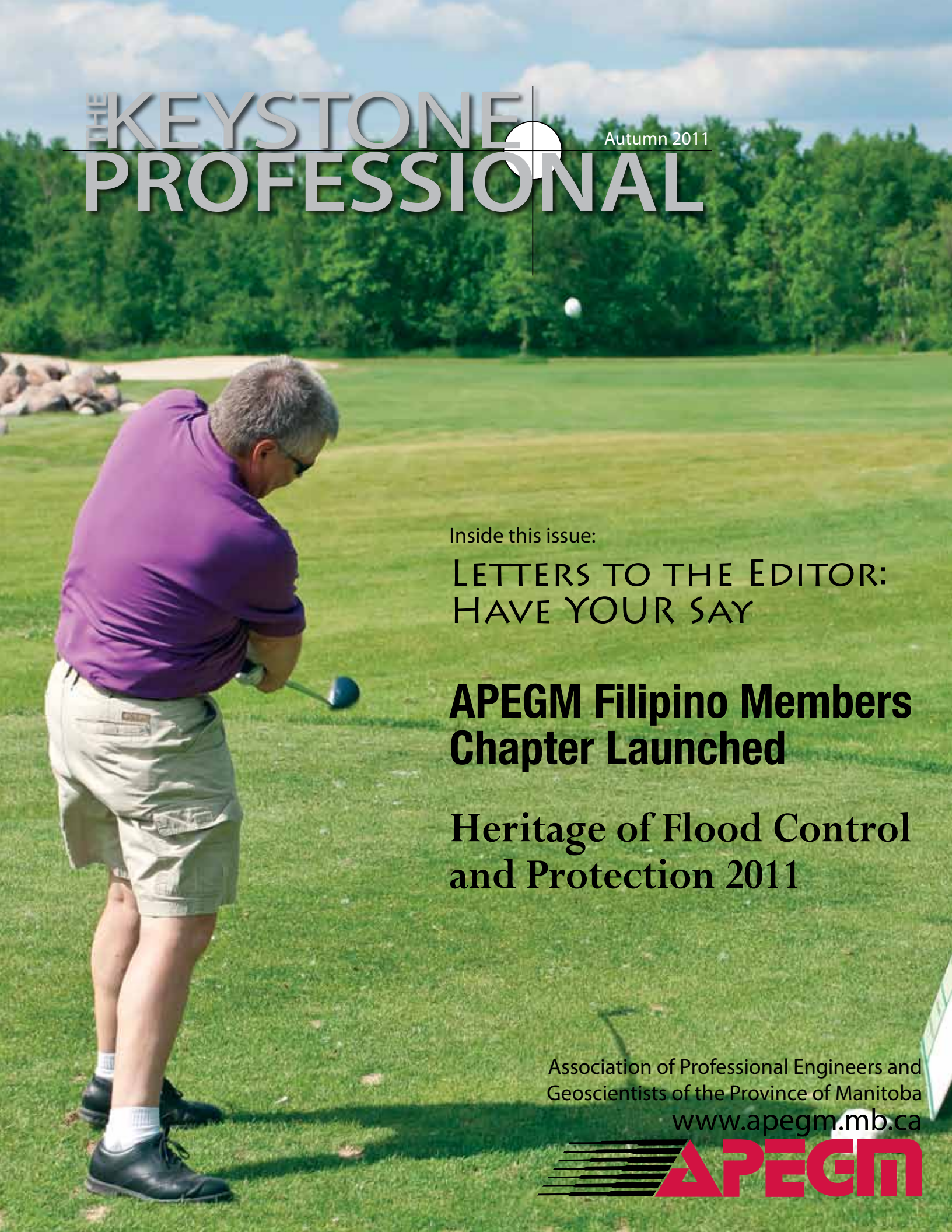

THE KEYSTONE PROFESSIONAL

Autumn 2011

Inside this issue:

Letters to the Editor: Have YOUR Say

APEGM Filipino Members Chapter Launched

Heritage of Flood Control and Protection 2011

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

THE KEYSTONE PROFESSIONAL

AUTUMN 2011

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870 Pembina Highway, Winnipeg, Manitoba R3M 2M7
Ph. (204) 474-2736 Fax (204) 474-5960
E-Mail: apegm@apegm.mb.ca

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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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Bill Girling, P.Eng.
President's Message

Reflecting Back on 2010/2011

As I am writing this article, it's three months until the end of my term as your APEGM President, and I am finding it hard to believe that already I am penning my final submission to the Keystone Professional. So it seemed like an appropriate time to reflect on (almost) a year that has gone by in a flash.

Our 2010/11 APEGM Council will agree that this was not a dull year; Council dealt with two special meetings, electronic balloting, a resolution and several discipline cases all while working diligently to introduce and finalize the Continuing Professional Development (CPD) program.

Council was focused this year on the CPD program, communicating the program to members, discussing the key elements of the program at Council meetings and writing by-laws around the program. While there have been some questions around the introduction of a CPD program, the majority of responses we have received have been positive; and in particular the online CPD reporting system has been very well received. Remember Grant's advice, "It's easy and it's fun!"

Two special meetings were held this year, one to introduce the CPD program to APEGM members and the other to discuss a resolution associated with the Bipole III issue. Both meetings were very well attended and served the purpose for which they were intended,to communicate key issues to membership.

From a personal standpoint, I gained a tremendous amount of knowledge about professional self-regulation by visiting some of the constituent associations' meetings and by participating in meetings with Engineers Canada. While at times these trips were exhausting, the interaction with fellow engineers and geoscientists from across Canada made it worthwhile.

One of the items I had hoped we would have spent more time on was increasing the visibility of engineers and geoscientists in our province and abroad. For several years, our Council has been contemplating a more aggressive and innovative ad campaign to get the message out about the value our professions brings to the community at large. I'm convinced that if the dentists and nurses can get their message out , so can engineers and geoscientists. I'll ensure that our 2011/12 Council will have this as one of the first agenda items.

Finally, I must acknowledge the excellent support I received from Executive Director Grant Koropatnick and our 2010/11 Council. Our Council was actively engaged in every topic and offered a diverse and credible perspective to all of the issues we dealt with. I couldn't have done it without their support.

Thanks for making this a most interesting, rewarding, and challenging year.

I'll leave you with some interesting statistics about our association over the past year and once again encourage members to log in to your APEGM website (http://www.apegm.mb.ca) extensively and become familiar with the features of the new and improved website:

- APEGM has **6,327 members** and saw **six per cent growth** in the past year.
- Membership this year was comprised of **6,025 engineers** and **302 geoscientists**.
- APEGM also has **1,044 members-in-training** and **495 retired and life members**.
- **One in 11** of our members is a woman.

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

Engineering Philosophy 101

...about limitations of definitions

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

The spring and early summer of 2011 was characterized by unprecedented rainfall and resultant flooding throughout the Canadian prairies and the states adjacent to our southern border. Damage has been, and continues to be, extensive. It is claimed, and at least implicitly accepted, that much of this damage is the direct result of systems designed to divert excess flows from heavily populated areas.

In general, all levels of government in Canada seem to have accepted their responsibility to compensate those who have been harmed by diverted water. It now seems to boil down to defining "fair" compensation.

> "We are charged with the responsibility to protect the well-being of the public. Can we meet that responsibility?"

Prior to construction of the diversion projects that now exist, cost/benefit studies were carried out. These studies were highly dependent on many uncontrolled variables, but they did provide a rational basis upon which decisions were made. Undoubtedly these analyses exist in project files and will, in all probability, be considered as the "fair" compensation discussions continue.

Engineering cost/benefit studies may have an underlying influence on decisions relating to compensation, but the decisions will be driven for the most part, by political consideration. The potential downside is that input provided by engineers may be used to justify decisions that are not politically popular.

With the benefit of 20/20 hindsight, it might be worth considering implications of compensation based on the cost/benefit analysis. Typically, engineering cost/benefit analysis assesses the relative cost of potential damage. In other words, the comparisons are based on the eventual cost of repairs to physical infrastructure. There are four words: damage, damages, repair, and fair that need some further assessment before proceeding.

My trusty Oxford Concise Dictionary suggests that damage, as a noun, means "physical harm reducing the value, operation, or usefulness of something." Interestingly, damages, still a noun, but now plural, means "financial compensation for a loss or injury." The verb repair, means "restore (something damaged, worn or faulty) to a good condition." The adjective fair, means "just or appropriate in the circumstances, treating people equally."

Engineering analysis is, and was, carried out under constraints imposed by our Legislation and our Code of Ethics. Specifically, the Engineering and Geoscientific Professions Act states that we must "advocate where the public interest is at risk." Canon 2.2 requires that we "guard against conditions that are dangerous or threatening to health, life, limb or property."

All of these definitions and citations seem to support the procedure used in a typical engineering cost/benefit analysis. However, the political question that is surfacing in the "fair" compensation debate relates to the broader consideration of the word "loss." Physical damages can be assessed and compared. The "cost" of replacing a building is relatively consistent regardless of its location. However, the "cost" associated with the flooding of land depends on the use to which that land is put. An urban park must be restored to "good" condition as per the definition of "repair." It is purely a "cost" issue. However, flooded agriculture land represents a financial "loss" due to lost production in addition to the "cost" of restoration. It goes beyond "repair." Typically this type of "cost" is not considered in engineering cost/benefit studies. However, in the context of "fair" (just or appropriate in the circumstances) compensation, can the traditional cost/benefit analysis approach be justified? Should this type of "loss" be considered? Would this type of "loss" be considered if a manufacturing facility is forced to shut down for a year?

The question of "fair" compensation will, no doubt, be debated well into the future. The issue of expanding the typical engineering definition of "damage" in our cost/benefit analysis approach is more confined to our profession. We are charged with the responsibility to protect the "...well-being of the public..." Can we meet that responsibility and, at the same time, continue to use a physically focussed definition of "damage" that excludes the concept of "loss" in future cost/benefit analysis of projects studies that can, and do, have serious economic impacts? ■

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

Anybody Looking for a Mentor?

Is anyone out there looking for a mentor? A mentor is someone experienced in professional practice who gives advice to a junior colleague. A mentor is like a coach. Who doesn't like some coaching? Some of the most memorable lessons in my life came from sports coaches: hockey, soccer, basketball, volleyball. Did you know that the great Dallas Cowboys Coach Tom Landry was an Industrial Engineer? He knew how to coach winners.

Something I have learned about myself is that I like to follow the advice of a coach and I like to help coach others. The image that comes to mind is a line of engineers – one in front of the other. Each is following the person ahead while looking back to pull the one immediately behind. Hand-in-hand, we all move together; relying on each other in our professional practise.

How would you like to be a part of a small group of three or four professionals meeting once-per-month? The purpose of the group would be to have a beer, coffee, breakfast, share some stories, and learn from each other. Let me know if you're interested. I am willing to give my time in this capacity. I want to learn from you and perhaps, you could learn a few tips and tricks from me. Lets have a coffee or beer and explore the possibilities.

Are you an engineer in mid-career with a few lessons to share with others? Send me an email, I want to hear from you. Our profession needs to grow a team of professionals who are willing to pass along their experience and wisdom to the new professionals – those younger who want to see change. Are you retired with a lifetime of experiences that you're willing to share? Send me an email. I want to hear from you. We have wealth that is not measured in dollars, but is rich and valuable to others because it will save them costly hours and effort (maybe some dollars, too) if they learn what we've learned earlier in their professional careers. Isn't that what it's all about? Learning from the mistakes made (or wisdom gained) by the previous generation?

CPD VOTE

The election of new APEGM councillors and ratification of by-laws takes place at this time of year. Included in this year's package is the by-law on continuing professional development (CPD). More than two years ago council established the CPD Task Group to research ways of improving continuing professional development for APEGM. The result has been the online CPD program which members have been voluntarily using for the past 10 months to record professional activities. As stated several times in the KP and in conversation with members, there is growing public expectation that professionals show what they are doing to keep up with the rapid changes in the marketplace. The engineering and geoscience professions have been lagging behind other professions in Manitoba. The online CPD program gives members the ability to record in their membership file the many professional and community service activities they are doing. As one member stated: "We can finally show all the good stuff we are involved in." This month you will have the opportunity to vote for the online CPD Program. I heartily encourage you to support this by-law for the good of the profession and the Manitoba public .

