THE KEYSTONE PROFESSIONAL

Winter 2010

Inside this issue:

Manitoba Flood Control and Protection

91st Annual General Meeting Awards Dinner and Dance

Professional Development at the APEGM AGM

Association of Professional Engineers and Geoscientists of the Province of Manitoba
www.apegm.mb.ca
APEGM

THE KEYSTONE PROFESSIONAL

WINTER 2010

Published by the Association of Professional Engineers and Geoscientists of the Province of Manitoba
870 Pembina Highway, Winnipeg, Manitoba R3M 2M7
Ph. (204) 474-2736 Fax (204) 474-5960
E-Mail: apegm@apegm.mb.ca

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.

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 nine years and is captivated by the depth of the craft.

Publications Mail Agreement Number 40062980

POSTMASTER: Return undeliverable copies to: *The Keystone Professional*, APEGM, 870 Pembina Hwy, Winnipeg, Manitoba, R3M 2M7

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.

Engineering Philosophy 101

...do you understand the rules?

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

Self-governing professions have been granted the privilege and responsibility to regulate the practice of their specific professions. While public opinion varies widely regarding both the need for and operation of professional "self-regulation," some detractors suggest that we accept the privileges, but shirk the responsibilities. Assuming that the rationale behind the self-governing concept is valid, each professional organization must strive to meet the expectations of those who granted us the privilege.

It is an obvious fact that professional organizations are populated by individual professionals. It follows that an action by any one of those professionals reflects, not only on that individual, but on the profession as a whole. When that action is positive, the reflected impression is, and should be, celebrated. If the action is negative, it needs to be dealt with promptly and openly.

> "Clearly, if an individual was found to be guilty of murder they would not be in compliance with Fundamental Canon One. But what about a speeding ticket?"

Probably in an attempt to provide clarification, profession specific Codes of Ethics have been developed to articulate behavior that members are expected to adhere to. They are a public statement that defines behavior within that profession. While the public can observe and react, members are expected to comply.

Within the Engineering profession in Manitoba, the APEGM Code of Ethics is featured as a part of the Professional Practice Test, a required part of Member in Training admission. Optimists among us suggest that this test assures all members are informed regarding the Code. Pessimists argue that, like "facts" acquired to pass many other "required" tests, the details of the Code are only retained until the test is completed.

Given the impact of individual action on the public impression of the collective, it might make sense to take a closer look at codes of ethics in general, and APEGM's Code of Ethics in particular.

Fundamentally, according to the Oxford University Press dictionary, a code, as it is used here, is "a set of conventions governing behavior" and ethics are "the moral principles governing or influencing conduct." From that same source, morals are "concerned with the principles of right and wrong behavior and the goodness or badness of human character" and principles are, among a number of definitions, "a fundamental source or basis of something."

So, the definitions seem to confirm that a Code of Ethics is simply a set of rules that define proper, in our case "professional," behavior.

Codes of ethics, given that they are principles, are written in the broadest of terms. This, of course, leads to the need for interpretation. There are always difficulties when dealing with interpretations because they depend on individuals. One of the most contentious of these interpretations relates to the scope of the requirement. Is the Code intended to apply to the specifics of technical interactions or does it go beyond to include personal behavior that has nothing to do with technical competence?

The introduction to the APEGM Code states that members should work with "...honesty, integrity and honour, and conduct themselves in a spirit of fairness and tolerance when dealing with fellow professionals." This seems to focus on "internal" circumstances. The introduction goes on to note that failure to comply with the Code can lead to a charge of "...unskilled practice of professional engineering or professional geoscience or professional misconduct, or both,..." Again, this suggests that the Code of Ethics only applies to actions within the profession and only relates to technical issues.

However, Fundamental Canon One broadens the scope of application in that it requires that "Each practitioner shall obey the laws of the land." Fundamental Canon Four has similar implications in that it requires practitioners to "...uphold and enhance the honour, integrity and dignity..." of the profession. On the other hand, Fundamental Canons Two, Three and Five are practice specific, addressing, respectively, the well-being of the public in technical matters, personal technical competence and support of colleagues.

Fundamental Canons Two, Three and Five, along with their specific illustrations, for the most part speak to activities within the technical confines of our behavior. Fundamental Canons One and Four present the interpretation difficulties, particularly when it comes to matters relating to personal behavior.

continued on page 22

Grant Koropatnick, P.Eng.

Executive Director's Message

Is There Anybody Out There?

