THE KEYSTONE PROFESSIONAL

Summer 2011

Inside this issue:

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MANITOBA EMERGENCY PREPAREDNESS

How Do We Handle Emergencies in Manitoba?

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

THE KEYSTONE PROFESSIONAL

SUMMER 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.

3 President's Message
4 Engineering Philosophy 101
5 Executive Director's Message
7 Thoughts On Design
9 Engineers Canada CEO Message
10 Engineers Without Borders - New Partnerships
13 Electronic Seal
25 Upcoming Events

FEATURES

14 Engineers Canada Awards 2011
16 Are You Addicted?
18 Manitoba Emergency Preparedness

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Bill Girling, P.Eng.
President's Message

Reflections on the Constituent Associations

As I am now more than halfway through my tenure as the President of APEGM, I thought it may be an appropriate time to reflect on some of the observations I have made from visiting other constituent Associations in our neighbouring provinces.

I attended my first Engineers Canada meeting in February. Engineers Canada is sort of like the "mother ship" for the provincial engineering and geoscience associations; in addition to being the voice of its constituent associations in national and international affairs, Engineers Canada coordinates the development of national policies, positions and guidelines on behalf of the engineering profession.

At the Constituent President's meeting I could share common concerns and issues with other presidents from our sister associations and it was here that I recognized that there is a need for more communication about the role of Engineers Canada to APEGM Council and its membership. Over the next few months Council will discuss how we can achieve this.

Some other observations I took away from the two Annual General Meetings I attended for sister associations so far were as follows:

At the Alberta meeting (APEGGA) in April, after I got over the fact that they have a whopping 60 thousand members, I realized that the format and content of their three-day event is very similar to our one-day event; bigger and somewhat glitzier, but otherwise the same. One major difference in Alberta is the manner in which they deal with serving multiple regions within the province; Council meetings are rotated between Edmonton and Calgary, however other meetings are held in Fort McMurray, Lethbridge, Medicine Hat, etc. to serve the large numbers of members that work in each of those areas.

At the Saskatchewan meeting (APEGS), I heard about several initiatives that were very similar to some of the issues we are dealing with at Council, including the implementation of an electronic reporting system for continuing professional development and the introduction of electronic balloting. APEGS has seen an unprecedented growth in mobility membership over the past several years largely fuelled by oil and gas exploration coupled with the ongoing potash industry.

For now, let me say that I am very proud to represent APEGM at these national events; not just to bring greetings on behalf of our Association but because I take away something from every meeting. APEGM is well respected across Canada despite being one of the smaller provincial Associations per capita. I will no doubt learn much more over the second half of my term as president and will no doubt have more reflections to share with you in the next edition of the Keystone.

Any correspondence for the current President can be sent to president@apegm.mb.ca. ■

NOTICE

Annual General Meeting

The 2011 Annual General Meeting of the Association of Professional Engineers and Geoscientist of the Province of Manitoba will be held on Friday, Oct. 28, 2011 at the Fort Garry Hotel, 222 Broadway, Winnipeg, MB.

NOMINATIONS FOR ELECTION TO THE APEGM COUNCIL

The Nominating Committee of APEGM requests recommendations from members and members-in-training for nominees who they consider to be qualified to participate in the governance of the Association and who are willing to so serve the engineering and geoscience professions in Manitoba. There will be four professional engineer positions and one professional geoscientist position to be filled as of October 2011.

The Committee will consider recommendations received by the secretary up to the close of business on Friday, Sept. 16, 2011. In the event insufficient recommendations are received, the Committee may exercise its prerogative to put forward a slate of candidates for election that is equal to the number of positions to be filled. Persons submitting a recommendation are required to obtain the consent of the professional member being recommended and to provide a curriculum vitae or biographical sketch.

continued on page 6

Engineering Philosophy 101

...innovation

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

Canadian industry is constantly being admonished for its lack of innovation. Governments at all levels wring their hands over this shortcoming. Apparently they "know" that the lack of innovation is a problem, but engineering doesn't seem to fit into their solution.

The situation is not new. In February 2002, the federal government issued Canada's Innovation Strategy entitled "Achieving Excellence." Dr. Tom Brzustowski did a word search of that document's Executive Summary. "Innovation" appeared 63 times, "research" 18 times, "science" 10 times, but "engineering" and "design" were not mentioned. Apparently, as of 2002, research and science were seen as the foundation upon which the government intended to build.

> "Research is not enough; we must innovate. Knowing is not enough; we must innovate."

In a Jan. 12, 2011 feature in the Edmonton Journal, Peter Hackett, the former President and CEO of "...a now-shuttered endowment fund called Alberta Ingenuity" spoke out with respect to Canada's ongoing dismal innovation record. He didn't offer solutions, but he did note, as many have before him, that "...Canada ranks 25th out of 25 developed countries in the creation of PhDs." This statement implies a link between innovation and the production of PhDs. Therefore Hackett, like the recently released Canada's Strategy for Partnerships and Innovation, continues to accept the assumption that more research, done by more PhDs, is the basis upon which innovation can be improved.

If research is the basis for improved innovation, maybe the alternative to simply increasing the quantity is to examine the quality. However, when you compare per capita Canadian research output, from both quality and quantity perspectives, this is clearly not the case.

So, if we accept the studies that indicate our current research "excellence" is comparable with most of our international competitors, does this support the conclusion that more research, with more people doing it, is the silver bullet? Specifically is the creation of more PhDs, and delivery of more research, the vehicle we need to stimulate innovation? Or, is research simply necessary as an innovation stimulant, but not sufficient?

Before going any further, it is important to clarify the meaning of some of the terms that are being tossed around. By dictionary definition, the verb research, means 'to discover or verify information to be presented in (a book, program, etc)." As a noun, it means "the systematic study of materials and sources to establish facts and reach new conclusions." Both definitions suggest discovery, not creation. It seems logical to conclude that research increases available information but it stops at that point.

On the other hand, innovation is presumably, the result of innovating. The former is a noun that means either "...a new device or process created by study and experimentation or the creation of something in the mind." The latter, innovate, is a verb meaning "introduce new methods, ideas, or products." These definitions suggest that innovation implies doing something different. In other words, using what we know in a different way.

In 2000, Thomas Homer-Dixon, a Political Science professor at the University of Toronto, published The Ingenuity Gap. The book's subtitle, *Can We Solve the Problems of our Future?* sets the tone of his thesis. He defines ingenuity "…as ideas that can be applied to solve practical technical and social problems." Through more than 400 pages of text and an extensive list of notes he speaks positively of engineers and our potential to address his "ingenuity gap." Apparently the authors of Canada's Innovation Strategy either hadn't read, or didn't agree with the conclusions in Homer-Dixon's book.

Leonardo da Vinci has been quoted as saying, "I've been impressed with the urgency of doing. Knowing is not enough; we must do. Being willing is not enough; we must do." Based on the definitions of research and innovation, would it be fair to modify de Vinci's statement to read: I've been impressed with the urgency of innovating. Research is not enough; we must innovate. Knowing is not enough; we must innovate. Given the Canadian Academy of Engineering's submission to the 2011 Federal Expert Panel on Research and Development (http://rd-review.ca/eic/site/033.nsf/eng/00240.html) I feel certain they would agree with this modification.

And if innovation is about "new and different," isn't it also about engineering and design? Is it reasonable to suggest that an increased focus on the "D" part of Research and Development has the most potential to improve Canadian innovation? ■

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

Nothin' or Negative?

A comment from a member at the Continuing Professional Development (CPD) info meeting caused me to think about my own membership file. The member spoke up during the question and answer time and said: "I really like what you've shown us tonight. This program gives everyone the opportunity of entering what they are doing in their professional practice. Finally, we can show all the good stuff we are involved in." It was a very positive comment from a member who has been practicing for many years.

THE FILE SAYS NOTHING

Without some way of reporting all the good things being done by a member in their professional practice, the only record in a members file is nothing or negative. Huh? What do you mean: nothing or negative? The typical member file has the application documents, experience reports, reference letters, and letter of registration. These are general documents of a historical nature. They don't really tell anything about the member, other than a brief snapshot of a person at the time of their registration. The file says "nothing" about what the member has done in the years of professional practice since they entered the profession. For a few members, there may be a letter of reprimand or disciplinary order in their file. A letter of reprimand comes as a result of a complaint investigation. This is an example of a negative record.

NOTHING OR NEGATIVE

Without a CPD reporting program, the only thing in a member's file is "nothing or negative." You either have the basic documents which say nothing about your professional practice or you might have a negative record. If the Registrar were called to give testimony on your behalf and the judge asked: "Mr. Registrar, can you please tell us about Mr. Engineer?" I would have to say: "I looked in his or her file and it showed the usual registration documents and that's about it." But with a CPD reporting program I could testify on the member's behalf – telling a positive history of professional practice and personal track record of continuing competency (as evidenced in the annual CPD reports).

MEMBERS MEETING

President Bill Girling and the CPD Task Group were pleased to host 86 members at the CPD info session held on Apr. 27 at the APEGM office. It was standing room only as Councillor Don Spangelo and I scrambled to pull extra chairs from offices while Mike Gregoire opened the wall on McKinley B to expand the space.

After 30 minutes of slides and explanation by President Bill Girling and Mike Gregoire, questions from the floor were received until about 8:30 PM. Despite one member who tried to dredge up fears from the failed 1998 CPD proposal, many positive comments were made during the Q & A time. It was obvious from conversations during the social hour after the meeting that many members were glad they attended and heard something to convince them that the new CPD program is realistic, practical, and good for the profession.

Your feedback is invited and always welcomed. If you have any comments on this topic, please input them on the Members Forum of the APEGM website, email me at gkoropatnick@apegm.mb.ca, or message me through Facebook. ■

continued from page 3, Notice

Members can also be nominated directly and be on the ballot for the 2011 election by the completion of the prescribed nomination form. The form can be obtained from the Association office or from the website at www.apegm.mb.ca/NominationsForCouncil.html. The consent of the nominee must be obtained.

Members of Council whose term of office continues for another year are:

Rajib Ahsan, P.Eng.; Bill Girling, P.Eng. (will continue as Past-President); Rick Lemoine, P.Geo.; Adam Pawlikewich, P.Eng.; Doina Priscu, P.Eng. (President-Elect); Roger Rempel, P.Eng.; Don Spangelo, P.Eng.

Members of Council whose term of office expires at the 2011 Annual General Business Meeting are:

Alan Aftanas, P.Eng.; Dawn Nedohin-Macek, P.Eng.; Raymond Reichelt, P.Geo.; John Woods, P.Eng.

BY-LAW CHANGES

By-law 17.1 prescribes that any proposal to introduce new By-laws, or to repeal or amend existing By-laws, must, unless initiated by the Council, be signed by not fewer than six members. Proposals must be given to the secretary at least 42 days before the meeting. In this case, the date for the receipt of a proposal is Friday, Sept. 16, 2011.

RESOLUTIONS

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

Grant Koropatnick, P.Eng.
Secretary

APEGM is asking members to promote the **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 pivitol to the ongoing success of the awards program, and to ensure that Manitoba's most worthy professional engineers and 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 assumptions

Almost every design project has, at its base, one or more assumptions. They are the foundation upon which you can begin to move from problem to solution. Life would be simpler, and more boring, if problems always came with a full list of facts and constraints so the analysis could be precise and complete. But that only happens in fundamental engineering science courses in the early years of undergrad education. Out there in the real world, things are a bit more complicated.

Back in those undergraduate days we all learned (well, we were all told) that the strength of materials theory is founded on the assumptions that the materials are isotropic, linearly elastic and homogeneous. The problem with these assumptions is that they are an idealization that cannot be realized. Once we have accepted this reality, the theories can be utilized, and modified, to fit real situations. In other words, the base assumptions may be wrong, but used with discretion, they are still a useful tool.

To a certain extent, an assumption is little more than a belief. Its strength is that it provides you with a place to start without the necessity of actually being true. Its weakness is that repeated use or excessive rationalization can make it seem to be true. In the cases of religion or politics, belief can lead to debate. At times design assumptions can also cause disagreement.

Most assumptions provide boundaries within which we can operate. They provide a way to simplify a complex situation or create boundaries within which we can work. They are a familiar tool that we use in design every day. However, that familiarity can lead to problems.

Subsequent analysis of the Mar. 11, 2011 earthquake and tsunami in Japan has brought a series of assumptions to light. We all saw videos of the actual events and their physical consequences. We all saw pictures of the nuclear power station with the ominous clouds emerging from the containment buildings. Miraculous rescues, grief stricken and/or resilient survivors, apologetic authorities and international experts became regular newscast features. But only in the engineering press did people start pondering the assumptions, both good and bad, that provided the foundation for design and construction many years ago.

The first of the "what were they thinking" questions was "why would they put a nuclear power plant in that location?" Obviously the answer to that is the Japanese design engineers assumed they could design and build a system that would survive a major earthquake. In retrospect, and considering only the structural performance, this was a good assumption. Until the seawalls were overtopped and the impacts of the tsunami were experienced, the reactor building/system survived.

However, the seawalls were overtopped. Clearly the engineers responsible for that system based their design on some assumed maximum tsunami magnitude. But assumptions respecting natural occurrences are based on best available historical data and statistical probabilities.

They are a best guess as to what we might experience. So maybe it is unfair to call the design assumption wrong and simply accept the risk inherent in attempting to predict nature.

The initial tsunami effect was to destroy the electrical distribution system. Clearly the engineers had assumed the seawall would provide the necessary protection for the area, including the electrical distribution system. Someone did, however, assume that some sort of electrical outage could occur and they installed backup systems to deal with such an occurrence. Unfortunately the backup systems were installed at ground level. This placement was a good assumption with respect to earthquake resistance, but a bad assumption with respect to the potential impact of an unanticipated tsunami. If the tsunami had not occurred, or if the seawall system had been adequate, the reactor structure would not have been compromised.

From the perspective of the general public, the problem was that the atomic reactors began to over heat because there was no electricity to operate the pumps that were needed to provide adequate cooling water replacement. Without adequate cooling water the reactor began to overheat and a partial melt down began. Steam build up led to explosions causing structural damage to both the reactors and the containment buildings and ultimately allowing release of radioactive materials.

Actually the assumptions that led to the melt down were made many years earlier at GE when the original reactor designs were carried out. The reactors were assumed to be safe as long as the rods were covered with cooling water. It was assumed that cooling water could

continued on page 23

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Associated Engineering is a leading, employee-owned, Canadian consulting engineering firm. One of Canada's most stable engineering companies, we have provided multi-disciplined engineering services for over 60 years. We specialize in the water, infrastructure, environmental, energy, asset management, transportation, and building sectors. At Associated Engineering, sustainability is part of every project we work on, as well as the way we run our business. Our selection as one of Canada's 50 Best Managed Companies recognizes the company's corporate responsibility, business performance, growth, innovation, and dedication to staff development and wellness.

We continue to experience growth in all our offices, and have immediate openings for the following positions:

Asset Management Specialist - All Offices
Senior Bridge Engineer - Burnaby, Edmonton
Bridge Rehabilitation Specialist - Burnaby, Edmonton
Transportation Planner - Burnaby
Senior ITS Specialist - Burnaby, Edmonton
Reliability & Safety Engineer - Burnaby, Edmonton
Infrastructure / Municipal Planner / Engineer - Toronto, St. Catharines, Kelowna, Edmonton, Fort McMurray, Medicine Hat, Prince Albert
Infrastructure / Municipal Design / GIS Technologists - Toronto, St. Catharines, Burnaby, Langley, Fort McMurray, Edmonton
Infrastructure Project Manager - Toronto, St. Catharines, Burnaby, Langley, Kelowna, Lethbridge, Calgary, Edmonton, Fort McMurray, Saskatoon, Regina
Municipal Program Management Specialist - St. Catharines
Structural Engineer - Whitehorse
Water & Wastewater Engineer / Project Manager - Regina, Calgary, Edmonton
Water Resources Practice Leader - St. Catharines, Calgary, Saskatoon
Water & Wastewater Process Engineers - All Offices
Trenchless Technology Specialist - All Offices

Visit our website at www.ae.ca for more information on these and other positions in our offices.

Associated Engineering offers the opportunity to work on challenging projects and a comprehensive continuing professional development program, all encompassed in an energetic and dynamic environment that promotes flexibility and work-life balance.

Please submit resumes in confidence to: Ms. Karen Kinakin, Suite 300 - 4940 Canada Way, Burnaby, BC, V5G 4M5 Email: kinakink@ae.ca, Fax: 604-291-6163. We thank all applicants, but will only contact those candidates selected for an interview.

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Associated Engineering is an equal opportunity employer.

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

Engineering Research and Development

Engineers are behind the innovations that help keep you healthy longer, create roads and bridges that transport you where you need to be, and design products for your entertainment and quality of life. Engineering is a key component involved in all stages of research, development and design, and engineers are well-positioned to provide expertise on new technologies, especially in developing controls to ensure public safety.

As part of this commitment to public interest, Engineers Canada has initiated dialogue with the federal government. We believe the government has a role to play in creating conditions for successful collaboration with business, academia, professionals, and other stakeholders in enhancing research and development (R&D) and innovation in Canada. A federal strategic approach to fostering R&D through direct investment and providing appropriate support for business and commercially oriented R&D is a valuable and necessary contribution to the R&D sector.

We recently submitted a response to the federal government's review of support for R&D programs. Our recommendations to government are: direct programs to specific R&D areas; streamline the delivery of existing programs; remove barriers to commercialization and technology transfer; continue to advance foreign qualifications recognition; and put measures in place to maximize talent and knowledge input.

Engineers Canada's most recent labour market study suggests that qualified domestic and foreign graduates will both be required to meet the engineering needs of a competitive economy over the next decade. Canada must remain diligent in recognizing foreign credentials so that skilled newcomers can contribute not only to a strong R&D sector, but to a prosperous society. Engineers Canada and the engineering profession have been working hard at this for more than a decade and are considered leaders in their approach to foreign qualifications recognition. We've asked government to streamline processes to make it easier for Canadian institutions to have access to facilities and to attract funding and foreign researchers necessary to continue performing their work and to bring innovative products to market.

Another way of supporting R&D and innovation in Canada is by supporting upcoming generations of engineers. As I mentioned in my previous message, Engineers Canada and the constituent associations are very involved with future engineers though our support of the Canadian Federation of Engineering Students and programs that encourage younger students to pursue engineering. Recently, we launched our updated National Engineering Month website, which provides a premiere hub for students to learn about engineering and the exciting career options engineering offers.

We all have a responsibility to encourage young Canadians to pursue fields of study that are integral to a strong and productive R&D sector. Governments at various levels must work to ensure that youth are getting a strong foundation in science, technology, engineering and mathematics to help them become leaders for the next generation of engineers and in R&D and innovation. I was pleased to see recent comments by the government suggesting a renewed commitment to supporting science, technology, engineering and mathematics education, which will be so important to attracting talent. Supporting this fresh talent is vital to future R&D in Canada and to our prosperity.

Engineers Canada will continue to engage and encourage the federal government to explore ways to improve on Canada's current R&D sector and develop long-term approaches for sustained growth and prosperity. ■

In Memoriam

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

Peter A Cain
John Martin
Patrick George Mackley
Alfred Dean Gould
Andrew Staudzs
Benjamin Edirmanasinghe

engineers without borders
ingénieurs sans frontières
Canada

New Partnerships

Engineers Without Borders has developed a partnership with TransCanada, a North American energy infrastructure giant. The corporation will give a $300 thousand donation to EWB over three years, but that isn't the most exciting part of this partnership. It will also link TransCanada and EWB together for the next three years in support of a rural agricultural project in the country of Ghana by sending six employees each on a six month paid secondment.

This is the first time that a corporation has provided both project funding and long-term seconded employees toward an EWB initiative in Africa. It will create opportunities for both organizations - EWB will be able to supplement its already talented volunteer base with experienced professionals from one of Canada's leading employers, while TransCanada will be able to offer its employees a unique growth opportunity.

"I'm very excited about this partnership with Engineers Without Borders," says Russ Girling, TransCanada's president and CEO. "It really fits our culture and our skills. We are problem solvers and innovators and this allows us to share what we do best with others who really need our help. The desire to invest in a project while providing skill-based leadership to TransCanada employees was something the company had been searching for."

In West and Southern Africa, EWB volunteers are working on projects that improve access to clean water, provide critical infrastructure, increase farmers' yields and support business opportunities for entrepreneurs. In Northern Ghana, EWB is helping shift rural farmers from farming for survival, to farming as a business. By building the business skills for rural farmers and addressing market-level challenges, EWB has great potential to create lasting change all across Ghana.

"We are very pleased about the partnership between Engineers Without Borders and TransCanada," says George Roter, CEO of Engineers Without Borders. "It's an opportunity to bring the skills of industry-leading professionals to our team on the ground in Africa, and also an opportunity for those professionals to gain unique experience and enhance their capabilities. It really is a win-win, and we hope it's the first of many such engagements."

RUN TO END POVERTY

Four years ago a unique movement called the Run to End Poverty was created through the initiative of an EWB volunteer in Ghana, West Africa. The run was an international half-marathon, with participants in Tamale, Ghana, and also half a world away in Montreal, Quebec. Since then, the Run to End Poverty has raised over $100 thousand to support EWB's capacity-building efforts with its partner organizations and communities overseas.

The Run to End Poverty has spread to eight Canadian cities, and will take place for the first time this year in Winnipeg. It is not an event, but rather a team. The team consists of runners in a major marathon event in each city, in our case, the Manitoba Marathon, who are training together and working together to raise awareness of extreme poverty and raise funds for an EWB development initiative in Africa.

Anyone who is participating in the Manitoba Marathon is free to join the Run to End Poverty team and help EWB build local capacity in Africa and create positive change. To make it more interesting, the Corporate Challenge allows runners from different companies to go head to head to see which office can log the most training kilometers and raise the most money. If you would like more information, or to learn how to join the Run to End Poverty, please visit their website at www.runtoendpoverty.ca.

The winning team at the 2011 EWB Bonspiel – Powerhouse

CURLING BONSPIEL

In March, the second annual Engineers Without Borders Curling Bonspiel took place at the Grain Exchange Curling Club. Over 60 Manitoba engineers, or their friends and family, came to the fun and friendly tournament. There were seasoned curling veterans, beginners, and everything in between. Everyone came away with a little more experience and some new friends, connections, or at least a good memory. In addition to being an enjoyable Saturday morning and afternoon, the event raised over $1,300 in support of EWB to send a volunteer overseas. Thanks to all the participants and to the generous prize donors—see you in 2012!

For more information about other upcoming local events, check out our EWB Winnipeg Professional Chapter Facebook page, send us an email at winnipeg@ewb.ca or go to our newly redesigned website: winnipeg.ewb.ca. U of M students can check out the EWB Manitoba Student Chapter: umanitoba.ewb.ca. ■

2011 Provincial Engineering and Geoscience Week

This year, Provincial Engineering and Geoscience Week (PEGW), part of the larger National Engineering Month, was held the week of Mar. 7-13 in Manitoba. The main objectives of PEGW are:

- to promote engineering and the geosciences as career choices,
- to celebrate Manitoba's excellence in engineering and geoscience,
- and to draw attention to the vital role engineering and geoscience play in the daily lives of Manitobans.

The 2011 PEGW activities were kicked off by the APEGM Westman Chapter in Brandon. The Westman Chapter, in association with the U of M Faculty of Engineering, hosted a Spaghetti Bridge Competition at the annual Brandon Career Symposium, which took place Mar. 7-9 at the Brandon Keystone Centre. The Chapter reported that 80 students participated in the Spaghetti Bridge Competition, and many spoke about engineering as a profession.

The 2011 PEGW activities in Winnipeg were once again held at Kildonan Place Shopping Centre, on Saturday and Sunday Mar. 12 & 13. Visitors to Kildonan had the opportunity to meet and speak with professionals at a number of displays featuring engineering or geoscience activities in Manitoba.

Saturday featured the annual Spaghetti Bridge Competition, a fun 'hands-on engineering' event for students, teachers and parents. Bridges are built entirely of regular spaghetti and white glue and must meet specific constraints to qualify for the $1000 in prizes available for Grade 1-12 students. Each bridge submitted is tested to destruction to determine the maximum load it can bear. This was the second year that APEGM pledged to match the cumulative weight supported by all entries in the competition with a donation of pasta to Winnipeg Harvest. A total of 92 bridges were submitted for testing. These bridges held a cumulative load of 4262.35 kg or 9377 pounds, resulting in a matching donation of pasta to Winnipeg Harvest.

- Matthew Lehmann, a Grade 7 student at Niakwa Place School, set a record when his bridge held an astounding 243.05 kg (534.7 lbs) to win the Grades 7-12 Grand Prize of $200.
- Branden Landgraff, a Grade 6 student at Henry G. Izatt Middle School, won the Grades 1-6 Grand Prize of $200 with a bridge that held 151.22 kg (332.7 lbs).

Additional Grade 1-6 winners were from the following schools:

- George McDowell School - 2 winners
- École Nöel-Ritchot
- Bairdmore School
- Woodlawn School (Steinbach) - 2 winners
- Other Grade 7-12 winners were from the University of Manitoba Kid-Netic Girls Club, École Charleswood, Oak Park High School and John Taylor Collegiate with winners of 3 grade levels.

It should be mentioned that John Taylor Collegiate's 35 entries held a total of 4845 lbs - almost 52% of the total donation to Winnipeg Harvest. Well done, Pipers!

On Sunday, Kildonan Place's Centre Court featured various children's activities to give children and parents an opportunity to have fun and explore the activities of engineers and geoscientists. Volunteers assisted children in building gum-drop structures, straw bridges, and testing "floating concrete," while making them aware of some of the things that engineers and geoscientists do.

APEGM would like to thank Kildonan Place, along with all of the volunteers who helped make this year's PEGW activities a success. ■

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- ✓ **ConsignO:** ConsignO is software designed to streamline the signing process of PDF files, thereby saving you time and money. With this solution, a hundred documents can be signed in less time than it takes to print them!
- ✓ **Your APEGM Digital Certificate:** This digital certificate is the key to your identity and professional title designation. It confirms that you are the author of your electronic documents and protects their integrity.

If you create or send PDF documents to your customers, having a digital signature protects your documents and saves time.

APEGM

Electronic Seal

Blair Mukanik
Member, APEGM Professional Development Committee

To clarify, this is not an article on animatronics - the electronic seal is the virtual version of the stamp-applied seal currently/historically used by engineers. The electronic seal is currently a legal method of sealing a document - APEGM owns the seal and contracts Notarius (a non-profit organization) to facilitate members using it. This article summarizes the Mar. 15 Professional Development luncheon where Marc St-Jacques of Notarius explained the new technology.

The event was well attended and - from the number of questions raised - it is clear that the technology has generated apprehension, skepticism, and confusion - even FEAR. Many attendees were on the edge of their seats in anticipation of asking their question of the speaker. Marc remained after the event to answer many questions; for those of you who did not attend, I hope this article will answer some (general ones) of yours.

Why would someone want to use an electronic seal?

1. Because there would no longer be the requirement to maintain paper copies of documents for legal purposes. Provided a paper copy is not required at all for some other reason, money is saved on paper, printing and postage.
2. Many drawings (after being appropriately reviewed) can be sealed at one time. Sure, applying an ink seal doesn't take long, but for a stack of drawings, the act is unnecessarily repetitive - even strenuous to one's writing hand.
3. The validity of an electronic seal can be verified by Adobe software. Hence companies receiving documents from a consultant can quickly/easily verify that they have been sealed by a member-in-good-standing.

Now that you may be thinking, "I could make use of this," but also "why should I trust this," the following are reasons why the technology is secure:

a) A member must have three things in order to apply their seal: an electronic version of their stamp, a token of their identity, and a password.

b) The document encryption is based on the content, so if even a single pixel has been altered, it will be clear when one attempts to verify authenticity. This ensures the original content of the entire document, not just the page that has been sealed.

c) Verification that the member applying the seal is in good standing is performed at the time the seal is applied - contrary to a stamp, which can be applied as long as it is in the member's possession.

Finally, now that you trust the technology and just can't live without it, how much will it cost you?

Again, Notarius is non-profit and the cost will vary in time - the more people who subscribe to the service, the less expensive it likely will become. The current cost involves a one-time fee of $140 (plus taxes), and an annual fee of $195 (plus taxes).

From the perspective of an EIT who has never used a stamp - but who has witnessed the difficulties encountered in having to file paper versions of every stamped document - I believe this technology can make a significant impact in the efficiency of many engineering offices; good luck to those of you who adopt it.

For more detail, see "Entering Fully into the Digital World" by Michael Gregoire, which appeared in the Spring 2011 Keystone issue, or visit Notarius online at www.notarius.com. ■

ENGINEERS CANADA AWARDS

PRIX D'INGÉNIEURS CANADA

Engineers Canada Awards

Presented annually since 1972 to recognize outstanding Canadian engineers, teams of engineers, engineering projects and engineering students, the Engineers Canada Awards highlight engineering excellence, as well as the contributions of Canadian engineers to their profession, their communities, and to the safety and well-being of Canadians.

Gold Medal Award
Yusuf Altintas, PhD, P.Eng., FRSC

Professor Yusuf Altintas is recognized worldwide as the leading authority in the field of machining and machine tools. He has contributed significantly to manufacturing engineering literature with the highest citation record in the field, particularly his theory of kinematics and chatter vibration stability milling. He is the founder and president of Manufacturing Automation Laboratories, which distributes practical application of his state of the art research to more than 140 companies and universities worldwide. Professor Altintas's passion for machining technology, and his dedication to the manufacturing industry, has inspired hundreds of researchers, engineers, and students around the world to dedicate their careers to machining technology.

Young Engineer Achievement Award
Kevin Riederer, P.Eng.

Canadian structural design engineer Kevin Riederer has experience in the design and construction of low-rise to high-rise in both steel and concrete materials. What distinguishes Kevin from his peers is the dedication he displays for supporting and enhancing his profession. Actively involved in his professional community, he is the founder of the Structural Engineers Association of British Columbia's Young Members Group, past-chair and treasurer of APEGBC Vancouver Branch, and is currently an active member of the APEGBC Nominating Committee. Mr. Riederer's outstanding contributions to both his profession and the public mark an impressive start to what promises to be an influential career.

Award for the Support of Women in the Engineering Profession
Sherry Sparks, FEC, P.Eng.

The City of Moncton, New Brunswick's first female director of building inspection, Sherry Sparks, was also the first woman project engineer for Marine Atlantic and the first woman regional engineer for the New Brunswick Department of Supply and Services. She is currently vice-president of the Atlantic Region for the Canadian Society of Civil Engineering and past-president of Engineers and Geoscientists New Brunswick. Her high-profile academic career focuses on one key issue: the advocacy of women's involvement in the engineering profession. She is an inspiration to the next generation of women looking for a rewarding career and a way to improve the lives of their fellow citizens.

Gold Medal Student Award
Erica Barnes

Erica Barnes is a 2011 graduate of civil engineering at McMaster University with a focus on structural engineering and society. She has demonstrated a commitment to sustainability and a passion for restoration and global engineering. Ms. Barnes has served as chapter president and junior fellow in Africa with the McMaster chapter of Engineers Without Borders Canada. Due in large measure to her leadership, the McMaster chapter was recognized nationally as the 2010 most improved chapter and 2011 chapter of the year. Ms. Barnes is also involved in a number of activities to increase engagement and leadership skills among Engineers Without Borders members and other students. The Engineers Canada Gold Medal Student Award comes with a $10,000 scholarship.

National Award for an Engineering Project or Achievement
Project: Canada Line Rapid Transit Project

The Canada Line is the newest addition to Metro Vancouver's transportation network. Running approximately 18.5 kilometers, the automated rapid transit line features 16 stations, three water crossings, and elevated, at-grade, and underground track sections. The line connects Vancouver International Airport with the city of Richmond and downtown Vancouver. The project's multidisciplinary nature required strong management and effective integration. The SNC-Lavalin team, led by executive vice-president Jim Burke, P.Eng., delivered the Canada Line almost four months ahead of schedule and on budget. The project's success is lasting proof of the value of engineers and engineering in society, when ingenuity is mixed with effective design and project management.

Medal for Distinction in Engineering Education
Edwin Nowicki, PhD, P.Eng.

Serving as a mentor and advisor, Professor Edwin Nowicki has consistently demonstrated his commitment to student development. Over the years, Dr. Nowicki has also made presentations to high school students promoting engineering as a career. He has shown a passion for leadership education, seeking to empower engineers to play a leadership role in their profession. Professor Nowicki has a passion for developing the future engineers that Alberta will need. He has been recognized as an educator for his contributions to the student expiernce.

Meritorious Service Award for Professional Service
Darrel J. Danyluk, FEC, FCAE, P.Eng.

Darrel Danyluk has been a strong and consistent voice of the engineering profession, having served as president of Consulting Engineers of Alberta, APEGGA and Engineers Canada. He is also the vice-president of the World Federation of Engineering Organizations, and has been a driving force at the United Nations Commission on Sustainable Development and the UN Framework Convention on Climate Change. His technical expertise developed from the design and delivery of infrastructure projects is in the water and transportation sectors. His exceptional professional contributions and tireless dedication to enhancing his professional field and community make him an outstanding member of the engineering community.

Meritorious Service Award for Community Service
Colin E. Smith, FEC, FCAE, P.Eng.

For decades, Colin Smith has provided exceptional community service at local, provincial, and national levels. In the past year, Mr. Smith accepted two additional community service appointments: director of the Victoria Airport Authority Board, and British Columbia Government House Foundation trustee. He is the immediate past-chair of the 1,500-member West Coast Railway Association and has served as one of three directors of the 625 Powell Street Foundation in Vancouver. Mr. Smith's service to the profession has also been extensive, including lengthy committee service and terms as president of APEGBC and of Engineers Canada.

For more information on the program, award recipients and eligibility criteria, visit www.engineerscanada.ca.. ■

Are You ADDICTED?

G.K. Andrejevic, EIT

Are you addicted to your smart phone? How would you know? A strange thing happened to me that made me wonder how attached I had become to my cell phone. I recently changed service providers and with the change got a new smart phone.

This new device was unlike the model I had used for the previous three years. To be honest with you, I didn't know how to operate the new device and didn't take the time to learn all of its features. But one thing I did unwittingly; I turned-off all the notifications; the bells, whistles, beeps and buzzes that happen when an email, text, appointment or call comes in. I had all the notifications set-up on my old phone, but because all of the sounds and options were different on the new device, I decided to turn them off until I could take the necessary time to select the options I truly wanted.

To my surprise, I discovered this amazing sense of freedom. No longer was the phone buzzing incessantly on my side desk. Gone were the vibrations on my belt while wearing the cell phone. The nervous reaction that I had grown used to every time an email or text message came in was gone! It made me wonder – had I become addicted to my cell phone? Was I equal to Pavlov's dog in the well known conditioned response experiments of 1901? Perhaps. After two weeks of new freedom, I've decided to leave notifications turned-off permanently.

The DSM or Diagnostic and Statistical Manual of Mental Disorders says this about addictions: "The term addiction is also sometimes applied to

compulsions that are not substance-related, such as compulsive shopping, overeating, problem gambling and computer addiction. In these kinds of common usages, the term addiction is used to describe a recurring compulsion by an individual to engage in some specific activity, despite harmful consequences, as deemed by the user himself to his individual health, mental state, or social life." Well, that could easily be applied to a lot of cell phone users.

The peculiar thing about addictions is sometimes you don't know you're addicted until you try to stop. Taking a bold step to end a bad habit is commonly called "going cold-turkey." It's at this point of stopping an activity or behavior that you notice the "withdrawal symptoms." These physiological reactions can include irritability, increased heart rate, blood pressure, sweating, loss of sleep, increased appetite, or other physiological changes. Researchers at the University of Maryland , who asked 200 students to give up all media for one full day, found that after 24 hours many showed signs of withdrawal, craving, and anxiety, along with an inability to function well without their media and social links.

So let me ask you again: are you addicted to your Blackberry, iPhone, or other computer device? How would you know? I challenge you to turn off notifications and see what happens to you. You may exhibit withdrawal symptoms or you may enjoy a new found freedom! If you find that you have a problem with a technology addiction or other dependency, consider calling the Addictions Foundation of Manitoba or other support agency that can help you. ■

ALWAYS Plugged In?
You Know You Have a Problem When:

- people call you a 'crackberry'
- you feel real anxiety when thinking about turning off your phone
- you find yourself wondering why no one has commented on your new status update
- you haven't had one notification for a whole four hours! (you are subconsciously tracking when your last nofication was)
- your coworkers, family or friends have said, 'You're checking your phone AGAIN?!'

How to Unplug

- turn off notifications to your phone
- or turn phone to phone calls only
- set specific times when your phone is OFF (immediately after work, during family supper, for night, etc.)
- try a new internal dialogue: It's OK to be unreachable for certain periods of time
- identify other pasttimes you enjoy and pursue them sans phone

Manitoba Emergency Preparedness

How Do We Handle Emergencies in Manitoba?

Billy Chan, EIT

Engineers and geoscientists are typically the sort that likes to know how things work; not always how things actually work, but how things should work. We are the ones that would actually read the instruction manual (likely written by a fellow engineer) before assembling an item. Thus, in light of the recent spat of successful and not-so-successful management efforts of large scale catastrophes around the world, one wonders what kind of plan Manitoba has in place to handle major emergencies.

Manitoba Emergency Measures Organization

The Manitoba Emergency Measures Organization (EMO) was established in 1959, in the midst of the Cold War, with the mandate of developing emergency procedures in case of a nuclear attack. Its scope has since broadened to something of a "one stop shop" of management resources for all foreseeable major disasters. Its mission is to "reduce the impact of disasters on Manitobans by fostering cooperation of available resources" with a vision to "provide all citizens with the best integrated emergency management system in Canada."

The EMO is mandated with broad authorities and responsibilities under The Emergency Measures Act (CCSM c. E80) covering the full timeline of disaster management which include prevention and mitigation, preparedness, and response and recovery. This entails a multi-faceted approach in providing resources for municipalities, school divisions, government departments and the private sector.

The EMO's role is mainly that of coordination. In an emergency, the EMO will provide oversight and coordination of communication and action between departments and other levels of government, private sector and non-government organizations.

Depending on the emergency, the EMO may activate the Manitoba Emergency Coordination Centre (MECC) which will then be the hub of all emergency decisions. Afflicted departments and or private sectors are required to send their emergency officer and/or a representative.

Manitoba Emergency Plan (MEP)

As with all things, there must first be a plan. The Emergency Measures Act mandates that the EMO prepare and maintain the Manitoba Emergency Plan (MEP). The MEP is the authoritative guidebook for the EMO to provide a coordinated and effective response to major emergencies. It explains the emergency management concepts adopted by Manitoba as its guiding principles, emergency command structure, roles and responsibilities of applicable government departments and agencies involved in a disaster. If one wants to know what the government is supposed to do in case of a major emergency or disaster, the MEP is the answer.

The MEP draws heavily from a federal, provincial, and territorial (FPT) document called An Emergency Management Framework for Canada. This document, created with input from FPT levels of government, intended to provide the guiding principles for each of

Photo: Gas Plant from Bridge
(left: mirror image of gas plant from bridge, taken by Leif Anderson)

the provinces and territories for their own emergency plans. These are based on the four major components or phases of emergency management: prevention, preparedness, response and recovery.

This article seeks to provide a general overview of the MEP and general concepts of disaster preparedness.

Prevention and Mitigation

The goal of this component is to take pro-active measures to eliminate or reduce the impact of major emergencies. This may take the form engineered measures (e.g. floodways and dykes) or procedural/policy measures (e.g. public education, building-codes, land use management).

Proactive measures start with hazard and vulnerability assessments to be performed by all departments and agencies. Starting with the department responsibilities, the goal of the hazard assessment is to determine the consequences of all foreseeable hazards that can affect the fulfillment its responsibilities. The vulnerability assessment is to determine the foreseeable likelihood and vulnerability to said hazards. Mitigation involves implementing measures to eliminate or reduce the impact of the determined hazards and establish triggers on when the emergency plans become active. The EMO takes an advisory role for this component because it is up to individual departments to assess their own risks as they are the most knowledgeable.

For example, water utilities in Manitoba have a legal responsibility to provide safe drinking water to their customers even in the case of emergency conditions. The Water and Waste Water Facility Operators Regulation (MR 77/2003) under the Environment Act (CCSM c. E125) mandates that all water utilities must have a documented emergency response plan. Water utilities must assess the potential consequences of floods, ice storms, drought etc. on the quality and quantity of water supply to their customers. Then they must determine the effects of these hazards on their system components. Based on the risks, there must be appropriate mitigation measures in place.

Manitoba Water Stewardship provides guideline documents to aid water utilities in performing their own hazard assessments and developing mitigation measures.

Preparedness

The goal of this component is for all departments and agencies to be ready to respond to a disaster and manage its consequences through measure taken prior to an event. This typically involves preparing an emergency response plan (ERP), establishing an

appropriate resource inventory, training, and equipment and exercise programs.

For most organizations an ERP starts with an overview plan detailing essential all-hazards information such as an emergency contact list, command structure with roles and responsibilities, triggers for ERP activation, and communication strategies within and out side of the department or agency in emergency situations. There will be appendices or schedules outlining plans for specific types of disasters.

For example, Manitoba Water Stewardship recommends that water utility ERP's include such things as a "detailed map of the distribution system, detailed locations of each valve…", "contact list of emergency services, regulators, suppliers, contractors…", and a 'determination of not less than nine most likely emergencies that may affect the water system and procedures to be followed and actions necessary.'

The EMO offers training for emergency managers from both government and private sectors. The training offered is usually broad based and spans most departments, but can be customized to specific areas. It is up individual departments to offer more specific training for their staff.

Operational drills and exercises are essential in preparing staff response and is a crucial part of the training process. Again, it is up to individual departments to determine the guideline on the scale and frequency of drills. For example, Manitoba Water Stewardship recommends annual drills of some sort for water utilities.

The purchase of equipment is also identified during this phase. As with all capital expenditures, there must be sufficient risk-benefit to justify new equipment (as engineers are most acutely aware). The recent purchase of a third Amphibex is a good example.

Response

In a major emergency, the local authority has the primary responsibility for managing the crisis. In an emergency situation, local authorities are given broad powers under The Emergency Measures Act to either prevent an emergency from occurring (issuing an Emergency Prevention Order) or reduce the effects of a disaster (Declaration of a State of Emergency). These powers given to local authorities in the latter case are far broader and can include:

- causing emergency plans to be implemented;
- utilizing any real or personal property considered necessary to prevent, combat or alleviate the effects of any emergency or disaster;
- authorizing or requiring any qualified person to render aid of such type as that person may be qualified to provide;
- controlling, permitting or prohibiting travel to or from any area or on any road, street or highway;
- causing the evacuation of persons and the removal of livestock and personal property and make arrangements for the adequate care and protection thereof;
- controlling or preventing the movement of people and the removal of livestock from any designated area that may have a contaminating disease;
- authorizing the entry into any building, or upon any land without warrant;
- causing the demolition or removal of any trees, structure or crops in order to prevent, combat or alleviate the effects of an emergency or a disaster;
- authorizing the procurement and distribution of essential resources and the provision of essential services;
- regulating the distribution and availability of essential goods, services and resources;
- providing for the restoration of essential facilities, the distribution of essential supplies and the maintenance and co-ordination of emergency medical, social and other essential services;
- expending such sums as are necessary to pay expenses caused by the emergency.

(CCSM c E80 S.12)

Depending on the emergency, other levels of government must get involved.

Recovery

The EMO is responsible for the administration of the Disaster Financial Assistance (DFA) program for the public and private sectors. The purpose of DFA is to assist victims, municipalities and government departments and agencies recoup some of the costs incurred in trying to mitigate the consequences of an emergency or disaster.

It is the responsibility of local authority to document all expenses incurred during the emergency, provide site damage and repair confirmation reports completed by a relevant expert, and provide any other relevant financial records for claiming expenses.

Concurrent to the recovery process, the EMO will summarize in a report all actions taken and costs incurred by all involved departments and conduct a post emergency review. The purpose of the report is to document the emergency and analyze lessons learned from the incident, evaluate effectiveness of established best practices used and identify opportunities for improvement.

What About Me?

In addition to broad-based plans coordinating government departments, the EMO has a wealth of information for individuals and small businesses seeking more information on how they can prepare for specific types of information. There are brochures and guidebooks to assist individuals in much the same process as for government departments. These include guides to identify prevention and mitigation measures through hazard assessments, developing home preparedness plans and what to do in case of specific emergencies. ■

by C.J. McNeil P.Eng.

JAMES BLATZ, PH.D., P.ENG., FEC

Dr. Blatz appointed to Canadian Engineering Accreditation Board; reappointed to Natural Sciences and Engineering Research Council

Dr. Blatz has been appointed to the "The Canadian Engineering Accreditation Board" effective July 1, 2011. Dr. Blatz has also been reappointed by the Minister of Industry to the "Natural Sciences and Engineering Research Council" (NSERC) for a three year term.

I had the opportunity to sit down with Dr. Blatz to talk about his career, the role of the Canadian Engineering Accreditation Board, and his business interests.

Dr. Blatz's career, like many in the field, is a series of taken opportunities. He is a home grown success story having grown up on a farm near Rivers, MB. He completed his undergraduate degree in Civil Engineering at the University of Manitoba. Although it was his intention to go into industry, an opportunity presented itself to pursue graduate studies at the University. He received his PhD in Civil Engineering in 2000 and is currently the Associate Dean (Research and Graduate Programs) at the University of Manitoba. Dr. Blatz also saw an opportunity in flood prone Manitoba (one man's problem is another man's opportunity). He is a principal in TREK geotechnical inc., a firm that specializes in riverbank stabilization, shoreline protection and flood protection.

Dr. Blatz is also very active in the Engineering community. He explained to me the Accreditation Board's role to ensure that undergraduate engineering programs in Canada meet the requirements to produce graduates with the qualifications to be licensed as Professional Engineers in Canada. The board also plays the important role of evaluating the equivalency of foreign schools relative to the Canadian system.

Talking to Dr. Blatz, I was struck by his level of enthusiasm, optimism, knowledge and willingness to give back to the Engineering community by serving on boards (including APEGM boards) and educating the engineers of tomorrow.

James Blatz, Ph.D., P.Eng., FEC

Dr. Blatz, thank you for taking the time to talk with me. You are an inspiration to all Engineers as to what you can achieve with the right drive and attitude. ■

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editor's note:

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Note:

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

continued from page 7, Thoughts on Design

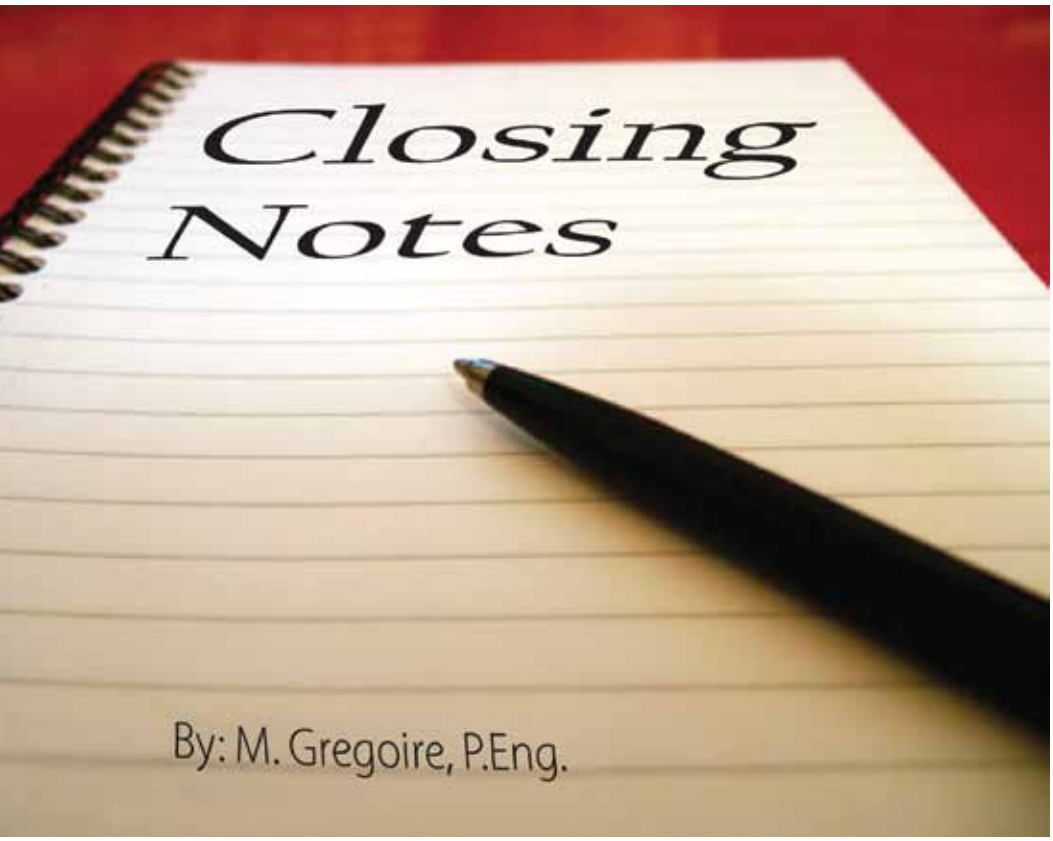
always be supplied. That being the case, there was no need for the complexity or cost of an automatic shut down system. Apparently this later assumption was hotly debated at that time and a number of senior engineers resigned in protest. Now almost a half century later, their concerns were justified. And "Houston, we have a problem."

Clearly I was not a part of the design process and I have been a distant, albeit interested, observer of the disaster. The assumptions I have identified are my assumptions based on information that I have been able to find. But they do illustrate the potential, and in this case realized, domino effect of assumptions and the design decisions that are based on those assumptions.

At its base, design requires that we make assumptions in order to proceed. Safe design requires that we minimize the probability of wrong/bad assumptions. System design requires that we understand potential component interactions when placed into the system, and remember that the designs of the components were all based on assumptions.

Because assumptions are so fundamental to the design process, we need to treat them with great care. Be certain that, in as much as possible, assumptions are based on knowledge rather than belief. Belief, by its nature, does not require proof.

And Chicken Little was wrong; the sky is not falling, unless the assumptions are wrong. ■



Where Did Those Shop Drawings Come From?

We've received several calls recently on a series of questions relating to shop drawings and the requirement for a seal. The same line of questions was also raised over a year ago with relation to a major project in the city. The overall question was, "Do the shop drawings need to be sealed?"

The answer will come across as a clear cut one to most of our members – "Of course they do." This snap answer is supported by the Act, our By-laws and even further by the Authentication of Professional Documents, which is available on the APEGM web site.

Starting with the latter, there is a clear statement that "…details or subsystem designs produced by manufacturers or contractors for specific projects… must be authenticated…" The guideline does provide clarification for instances where a manufacturer's drawing does not require authentication. These include documents that describe a generic system; one that is not specific to the project at hand. An example would be product literature for wood I-joists.

The Act also provides direction on this question, too. The Act stipulates that every engineering document issued by the member must be authenticated. This would include, of course, shop drawings.

The next question asked in these scenarios is, "But the drawings weren't prepared by a member of APEGM. Does the shop drawing still require an APEGM seal?" The answer to this lies in the definition of the practice of professional engineering. Any act of designing that requires the application of engineering principles must be performed by a professional engineer who is registered with APEGM.

So, what about the cases where the individual who prepared the shop drawing is not in Manitoba; does the shop drawing still require an APEGM seal? This has been the crux of the matter in a couple of cases. For these projects, there was an element that was designed by someone overseas. Once the owner received drawings for these elements, they noticed the lack of an APEGM seal and notified the contractor/supplier that the drawings weren't valid.

This element does raise the complexity of the question a little bit, as it brings in the element of jurisdiction. One of APEGM's roles is to ensure compliance with the Engineering Act, but this Act is a provincial law and does not apply outside the borders of Manitoba. This is why APEGM would never seek to have designs being physically prepared in Asia to be done under an APEGM member, even if the design was intended to eventually be implemented within our province.

Where our Act does come into play, though, is when the drawings for the design enter the province and are given to a contractor for local installation. The definition of the practice of professional engineering includes a key word to this effect: "directing." Engineering in the construction realm involves several steps, three key ones being the design itself, the direction towards implementation of the design, and verification of compliance with the design.

The early step of the design itself creates a model. This model could be an idea in the designer's mind, a conceptual drawing, or a 3D graphical representation on a computer. The design could be developed anywhere in the world. If that development occurs within Manitoba, it must be done by a member of APEGM.

The intermediate step of directing the implementation of the design is the form of communication that relays the design itself to the builder. This generally takes the form of a set of drawings. When those drawings are given to a contractor in Manitoba, they must be sealed by a professional engineer registered in this province.

The final step of verifying the construction of the design must also be done by Manitoba P. Eng. for all projects built in this province.

This question of jurisdiction though, is not uniformly applied across the country. In some provinces, the regulator allows for the import and implementation of documents that were not prepared by a locally registered engineer. This has included shop drawings as well as full sets of design drawings.

I'm curious to hear about your views on this topic, as well as any stories describing experiences you've had related to the authentication of shop drawings, especially ones prepared outside of the province. Drop me a line at mgregoire@apegm.mb.ca. ■

Detach page for posting

Upcoming Events

National Professional Practice Exam

Information and the application forms are available at the APEGM web site: http://www.apegm.mb.ca/PPE.html

Deadline for application September 1, 2011.

Date: October 17, 2011
Cost:
$140.00 Registration

Preparation Seminary for the Professional Practice Examination

PPE- Law and Ethics

Information and the registration forms are available at: www.focussedconsulting.com.

Deadline for application is September 16, 2011 (will close earlier if registration reaches capacity).

Date: September 23 - 24, 2011
Time:
9:00 a.m. - 4:30 p.m.
Cost:
$250.00
Location: Caboto Centre, 1055 Wilkes Ave., Winnipeg

New Members Registered February, March, & April 2011

S.R. Aiken
M. Arabi
T. Aung
J.T. Austman
A.J. Baker
R. Bari
H.Batenipour
L.A. Bermel
S. Boualleg
P. Calic
A.M. Cardinal
C.F. Chan
B.D. Chaput
D.W. Chester
V. Cicovski
S.G. Clements
S.G. Clemmer
S.P. Colleaux
E.S. Couture
J.R. Crummy
A.W.T. Curwain
S.F. De Marni
D.M. Delombaerde
W.J. Dewit
R.T. Duplak
Y.Y. Fang
T.E. Flynn
R.M. Focht
T.E. Fransham
L.L. Garet
D.C. Glenney
D.A. Godkin
L.T.H. Grieger
M. Hamidi
J.R. Handscomb
B.J. Hartmann
P.J. Hayes
T.M. Hengen
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J.W. Marcinkowski
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K.L. McDonah
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C.R. Nimegeers
A.J.J. Nolet
L.M. Northwood
C.L. O'Brien
P.M. Oakley
A.T. Oberez
P. Pakniat
B.A. Palynchuk
D.P. Panday
D.W. Pankratz
V.R. Parker
M.F. Pauls
D.A. Penman
N.D. Perera
J.T. Perry
S.D. Piper
J.S.C. Plett
R.A. Prather
I.W. Quach
G.T. Rempel
D.K. Reske
K.E. Rink
L.F. Rodriguez
C.C. Ross
C.W. Rousch
J.F. Roush
D.G. Sandy
E.N. Sapnu
D.M. Sauve
J.D. Schellenberg
J.A. Schepers
C.D. Schneider
B.G. Schropp
M. Shariat
D.G. Skoropad
R.J. Slade
B.H. Smith
J.D. Sorenson
T.A. Stadnyk
R.F. Stanescu
M. Stefanescu
T. Sun
S.S. Tabet
B.E. Tangjerd
B.E. Thompson
J.A. Tiner
R.G. Usaty
L.F. Velandia Prieto
L.W. Wagner
A.J. Walczak
C.A. Warwaruk
J.K. Weng
J.M. Wiseman
I.M. Wood
R.B. Yoneda
M.R. Yousef-Beigi
J. Zhang
P.C. Zhou

Members-In-Training Enrolled February, March, & April 2011

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A.Q. Adetunji
O.M. Al-Khayat
R.V. Alday
R. Alvarez Barahona
J.H. Bain
J.O.M. Buchanan
I. Buda
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J. Li
Z. Li
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J.L. Taylor
A.B. Teeter
I. Telichev
J.L. Wainwright
G.W. Walkin
B. Wang
Y. Wang
W. Wei
R.F. Zoleta

Certificates of Authorization February, March, & April 2011

ADB Structural Engineering Inc.
BRUNS-PAK MEP LLC
Brytex Building Systems Inc.
C.A. Reed & Associates (Sask.) Ltd.
Code Consultants, Inc.
D.S. Allen Engineering Consulting Ltd.
DEI & Associates Inc.
e.Construct.USA, LLC
Fransen Engineering (FE) Ltd.
Fusion Expert Conseil Inc.
Golden Empire Mfg., Inc.
GRB Engineering Ltd.
Hall Engineering Co. Ltd.
North Rim Exploration Ltd.
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Roy Consultants Group Ltd.
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