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 or message me through Facebook. ■

Volunteer Appreciation BBQ

APEGM held a Volunteer Appreciation BBQ on June 21, 2011. The event was a great success giving thanks to the members, members-in-training and the various volunteers that have contributed many hours of volunteer service over the past year. Approximately 50 members attended the event and took advantage of the abundance of snacks, burgers, hot dogs, pop, beer, and desserts (not necessarily in that order!). In addition, a lucky few won some spectacular prizes in the draw. Below are the winners:

Gift Baskets:

Don Spangelo – Legislation Committee Member

Doug Chapman – Heritage Committee Member

Jun Tan - Professional Development Member

BBQ:

Walter Turchyn - Experience Review Committee Member (In case you were wondering, we did not actually use Walter's new BBQ for the event.)

E-Reader:

Rob Matthews - Geoscience Committee

GPS:

Lawrence Ferchoff - Nominating Committee Member

I-Pad2:

Garland Laliberte - Past President

Thank you to all volunteers that contribute your valuable time to the community. ■

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

Thoughts On Design

. . . and the meaning of "design life"

An article on the Canadian Consulting Engineer electronic message board "Recent Studies raise concerns over Champlain Bridge" caught my attention. The article caused me to feel an affinity for the old bridge. But I have always been a bit of a structures freak. My affinity stems from the fact that we were both "introduced to service" in 1962 and are now approaching the end of our "best before date." In all probability we will both be replaced in the not too distant future.

The similarities of timing and circumstance are almost eerie. My 1962 engineering education was, like the Champlain Bridge, "designed" to meet needs as they were understood at that time. Since 1962, both of those original "designs" have experienced significant changes in service conditions.

As a practising engineer, I have had the opportunity to adapt to changing service conditions by supplementing my education and my understanding. Slide rules were replaced by calculators and then computers; triangles and T-squares gave way to CAD systems; and graphical solutions morphed into computer analysis systems. The tools changed and engineering design increased its dependence on science based models. In response, engineering education shifted its emphasis from practical skills to theoretical analysis. As a person, I have had the opportunity to adapt and stay current.

While I began struggling to cope with my undergraduate studies, practising engineers were applying the techniques that I was studying as they defined the shape and structure of what would become the Champlain Bridge. The resulting steel cantilevered main span, complemented by pre-stressed concrete approaches, brought into being a six kilometre long structure that has become one of the busiest traffic routes in Canada.

Like all designs, their design was founded on "current" (in this case, late 50s) knowledge and assumptions. As is/was the case for all bridges, they worked with input such as traffic volume projections, traffic load projections, environmental service projections, geographics and geological realities as well as code and material constraints. The input criteria shaped the resulting bridge design. But soon after commissioning, requirements began to change. Both traffic loads and volume turned out to be underestimates so structural upgrades had to be designed and installed. In the mid to late 60s the use of road salt was introduced to control icing. This caused corrosion, something not considered in the original design, to develop into a major concern. More recently, seismic design requirements were introduced resulting in the bridge losing its lifeline classification.

The Champlain Bridge, like all inanimate objects, does not have the capacity to adapt on its own volition. It is dependent on actions of authorities to respond to new service conditions. Maintenance, modifications and studies to determine ultimate risk have all been a part of the life of the bridge. More recent studies suggest that it may now be more cost effective to replace the bridge than attempt to bring it up to current standards.

It is axiomatic that things "wear out." From a more technical perspective, every artifact that engineers design has an underlying assumption regarding its "design life." The length of that assumed design life varies widely depending on the artifact in question, but they all eventually wear out.

In the eyes of the public, manufactured items like cars and toasters have an implied useful life based on their warranty periods. Computers and software systems have a relatively short useful life, driven as much by marketing as by technical advancement. But infrastructure items, like bridges and roads, are somehow seen as permanent. The design life of these infrastructure elements, which began as a conscious or inferred engineering assumption, becomes a mixture of technical, economic and political decisions.

And that takes me back to my feeling of affinity for the Champlain Bridge. Thanks to updates and modifications we have both responded to the requirements of a 50 year "design life." We have shared a period of time that was launched from a common design input philosophy. The question is, how well have we adapted and what will our "best before dates" eventually be? ■

92nd Annual General Meeting

Awards Gala Dinner and Dance

October 28, 2011 ~ The Fort Garry Hotel, 222 Broadway, Wpg

See attached brochure (centre fold) for more information and registration details.

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

APEGM

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

Brent Smith P.Eng.
President
Engineers Canada

Message from the President of Engineers Canada

As Engineers Canada begins its 76th year, I am honoured to serve as president and to be the seventh from New Brunswick in this role. I am looking forward to the opportunities of the coming year.

At a recent Board workshop, we were asked to sum up what Engineers Canada does best. The message we came up with is strong, yet humbling: we help over 34 million people every day.

At Engineers Canada, we build engineering excellence through our gold standard engineering education standards and practice guidelines, and we help our associations put these in place so professional engineers can protect Canadians at home, work and at play. It is clear that the work of engineers is essential to the daily lives of Canadians.

This is what I believe is at the heart of what Engineers Canada does as a national organization – made complete by its constituent associations, Board, volunteers and staff.

Because of the successful work of the Synergy Task Force over the past three years, Engineers Canada can begin a new stage in its growth with a renewed governance model, which includes sustainable strategic and financial planning methods. Our new strategic objectives continue to include activities that support our associations' regulatory activities and their efforts to ensure that all people practising engineering are licensed. The objectives also include initiatives to influence government policy and decision-making, create and benefit from strategic partnerships and alliances, and maintain a governance structure that provides a solid framework for Engineers Canada to conduct its business.

During my term as president, my goal is to ensure that all issues are dealt with fairly and responsibly through proper governance. I am very proud of the high quality of our Board representatives and advisors who come from all over Canada. Our healthy discussions and decision-making process allow us to effectively serve the organization, our members and by extension, the Canadian public.

When I accepted the gavel from Zaki Ghavitian, FIC, ing., M.ing., in May to become president of Engineers Canada, it was a very special and moving moment for me personally and professionally, and I was proud to have my family, parents and friends in attendance. I am humbled to have the privilege to serve this wonderful organization and the profession in this capacity.

My thanks go to our constituent associations, our Board, and Engineers Canada staff for their warm welcome. I also acknowledge the tireless dedication of our Board and constituent association volunteers. Your efforts continue to allow Engineers Canada to successfully pursue its mandate. I look forward to working together toward achieving the organization's goals and objectives.

Feel free to contact me at executive.office@engineerscanada.ca if you have any comments on this, or any other topic. I would be pleased to hear from you. ■

In Memoriam

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

Karl Breu
George R. Cooke
John W. Markowsky
Jerry J. Pomor

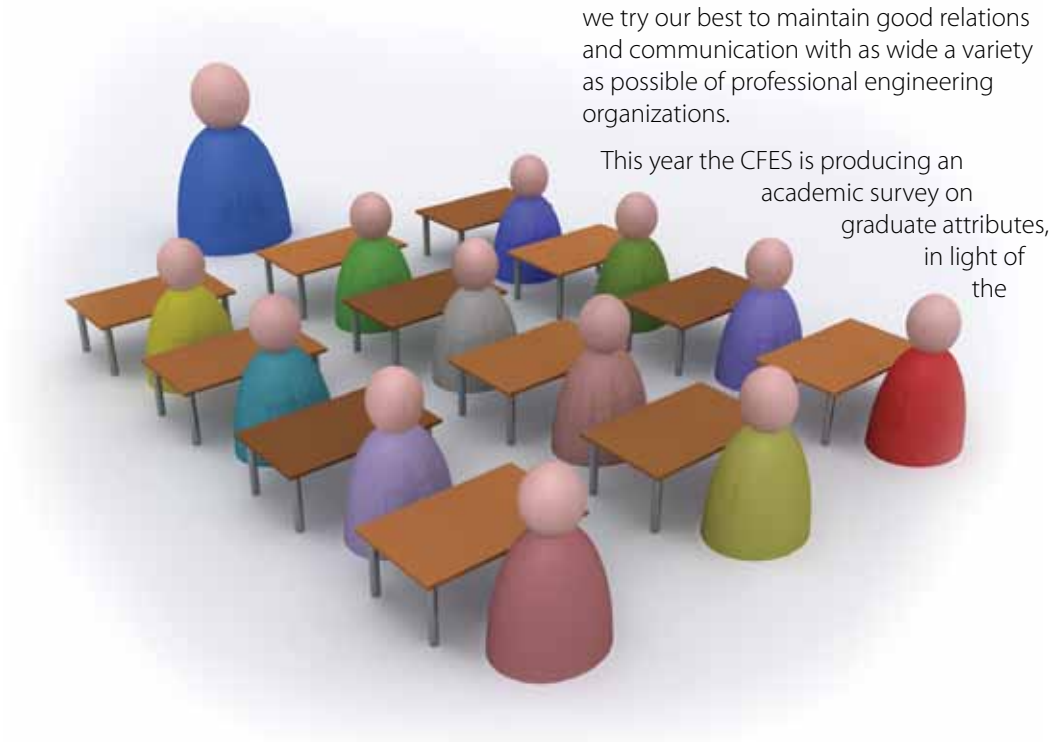
A Message From The Canadian Federation Of Engineering Students

Michael Ross, CFES Academic Commissioner

First of all, hello! For those of you who aren't familiar with the Canadian Federation of Engineering Students (CFES), we are a national organization that represents the approximately 60 thousand engineering students across Canada. Every year we organize several major events all over the country such as the National Conference on Women in Engineering and the Canadian Engineering Competition, and we work throughout the year to develop leadership courses and conferences for our members.

One of our priorities is keeping our members informed on the matters that affect them the most, and to represent their concerns to the appropriate bodies. We have a long-standing and successful partnership with Engineers Canada, and we try our best to maintain good relations and communication with as wide a variety as possible of professional engineering organizations.

This year the CFES is producing an academic survey on graduate attributes, in light of the upcoming changes in the accreditation system in Canada. The goal of this survey is to gain a fundamental understanding of how different stakeholders in engineering education perceive several key aspects of the undergraduate education experience in Canada. The Canadian Engineering Accreditation Board is in the process of switching the accreditation process for undergraduate engineering programs to a graduate attributes based system, and it is likely that there are discrepancies between how engineering students value each of these attributes, and how the professionals who train or hire them value the same traits.



It is also possible that the attributes that are most valued by engineering professionals are not those that are best developed in the classroom, and it is further likely that there is a disconnect between what engineering students feel they are being taught compared to what engineering professors feel they are teaching. Discovering where and why these disconnects exist could be valuable in making suggestions that could ultimately improve engineering education in Canada, especially while the new graduate attributes accreditation system is being implemented.

We would like to invite you, as engineering professionals, professors, or students, to participate in our survey, which will be open from September through October at www.cfes.ca/survey. The survey should take no longer than five minutes, and you will be offered the chance to enter your name in a draw for prizes.

Thank you so much! ■

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

30 by 2030 - The Future of Women in Engineering

For a number of years, Engineers Canada has been studying the reasons why there are fewer women than men working in the engineering profession. Countless hours have been spent assessing this issue and planning ways forward. Now we are making an even stronger commitment and putting even greater resources behind improved initiatives that will raise the number of women in the profession. It is time that we move from a passive approach to an active approach in order to effect real change.

A strategic objective for Engineers Canada is to have 30 per cent of licensed engineers be women by the year 2030 (30 by 2030). Compared to the current10 per cent, this may seem like a lofty goal, but considering that the overall Canadian workforce is composed of nearly 50 percent women, why are we not seeing or expecting similar numbers in engineering?

This is a complex issue, but one that can no longer be accepted as the status quo. Changes to the gender gap in engineering are occurring, but growth is slow. That is why our Board recently accepted recommendations by the Women in Engineering Task Force and approved an action plan for the next five years outlining key steps for increasing participation of women in our profession. This plan will propel the profession into high gear and help us deliver tangible, measurable results. In addition, we are now in the process of forming a standing committee on women in engineering. Once the work around this issue is operational, the opportunity for collaboration with our constituent associations will be even further strengthened.

A key driver of success for this 30 by 2030 initiative is the continued support of our constituent associations. Many of our associations already have programs in place to promote engineering to women, such as partnerships with schools, universities, and colleges to promote engineering as a career option to young women, and mentoring programs to help newly licensed female engineers. It is through building on programs already in place, continuing to share best practices, and further collaboration and networking with our associations and other key interest groups where we will find success.

As we move forward with our objectives and establish our goals, we will map what other groups are doing and capitalize on partnerships we have already formed in addition to forming new ones. We have been participating in summits and workshops with key stakeholder groups, and have held meetings with government officials. We are already working on projects that will raise the profile of women engineers and will continue these activities and more to promote our message that engineering is an excellent lifelong career choice for women. There is still much work to be done, but I am excited about the potential and what it means for the profession.

I stand firm that increasing the numbers of women in engineering is not solely about gender equity, but about making our profession more reflective of society. A more balanced engineering profession means a better profession. Women have the capacity to gain the knowledge and skills to not only become part of the engineering profession, but to become leaders in the field.

Women such as the 2011 Canadian Engineering Memorial Foundation scholarship winners, the 2011 Engineers Canada Award winner for the Support of Women in the Engineering Profession, Sherry Sparks, FEC, P.Eng., and the 2011 Engineers Canada Gold Medal Student Award winner, Erica Barnes, have all demonstrated that gender will not and should not hold anyone back from pursuing all that they wish to accomplish as engineers. I applaud these winners and their predecessors for the outstanding contributions they have made to the profession as they shape their careers and help to create the engineering leadership of tomorrow. ■

engineers without borders
ingénieurs sans frontières
Canada

Supporting Entrepreneurs and Farmers in Zambia

As our local EWB chapter is preparing for fall events such as a Development Drinks night and Book Club, overseas volunteers are bringing stories of the impact that EWB and our partners are having in countries such as this one from Zambia. For an update on the upcoming activities here in Winnipeg consult our website, winnipeg.ewb.ca. This story is taken from EWB's national website at ewb.ca.

Shopkeeper Christine Daka has benefited from the programs and guidance that EWB and their partners provide.

Christine Daka stands proudly in her shop on a dusty road through Mwanjavantu, Zambia, which eventually leads to the border with Mozambique. She will open her small stall today as she has every day for the last five years, which she operates to support her two children through school. Inside it's filled with products you would expect from your local store, such as groceries, hygiene & beauty products, and other household goods. However on many days Christine also has bags of maize and vegetable seeds, fertilizers and various other agriculture supplies stacked up around her shop.

Christine struggled to increase profit margins when running the shop she had started with the help of an NGO called CARE. When approached by CARE again to start adding the agricultural products to her shop, she saw an opportunity to reach out to a new market. CARE's program had sought to recruit and mentor small agricultural enterprises located in rural areas, to improve access to agricultural products. Prior, farmers would travel the 45 km to the nearest town, to buy a products like a small bottle of veterinary medicine. On trips such as this, transport costs would be double, or triple, what the product costs. Now, small agricultural shops are servicing farmers in their communities, delivering valuable technical advice on top of essential products.

The stacked seeds and fertilizer suddenly make much more sense when, in communities like Mwanjavantu, and across the country, over 80% of Zambians rely on their farms as their primary income. By offering various inputs for farmers at her shop, Christine is able to access not only Zambia's largest industry and customer base, but also bring the community access to supplies they would normally have to travel much further for in a larger city. The proximity to Mozambique has even brought many customers across the border to access services and products not available locally.

Joanne Linnay, a volunteer on EWB's Access to Market team, has been working with CARE in Zambia, consulting them towards their objective of establishing 500 thriving rural enterprises much like Christine's, across three Zambian provinces. As part of her goal to better understand the agriculture market, Joanne attended a dozen CARE-organized seed fairs—events that aim to help rural farmers make more informed purchasing decisions and increase their knowledge of available products by bringing goods closer to home—and in the process made recommendations to CARE around improving their services to farmers.

In addition to working with CARE, Joanne also spent a significant amount of time living with Christine. During her time in Mwanjavantu she supported Christine's shop by mentoring her and showing her basic business principles to help her improve her business. In return Joanne gained valuable insights to better understand how the entire network of local agro shops could better serve their customers. When analyzing monthly sales data together, they realized that 99% of Christine's profits and 79% of her customers were in the months of October to December, when she distributes maize seed.

Christine is now working to diversify her products to counter the seasonality of her business and provide better service to farmers. A more diverse product offering, better catering to her customers, and generating an income on a steady basis throughout the year will help Christine move from uncertainty to confidence in her ability to plan for the future of her family. With a more diverse offering of products, Christine is providing for her family, strengthening her business, paying for her children to attend school, increasing the size of her own farm, and even invest in an apartment complex to provide extra income from rent.

With a strengthened and successful network of rural farm suppliers, we're looking to better connect rural farmers to increased business opportunities and profits. The support that EWB receives through donations enable us to support more entrepreneurs across Zambia like Christine. ■

Devils Lake Diversion Update

In the state of North Dakota lies a closed body of water called Devils Lake. In the 1940s, water levels in Devils Lake were the lowest in recorded history, so low that the lake almost disappeared. From the 40s to the early 90s the water levels rose at a slow rate, adding about 20 feet to lake levels. During the 90s, water levels exploded and rose about 23 feet, more than in the preceding 50 years. Water levels have continued to rise in the 2000s and in doing so have created a severe flooding problem for North Dakota.

One of the ways that North Dakota chose to deal with the rising waters was to build an outlet from Devils Lake. International tensions arose because the water diversion would mix water from substantially separate drainage basins and send it into Manitoba. Manitoba feared that pathogens from Devils Lake eventually could pollute the waters of Lake Winnipeg. American conservations groups and neighboring states were also concerned about the degradation of water quality within their jurisdictions.

The original capacity of the state-sponsored Devils Lake outlet was 100 cfs, but by June 2010, the state had expanded the outlet to increase capacity to 250 cfs. Through the years state agencies lowered the water quality standards of the diverted water and increased the time the outlet could flow, further increasing the total capacity of the diversion. Even with all those tweaks, the water level in Devils Lake could only be reduced by inches, critics said.

In August of 2005 after years of bickering, Canada and the US signed a federal-to-federal agreement on Devils Lake. For Manitoba, the most important aspect of the deal was the construction of an advanced filtration system and/or disinfection system to eliminate pathogens from the water stream. Officials who negotiated the deal declined to set a timetable for the building of the filtration system or who would be responsible for funding.

Fast forward to 2011.... Inexplicably, no filtration system has been built and there are no plans to build one. Devils Lake continues to expand. In many quarters the controversy around Devils Lake appears to have evaporated just as the water has accumulated. In the early 2000s Manitoba objected to the creation of a state-sponsored Devils Lake outlet, but in November of 2010 Manitoba agreed in principle to a second outlet from Devils Lake, this time the east side of the lake. The dramatic change in attitude is due chiefly to the possibility of an uncontrolled spill from the lake into Tolna Coulee. Such overflows are thought to have occurred naturally twice in the last 4000 years. An uncontrolled flow would send very polluted sulphate-rich water into the Red River, so a second outlet was the lesser of two evils. The impending spring floods of 2011 seemed to renew a sense of teamwork between state, provincial, and federal governments, as they agreed also to share information and expertise in flood mitigation.

Devils Lake has been a very expensive problem for North Dakota. As of 2011, estimates for the costs of fighting the water hover around 1 billion dollars. Around 15 thousand people are affected for a very high cost-per-person rate. The East Devils Lake outlet is scheduled for completion in the spring of 2012. The two outlets could move as much as 700 cfs from the lake, but engineers estimate that a 1,300 cfs flow over six months would only serve to maintain water levels at present inflow rates. Unless the wet cycle abates, it appears that a second outlet will not be effective in stopping Devils Lake. ■

2011

Making Links Engineering Classic Golf Tournament

Photo Gallery

Thank you to all sponsors and golfers for making this year's golf tournament a success!

Some came away with winning trophies! Congratulations winners!

(left) The University of Manitoba certainly took home a win! The Sponsors and Participants of the Making Links Engineering Classic were pleased to present them with this cheque for $14,000.

(right) And still others came away feeling like winners in their own right after enjoying a relaxing massage right on the green. What a great day!

LETTERS TO THE EDITOR

RE: The Bipole III Project: Is it Fair Game for Advocacy?

Dear Editor,

APEGM's 2010 Annual General Meeting passed a resolution directing the Council to "call a Special Meeting to consider whether the concerns of the public (about Manitoba Hydro's Bipole III Project) should be studied and establish criteria that, depending on the conclusions of such study, would become a basis for engaging in advocacy" (parenthetical insert ours).

A Special Meeting was held on June 8, 2011 at which one of the authors of this letter presented on behalf of the Bipole III Coalition. The Coalition, for a variety of reasons, advocates a return of the planning of the Bipole III transmission line to the east side of the province. Other presenters had been invited but had declined the invitation.

In the discussion that followed the presentation, Grant Koropatnick, Executive Director, assisted by Council's legal counsel, Wells Peever, explained that Council had decided that engaging in advocacy on this project was outside APEGM's mandate. When asked to explain the basis for Council's decision, Mr. Peever defended the decision. The question never came up in the discussion as to why it was considered within APEGM's mandate to proceed with the Special Meeting with only one presenter who had clearly indicated ahead of time that the presentation would be from the advocacy perspective of the Bipole III Coalition.

We both have the greatest of respect for both Mr. Koropatnick and Mr. Peever. During our time as elected and appointed officers of APEGM and Engineers Canada, we relied frequently on Mr. Peever's advice and on Mr. Koropatnick's too. On the assumption that Council's reasons for its decision were fairly characterized by Mr. Koropatnick and Mr. Peever, we challenge Council's decision not to study the project with a view to engaging in advocacy.

The Engineering and Geoscientific Professions Act under which APEGM operates (the Act) sets out three purposes for the Association. The first is to "govern and regulate the practice of professional engineering and professional geoscience in Manitoba". The second has to do with promoting knowledge, skill and competency of APEGM's members and its students. The third is to "advocate where the public interest is at risk". These are direct quotes from the Act.

The first purpose centres on the practice of professional engineering which is defined in the Act as "any act of planning, designing, composing, measuring, evaluating, inspecting, advising, reporting, directing or supervising, or managing any of the foregoing, that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public interest or the environment". There can be little question that the Bipole III Project falls within the scope of the practice of professional engineering on several counts. Council's decision does not seem to question that point.

The third purpose focuses on the public interest which is defined in the Act as "the well-being, convenience and concern of the public at large". Again, there can be little question that the Bipole III Project impacts the public interest. The question then becomes one of whether there is risk to the public interest if the routing of the line is to the far western side of the province.

In our opinion, a system to deliver power on which Manitobans depend for domestic use and export must do so reliably, economically and with due consideration for the environment and socio-cultural factors. It is important that all components of that system, including the Bipole III transmission line and its converter stations, contribute optimally to ensuring that the well-being, convenience and concern of the public at large. It follows that anything less puts the public interest, as defined in the Act, at risk.

The explanation of Council's decision at the Special Meeting seemed to hinge on the argument that the third purpose of the association was limited by the first two purposes. More specifically, it seemed to imply that the public interest that allows APEGM to engage in advocacy must fall within APEGM's roles of governing, regulating, promoting and increasing knowledge skill and competency.

Without conceding that the purposes of the association are "nested", but even if they are, the question arises as to what is there in the engineering content underpinning the Bipole III Project that does not meet this standard? Is it not important that APEGM be vigilant in ensuring that high standards of engineering practice go into the design and construction of the Bipole III Project? We submit that it is. Does APEGM not have a responsibility where the Bipole III Project is concerned to promote and increase the knowledge, skill and competency of its members and students? It is our conviction that, either with or without the members' resolution, APEGM has as much responsibility to engage in advocacy where the Bipole III Project is concerned as it does any other engineering project that puts the public interest at risk in the sense defined in the Act.

One wonders if Council's decision is based on a narrow interpretation of the Bipole III Project. Certainly, there are elements of this project that go beyond what might be characterized as "hard engineering'. The environmental and socio-cultural considerations come to mind. But these too are part of the practice of engineering. Otherwise, engineering accreditation criteria would not include these elements as a required part of the training of engineers. Continuing competency standards would not recognize effort in these areas. There would be no credit given to these activities in evaluating foreign graduates.

Council's decision not to engage in public advocacy on the Bipole

III Project is also inconsistent with the Montreal Declaration, a 2009 engineering summit to which APEGM was a signatory. The Declaration acknowledges, at a high level, that engineers must increase their influence in policymaking. Specifically, the Declaration affirms that engineers will take collective action in five areas, two of which are the environment and safety and security. In the first instance, six activities are identified and, in the second, five activities are identified. Several of these activities apply directly to the Bipole III Project.

Finally, not to engage in an advocacy role as provided for in the Act is to deny at least two "ends" of the Carver Governance Model adopted by APEGM, namely, End E 7.2 which recognizes that "the public perceives the professions of having a leading role in protecting public interest" and End 4.2 which acknowledges that "governments dialogue with the professions in developing public policy ..."

Manitobans and others dependent on the hydro-electricity that will be transmitted and processed by the Bipole III Project need to be certain that it will be there, winter and summer, in our hospitals, in our factories, on our streets, in our homes and at our borders for export. They need to be assured that the risk to the public interest inherent in the product of that project will be managed. In our opinion, Council should reconsider its decision.

Garland Laliberte P. Eng., Honorary Life Member of APEGM, Past President of APEM, Past Chair of the Canadian Engineering Accreditation Board, Past President of the Canadian Council of Professional Engineers and Dean Emeritus (Engineering), University of Manitoba

- Dave Ennis, P. Eng., Honorary Life Member of APEGM, Past Director of Engineers Canada, Retired Executive Director of APEGM

ASSUMPTIONS AND EARTHQUAKES - A REALITY CHECK

IMAGINE:

In downtown Winnipeg, it is 12:51 pm on a sunny Tuesday in August.

Without warning, there is a loud rumble, the earth shakes violently and everything around you is smashed to the ground in 30 seconds. Is it a huge bomb? Terrorists? Tornado? Or what?

THEN - Many people are crushed and dead in choking dust. There is water gushing everywhere from broken water mains.

NOW - there is no electricity. No sewerage. No communications. Gas leaks and perhaps fires. No Water. No firefighters for several hours. There are mangled busses and other vehicles. Streets clogged with debris. Screaming injured. Panicking uninjured citizens scrabbling about like beheaded chickens. - UTTER CHAOS.

Also - Most of the basements of homes etc., constructed in stone masonry, have failed. (This is independent of the inherent strength of the timber structure above.)

HOW SAD about the Golden Boy and those wonderful cathedrals, churches and statues.

Everyone, who is able, rushes to Assiniboine Park or any other open space. - Anywhere that nothing can fall on them. ARE THE BRIDGES SAFE?

REALITY

THIS WAS THE REALITY IN CHRISTCHURCH, in the South Island of New Zealand on February 22, 2011.

Buildings now had open facades. Floors and stairwells had collapsed trapping people with serious injuries. Ground accelerations were several times building code specs.

The Urban Search and Rescue (USAR) teams from around the country were mobilized as soon as possible. - A real a.s.a.p. The airport had to be safe.

After several hours, or days, many were rescued but some had limbs amputated to obtain their freedom. But many were killed. Sad stories abound.

Immediate Needs: - Emergency services, potable water, toilets, food, shelter, telephone, etc. Where are my loved ones? - HOW CAN I HELP?

Other Questions: - Is our home safe? Where can we live? How do we clean up the mess of the sand inside and outside the house? (Due to liquefaction)

If not destroyed, many landmarks and heritage buildings may be restorable costing many millions of dollars – if finances are available. A lot of soul searching has been done.

The Institution of Professional Engineers NZ (IPENZ) immediately organized a roster of volunteer professionals to assess the safety for access to the damaged buildings and structures. Other qualified people systematically inspected all homes. Red, Orange or Green notices were affixed as applicable. As of July 2011, the extended "RED ZONE", including much of the CBD, is still cordoned off until all essential demolition is complete.

BACKGROUND

The city of Christchurch was built up in since about 1860. The style and design was similar to many of those in Winnipeg. Typically 1 – 3 floors of stone masonry, or bricks with wooden joists and floor decking with linoleum, carpet or oiled hardwood finish. Fancy parapets, tied back verandas over sidewalks and ornamental masonry cornices and windows. Just like Winnipeg.

The climate is temperate. Basements are rare with water supplied at about 2 ft depth. Houses are founded either on piles with crawl space, or slab on grade. In at risk areas, reconstruction of a home will only follow a full geotechnical report.

Older sewers were earthenware with mortar joints and on very flat grades, typically 1:600 to 1:1000. Depths are 3-10 ft. Some pumping stations floated 1-2 metres due to the liquefaction which also destroyed hundreds of concrete slab founded homes.

Engineers had traditionally ASSUMED the Christchurch area to have low seismic risk. The city is on the coastal edge of the Canterbury

Letters to the Editor is continued on page 24

APEGM Filipino Members Chapter Launched

Dr. Marolo Alfaro, PhD, P.Eng.

In 2009, a group of Philippine-educated engineers formed an organization to represent the interests of Filipino-Canadian members of the Association of Professional Engineers and Geoscientists of Manitoba (APEGM). The group met with Council to seek a working relationship. Dr. Marolo Alfaro, P.Eng (a civil engineering professor at the University of Manitoba) made a presentation explaining the formation of the group and expressing its intent. APEGM legal counsel recommended a memorandum of understanding (MOU) to define issues important to both organizations. In the beginning this sounded like a straightforward MOU, but ended up generating an extensive debate among Council members. In 2010, APEGM Council approved the formation of the Filipino Members Chapter. It is the only Chapter of APEGM with members from a specific ethnic group.

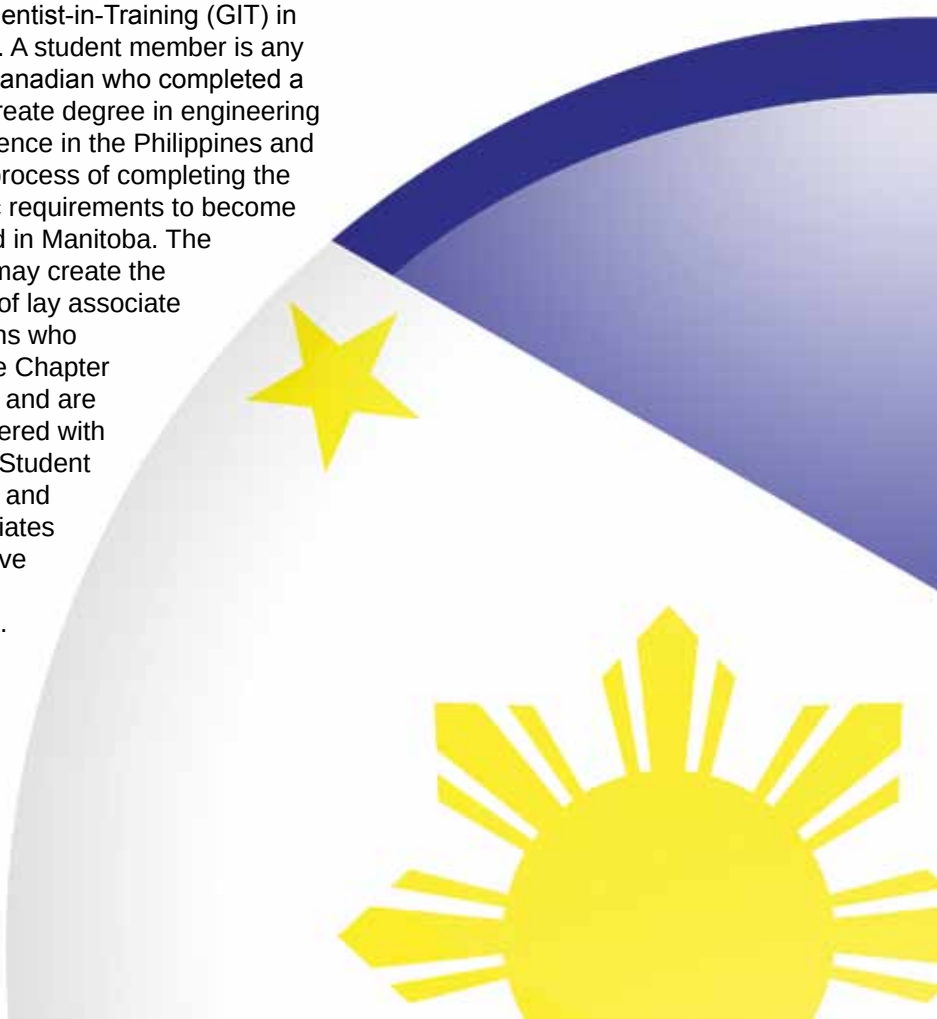
CHAPTER OBJECTIVES

The Chapter has the following objectives: (a) assist APEGM in matters of engineering and geoscience regulation and professional practice; (b) encourage and facilitate the study, discussion and exchange of ideas and information among the members on all questions of interest as engineers and geoscientists and as citizens; (c) provide a forum for members to formally recognize the voluntary contributions of its members to APEGM and as citizens in the community; (d) promote, undertake, and/or engage in such programs, functions, and activities that will contribute to the professional growth and career development of its members; (e) establish a registry of Filipino-Canadian P.Eng's, P.Geo's, EITs and GITs within Manitoba; (f) support the educational aspirations of future members by granting academic scholarships to deserving Philippine-educated engineering and geoscience professionals and (g) engage in community service.

The Chapter membership has two categories: full and student members. A full member is any Filipino-Canadian who completed a baccalaureate degree in engineering or geoscience in the Philippines and is a registered Professional Engineer (P.Eng), Professional Geoscientist (P.Geo) or Engineer-In-Training (EIT) or Geoscientist-in-Training (GIT) in Manitoba. A student member is any Filipino-Canadian who completed a baccalaureate degree in engineering or geoscience in the Philippines and is in the process of completing the academic requirements to become registered in Manitoba. The Chapter may create the category of lay associate for persons who wish to be Chapter members and are not registered with APEGM. Student members and lay associates do not have voting privileges.

SIGNING CEREMONY

On August 11, 2011, the Constitution and By-laws of the Chapter were signed by APEGM President Bill Girling, P.Eng and Chapter President Ramon Cairo, P.Eng. The signing ceremony was attended by APEGM Executive Director Grant Koropatnick, P.Eng and the rest of Chapter Executive Officers: Valentin Abella, P.Eng (VP-Communications), Roman Nepomuceno, P.Eng (VP-Finance), Marolo Alfaro, PhD, P.Eng (VP-Technical) and Councillors Rodolfo Soriano, P.Eng, Edwin Sapnu, P.Eng, Arnel Oberez, MSc, P.Eng.



During the signing ceremony, Grant Koropatnick appreciated the patience and determination of Philippine-educated engineers and geoscientists in satisfying all requirements for registration. He expected Chapter members to encourage and guide Philippine-educated engineering and geoscience professionals who are seeking registrations. This is increasingly important because of the

APEGM Filipino Members Chapter Launched is continued on page 25

Signing of Chapter Constitution and By-laws by Bill Girling and Ramon Cairo

Left to Right: Grant Koropatnick, Roman Nepomuceno, Edwin Sapnu, Ramon Cairo, Bill Girling, Rodolfo Soriano, Valentin Abella, Arnel Oberez and Marolo Alfaro

Heritage of Flood Control and Protection 2011

As a means of celebrating the role of engineering and geosciences in the 90th year of APEGM's history, the Heritage Committee began a series of articles in 2010, under the general theme of "Liquid Assets," that link water to the economic and social development of the province. This is a follow-up article in light of the spring and summer of 2011, when the liability side of water's balance sheet affected the lives of Manitobans and the contribution of engineering and geoscience to the flood control and protection system have been both recognized and questioned. From the experience of 2011 Manitobans, and Winnipeggers when they gaze beyond the perimeter highway, now have an enhanced awareness of the realities of living in the bottom of a former glacial lake.

Awareness of vulnerability to flooding has been with Manitobans since before the Province's entry into confederation. The spring of 1826 brought the greatest flood to inundate the valley and Red River Settlement, estimated by engineers on the basis of journals and eye-witness recollection to have risen to an elevation of 764.87 ft. above sea level. The 1852 flood crested two feet lower than in 1826, but it caused more damage in the settlement due to urban growth and rapid rise due to a number of large ice jams. In May of 1950 the Red River crested at 757.87 ft. at James Avenue, creating a lake seven miles wide at Winnipeg's southern limits.

One of the earlier engineering papers on flood mitigation was authored by D.L. McLean, who had previously been a design engineer on the Greater Winnipeg Water District aqueduct. It was published in 1920. Since then engineers have continued to be instrumental in the Province's system of flood control and protection. That contribution has been acknowledged throughout the system's development, and was recognized by the association during the Centennial of Engineering in Canada in 1987. The physical reminder is a plaque dedicated by the Lieutenant-Governor of Manitoba at the 1987 annual meeting.

The wording of the dedication of the plaque was:

> *On the occasion of the Centennial of The Engineering Profession in Canada and to recognize the Profession's service to the citizens of the Province and its contribution to the development of the Province, the association of Professional Engineers of Manitoba has chosen to honor the engineering undertaking which exemplifies that contribution over the past 100 years.*
>
> *By Reducing damage and the threat to lives and property from recurring floods in many parts of the Province, the Manitoba Flood Control and Protection System has greatly contributed to the peace of mind and the social and economic well-being of a vast number of the citizens of our Province. The works, the operational procedures and the emergency response mechanisms which comprise the system are deemed to epitomize the obligation of Professional Engineers to ensure the safety and comfort of people in all engineering undertakings.*
>
> *October 19, 1987*
>
> *Dedicated by*
> *The Honourable George Johnson,*
> *Lieutenant Governor of Manitoba*

The spring of 1826 brought the greatest flood to inundate the valley and Red River Settlement, estimated by engineers on the basis of journals and eye-witness recollection to have risen to an elevation of 764.87 ft. above sea level. The 1852 flood crested two feet lower than in 1826, but it caused more damage in the settlement due to urban growth and rapid rise due to a number of large ice jams. In May of 1950 the Red River crested at 757.87 ft. at James Avenue, creating a lake seven miles wide at Winnipeg's southern limits.

Other wording on the plaque describes features of the system as it was in 1987. It included; the Red River Floodway, Shellmouth Dam, Assiniboine [Portage] Diversion, Seine River Diversion, Fairford Control Works, Diking Systems, and Flood Forecasting. The wording can be accessed at the Heritage Committee section of the APEGM website. A copy of the 1920 paper by D.L. Mclean is also available in that section.

Since 1987

The descriptions on the 1987 plaque provided an overview of the system at that time. Most of them have since become familiar to Manitobans. Since then we have experienced the 1997 "Flood of the Century" and are aware that the Red River Floodway has been expanded. In 1987 eight communities in the Red River Valley were protected by ring dikes. After the 1997 flood twelve additional communities were protected and 1800 homes, businesses and farms in the valley were either raised onto pads or protected with individual ring dikes. The effectiveness of the flood control works in the Red River Valley was evident during the spring of 2011 when very little flood damage occurred even though the flood was larger than the historic 1950 flood.

But there have been other projects outside the Red River Valley that have not garnered as much attention. The first two below were mentioned in the 1987 plaque:

Seine River Diversion

The first major floodwater diversion constructed in Manitoba, the Seine River Diversion, diverts excess Seine River flows of up to 4270 cfs from a point upstream of Ste. Anne to the Red River near St. Adolphe. The diversion was constructed in 1962 at a cost of $1.8 million to provide flood control along the Seine River through and below Ste. Anne.

Fairford Control Works

Located at the outlet of Lake Manitoba on the Fairford River, the Fairford Control Works together with upstream and downstream channel improvements were constructed in 1961 to control Lake Manitoba levels within a much narrower range than that which occurred historically. The control structure doubles as the PTH #6 highway bridge. Stop logs are installed or removed to control the flow.

Carman Diversion

A diversion of the Boyne River around the Town of Carman was completed in 1991. Before the diversion was constructed Carman experienced flooding in 1893, 1923, 1970, 1974, and 1979. The 1979

Above: Damage at Twin Beaches (Lake Manitoba)
Right: The Souris River at Victoria Park

flood caused damages of over $3 million. The $6 million diversion diverts flood water from the Boyne River west of Carman through a 9.8 km channel that exits into the Norquay Channel. It has been very effective in flood prevention.

Ste. Rose du Lac

Following a 1975 flood from the Turtle River in Ste. Rose du Lac a diking system was constructed through the town. A flood in 1986 overtopped these dikes. The dikes have since been upgraded to provide protection against a one in 100 year flood event. The dikes were raised and sandbagging was necessary to protect Ste. Rose du Lac in 2011

The Pas Area

A series of dikes along the Saskatchewan River and Carrot River in the vicinity of The Pas has been constructed to protect agricultural and residential areas. The Carrot River is located south of the Saskatchewan River flowing easterly. It is generally about 10 km south of the Saskatchewan and joins that river just before it reaches The Pas. The Carrot River has approximately 39 km of dikes. The Salt Channel which protects the western boundary of the Carrot valley area has 34 km of dikes. Together with the Pasquia River dikes they protect 57,000 hectares of farm and residential land.

Rock Lake, Pelican Lake Controls

Completed in 1991, the Pelican Lake Controls include a diversion channel from the Pembina River to Pelican Lake and control structures. The diversion channel brings water to the lake to raise low lake levels and drains water from the lake to prevent high water levels, providing improved regulation of water levels. At Rock Lake a weir and an outlet channel to the Pembina River have been built, along with dikes on the west side of the lake to protect farmland.

Assiniboine River Diking Systems

Downstream of the Shellmouth Dam (the reservoir formed by the dam, the Lake of the Prairies, extends into Saskatchewan) the Assiniboine River meanders in the bottom of the deep river valley that was formed by the melting glaciers approximately 10,000 years ago. The valley is subject to flooding when the Assiniboine River spills over its banks as happened in 1976 and in 1995. The Town of St. Lazare, 60 km downstream of the dam, has been protected by a ring dike.

Further downstream at Brandon the Assiniboine flows in the deep valley on the north side of the City. While most of the City is located on the higher elevations above the valley floodplain, industrial, commercial, residential and recreational properties and facilities exist in the floodplain. Most notable is the Brandon Flats area located on the south side of the river between First Street and 26th Street. Prior to 2011, flood prone properties were protected to varying degrees, but generally not against a 100 year flood.

East of Brandon the Assiniboine River breaks out of the glacial valley into the Assiniboine River delta east of the Manitoba escarpment and enters the flat remnants of Glacial Lake Agassiz. East of the Portage Diversion and the City of Portage la Prairie to just east of Baie St. Paul (near St. Francois Xavier) there are 67 km of diked channel for a total of 134 km of dikes. The dikes were first constructed in 1912. They were reinforced in 1950 and again following the 1997 flood. They protect farmland, farms, and rural residences as well as the communities of Elie, La Salle, Sanford and Starbuck.

Souris River

The Souris River begins in Saskatchewan, runs south into North Dakota, and returns to Manitoba, joining the Assiniboine River near Treesbank. In North Dakota the River passes through the City of Minot and many smaller centers. In Manitoba the Souris passes through the towns of Melita, Souris, and Wawanesa. Those Manitoba communities had dikes along the Souris before 2011.

The "Perfect Storm" of 2011

Despite the pre and post 1987 measures, with the events of 2011 we have come to realize that Manitoba is vulnerable to the impact

Left: 18th Street Brandon
Above: Portage Diversion, May 11

of major flood events. While the system performed well for the Red River Valley, unusually high runoff on the Assiniboine and Souris Rivers, exceptional rainfall in Saskatchewan, and high water levels in Lake Manitoba and Lake St. Martin converged to require emergency measures and caused devastation – particularly on Lake Manitoba and Lake St. Martin.

At Brandon, to address the predictions made in February, the City raised approximately 5 km of dike by about 0.6 m, thought to be 0.3 m above the predictions for the 2011 spring flood. But it far exceeded all expectations and required an enormous additional diking effort including the assistance of the Canadian Army. The Assiniboine had several crests; the largest had a flow of 37,100 cfs representing a 300 year flood. While the dikes protected the low lying areas, the risk of a breach required evacuation of the Flats area for several weeks and traffic was disrupted on the major access roads to the city

East of Portage la Prairie where the design capacity was a flow of 18,500 cfs, the dikes were at considerable risk and the Canadian Army was called upon to assist with strengthening and inspection. Because of the softened condition of dikes due to persistent wet weather some sections were reinforced with sandbags delivered by helicopter. Because the flow in the Assiniboine at Portage la Prairie was 52,400 cfs (34,500 beyond the downstream capacity) the Portage Diversion was upgraded to divert a peak of 34,000 cfs to Lake Manitoba, much beyond its 25,000 cfs design capacity. The emergency over capacity flow required evacuations along the diversion for safety.

As another emergency measure to prevent overtopping of the dikes, the south dike was breached at the Hoop and Holler bend to release water tothe LaSalle River. While only approximately 400 cfs were released, the deliberate release and flooding of lands south of the river illustrate the grave concern along the Assiniboine between Portage la Prairie and Baie St. Paul.

There were three crests on the Souris River, the first on April 9, 2011. Each time dikes were raised and reinforced. The last crest was caused by a major rainstorm in Saskatchewan near the middle of June. The flood devastated the City of Minot where 11,000 people were displaced and 4,200 residences were inundated, many to roof level.

In Manitoba, dikes were raised by up to two metres above the previously raised and reinforced levels, and once again the Army was called upon at the last minute to assist. The peak flow exceeded 30,000 cfs, in the range of a 300 year flood. The temporary dikes held and averted a disaster similar to what occurred in Minot. Extensive damage was caused to roads, bridges, and other infrastructure. Most notable was the loss of the famous Souris swinging bridge. As the crest approached it was feared the bridge would be ripped from its moorings which could have damaged the dikes on each side of the river. One end of the bridge was severed as a precaution.

The diversion of water into Lake Manitoba, along with high flows in the Waterhen River from Lake Winnipegosis and in the Whitemud River has caused an enormous flood all around Lake Manitoba and Lake St Martin. At this time, July 21, 2011, Lake Manitoba is above 817 feet above sea level. Many stakeholders around Lake Manitoba, including farmers, ranchers and cottagers feel the ideal level is 810.5 – 812.5 feet. That range was adopted by the Lake Manitoba Regulation Advisory Committee in 2003. That leaves the July 2011 level at 5.5 - 7 feet above optimum.

To compound the situation, a fierce windstorm from the northwest on May 31, 2011 caused widespread destruction even as protective measures were being undertaken prior to the rise in lake level. Winds were 75 kilometers per hour with gusts to 100 kilometers per hour. The destruction to the farms and ranches and the cottage communities from Twin Lakes in the south to Laurentia Beach and Johnson Beach in the north was devastating and still has not been fully assessed as access for roughly two thirds of the cottages, including permanent residents, was only restored in mid July. Delta Beach at the south end of the lake was devastated.

Diking against the high water and potential windstorms continues for the many homes and communities all around the lake. While three weeks of dry and hot weather in July have assisted and Lake Manitoba levels have stabilized for several days, the predicted peak of 817.5 has not yet been assured. The flood resulting from high lake levels and wind has been described as a once in 2000 year event.

Lake Manitoba drains through the Fairford Control Structure described above, into Lake St. Martin and the Dauphin River to Lake Winnipeg. With Lake Manitoba at high levels the flow through the Fairford Control Structure is at 20,800 cfs compared to a normal flood flow of 6000 cfs in summer and 3500 cfs in winter. Lake St. Martin and the Dauphin River have also been flooded. Four First Nation Communities; Fairford First Nation; Little Saskatchewan First Nation; Lake St. Martin First Nation; and Dauphin River First Nation have been evacuated for up to three months with no end in sight. Lake St. Martin is at elevation 806, three feet above the historic 1955 peak of 803 and 6-8 feet above the desirable range of 798-800.

The Lakes are predicted to remain at flood levels well into winter and approximately 2000 residents and cottagers are not permitted into most areas except for day visits to retrieve belongings. Thousands of cattle have been moved to higher ground or out of the area for feed as the hay crops are flooded.

Moving Forward

The experience of the many necessary emergency actions and the devastation from the outcomes of the 2011 flooding in Manitoba tells us that the job of effective flood control and protection is not yet finished. After the 1950 flood the focus of flood protection was on protecting Winnipeg from future floods. After the 1997 Red River flood the focus was on increasing flood protection for Winnipeg and the whole Red River Valley. Both of these efforts have proved very successful. With the 2011 flood the focus has turned towards increasing flood protection along the Assiniboine and Souris Rivers and on Lakes Manitoba and St. Martin.

A major study on an up to 9000 cfs channel parallel to the Dauphin River from Lake St. Martin to Lake Winnipeg has been completed and released in late July. It includes a seemingly optimistic construction completion date of November 1, 2011. The 8 km long channel from Lake St. Martin to Big Buffalo Lake, from which the water would flow through existing streams and return to the Dauphin River near Lake Winnipeg is estimated to cost $100 million. The channel would go through very wet bog and the location is only accessible for equipment by crossing Lake St. Martin by barge. If emergency approval and funding from the federal government is obtained, environmental impact studies would have to be made during construction to meet the November date. Opposition has already been expressed by the Dauphin River First Nation and the community of Dauphin River over increased flows and the effect of river levels on access, the Dauphin River, ice conditions and the fishery.

The Fairford Control structure is operating at maximum capacity and the new channel will only help to reduce water levels by making it possible to operate the control structure at a higher capacity during the winter when the flow normally has to be reduced to prevent flooding along PR 513 and at Dauphin River due to ice conditions in the Dauphin River. It is predicted the lake could be drawn down to elevation 813.1 by spring, rising to near 814 with spring runoff, still several feet above optimum with possible use of the Portage Diversion looming.

A second phase would see a new bypass channel from Lake Manitoba to Lake St. Martin estimated to cost $60 million. The channel would increase the flow capacity from Lake Manitoba to Lake St. Martin. A third phase is to increase the capacity of the bypass channel. These necessary works are only in the concept stage. Providing effective controlled drainage of the Lake Manitoba system, and by extension the Lake Winnipeg and Nelson River system, will be necessary if Manitobans are to preserve and maximize the asset of our water supply. ■

continued from page 17, Letters

Plains. These consist of alluvial gravels and sand several hundred metres deep. Nobody knew that a fault was hidden below. The more distant Mag. 7.1 event on Sept 4, 2010 was assessed at about 1:15,000 probability. The Mag. 6.3 event of Feb 22, some 5.km under the city, was one of about 7000 aftershocks. Up to 10-20 were occurring in a 24-hour period.

Just as people were coming to terms with the situation, planning a new life and deciding which heritage buildings should be restored, another major aftershock Mag. 6.3 happened on June 13, 2011. For some people, the decision was made for them as many of the already damaged structures collapsed. Design codes are being revised.

There are now some temporary houses built on open land and parks. More are in progress. The eastern suburbs subject to liquefaction have sunk about 1.0 m while the nearby Port Hills (extinct volcano) have risen about 0.5m. Boulders and rock falls caused death and destruction.

WHAT ABOUT VANCOUVER?

When the big quake comes, liquefaction will be widespread across the lower Fraser valley. It will close Vancouver International Airport on Sea Island plus the main highways south and east and probably the Abbotsford airport. Landslides and/or avalanches are likely to close highways north and east of Hope as well as to the ferry terminals at Horseshoe Bay.

The only reliable access to Vancouver is likely to be by sea – if the channel under Lion's Gate Bridge is clear and some of the wharves are operable. No power hence no cranes.

Some airports in Washington State may be available if they are not too seriously damaged.

UTTER CHAOS

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I'M VERY GLAD THAT WE LIVE IN WINNIPEG.

- Gordon K. Lovatt, P.Eng., MIPENZ. ■

continued from page 19, APEGM Filipino Members

recent influx of Philippine immigrants in Manitoba and APEGM has seen a rise in the number of Philippine-educated engineering professionals who are seeking registration. Filipino engineers applying for registration comprise one-third of the assessment applicants. The Executive Officers of the Chapter promised to support and assist APEGM in matters of engineering and geoscience regulation and professional practice.

CPD & COMMUNITY SERVICE

The Chapter is planning several activities including continuing professional development seminars, mentorship programs, networking initiatives, professional and community service events, cultural integration opportunities and outreach programs.

The process to become a registered engineer or geoscientist in Manitoba consists of two main steps: (1) assessment of academic qualification, and (2) recognition of a minimum of 4 years of valid engineering work experience (with at least 1 year in Canada). For further information, please visit the APEGM website: www.apegm.mb.ca. ■

Snapshot:

Group of APEGM new members at the Spring 2011 New Members Luncheon held April 19, 2011

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.

Would you or your company like to advertise in an upcoming issue of the Keystone Professional? More information, including our full Advertising Policy, Mechanical/General Information, and Insertion Order form can be found at www.apegm.mb.ca/KeystoneAdvertising.html or by contacting Angela Moore at amoore@apegm.mb.ca.

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INTERMEDIATE STRUCTURAL ENGINEER 27-0222

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careers.genivar.com GENIVAR

University of Manitoba Students Excel in 2011 Design Competitions

It's a great time to be an engineering student. For past generations of engineers, the only opportunity for hands-on engineering was the manufacture of a small vise at Red River Community College. Over several weekly excursions students used files, drills, lathes, and mills to produce a small, rust-prone, clamp-on table vise. Maybe some engineers still have those early creations.

Today, engineering students have numerous opportunities to design, build, and manage a product; everything from planes to tractors. In the past, University of Manitoba teams have been very successful in vehicle design, and the tradition continues. Recently a team from the university participated in the 14th Annual International ¼-Scale Tractor Student Design Competition and finished fifth overall. The U of M team jumped from 17th place in 2010 to fifth place in 2011 and earned the "Most Improved" award.

The tractor design competition is not a one dimensional experience. The ASABE ¼-Scale Tractor Student Design Competition requires that participants analyze market factors, document their development and test efforts, and sell the merits of their product—just as an engineering team would in the real world. The competition has four components: written design report, team presentation, static design judging, and performance—the last element comprising a multistage tractor pull. Each team is challenged to optimally design their tractor according to that year's specifications. In the real meat and potatoes category, the tractor pull, the U of M team achieved a remarkable second place finish!

The UMSAE Aero Team was another U of M design team to bring home honours, finishing ninth overall in a field of 47 competitors. The competition took place in Marietta, Georgia, from April 29 to May 1. The plane constructed by the U of M team was no midget, as it appeared to have an eight-foot wingspan. One of the design constraints was that the combined dimensions of the aircraft were not to exceed 225 inches while not exceeding a maximum weight of 55 pounds. The UMSAE team excelled in presentations, scoring first in the technical presentation and winning the NASA Systems Engineering Award in the Speciality Awards class.

Congratulations to the teams and good luck in next year's competitions.

Associated Engineering Opens New Office in Winnipeg

Associated Engineering is a Canadian, employee-owned consulting engineering and project management firm. We provide engineering and project management services in the water, infrastructure, environmental, transportation, energy, building, and asset management sectors.

Sustainability is part of our business, as well as every project we undertake. It is our commitment to improving the environment and reducing our carbon footprint. See our website at www.ae.ca.

Jeff O'Driscoll, P.Eng. joins our new Winnipeg office as Branch Manager. Jeff has over 20 years of experience in municipal engineering, project management, and construction. He specializes in design, construction management, and contract administration of water supply, treatment, and distribution systems, and is a leader in assessing climate change vulnerability on municipal infrastructure. Jeff's experience includes projects across Manitoba and Canada, as well as Central and South America.

Ken Anderson, P.Eng. joins our new Winnipeg office as Water Group Manager. Ken has over 14 years of experience in a variety of engineering projects, from environmental and utility studies to design and contract administration on municipal and water projects. He specializes in design and construction management of water treatment and pumping facilities, and has worked on small and large projects for communities across Manitoba.

Darcy Robinson, P.Eng., LEED AP joins our new Winnipeg office as Electrical, Instrumentation & Controls Group Manager. Darcy has 12 years of experience including feasibility studies, design, contract administration, and project management for projects in the commercial, industrial, institutional, recreational, residential, and water and wastewater sectors. Darcy has participated in power quality projects including short circuit and coordination studies, power factor correction, harmonic filtering, lightning protection, and critical power systems.

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50 BEST MANAGED COMPANIES

EPIC Educational Program Innovations Center

Upcoming Course Schedule	PDHs*	Location	2011			
Civil			Apr	May	Jun	Aug
Design and Maintenance of Roof Structures on Industrial Buildings	12	Winnipeg	28-29			
Structural Steel Connections - Design, Detail and Specifications	12	Regina		26-27		
Upgrading Bridge Inspection Skills	12	Winnipeg				3-4
Construction			Apr	May	Jun	Aug
Cost Engineering - Effective Estimating and Cost Control of Construction Projects	12	Saskatoon				8-9
Electrical			Apr	May	Jun	Aug
Electrical Design Concepts for Non-Electrical Engineers	18	Winnipeg	26-28			
Electrical Design for Industrial, Commercial and Institutional Facilities	24	Regina			14-17	
Environmental			Apr	May	Jun	Aug
Achieving Water Quality Standards by Effective Stormwater Management	12	Winnipeg		9-10		
Small Communal Wastewater Treatment Systems	12	Winnipeg	27-28			
Mechanical			Apr	May	Jun	Aug
Heat Exchangers - Design, Operation and Performance	18	Regina		2-4		
Pumps and Compressors: Selection, Operation and Maintenance	18	Regina		4-6		

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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Each scholarship will assist engineers returning to university for further study or research in a field other than engineering. The discipline should favour the acquisition of knowledge which enhances performance in the engineering profession. Candidates must be accepted or registered in a faculty other than engineering.

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This scholarship will assist engineers returning to university for further study or research in the field of public policy development. The field of study chosen, whether it is engineering or another subject area, should favour the acquisition of knowledge pertinent to better serve the public interest by bringing the perspective of the engineering profession.

Candidates must be accepted or registered, no later than September 2012, in an acceptable master's or doctoral program that will greatly enhance their expertise, abilities and potential to influence the development of public policy.

APPLICATION DEADLINE: March 1, 2012

Application forms are available at:
www.engineerscanada.ca or by contacting the National Scholarship Program at Engineers Canada:
awards@engineerscanada.ca

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DECISION AND REASONS

IN THE MATTER OF A HEARING UNDER THE ENGINEERING AND GEOSCIENTIFIC PROFESSIONS ACT, AND IN THE MATTER OF THREE CHARGES REGARDING THE CONDUCT OF DONALD EDWARD SPIKULA, A FORMER MEMBER OF THE ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF MANITOBA.

This matter came on for hearing before a panel of the Discipline Committee commencing on December 15, 2010 and continued on April 5, 2011 at a hearing room at the Association of Professional Engineers and Geoscientists of Manitoba in Winnipeg.

THE CHARGES

The Investigation Committee submitted three charges against Donald Edward Spikula relating to alleged unskilled practice and professional misconduct, as defined in section 46(1) of The Engineering and Geoscientific Professions Act.

Re-Amended Charge Related to Interaction with the Investigation Committee

The Re-Amended Charge submitted by the Investigation Committee alleged that Mr. Spikula:

1. failed to cooperate with the Investigation Committee in accordance with Article 33 (1) of the Engineering and Geoscientific Professions Act, by:

   a. failing to respond to the Investigation Committee's requests for information;

   b. failing to maintain or advise APEGM of an address or phone number at which he could be contacted despite the existence of an ongoing investigation, such that the Investigation Committee was unable to communicate with him or obtain information from him;

   c. failing or refusing to accept communications from APEGM in relation to an investigation. The Investigation Committee's efforts to contact Mr. Spikula included a letter sent by registered mail on August 28, 2008 to the mailing address appearing in the records of APEGM, a letter sent on September 26, 2008 to his home address and phone calls to the phone numbers appearing in the said records which numbers were disconnected;

2. contravened Article 7.3 of the By-laws by failing to advise APEGM of a change of his address within 30 days of the effective date of the change.

Amended Charge Related to Services Provided to Dauphin Consumer's Co-operative

The Amended Charge submitted by the Investigation Committee alleged that Mr. Spikula:

1. failed to notify another professional engineer when he gave an opinion on that engineer's report, contrary to Canon 5.6 of the Code of Ethics;

2. characterized material structural deficiencies as "minor structural problems" in a report dated March 9, 2000;

3. reported on the condition and structural integrity of a building in a report dated January 9, 2004 without having performed a site investigation sufficient to assess structural deficiencies previously identified by another professional engineer. In particular, Mr. Spikula did not obtain entry to the building despite that certain of the deficiencies could only be observed from the interior of the building; and

4. concluded in the January 9, 2004 report that the building "appears to be functioning well in terms of structural integrity" when he:

a. was aware of material structural deficiencies noted by another professional engineer, and

b. had not adequately assessed the materiality of identified deficiencies.

Charge Related to Services Provided to Larry Ushkowski

The Charge submitted by the Investigation Committee alleged that Mr. Spikula:

1. did not produce revised (as-built) drawings to reflect major changes in the foundation of the building and addition;
2. failed to provide proper project supervision, particularly in dealing with the contractor and his client, evidenced by the contractor making major changes with regard to electrical and footing location, which Mr. Spikula did not attend to;
3. failed to respond to his client and on-site personnel in a timely manner;
4. failed to implement proper contract administration for an engineering project of this magnitude; and
5. failed to issue sealed drawings to his client in a timely manner.

Joint Submission by Mr. Spikula and the Investigation Committee

Re-Amended Charge Related to Interaction with the Investigation Committee

Mr. Spikula appeared with counsel and pleaded guilty to the second particular of the Re-Amended Charge.

Counsel for the Investigation Committee advised that the Investigation Committee would stay or withdraw the first particular of the Re-Amended Charge.

Amended Charge Related to Services Provided to Dauphin Consumer's Co-operative

Mr. Spikula appeared with counsel and pleaded guilty to the third particular of the Amended Charge.

Counsel for the Investigation Committee advised that the Investigation Committee would stay or withdraw the first, second and fourth particulars of the Amended Charge.

Charge Related to Services Provided to Larry Ushkowski

Mr. Spikula appeared with counsel and pleaded guilty to the third and fourth particular of the Charge.

Counsel for the Investigation Committee advised that the Investigation Committee would stay or withdraw the first, second and fifth particulars of the Charge.

Penalties

Counsel for the Investigation Committee and counsel for Mr. Spikula presented a joint submission as to penalty. The joint submission was for:

a. a total of $12,000.00 in fines - $2,000.00 in relation to the conviction pursuant to the Re-Amended Charge dated March 15, 2011, $5,000.00 in relation to the conviction pursuant to the Charge dated October 15, 2009 and $5,000.00 in relation to the conviction pursuant to the Amended Charge dated March 15, 2011;

b. costs of the investigation and prosecution of $31,000.00 all inclusive of the three charges;

c. both the fines and the costs be paid within 90 days from the date the Resolution Orders are signed;

d. Mr. Spikula to be precluded from applying for reinstatement with APEGM until the fines and costs have been paid;

e. Publication of the convictions and penalties to be made in the Keystone Professional with Mr. Spikula's name to be disclosed.

Submission of the Investigation Committee

Letters to the Editor is continued on page XX

Counsel for the Investigation Committee summarized the factual background of the three charges to which Mr. Spikula pled guilty. Counsel also presented certain documents as exhibits with the consent of Mr. Spikula.

Counsel outlined the several unsuccessful attempts by APEGM to have Mr. Spikula respond to a complaint. The problem was that Mr. Spikula had moved and did not receive this correspondence. By pleading guilty, Mr. Spikula admitted that he had moved and did not advise APEGM of his change of address contrary to Article 7.3 of the By-laws.

In relation to the Charge with respect to the Dauphin Consumer's Co-operative, counsel outlined that Mr. Spikula had been engaged by a contractor or material supplier to comment on the condition of a building that it had supplied and to comment specifically on the report prepared by another professional engineer that identified 12 deficiencies. Initially, Mr. Spikula merely provided comments. But later, his client requested a formal condition inspection report. Mr. Spikula prepared such a report but he failed to enter the building to assess its condition and he failed to qualify his report by expressly stating that he had not entered the building and that his opinions were based on looking in from the outside. Mr. Spikula now acknowledged that he did not conduct a sufficient inspection to express the opinions that he expressed in this report. Some of the deficiencies outlined by the professional engineer engaged by the owner required an interior inspection.

The third Charge related to a contract for the construction and renovation of a building. Mr. Spikula was initially engaged to design the foundation and then he was engaged to design the loading dock and was hired as project manager. Mr. Spikula provided a quote date July 31, 2007 and an email dated August 7, 2007. The quote was a price to build the warehouse. The email was a quote for the loading dock. There was no indication of the scope of work in the email. The two documents constituted the entirety of the contractual documents prepared by Mr. Spikula. There was no contract for engineering services. The total cost of the project was in the range of $500,000.00 to $600,000.00. By pleading guilty to particulars three and four, Mr. Spikula admitted that he failed to respond to his client and on-site personnel in a timely manner and failed to implement proper contract administration for an engineering project of this magnitude.

It was pointed out that Mr. Spikula had a prior disciplinary record. He had been convicted of three charges of professional misconduct in 2003 and the Resolutions and Orders were exhibited. The prior convictions dealt with similar issues of failing to cooperate with APEGM, in respect of which Mr. Spikula had been reprimanded, and also with poor client communications and reports, in respect of which he had also been reprimanded.

It was submitted that the joint submission in this case appropriately represented progressive discipline as required in that the discipline sought was no in the form of fines rather than the prior reprimands. It was also pointed out to the panel that there is a legal principle that governs joint recommendations as to penalty. In the case of Rault v. The Law Society of Saskatchewan 2009 SKCA 81, the Saskatchewan Court of Appeal stated that there is an obligation of a trial judge to give serious consideration to a joint submission on sentencing agreed upon by counsel unless the sentence is unfit or unreasonable; or contrary to the public interest; and this principle should not be departed from unless there are good or cogent reasons for doing so.

Submission of Mr. Donald Edward Spikula

Counsel for Mr. Spikula said that his client is 57 years old, unemployed, a father of four, and is experiencing significant health problems. He has a strong need to get back to work. Mr. Spikula had 12 years of practice with no problems in his performance, and has had no such problems since 2007. He has not been practicing engineering since 2007. He wished to make it clear that the plea-bargains were not "trade offs" but some charges or particulars were withdrawn by the Investigation Committee due to the facts presented at the joint meetings.

Mr. Spikula had been refused entry to the building he was asked to assess, and it was agreed that he should have pointed that out in his report. It had not been his intention to ignore or avoid the Investigation Committee requests for information. He had not received them. He agreed that he should have provided his change of address to APEGM within 30 days. He agreed that he was slow to respond to a client in a timely manner. It was also admitted that he should have had better paperwork for the relatively large contract in which he was involved.

Mr. Spikula accepted full responsibility for his actions. He apologized to APEGM for the time spent on the investigation and the prosecution. He requested approval of the plea-bargain and joint submission as to penalty.

Reasons of the Panel of the Discipline Committee

During and after the hearing, the Panel considered the verbal and documentary evidence presented by both parties and examined the relevance of the charges to the By-laws, the Code of Ethics of APEGM, and the relevant sections of The Engineering and Geoscientific Professions Act.

The Discipline Panel is mindful of the legal principles expressed by the Saskatchewan Court of Appeal in Rault vs. the Law Society of Saskatchewan regarding acceptance of joint submissions for sentencing. There is an obligation of the part of a Committee such as this one to give serious consideration to a joint submission on sentencing agreed to by counsel.

As the Discipline Panel is not able to identify a specific matter of public concern, nor does it judge the recommendations to be significantly inappropriate, it accepts the recommended plea-bargain and penalties, costs and fines jointly recommended by counsel.

The Discipline Panel therefore unanimously resolves and orders that:

1. Donald Edward Spikula is guilty of professional misconduct by failing to advise APEGM of a change of mailing address within 30 days of the effective date of change in contravention of Article 7.3 of the APEGM By-laws;

2. Donald Edward Spikula is guilty of professional misconduct in failing to respond to his client and on-site personnel in a timely manner and in failing to implement proper contract administration for an engineering project of this magnitude;

3. Donald Edward Spikula is guilty of unskilled practice and professional misconduct in reporting on the condition and structural integrity of a building in a report without having performed a site investigation sufficient to assess structural deficiencies previously identified by another professional engineer.

The Discipline Panel further unanimously orders that:

1. Mr. Spikula will pay to APEGM the out of pocket costs incurred in connection with these convictions in the sum of $31,000.00 within 90 days of the date upon which the Resolution Orders of this Panel are signed;

2. Mr. Spikula will pay fines of $2,000.00, $5,000.00 and $5,000.00 respectively in relation to the three charges. The total fines of $12,000.00 will be paid within 90 days of the date on which the Resolution Orders of this Panel are signed;

3. Mr. Spikula shall be precluded from applying for reinstatement with APEGM until these fines and the costs have been paid;

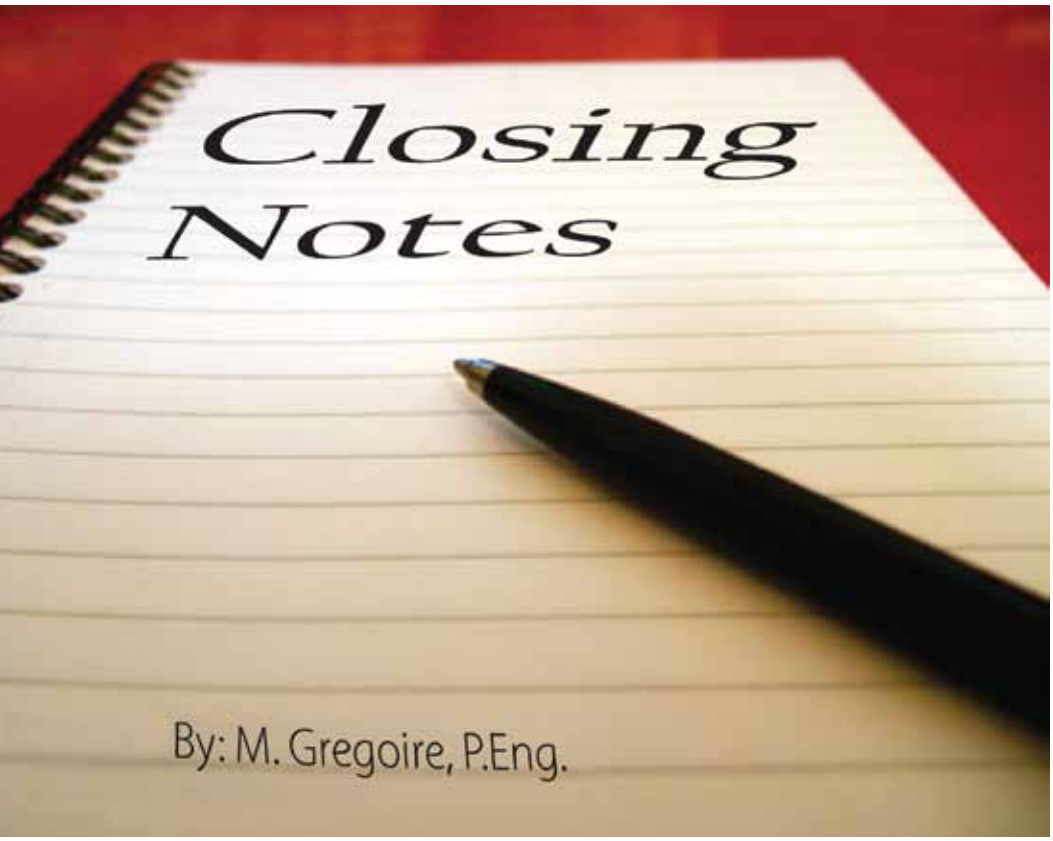
4. publication of the conviction and penalty shall be made in the Keystone Professional with Mr. Spikula's name being disclosed.

In conclusion, the Discipline Panel wishes to express that it does have a concern, given Mr. Spikula's past convictions for professional misconduct, and the fact that the past charges of which he was convicted are similar to the charges of which he has now also been convicted, as to whether he, if reinstated to the profession of engineering, will be able to practice safely and without misconduct in the future.

The written Decisions, Reasons and Order was dated June 6, 2011 and was signed by Gervin L. Greasley, CAE, Chair, Peter Mignacca, P.Eng., and Philip Reynolds, MAA

Note:

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



Management and the Practice of Professional Engineering

Not too long ago, I received a question from one of our members that asked:

"Is it logical to assume that if a person has a business card which identifies the person as a P. Eng. and if that person is 'supervising' and makes financial and life safety building construction related decisions based upon the reading and digesting of engineering reports prepared by other professional engineers, that this decision making work in itself would also be considered to be engineering?"

Determining whether or not the practice of professional engineering has been performed by an individual can be a tricky task. Similar to most other provinces, our Act defines it as:

- any act of planning, designing, composing, measuring, evaluating, inspecting, advising, reporting, directing or supervising, or managing any of the foregoing, that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public interest or the environment

"Managing any of the foregoing" definitely forms a part of the definition in Manitoba, but the important part is the qualifier: "that requires the application of engineering principles."

I've never been a fan of this self-referential definition (engineering is engineering), but I think it can be made to work in most cases.

Acts of management that are also acts of professional engineering would be instances where the way that the individual interacts with other employees would require the application of principles unique to engineering studies. For example, if a manager for a structural design department reviewed drawings from one of their engineers and noted that the snow loads did not appear to take accumulation into account, they might ask the designer to re-perform the calculations for the loads. This manager would be performing engineering without actually doing analysis themselves. If, however, a manager for a structural design department reviewed a report from an engineer that included the list of materials required to build the structure, and the manager came back to the designer with "it will be too expensive, what can we do differently?" then this manager is not performing engineering.

The reality is that managers with a P. Eng. designation may not be practising engineering for significant portions of their work week and may only be performing the practice of professional engineering for a percentage of their time. It is even possible for a manager with a P. Eng. designation to never perform the practice of professional engineering. Similarly, there are managers of engineers who do not have a P. Eng. designation and who would not be in contravention of the Act, depending on how they manage their staff.

The answer to the original question, therefore, is that 'it depends.' I can envision several scenarios that fit the description and the answer would be that the decision making work would not be considered engineering. The hypothetical scenario described in the question is very similar to what building owners must do all the time: make decisions based on reports prepared by an engineer. The distinction is the presence or absence of engineering principles employed by the supervisor in making their determination.

As another example, last fall, APEGM had to tackle this question with respect to the Resolution made about advocating on the Bi-Pole III route location decision. In that scenario, professional engineers provided a recommendation for an eastern route, but the decision was overturned by the government. As legal counsel for APEGM noted during the AGM, the decision by the government was made based partly on advice from the engineers, but that the decision in and of itself was not an engineering decision. The government considered several areas of input on the matter, including that of professional engineers. Had the government officials involved in that decision been registered members of APEGM, it would not change the fact that their decision was not the practice of professional engineering.

As with many matters relating to the regulation of a profession, hypothetical questions prove to be difficult answer without clarifying the details. "It depends" can be frustrating, but it's important to consider a specific set of parameters before trying to give an opinion on these matters. ■

Detach page for posting

Upcoming Events

AGM Business Meeting

The Annual General Business Meeting is an opportunity for members to become directly involved in the business of the Association, vote on current matters, and acknowledge Councillors completing or just beginning their terms.

Pre-registration is required. Continental breakfast, and door prizes included. Meeting reconvened at 2:00 p.m. if required.

Date: October 28, 2011
Time: 8:00 a.m. Registration and Continental Breakfast
8:30 a.m. Business Meeting
Cost:
Complementary with Registration
Location: Provencher Ballroom, The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

APEGM Professional Development Seminar

Barb Gemmell, Gemmell Training & Consulting

Volunteer Connections: New Strategies for Involving Youth

Motivate youth to become involved with your organization: recruitment, retention, mentoring, recognition and relationships with youth volunteers.

Barb Gemmell has extensive experience in facilitating and consulting for organizations interested in maximizing the effectiveness of their volunteers. This includes 13 years with Volunteer Manitoba as a staff member where she worked with organizations of all sizes and structures, both within the province as well as nationally. Since establishing Gemmelll Training & Consulting in September 2000, Barb has continued as a contract trainer with Volunteer Manitoba.

Barb provides practical ideas including examples from her current personal volunteer involvement with organizations such as the Community Legal Education Association and Creative Retirement Manitoba, Hospice and Palliative Care Manitoba, Canadian Administrators of Volunteer Resources and Manitoba Association for Volunteer Administration.

Closing Remarks provided by Mike Gregoire, P. Eng., APEGM Professional Standards Officer.

Date: October 28, 2011
Time: 10:00 a.m. - 1:00 pm.
Cost:
Pre-registration required.
$75.00 Early Bird (before Oct. 7)
$115.00 Regular (from Oct. 8 - 21)
Location: Provencher Ballroom, The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

AGM Companions Program

Pre-registration required. Limited to first 20 registrants.

Guided Tour of the Manitoba Museum and Galleries

Travel the province from north to south in the Museum's galleries on a 1.5-hour guided tour of the Museum Galleries. Explore the history and environment of Manitoba from the arctic coast to the southern prairie grasslands. Experience the new Ancient Seas display in the newly renovated Earth History Gallery. Time will also be available for shopping at the Manitoba Museum Shop which offers a wide selection of unique, exclusive, and distinctive Manitoba products.

At 12:30 p.m., enjoy a relaxing lunch and socializing at The Peasant Cookery.

Date: October 28, 2011
Time: 10:00 a.m.
Cost: $30 (including lunch)
Location: Provencher Ballroom, The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

AGM Awards Gala Dinner and Dance

Join us for a Masquerade Ball (black tie and mask recommend). Fine cuisine and highly enjoyable entertainment set the stage for a first-class evening honouring member achievements and corporate contributions to the professions, followed by entertainment and dancing with The Royal Winnipeg Ballet School, as well as Jenifer Scott and Groovesound.

The Aspirant Program of Canada's Royal Winnipeg Ballet School Professional Division is a unique, intensive, full-time one or two year training program designed specifically for advanced-level classical ballet students who are making the transition to professional artists.

Jenifer Scott is a Winnipeg-based musician who's been performing since age nine, and today owns and operates her own company, Jenifer Scott Productions. A lead vocalist who can rock the mic with everything from jazz and R&B to country and pop rock, Jenifer has shared the stage with several of Manitoba's top musicians including Dave Lawton, Walle Larsson, Danny Kramer and Ron Paley.

Also, please see the brochure in this issue of the Keystone Professional or the APEGM website: www.apegm.mb.ca/AGM.html.

Date: October 28, 2011
Time: 5:30 p.m. Reception
6:00 p.m. Doors Open
Cost:
$50.00 Individuals
$450.00 Table (10 tickets)
Location: The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

New Members Registered May, June, July 2011

P. Adhikari
S.I. Aghedo
B.S. Al-Mahameed
T. Alzahawi
B.K. Ayres
S.V. Bablecos
G.Beric
V.H. Bhachech
S. Bhutta
A.Birur
J. Boehme
R.W. Borthwick
A.L. Burke
S.D.W. Carron
J.R. Catris
D.O. Christensen
G.K. Claypool
D.J. Coleman
H.R. Cruz
W.E. Curtis
P.C. Dueck
B.J. Earl
A.Y. Ele
C.R.R. Erb
E.J. Fer
J.A. Fillion
T.T.Y. Fok
A.S. Forzley
P.D. Galloway
P. Gingras
I. Gordon
N.W.N. Gray
R.K. Gupta
B.J. Haider
M. Hanu
E.R. Harricharran
N. Hasan
S.L. Helmerson
H. Hernandez
S.P. Higbee
K.P. Ho
S. Hu
J.H. Hwang
G.P. Jaman
T. Jayasekara
P.F.J. Jekyll
S.S. Johal
B. Jose
M.M.A. Kealey
S.L.A. Kennedy
N.C. Ketcheson
K.L. Kirk
H.K. Kislinger Arauco
P.A. Klassen
A.R. Komus
A.M.G. Krivoy
M.B. Kuppe
F.A. Lauer
T.R. Lavallee
T. Ling
Y. Luo
B.D.D. Machula
E.E. MacNeill
K.L. Maranchuk
E.B. Masarsky
M.I. Matar
J.A. McEwen
R.A. McKim
B.W. McPhedran
J.N. Meade
C. Messier
C.E. Mulder
A.M. Najm
S.T.U. Naqvi
N.R. Newson
M.A.T. O'Kane
S.D. Parrott
J.H. Pearl
M.T. Peerbocus
C.W. Pelda
S.M. Petrovich
D.L. Philippon
P. Poon
S.D. Probst
D.C. Proudfoot
A. Rahman
P.K. Rajurkar
S.J. Riley
R.J. Rodd
M.P. Saganski
A.O. Salem
S.D. Sapukotana
C.S.G. Saunders
J. Sethi
R.M. Sherlock
T.M. Skippen
M.F. Skoworodko
J. Skowronski
B.J.R. Smit
A.Smith-Windsor
M.F. Tachie
B.S. Taylor
T.P. Theaker
D.I.F. Thiele
J.L. Thierman
T.W. Thompson
A.S. Todeila
S.M. Torr
W.A. Townsley
D. Turgeon
R.A. Verre
A.J. von Eppinghoven
T.C.T. Vos
T. Wacker
M.L. Wadelius
A.J. Walker
J.P. Watson
P.D. Wilcott
K.N. Wilson
R.W.C. Wong
W. Wu
J.B. Wyatt
T.S.I. Yamashita
M.T. Zeid
S.E. Zubriski

Members-In-Training Enrolled May, June, July 2011

J.C. Abello
J.K. Arthur
D.J. Barchyn
C.R. Bartel
K.R. Bouchard
W.K.R. Boyce
J.D. Bunkowsky
M.M. Cleveland
N.M. Conti
K.A. Cormack
T.J.B. Crawford
M.D.W. de Monye
J.M. Delorme
K.L. Dewar
R.E. Domaratzki
J.Z. Dueck
V.V. Elimban
J.S. Friesen
L. Gao
M.P.A. Gaudreau
K.C. Ginter
T.J. Goertz
K.A. Griffiths
B.B. Gustave
M.A.M. Haresign
A.L. Hayes
M. Heidari
M.F. Hussain
A. Iancu
I.O. Jalasan
G.A. Jimenez Yamasaki
C.N.M. Jones
N.G. Krawchuk
A.M. Kroeker
P.D. Lacoursiere
H.Y. Li
K.H. Li
Y. Liang
D.G. Little
S. Liu
T.Y. Liu
P.S.C. Loewen
P.M. Malegus
O.S. Maqsood
A.D.S. March
Y. Margulets-Shatsky
H.A. Masroor
P. Mojabi
R.S. Molod
Y. Mykytyuk
E.J. Nickel
S.L. Nugent
O.T. Ola
J.E. Oram
K.P. Owusu
E.C. Patrocinio
T.S. Pickering
T.J. Price
G.S. Propp
J.T. Reimer
B.N. Rempel
D.J. Sandison
C.J. Severino
Y.A. Shah
M.A. Smith
M.M. Smith
T.L. Taras
P. Tocko
G.R. Toews
K.M. Toews
K.L.M. Tremblay
K.L. Vandenberghe
W. Wang
C.J. Wittig
A.J. Wood
C.N. Wu
L. Yin

Certificates of Authorization May, June, July 2011

Acero Engineering Inc.
Agassiz Engineering Inc.
AGN Engineering Ltd.
ALSTOM GRID CANADA INC.
Baldwin Residential Inc.
BCA Structural Consulting Services Inc.
Bermel Engineering (BC, AB)
Bicycle Consulting Ltd.
Blueridge Engineering Ltd.
BRT Consulting Limited
Chemetics Inc.
Cities Edge Canada, Ltd.
Clarus Environmental Services Inc.
COLESTAR Environmental Inc.
Dallaire Groupe-Conseil inc.
DGR Projects Inc.
Dyregrov Robinson Inc.
ECCOM Consulting Inc.
exp Services Inc.
Flynt & Kallenberger, Inc.
Hidi Rae Consulting Engineers Inc.
Ho & Laviolette Engineering Ltd.
IMV Projects Inc.
Integra Engineering Ltd.
Integrated Sustainability Consultants Ltd.
M.A. O'Kane Consultants Inc.
MAT 4Site Engineers Ltd.
MWH Canada, Inc.
Ocean Steel & Construction Ltd.
Pearl Engineering Corporation
Randal Brown & Associates Engineering Ltd.
Shremshock Engineering, Inc.
Stockdales Electric Motor Corp.
Swift Engineering Inc.
TNT Engineering Ltd.
Tornado Combustion Technologies, Inc.
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