I spend quite a bit of time musing about the professions of engineering and geoscience. I expect you do too. Perhaps I spend more time than the average member, because I'm the Registrar and it's my role to forecast ideas and topics that affect us all. For example, while raking the leaves in my yard last week, the following thought occurred to me: "What if we think we're communicating with the membership, but we're not. What if no one is reading the KP?"

Huh? What? You mean we have this great little magazine, with lots of interesting stories, comments and photos, but no one is reading it? I don't like the thought of it, but I suppose it's a possibility. After all, very few people send me an email to comment on something in the KP. Occasionally, a member will say to me in person, "I was reading your column in the latest KP." It is a sobering thought: perhaps very few members are reading the KP. Communications and media have changed a lot in recent history.

The internet has caused a huge shift in how people get their information and many printed publications have dropped out of circulation because readers can get the same information elsewhere. Environmental pressures have resulted in the reduction of paper-based publications. Major dailies like the New York Times and the Globe & Mail have made changes in readiness to shift their readers over to online subscription services which will pave the way to ending their printing operations. Devices like the iPad and Kindle will gradually take over from the paper-based media of books, magazines and newspapers.

If you're out there reading, keep in mind, I like magazines. I like reading journals and magazines and paper-based publications with my morning coffee. I dislike firing-up the laptop to read my Globe & Mail online. I prefer the "old-school" method of sipping coffee, dripping on my newspaper, swiffing bagel crumbs off the page as I enjoy the stories, commentary and photographs in my daily newspaper. Okay – I'm "old school." LOL

All of these changes make me wonder: "Is anybody out there reading the KP?" I'd like to think all 6,131 members are either reading the printed KP with their morning coffee or reading it online during their lunch break. However, I'm not deluded. I realize that many members prefer online information in the form of email, social media messages, video streams or blog entries. Some have given-up and no longer want paper-based invoices, bank statements or mailings. If very few people are reading the printed KP, then it begs the question: How are we communicating?

For about a year, I've wondered if APEGM should be on Twitter, YouTube, Blogger or any of the popular internet-based communication services. Do members want a moment-by-moment commentary on what is happening in their profession? I don't think so, but I could be wrong. If you're reading this PLEASE TELL ME what you think about this question. Should APEGM make the shift to the new media? I'd love to know your thoughts. I'd even buy you a beer to hear them in person. Is anybody out there?

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. ■

IEEQ Quiz

Have you kept up with the Internationally Educated Engineers Qualification (IEEQ) Program at the University of Manitoba? Take this quiz to find out how much you know.

1. Since IEEQ was created in 2003, how many internationally educated engineers have graduated from the program?

- ❑ 23
- ❑ 54
- ❑ 71

2. Thirty-six internationally educated engineers are currently enrolled in the IEEQ Program, completing a program including what?

- ❑ senior-level engineering courses
- ❑ a co-op work term
- ❑ language and communication development
- ❑ cultural orientation
- ❑ professional networking
- ❑ all of the above

3. Graduation from IEEQ leads to a Post-Baccalaureate Diploma in Engineering from the University of Manitoba, and _____ eligibility with APEGM.

- ❑ Engineer-in-Training
- ❑ Certificate of Authorization
- ❑ Licensing

4. To date, how many of the 71 graduates have also fulfilled APEGM's professional experience requirements and are registered as Professional Engineers.

- ❑ 3
- ❑ 30
- ❑ 65

5. Twenty-five countries of origin have been represented in IEEQ to date, with the top source countries (in order) being:

- ❑ India
- ❑ Argentina
- ❑ Ukraine
- ❑ Pakistan
- ❑ China
- ❑ Columbia

6. A full range of engineering disciplines are represented by IEEQ students, including:

- ❑ civil
- ❑ electrical
- ❑ computer
- ❑ mechanical
- ❑ manufacturing
- ❑ biosystems
- ❑ all of the above

7. Thirty-three Manitoba companies have provided over 70 _____ opportunities to IEEQ students to date, ranging from the public sector, consulting engineering services companies, manufacturers, agri-business, and aerospace.

- ❑ co-op work experience
- ❑ management
- ❑ scholarship

8. This Manitoba company has the most extensive experience in employing IEEQ students, accounting for 40% of co-op positions to date.

- ❑ Teshmont Consultants
- ❑ the City of Winnipeg
- ❑ Manitoba Hydro

9. Approximately what percentage of IEEQ graduates have found ongoing career opportunities with their co-op employer?

- ❑ 25%
- ❑ 50%
- ❑ 75%

IEEQ graduate Carole Kouessi, employed at Manitoba Hydro

IEEQ welcomes the participation of the Manitoba engineering community.

If you employ internationally educated engineers, IEEQ may be a licensing pathway to consider that benefits your employee and your company.

If you are looking for engineering talent, consider hiring an internationally educated engineer from the IEEQ Program.

IEEQ staff welcome the opportunity to come to your workplace and offer in-house seminars on managing cultural diversity in the engineering workplace.

For more information, please contact Marcia Friesen, P.Eng., IEEQ Director, at 204.474.7873 or Marcia_Friesen@UManitoba.ca. Visit us online at umanitoba.ca/engineering/ieeq. ■

Answers:

1. 71
2. all of the above
3. Engineer-in-Training
4. 30
5. India, China, Ukraine, Pakistan, Argentina, and Columbia. These six countries represent 60% of IEEQ students.
6. all of the above, as well as the respective sub-specialities.
7. co-op work experience
8. Trick Question: it's all of them! Many small businesses in Manitoba have provided co-op opportunities to one or more IEEQ students as well.
9. 75%

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

Thoughts On Design

. . . and the Limit of Involvement

During a recent conversation, a colleague stated that, as an Engineer, he provides the facts so that others can make informed decisions. This statement of his concept of the Engineer's role bothered me. What bothered me even more was my inability to clearly articulate why it bothered me. That, in turn, led me to an examination of what I see as our role as persons who "design" things.

In my view, the stated position separates the responsibility for provision of "facts" and "decisions." Using this as a place to start, it seemed necessary to get a clear understanding of the word fact. A quick check of my Oxford dictionary provided me with a definition: "a thing that is indisputably the case." The term "indisputably" bothered me but my Oxford thesaurus seemed to provide a less restricted view: "a concept whose truth can be proved." It added two additional definitions both of which incorporate the word information: "a statement or assertion of verified information about something that is the case or has happened," or "a piece of information about circumstances that exist or events that have occurred."

If information is basic to the concept of fact, it too needs definition. My Oxford dictionary presented a couple of options for this noun: "facts or knowledge provided or learned," or "what is conveyed or represented by a particular sequence of symbols, impulses, ext." My thesaurus broadened the definition to "a message received and understood that reduces the recipient's uncertainty."

So, it seems reasonable to conclude that a fact is a piece of information that has some reasonable chance of being correct. There is nothing in these definitions that suggests that facts, in themselves, have any particular use; they "just exist." Information's definition goes a bit beyond by incorporating the word "knowledge." This has three dictionary definitions: "information and skills acquired through experience or education," "the sum of what is known," or "awareness or familiarity gained by experience of a fact or situation." But I prefer the offering from the thesaurus: "the psychological result of perception and learning and reasoning." If knowledge is acquired in some manner or means and if it involves perception and reasoning, it seems to imply some sort of action beyond mere existence. It would seem reasonable to conclude that knowledge is a requirement for the use of information/facts.

Maybe the difficulty I had in articulating my concern boils down to the word knowledge. There is no question that it requires specialized knowledge to assemble information/facts appropriate to any specific problem. Engineers have this type of knowledge within the bounds of their specific fields of competence. Engineering research serves to grow these fields of knowledge and provide a base upon which to expand potential applications. On the other hand, pure science makes this same sort of contribution. Notwithstanding the growth of information, unless it gets used in a knowledgeable manner, it is little more that Wikipedia input.

Engineers use their specialized knowledge as the basis for assumptions that are necessary to determine what information is required in response to specific situations. Those assumptions are a hidden part of the facts that will be used to reach an "informed decision." Unless the team that is responsible for making that decision is fully aware of the assumptions and their implications, the validity of those facts may be compromised. In a nut shell, that is why an Engineer's responsibility cannot stop at simply "providing the facts."

The Canadian Engineering Accreditation Board (CEAB) specifies as a part of the accreditation process, 12 different "attributes" all Engineering graduates are expected to possess. The list reflects a philosophy that knowing "how" and "why" is every bit as important as knowing "what." Facts tend to fall into the "what" category. Knowledge requires elements of "what," "how," and "why." Given that CEAB accreditation defines the standard for graduates to become academically qualified for admission to the profession, it should also provide a broad picture of expectations for the practice of Engineering. CEAB goes beyond facts. