing, Switching Theory and Optoelectronics. I was always fascinated by the interaction of systems and these courses really gave a good understanding of the interaction of things in the digital age. It seems that with the understanding of these topics, you can understand so much of how systems work in general.

3. How would you describe yourself in three words?

Engineer, loves coffee.

4. What would I find in your fridge right now?

My fridge is typically overflowing at any point in time with the week's ingredients for meals, some snacks for the kids, milk, a collection of various cheeses and a wide variety of condiments. I am never really exactly sure of the contents, and normally just go and check it out…

5. What is your favorite recipe?

It depends on the day really. My favorite cooking tends to be Italian. I particularly like cooking fresh pizza and Carbonara from scratch.

6. What specific area of discipline do you work?

I work in Electrical Engineering. In this I do a wide variety of electrical tasks; networking, power distribution, lighting, life safety systems, control systems etc. However, much of my work has been branching out into related tasks such as the processes used for 3D design in engineering in general. This has been giving me a healthy respect for all the disciplines of engineering.

7. Do you have any hobbies? What do you do in your spare time?

I find, of late, between work and family, I don't really have a lot of spare time. When I do, I like to work on bicycles, cook, listen to music and play with computers. Most of all, though, my hobby seems to be coffee. I have taken to exploring the many ways of roasting, blending and brewing coffee. This is one hobby I have to find time for or we have no coffee around the house. I also have a number of friends who make sure that I am roasting coffee, as I have began supplying them as well.

8. If you were a Star Wars character, which one would it be and why?

I think if I had to be a Star Wars character it would be R2D2. He seems to be most familiar with the technical aspects of things. That's a little comforting. I don't really have any better reasons than that.

9. What is the last book you read?

The last book I read for myself was *Espresso Coffee: The Science of Quality*. This is essentially a textbook on the chemical and physical properties of coffee beans and the changes they go through in the roasting and brewing processes. The last book I actually read in general was *Goodnight Moon*. My daughter is not quite a year old, so I tend to keep up on my kids literature.

10. What do you enjoy most about engineering?

The thing I think I enjoy the most about engineering is that it is always changing and there are always new facets to explore. As I get to go through my career, the work seems to get more and more interesting. When you start out, it seems as though there was so much learned in school, over the course of working, it becomes clear that the thinking has just begun. The whole job is actually all about learning new applications, new technologies and new ways of thinking. ■

The Foundation of the Aviation Industry in Manitoba

submitted by the Heritage Committee

As a means of celebrating the role of engineering and geoscience in the development of Manitoba and APEGM's history, the Heritage Committee created a series of articles that link water to the economic and social development of the province. This article, while somewhat linked to water, deals with the development of the aviation industry in Manitoba. In particular, it looks at the formation of an aviation company that is known today as Magellan Aerospace.

You could say the development of an aviation industry occurred by happenstance. Two things came together. First, a gold strike in the 1920s was made at Red Lake, ON, northwest of Dryden. With no roads, aircraft became the best means of access. Water was the preferred surface with aircraft on floats in the "open season" and skis when the lake was frozen. The demand for air service spurred the rise of commercial aviation in Manitoba and North Western Ontario. The second was the hobby and interest in those early aircraft and their pilots of one Winnipeg based entrepreneur.

The gold rush created the need and the profit potential for aircraft to fly men and machines to Red Lake. This was the economic incentive that led James A. Richardson to get involved with commercial aviation. In 1926, he founded Western Canadian Airways (WCA) initially focused on Red Lake. However, over the next few years WCA helped open up the mineral mining development of the North with their air transport routes. Richardson then amalgamated Western Canada Airways with five eastern air services in 1930 to form Canadian Airways Limited (CAL). CAL operated through the 'Dirty Thirties' and into the 40s, delivering passengers and cargo to northern communities and outposts. In 1942, the Richardson family gave in to federal government pressure and interference in commercial aviation (with the government owned Trans-Canada Airlines) and sold CAL.

Back in 1926, Richardson found that the most suitable aircraft for the type of work was the Fokker Universal, as it was readily convertible from wheels to skis, and to floats in the open-water season. These aircraft were flown by an assortment of pilots who became legendary bush pilots. Punch Dickins (see below), Wop May, Ray Brown and others were opening up new routes and, from time to time, damaging their machines. Winnipeg was the closest city and the float planes would land on the Red River at the Brandon Avenue base (in 2011, it is the site of the Redboine Boat Club). One of the regular visitors to watch the aircraft and talk to the pilots at Brandon Avenue was Grant MacDonald.

It was Grant's interest in aviation that sparked the creation of MacDonald Brothers Aircraft Ltd. in 1930. The pilots would fly in to Winnipeg and Grant made friends with many of them. Once the pilots knew Grant was involved with a sheet metal shop they asked him to carry out repairs. Quickly MacDonald became aware of aircraft maintenance issues and Grant arranged to repair the floats they used for water landings.

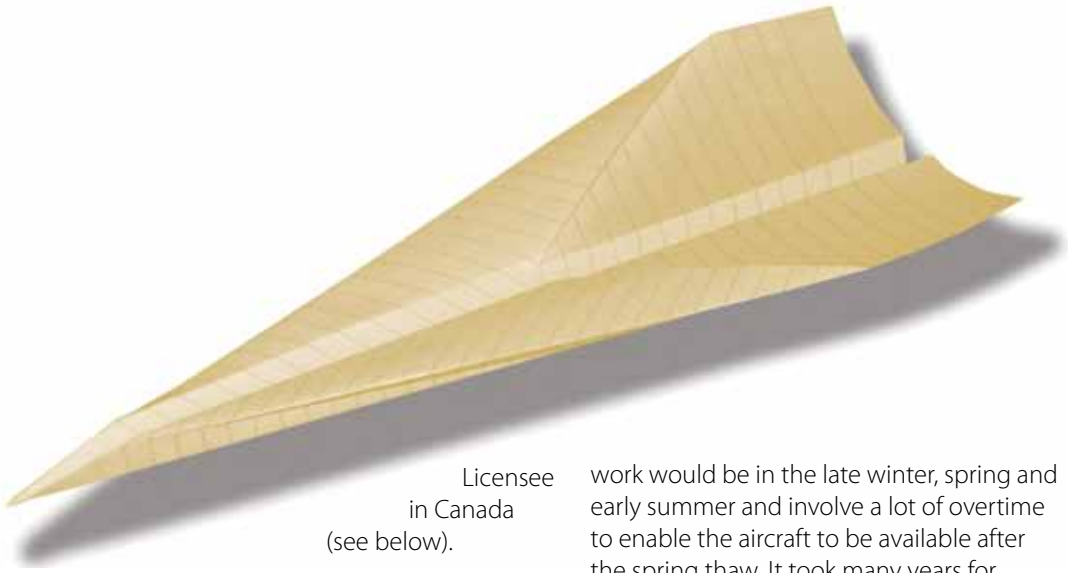
Punch Dickins Trained as an Engineer

Punch Dickins is still a legend in the Arctic; flying more than 1,000,000 miles across the uncharted North. He invariably used dead reckoning and hand-drawn maps to plot his way across the north of Canada.

What is less well known is that Punch was a Manitoban, born in Portage La Prairie, and he enrolled in mechanical engineering at the University of Alberta.

He quit to enlist as an infantryman in the Canadian Army. While in Europe he transferred to the Royal Flying Corps. Punch became a bomber pilot and emerged from the war as a skilled and able pilot.

Leaving the military for civil aviation, he was one of the first pilots to join Western Canadian Airways, operating in Manitoba and Northern Ontario. He flew the first aircraft on the prairie airmail circuit of Winnipeg, Regina, Calgary, Edmonton, Saskatoon, and Winnipeg.



The MacDonald Brothers story starts in 1904. This was the year the three MacDonald brothers left Nova Scotia for the Prairies. Two of them, Grant and his brother James, arrived on a harvesters' excursion train to farm near Portage la Prairie. Obviously farming didn't really suit the brothers as in 1906, with the third brother Edwin, they formed the MacDonald Brothers Sheet Metal and Roofing Company. The company prospered and was still operating in Winnipeg as late as 1980.

The largest US manufacturer of floats for aircraft was Edo Aircraft (which became EDO Corporation in 1947). The founder, Earl D. Osborn, established it in 1925. Osborn wanted to find a manufacturing outlet in Canada. He knew the Western Canadian Airlines pilots and operators and, the story goes, sought their advice as to which company they would recommend. The reply seems to have been that he should not deal with anyone but Grant MacDonald in Winnipeg. MacDonald was invited to College Point, NY (today a suburb of Brooklyn) and they became fast friends. So MacDonald brothers became the Edo Licensee in Canada (see below).

The MacDonalds decided to separate the aircraft business from the sheet metal shop, so in 1930 MacDonald Brothers Aircraft Limited was formed. The new shop was on Robinson Street in Winnipeg's North End. They also had some space at the Brandon Avenue base for fitting and installing repaired components. It was the beginning of an operation that would manufacture floats for aircraft of Western Canada Airways and become one of the world's largest manufacturers of seaplane floats.

For the fledgling company the early years were difficult. The depression of the 1930s meant fewer aircraft were flying and being built, therefore, fewer floats and repairs were needed. The factory produced a variety of floats (as well as Edo, Fairchild and Junkers floats were constructed), but still the work was seasonal. The workforce would fluctuate between as few as 2 and as many 20. Because of cash flow problems aircraft repair would only be done just before the flying season. The bulk of the work would be in the late winter, spring and early summer and involve a lot of overtime to enable the aircraft to be available after the spring thaw. It took many years for aircraft repair to become an even workload. By then the work included the first overhaul of a Fokker Aircraft. This work provided for steady growth of the workforce, which had reached 65 employees in 1936.

In these pre World War II days, MacDonald Brothers also started a relationship with the Royal Canadian Air Force (RCAF) which was to be the foundation for the massive expansion in the war effort that followed. Pre-1936 the RCAF was responsible for overseeing the airworthiness of all aircraft both military and civilian. Hence a close liaison developed between the RCAF inspectors and MacDonald brothers. The plant overhauled RCAF Avro Avian and the ubiquitous Tiger Moth.

As the amount of flying into the North increased the need for rugged "bush aircraft" also increased. One of the most successful was the Noorduyn Norseman (see below). The Noorduyn Aircraft Ltd.,

continued on page 25

The Fokker AirCraft Company of America

In 1923, Anthony Fokker had founded the Atlantic Aircraft Corporation, a name that was then changed to Fokker Aircraft Corp. of America. By the end of the twenties, Fokker had grown into the largest builder of aircraft in the world, with factories in the Netherlands and the United States. The Universal was designed by another Dutchman - Robert Noorduyn, and manufactured in New Jersey, USA.

A Strange Agreement

Apparently, Earl Osborn and Grant MacDonald had such a solid friendship they developed their Licensee arrangements on a hand shake. This seems strange to us in the 21st century, but it was not until 1943 that the arrangement was ever formalised.

The Noodruyn Norseman

Few aircraft initially designed in 1933 are still flying. One is the Norseman. The Norseman aircraft are known to have been registered and/or operated in 68 countries throughout the world and also have been based and flown in the Arctic and on the Antarctic continent. The last Norseman built was sold and delivered to a commercial customer on Jan. 19, 1059. A total of 903 Norseman were built and, even today, approximately 18 Norseman are still plying their trade in Canada and elsewhere, as the visible embodiment of the design genius of Robert Noorduyn.

92nd Annual General Meeting

Friday, October 28, 2011

by C. McNeil, P.Eng.

APEGM 2011 AGM
Business Meeting

The 2011 Annual General Meeting Business Meeting was held on Friday, October 28, 2011 at 8:30 a.m. at the Fort Garry Hotel in Winnipeg. The meeting was well attended so having a quorum was not an issue.

This year there was a slight change in format as the AGM Business Meeting was held before the Professional Development Seminar.

The meeting was called to order at 8:37 am with the official opening followed by a moment of silence for deceased members.

The first few agenda items (Notice of Meeting, Approval of Agenda, and Introduction of the Council and Staff) moved along quickly followed by recognition of Invited Guests and Association Representatives.

The representative for Engineers Canada, President Brent Smith, FEC, P.Eng., gave a talk regarding licensing of International Trained Professionals and streamlining the process of professional certification. His talk also highlighted cooperation between associations with regard to mobility of professionals to practice between provinces. He capped off his address with a reminder for members to go online and vote for the Bay of Fundy as one of the new seven wonders of the world.

The Report of the President was followed by the adoption of the minutes from the 2010 AGM. There was a motion to amend the wording of the legal opinion regarding last year's resolution from the floor regarding Bipole III. The wording said that the "motion is out of order." It was requested that it be changed to "in his opinion the motion is out of order." This change was accepted.

Member David Grant also pointed out that the minutes listed him as having abstained from the vote re: Bipole III. He pointed out that this was an error as he did not abstain. After these changes the minutes were approved.

The 2011–2012 budget was discussed as well as the schedule of Dues and Fees. The deadline for fee payment is December 31 with a late fee being applied for any payment after January 11th.

After the reports from APEGM Committees and Staff there was a special report from the President regarding the 2010 Bipole III Resolution. In summary, the report concluded that advocacy in connection with Bipole III was beyond the purpose and powers of the Association, however in subsequent meetings, Council agreed to create a task group to help assist Council in determining the Association's role in advocacy.

In other business, it was raised as a concern that the Bipole III legal opinion should be made available to all members. The Association's legal council stated that the opinion belongs to the association and that they had no objections to it being made available to members.

One other interesting piece of new business was that member Ed Toutant, P.Eng., spoke about the new electronic voting system. His concern is that it violates Canon 2.6 of the act regarding confidentiality of votes and the fact that there is no physical record of votes. This concern was not shared by the Council.

Adam R.D. Pawlikewich, P.Eng. was sworn in as the new President of APEGM. Good luck and may your year be successful for all members.

After the Incoming President's Address the meeting was adjourned.

APEGM 2011 AGM
Professional Development Seminar

The 2001 Annual General Meeting Professional Development Seminar was held at 10:30 a.m., Friday, October 28, 2011 at the Fort Garry Hotel, Winnipeg, MB.

The theme of this year's seminar was motivating youth to become more involved in your organization. A theme that APEGM members should be very interested in as a quick glance around the room will attest.

The seminar started out with Bill Girling, P.Eng., APEGM Past President introducing the speaker Barb Gemmell from Gemmell Training & Consulting.

There was a wealth of information provided by Barb on how to foster a culture that helps engage the youth and young adults of today. She talked about mentoring and how mentoring programs can help cross the age divide in organizations. She also talked about how mentoring not only helps the younger member but also

My **life's work**
makes **life work better.**

how it is a two way street. The youth of today have much to offer to the mentor such as a greater grasp of technology and modern social networking modes of communications. This interaction between the two can impress knowledge on both parties and benefit the organization as a whole.

Another focus of her talk was on the role of volunteering in the work place. Studies have shown that many younger employees feel that being engaged in the community is a personal duty and welcome being involved in organizations that share this goal.

All in all, the seminar was very worthwhile to attend and I would recommend that more members take part in the professional development opportunity that such a seminar offers.

Closing remarks were made by Mike Gregoire, P.Eng., APEGM Professional Standards Officer.

Lunch was served at 1:00 p.m. and door prizes were drawn. Congratulations to all who won door prizes, consisting of gift cards from Canadian Tire and Winnipeg Jets Jerseys: Go Jets go!

APEGM 2011 AGM
Annual General Meeting Award Dinner and Dance

The 92nd Annual General Meeting Award Dinner and Dance was held Friday, October 28, 2011 at the Fort Garry Hotel.

Continuing with the popular Black Tie and Masquerade theme of the previous year, the event was well attend by masked APEGM members and significant others.

Following introductions and greetings by Master of Ceremonies, Larry Updike, the awards segment of the evening took place. Congratulations to all this year award winners!

Professional-in-Training Award
Peter Schilling, EIT

Early Achievement Award
Nelson Ferreira, M.Sc., P.Eng.

Champion of Engineering Education
M.G. (Ron) Britton, P.Eng., PhD.

Honorary Life Membership Award
Douglas Gerald Chapman, P.Eng., PhD.

Merit Award
Ernest Armitt, P.Eng.

Entertainment for the evening was provided by the Royal Winnipeg Ballet School and Jenifer Scott and the Groovesound Band.

A special thank you goes out to the event sponsors: Great-West Life and Nova 3 Engineering. ■

Right:
The Royal Winnipeg Ballet School during the Awards Gala Dinner and Dance

Jenifer Scott and the Groovesound Band

92nd Annual General Meeting
Awards Gala Dinner and Dance
Award Presentations

by C. McNeil, P.Eng.

Professional-in-Training Award
Peter Schilling, EIT

Mr. Peter Schilling graduated from the University of Manitoba in 2006 with a B.Sc. in Computer Engineering. Peter became a student member of APEGM in 2004 and an Engineer-in-Training (EIT) in November of 2006.

in January of 2007, Peter was hired by MCW/AGE Consulting Professional Engineers. Over the next four-and-a-half years, he gained much experience working for the company. Since 2009, Peter has held the position of lead electrical designer or co-designer for a variety of projects. These new construction and renovation designs were for buildings including personal care homes, daycares, educational facilities, offices, a cultural centre, a condo, a hotel, and projects for the Department of National Defense.

Peter has, with the support of wonderful mentors, co-workers, architects, manufacturer representatives, and owners, completed four new Manitoba Public Insurance Buildings, accomplished multiple projects at the University of Manitoba and at the Canadian Mennonite University, submitted electrical construction drawings for the Canad Inns Hotel at the Health Sciences Centre, and has worked on many other small but very important projects within Winnipeg and throughout Manitoba. All projects are approached by Peter with energy efficiency in mind and several of them have been submitted for LEED certification.

Throughout his academic studies and professional career, Peter has been actively involved in many volunteer activities. In 2004, he began singing in his church choir and in 2009 taught catechism: grade 2 for two years and in 2011 will teach grade 1. Peter greatly enjoys working with children and this can be seen through his volunteering for the St. Louis Bible Camp, near Kenora. In this position for the last 3 years, he has been responsible for looking after the children, teaching them about his faith, and leading the outdoors program.

Peter has also been involved as a member of the Hungarian Kapisztran Folk Ensemble for roughly eighteen years and has been passing on his culture by helping teach and choreograph for the junior and intermediate dance groups for the past four years, where this group performs at Folklorama every summer. Peter is proud to have the opportunity to pass on something that has always been a part of him and is honored to help the kids learn something that they enjoy and can grow from.

The Association of Professional Engineers and Geoscientists of Manitoba is pleased to present the Professional-in-Training Award for 2011 to Peter Schilling, an exemplary individual, committed to his community and to his profession.

Early Achievement Award
Nelson Ferreira, M.Sc., P.Eng.

Nelson Ferreira is a two-time graduate of the University of Manitoba with an undergraduate degree in Civil Engineering in 2000 and a Masters degree in Civil Engineering in 2002. His post-graduate research focused on the practical aspects of evaluating the impact of rainfall on the stability of engineered embankments and natural slopes. The results of his research were recognized with the 2005 R.M. Quigely Award for the best paper published in the Canadian Geotechnical Journal in 2004.

Upon Graduation from his post-graduate studies, Nelson joined UMA Engineering Ltd. where he worked for eight years in the geotechnical engineering division taking on ever increasing responsibility as he developed through technical design roles to project management lead roles. Some of the more notable projects he was a team member of included the Red River Floodway Expansion project main channel and bridge crossings, the City of Winnipeg Water Treatment Plant and the East Side Road Authority Rice River Road functional design. In the final two years of his time at UMA, Nelson also served as the manager of the materials testing laboratory.

In 2010, Nelson moved on to become a founding partner of TREK Geotechnical Inc. where he has served as

Vice-President and manager of engineering services. Nelson has led TREK's expansion in engineering and materials testing services to the current team of five engineers and

additional support and technical staff. He is the lead engineer on a number of TREK's projects including the emergency riverbank rehabilitation of the Morris Bridge crossing, riverbank stabilization works for the new Disraeli bridge and development of shoreline protection works for Sagkeeng First Nation.

Nelson was recognized for his early career achievements with the 2003 APEGM Professional-in-Training Award and now his continued exemplary accomplishments are being acknowledged with the APEGM Early Achievement Award.

Champion of Engineering Education

M. G. (Ron) Britton, P.Eng., PhD.

Nominated by Dr. Douglas Buchanan, P.Eng., Past Acting Dean

Dr. Ron Britton is the Associate Dean of Design Education in the Faculty of Engineering at the University of Manitoba. Born in Regina and raised in Lang, Saskatchewan he obtained his B. Sc. in Civil Engineering degree from the University of Saskatchewan, M.Sc. in Agricultural Engineering from University of Manitoba and Ph.D. in Agricultural Engineering from Texas A&M University.

Ron spent five years working in industry between his B.Sc. and his M.Sc. During that time he was employed by Shell Oil, the Plywood Manufacturers Association of British Columbia and Beaver Lumber. His work took him from Winnipeg to London, England and Toronto. During that time he concentrated on the design of buildings, with an emphasis on wood, and ultimately focusing on agricultural buildings.

Ron has held academic appointments at both Texas A&M and the University of Manitoba. He rose through the ranks in the Agricultural Engineering (now Biosystems Engineering) departments. He now holds appointments in both Civil Engineering and Biosystems Engineering in addition to his administrative responsibilities. In 2001 he was awarded a Natural Sciences and Engineering Research Council Chair in Design Engineering, a Chair he held for 10 years. During that time Ron was instrumental in the establishment of the Design Group, the promotion of engineering design concepts through departmental courses, the restructuring of the delivery of technical communications throughout the Faculty, and the recruitment of Engineers-in-Residence as active partners in the delivery of design engineering courses. Ron was also instrumental in the establishment of the Internationally Educated Engineers Qualification Program which assists foreign trained engineers to achieve their P.Eng in Manitoba.

Ron brings the issue of design education to the attention of provincial industry through the regular column "Thoughts on Design" in the Keystone Professional. Through Ron's efforts, a culture of design has been established at the U of M, along with an understanding by industry of their role in undergraduate engineering education.

Ron is an honorary lifetime member of the Society for Teaching and Learning in Higher Education, and a member of numerous other technical and education related societies. Ron is a 3M Teaching Fellow and has received a number of other awards including the CCPE Medal of Distinction in Engineering Education, the CSBE Maple Leaf Award, the APEGM Merit Award and Outstanding Service Award, the University of Manitoba Dr. & Mrs. H.H. Saunderson Award for Excellence in Teaching, and the Dr. & Mrs. D.R. Campbell Outreach Award. During his career, Ron has authored over 30 papers published in refereed journals, 12 papers published in refereed conference proceedings, books, monographs, articles, chapters and has provided editorial services in books. He is a nationally recognized speaker on the topic of Engineering Design Education, and has supervised 41 Undergraduate and 17 Postgraduate theses.

Away from the campus Ron is a proud grandfather of four and a sometimes obsessive baseball fan. He is probably one of the few to include questions on baseball in his final exams.

In recognition of his outstanding efforts to improve and promote engineering education, the Faculty of Engineering at the University of Manitoba, together with the Association, is pleased to present the Champion of Engineering Education Award to M.G. (Ron) Britton.

My **life's work** makes **life work better.**

Honorary Life Membership Award

Douglas Gerald Chapman, P.Eng., PhD.

Doug Chapman became registered with the Association on March 5, 1974, and has been a member continuously for 37 years. Dr. Chapman obtained his B.Sc. in Electrical Engineering from the University of Manitoba in 1968 and a Ph.D. in Automatic Control from the Univeristy of London (Imperial College of Science and Technology) in 1973.

Doug has over 35 years experience in power system planning and operation with Manitoba Hydro as Principal Planning Engineer, HVdc and System Controls, System Planning and, Manager, System Performance.

Dr. Chapman retired from Manitoba Hydro in 2004. Since late 2006, he has worked part-time for TransGrid Solutions, Inc., a power system consulting company in SmartPark – with involvement in projects in New Zealand, Chile, USA and Canada – in HVdc transmission and generation control.

Over the past 37 years, Doug has made significant contributions to the engineering profession through many APEGM committees. Doug has served on Council, the Executive & Finance Committee, the Board of Examiners, the Awards Committee, the University Liaison Committee, the Nominating Committee, the Salaray Research Committee, the Research and Development Committee, the Investigation Committee, the Heritage Committee, the Academic Review Committee, and was President for the Association in 1994.

Dr. Chapman is also a past director of Engineers Canada and a Senior member of the IEEE. He is an adjunct professor at the University of Manitoba and a past member and chair of a Natural Science and Engineering Research Council (NSERC) Grant Selection Commitee. He is the joint author of over 15 IEEE, Cigre, and EPRI publications.

Doug has been married for 40 years to Monica. They have two sons, Stephen, an engineer for the City of Winnipeg, with wife Jen, an engineer with the Province of Manitoba (Highways) and two grandsons; and Michael, a doctor in Vancouver, with wife Maggie.

Doug's many years of service to the Association are characterized by his outstanding ability and by his dedication to the engineering profession. The Association of Professional Engineers and Geoscientists of Manitoba is extremely grateful to him for the dedicated service he has rendered in so many areas of the Association's activities, and in appreciation is pleased to confer Honorary Life Membership on Douglas Chapman.

Merit Award

Ernest Armitt, P.Eng.

Ernest Armitt graduated in 1963 from the R.C.A.T. (Sanford University in Structural/ Civil Engineering) after completing a student training program gaining experience in a number of companies in the United Kingdom and Europe. Ernest immigrated to Canada and became a registered member of APEGM in 1988.

Ernest spent 31 years with INCO (now Vale), 11 of which were in Thompson, Manitoba where he carried out many roles in the engineering, maintenance, and exploration areas in Manitoba. His final position was Manager, Engineering, Technical Services and Maintenance where he oversaw the capital budget for the division doing major expansion work. During this period, Ernest hired and mentored numerous engineering graduates. A significant number of these graduates were from the University of Manitoba, and many of them now hold senior positions within Vale.

In 1999, Ernest joined the Manitoba Provincial Government as Director of Mines, responsible for the administration of the Mines and Minerals Act as well as acting as a technical consultant to other agencies on mining related matters.

Shortly after joining the Department, a new program was initiated to remediate all Orphan and Abandoned Mine Sites in the Province which were the responsibility of the Crown. After initial assessment of the sites, a budget of $220 million was established. Consultants have been retained to carry out this work, and the majority of high risk/hazard sites will be completed by 2012.

Mr. Armitt also volunteers his time and engineering expertise freely. He has been a member of "Rotary" since 1990 and has served as President of the Thompson Rotary Club and the Winnipeg St. James Rotary Club. He provided leadership and design for the Pisew Falls Bridge over the Grassy River and in 1999, was awarded the Leadership Award by APEGM. Ernest has also worked closely with the local chapter of Canadian Society for Civil Engineering in the mentoring of graduates, and currently serves on the Board of the Friends of Engineering at the University of Manitoba.

Ernest is a Fellow of Canadian Civil Engineering Society, a member of the Institute for Structural Engineers (UK), a member of the Inter Provincial Territories and Federal group representing the Province, and a life member of the Canadian Institute of Mines and Metallurgy.

Ernest's efforts in maintaining high ethical and engineering standards in mentoring new graduate immigrant Engineers has resulted in career achievements for many, and the Association of Professional Engineers and Geoscientists of Manitoba is proud to award Mr. Ernest Armitt, P.Eng. the Merit award for his outstanding achievement, including the direct advancement of the engineering profession in Manitoba. ■

92nd Annual General Meeting
Awards Gala Dinner and Dance
Picture Gallery

The Royal Winnipeg Ballet School during the Awards Gala Dinner and Dance

Past President John Woods and wife Catherine at the Awards Gala Dinner and Dance

Armadillo String Quartet

Group shot: New Members Luncheon, October 25, 2011

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APEGM

www.notarius.com/APEGM

continued from page 17, Aviation

founded by Robert B. C. Noorduyn, was established in early 1933 outside Montreal, Quebec. In the later part of the 1930s, MacDonald Brothers became the supplier for the floats and the undercarriage installations. The designer of the Norseman, Robert Noorduyn had an excellent pedigree. He had been responsible for the design of the Fokker Universal, the popular utility 1920s transport aircraft that was chosen by James A. Richardson for Western Canada Airways in 1926. This selection was based on its rugged suitability for Canada's northern conditions. The Norseman design revolved around a few basic criteria: it should be an aircraft with which a Canadian operator utilizing existing talents, equipment, and facilities could make money; it should be a high-wing monoplane to facilitate loading and unloading of passengers and cargo at seaplane docks and airports; and it should be an all-around superior aircraft to those currently in use in Canada. The fact that they chose MacDonald Brothers as a supplier is evidence of the high calibre of work the plant was producing.

The need for aircraft maintenance also gave rise to the creation of Standard Aero Engine Works in 1938. This was an offshoot of the Standard Machine Works founded by Charles Pearce and William Bucknell in Winnipeg in 1911. Like the MacDonald brothers, they started to repair and overhaul aircraft engines in the late 1920s. Today it is known as Standard Aero. As the company steadily grew, so too did its reputation and nowadays it has a worldwide presence in the aviation industry. Today, it is the world's largest independent small turbine engine repair and overhaul company. Standard Aero also operates facilities in the United States, Europe and Asia as well as in Winnipeg.

The outbreak of World War II dramatically impacted Manitoba's industrial base; more so than MacDonald Brothers. First the initial Robinson Street plant was expanded and then moved to the 16 acre site at Stevenson Field (as it was known in 1940 – now on Berry Street with access to the James Armstrong Richardson International Airport) the company, (now Magellan Aerospace Limited – Winnipeg) still occupies to this day. Employment went from 100 in 1939 to 1,100 in 1945. In 1954, MacDonald Brothers sold the Aircraft Company to the Bristol Aeroplane Co. of England for a reported $3 million. It was then renamed Bristol Aerospace until the change of ownership to Magellan Aerospace Limited took place in June 1997.

From these humble beginnings the aviation industry has grown dramatically. In 2010, Manitoba based aerospace industry revenues exceeded $1.6 billion employing an estimated 5,300 persons. They work on aerospace manufacturing, and repair and overhaul, which accounts for approximately 80 per cent of industry revenues with aerospace training and services providing 20 per cent.

Today the Manitoba aviation industry is led by four world-class firms -- Boeing Technology Canada, Standard Aero, Magellan Aerospace Limited – Winnipeg, and Aveos Fleet Performance Inc. However, there are 23 other established regional and national firms as well. These companies are supported by a large number of small to medium sized aerospace suppliers including precision machine shops, tool and die makers, precision sheet metal fabricators, plating and coating operations, and electronics companies. ■

continued from page 7, Thoughts on Design

now, so there are models to examine.

Notwithstanding my whining about the definition of design, I believe the new CEAB Accreditation Guidelines are a distinct improvement. I have always contended that education is too important to leave to academics. CEAB apparently agrees with me. ■

[1] Visit http://www.engineerscanada.ca/e/files/Accreditation_Criteria_Procedures_2010.pdf for more information.

continued from page 12, Engineers Without Borders

socially conscious products like this one. To us, that's the value of RUBR — showing Canadians the power that they have to create real, lasting positive change, not through charity, but through smart, informed decisions. Public Inc. feels the same way, calling it a "win-win-win" proposition for consumers, causes and companies.

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For the original article and more of the latest EWB news, visit the national web page, www.ewb.ca. For news, events, and ways to get involved with our local Winnipeg Professional Chapter, visit winnipeg.ewb.ca. ■

In Memoriam

The Association has received, with deep regret, notification of the death of the following members:

William David Buhr
John David Hintsa
Paul E. Jarvis
Arthur Bambridge Sparling
Robert Gerald Thiessen
Erwin Weiszmann

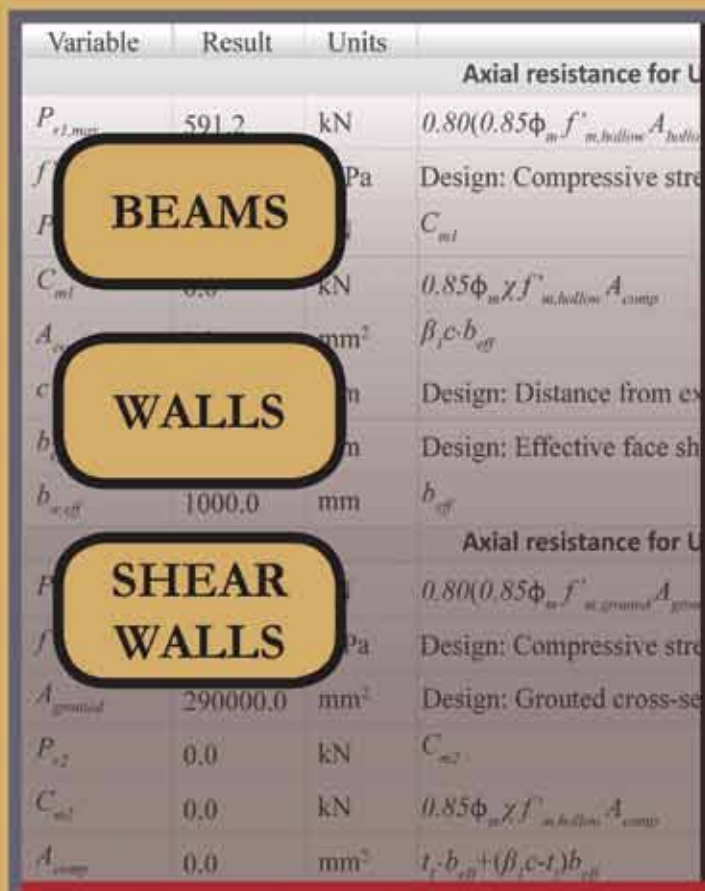
Note:

If you would like to review the council minutes, they can be found online at www.apegm.mb.ca

Masonry Analysis Structural Systems

Version 1.0

Simplify and accelerate the masonry engineering process



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NMDP would like to thank the following organizations for their significant contributions to the development of MASS™

To order copies of MASS™ please contact NMDP's authorized service provider, the Canada Masonry Design Centre (CMDC):
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Mississauga, ON L5T 2N7
Tel: 888-338-3336 Fax: 905-564-5744
mass@canadamasonrycentre.com

Canadian Concrete Masonry Producers Association
Region 6 of the National Concrete Masonry Association

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www.masonryanalysisstructuralsystems.com

editor's note:

Your comments are always welcome by the Communications Committee through commfeedback@apegm.mb.ca.

Advertising in the Keystone Professional: Advertising will generally be limited to products and services of technical or professional interest to members of the Association. They can include: engineering, geological, or geophysical services, educational products and services supporting continuing professional education and development, employment opportunities, and financial services.

The publication is produced using full-colour process (CMYK), however, Advertisers have the option to submit black & white advertisements instead.

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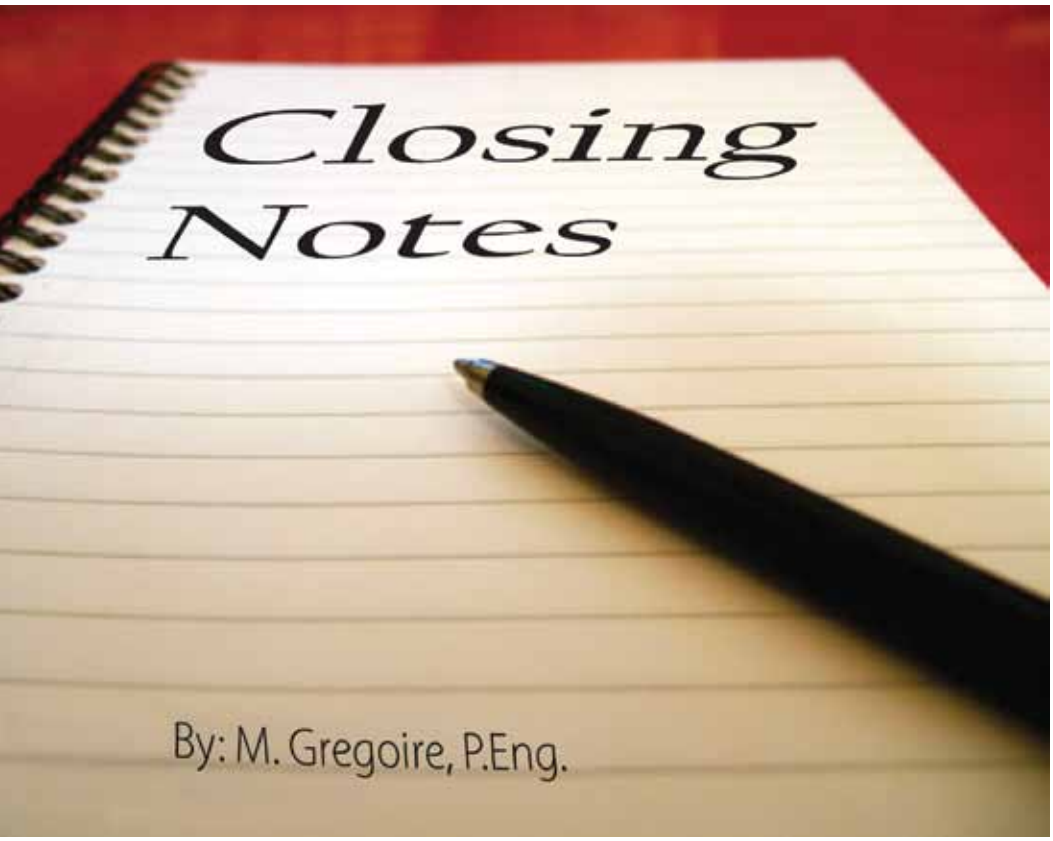
Take a Stand for Engineering Education

The Canadian Engineering Education Association will be holding its Third Annual Conference here in Winnipeg, June 17 - 20, 2012. The theme of the Conference is "Examining Future Directions in Engineering Education." Typically, groups like CEEA are populated by persons directly involved in the delivery of Engineering Education. These groups would be more effective if they were populated by persons who are interested in and/or care about Engineering Education. CEAB (the Canadian Engineering Accreditation Board) has mandated that programs accredited based on outcomes assessment. This shifts some of the evaluation responsibility away from the campus.

Consider participating, actively or passively, in this conference. The call for papers can be found on the CEEA web site <ceea.ca>.

Education is too important to leave to academics.

CEEA ACEG
CANADIAN ENGINEERING EDUCATION ASSOCIATION
ASSOCIATION CANADIENNE DE L'ÉDUCATION EN GÉNIE



Changing Disciplines

There are many people who assume that APEGM tracks the area of discipline for each and every member. We regularly get calls from engineers and lay people alike asking us for the area of discipline of a particular member. However, we cannot give an answer to this question as we do not require members to declare their area of discipline.

One of the reasons that a member's area of discipline is not tracked is that there is no easy way to define the potential possibilities. If we define areas of discipline too broadly, it lacks usefulness and ignores the many members whose expertise straddles the traditional engineering boundaries. Take, for example, a member who graduates from mechanical engineering. Defining their area of discipline as 'mechanical' doesn't tell us if they are competent in designing transmissions, robots, or building ventilation systems. Additionally, for those who design HVAC there is often a requirement to have some competency with regard to the controls for the equipment, which requires elements from the electrical discipline.

If we define areas of discipline too narrowly, it does not properly allow for scenarios where a member is competent in many of the narrowly defined possible areas of practice. For example, a member may be competent to practise in building envelope design, Part 3 code compliance design, as well as structural analysis. A member in this described scenario is likely not competent to design an entire high rise structure in an earthquake zone, but would have the ability to size a steel beam being added to an existing structure. It would be up to the member to determine when the complexity of a structural design exceeds their abilities.

Traditionally, APEGM has tracked the engineering degree that a member received in their academic training. This is the sole piece of information we have with respect to the area of discipline for a member. Until recently, this degree was included as information when a member of the public searched the APEGM directory. Now, if you have an area of discipline you'd like displayed to the public, you can log in to our website and choose one that you feel is appropriate.

Which leads us to the underlying philosophy for APEGM's approach to a member's area of discipline. Our Code of Ethics states that:

"... each practitioner shall possess the training, ability and experience necessary to fulfill the requirements of any engineering or geoscientific work undertaken..." (Canon 2.1).

At its core, this canon recognizes that each of us, as individuals, should be best equipped to determine the areas within which we are currently competent to practise.

Where the issue of competency can become a problem is in situations where a member makes a move to become competent in a new area of discipline. For many of us, we will practise in the same field of engineering for our entire career, perhaps moving into a managerial role overseeing other members that have a similar area of discipline. Occasionally, however, a member will choose to make a career move that takes them into a new type of engineering. This change can vary considerably in its difficulty. A member may choose to move within the broad area covered by their degree; for example, from software to hardware design.

A much more difficult example of changing disciplines would be from structural analysis to building HVAC design. A member competent in the former would usually be a graduate of the civil program while the latter would traditionally be a mechanical grad and, as such, the two have substantially different courses under their belt.

What renders a move like this even more difficult is the fact that there is no explicit guidance available for members. I've looked into this, and this holds true for all of the provinces. Theoretically, the member-in-training process provides a member with an overview of what it takes to be competent as an engineer.

Broadly speaking, competency is achieved through an academic foundation followed by an on-going acquisition of experience and professional development. Presumably, the 48 months of experience required of an MIT would not be required for changing disciplines, since some elements (such as supervising others or sensitivity to socio-economic considerations) are common to all disciplines. But how much academic training and mentored experience is required for changing disciplines?

The answer is highly dependent, again, on the relationship between the member's original area and the new one. This is the reason that a guideline on the topic would be a challenge to develop. We do know, however, that members have successfully accomplished this feat. If you are one of these members, please contact me so that I can take you for coffee and pick your brain, as I would love to hear the details. ■

Detach page for posting

Upcoming Events

The 2011 Flood: We're Still Working on It

The flood of 2011 in Manitoba is still on-going. While we are used to floods in Manitoba and usually they are localized events, this flood had unprecedented levels of flooding in many areas of the province. It has also lasted for a long period of time.

Preparations began in December 2010 and we are still working at it in the Lake Manitoba and Lake St. Martin area. The presentation will highlight flood forecasts and preparations, the widespread nature of the flood and its impacts, the Lake St. Martin emergency channel and flood recovery.

Organized by the APEGM Professional Development Committee.

Speakers: Doug McNeil, P.Eng., Deputy Minister of Manitoba Infrastructure; Doug McMahon, P.Eng., Executive Director of Water Control and Structures.

Online Registration available: visit www.apegm.mb.ca.

Date: January 16, 2012
Time: 11:30 a.m.
Registration
12:00 p.m. Lunch
12:30 p.m. Presentation
Cost:
$25.00
$20.00 APEGM Student Member Rate
RSVP required.
Location: Canad Inns Destination Centre Polo Park, 1405 St. Matthews Ave, Winnipeg, MB

City of Winnipeg Water Treatment Tour

Description: City of Winnipeg Drinking Water Treatment Program: from Shoal Lake to Your Tap

In late 2009, Winnipeg's new state-of-the-art drinking water treatment plant came into service – a $300 million investment to enhance Winnipeg's water quality. The plant employs dissolved air flotation (DAF) and is one of the largest DAF plants in North America. The entire treatment process was extensively pilot tested to optimize process design. This environmentally sustainable treatment plant can treat up to 400 million litres of water per day, and uses a highly automated control system. Registration is limited to 40 people and all attendees must complete a waiver for a security clearance check two weeks prior to the event.

Registration deadline: 12:00 Noon, Jan. 16.

Email umdelav0@cc.umanitoba.ca to register.

Date: January 31, 2012
Time: 1:00 p.m. - 3:30 p.m.
Cost:
$15.00 CWRA and SYP Members
$20.00 Non-Members

APEGM Student Networking Dinner

Bringing Students and Professionals Together to Strengthen the Future of Engineering and Geoscience in Manitoba

APEGM's Annual Networking Dinner is held to help encourage student engineers and geoscientsts to become more involved in their profession before graduation. The dinner features a delicious meal, a guest speaker, and activities to encourage interaction between students and professionals. The networking dinner is a great way to promote yourself and your company, and support the future of engineering and geoscience in Manitoba.

Date: February 2, 2012
Time: 6:00 p.m. Reception
7:00 p.m. Dinner
Cost: $80.00 Individual Registration
Sponsorships available
Location: Canad Inns Fort Garry, 1824 Pembina Hwy, Winnipeg, MB

Discovering the Science Behind Organic: Solutions for all of Agriculture

On behalf of the Organising Committee, we would like to extend an invitation for you to attend the Canadian Organic Science Conference and Organic Science Cluster Strategic Meetings. The conference and meetings will be held on February 21-23, 2012 in snow-sparkled Winnipeg, Manitoba, Canada.

The goal of the meeting is to provide a forum for presentation and discussion of organic research in Canada and beyond. At the Canadian Organic Science Conference and Science Cluster Strategic Meetings, leading scientists will present current advances in the field of organic agricultural practices. Information will be of interest to organic and non-organic stakeholders.

Early registration deadline is Jan. 9, 2012, and registration closes on Feb. 7, 2012. Please contact Joanna MacKenzie at jmackenzie@nsac.ca or 902-896-2249.

Date: February 21-23, 2012
Time: 5:30 p.m. Reception
6:00 p.m. Doors Open
Cost:
$195.00 Early Bird 3-Day Conference fee (reg. $250.00)
$165.00 Early Bird 2-Day Conference fee (reg. $195.00)
$395.00 Conference via Webinar
$70 1-Day Science Cluster Strategic Meetings Only (Feb. 23)
Location: Canad Inns Fort Garry, 1824 Pembina Hwy, Winnipeg, MB

Emissions Conference 2012

Proposed 2014 GHG Emission Reduction Standards for Medium & Heavy-Duty Engines & Vehicles Conference: A Canadian Perspective

Conference Purpose:

Policy-makers, manufacturers and importers of new on-road heavy-duty vehicles, engines and components; manufacturers of air conditioning units will consider Canadian strategies for dealing with the environmental, economic, and community impact of the proposed regulations outlined to limit greenhouse gas (GHG) emissions from new on-road heavy-duty vehicles for model year 2014 and beyond.

Although mirroring the rules currently being proposed by the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHSTA), the proposed Canadian rules and standards will also consider the competitiveness, safety and unique aspects of the Canadian industry.

Early Bird registration deadline: Jan. 31, 2012. Secure online registration at www.umti.ca.

Date: March 13-14, 2012
Cost:
$275.00 plus GST Early Bird fee (reg. $325.00 plus GST)
Location: The Hotel Fort Garry, 222 Broadway Avenue, Winnipeg, MB

New Members Registered August, September, & October 2011

V.O. Adindu
N.A. Agbayani
M. Agelin-Chaab
I. Akhnoukh
A.A. Ali
T.W. Allen
K.R. Axt
R.T. Belke
N. Bergeron
A.G. Bilesky
M. Birouk
C.W. Brown
H.A. Buhler
W.J. Burgess
J. Cai
M.M. Cetnarowski
R. Chan
C.W. Chiu
B.R. Cruickshank
P.P. Das
S.L.F. Devereaux
A. Franchuk
R.K. Gaebel
F.J.M. Gerrits
N.J.S. Gilbert
R.G. Gillard
S.L. Gmiterek
B. Gocmanac
J. Golini
P.E. Grieve
I.H.A. Hamid
N.R. Hampton
S.R. Hawken
S.J. He
B.R. Hughes
D. Jain
R. Kalsi
S.N. Kam
K. Karimzadegan
D.A. Keef
N.J. Kehler
J.D. Kendall
M. Keshavarzian
D.J. Khachi
L.S. Kirihen Kothalawalage
D.M. Klassen
J.C. Ko
B. Kordi
J.K. Krut
W.B. Kuffner
J.M. Langner
B.M. Lawrence
G.O. Legacion
A.K. Legary
S. Leo
X.L. Li
T.J. Lozinski
M.A. MacLean
K. Mahmood
I. Maiga
G . Martino
C.D. McKinnon
D.K. McNeill
S.C. Meatherall
J.B. Morrison
R.A. Nakka
P.L.N. Nayar
A.Nazari
M.A. Newton
N.K. Ochani
D.C. Oliver
K.J. Onofrychuk
R.D. Patel
A.L. Paveley
G.E. Peters
T. Pham
B.J. Phillips
A.G. Porter
J.M. Powell
G.T. Purdy
D.L. Ratzlaff
R.E. Robertson
E.J. Ross
I.J. Roux
T.J. Sabourin
J.A. Saldivar Vega
M.M. Scrimgeour
S.J. Sethi
D.M. Shepherd
C.B. Singh
B.D. Sjoberg
J.D. Sneath
K.D. Sproll
B.R.J. Symaka
A.J. Thielmann
K.D. Thiessen
R.N. Thompson
J.T. Towle
C.D. Urbinsky
I.A. Urquhart
Q. Wang
M.D. Whelan
N. Wilcken
T.W. Woloshyn
D.C. Yu
J.A.W. Zimmer
C. Zorbas

Members-In-Training Enrolled August, September, & October 2011

B.K. Adu-Quaye
T. Alemaio
J.H. Ashdown
D.A. Balcha
J.J. Baptiste
A.W.D. Bell
R.B. Bowles
R.S. Brar
M.A. Calpito
J.H. Choi
M. Choi
G.F. Clements
A.M.M. Cruickshank
J.A. De Castro
A. Drivas
D.A. Duncan
E.T. Duroni
K.E. Egilson
S.V. Elimban
F.L.A. Ermitanio
A.M. Evans
F.A. Fattal
S.J.B. Foord
Y. Fraiter
P.K. Glowacki
R.C. Gryba
M.A. Guberman
L.J. Guzman Quinonez
S. Habib
L.K. Hadi
M.L. Hebert
D.P. Hinton
J.M. Hughes
M.O. Iarovoi
Z. Jefic
E.E. Jordaan
N.K.M. Juzkiw
S. Kaushal
N.J. Kehler
M.W. Khan
V. Khan
L.W. Kitchen
E. Lam
N.H. Le
J.D. Leachman
T. Litvin
H. Liu
J. Liu
Q. Liu
Y. Liu
S.E. Lyons
E. Madrid
C.L. Mahoney
J.J.K. Mak
A. Mani
J.E. Marsh
M.R. MirRashed
K.J. Mozdzen
D.C. Nychuk
M.D. O'Sullivan
V.I. Okhmatovski
M.C. Olson
A.E. Ostroman
A.L. Papiona
M. Pawluk
T.D. Peters
T.J. Piche
L.K. Pisiak
S.J. Plett
E.A. Pritchard
S.A. Qually
R. Ramchandar
S.S. Randhawa
S. Sathyan
T.R. Schick
L.A. Schwab
S. Shahidinejad
M.A. Singer
R.O. Siram
M.D. Skinner
I.H. Southern
R.R. Sugden
T.B. Sutherland
R.J. Tarrant
N.A. Thiessen
S.L. Toth
A. Uprety
A.A. Velasco
C. Wang
G.E. Wellwood
A.K. Wilcott
A.R. Winkelmeyer
S.G. Wruth

New Licensees Enrolled August, September, & October 2011

J.E.Fee
D.A. Manglorkar

Certificates of Authorization August, September, & October 2011

1094134 Alberta Ltd.
1685177 Ontario Ltd.
Arcon Engineering Consultants Ltd.
Atkinson Engineering Inc.
Ausenco Engineering Canada Inc.
Behlen Industries LP
Bindle Engineering Limited
Boise Alljoist Ltd.
Chimax Inc.
Colleaux Engineering Inc.
Cyntech Canada Inc.
Cyntech Services Inc.
Donald Keef and Associates, Inc.
DST Consulting Engineers Inc.
E-MISSION FREE INC.
Enercore Projects Ltd.
ESTI Consultants Inc.
Haywood Concrete Products Ltd.
IBI Group (Canada) Inc.
ITEC Systems Design Ltd.
Jain & Associates Limited
KOVIT ENGINEERING LIMITED
Montufar Group
Niels Wilcken Consultants Inc.
Northwest Hydraulic Consultants Ltd.
Outotec Canada Ltd.
Peck Geoscience & Exploration Corporation
RDL Engineering Services
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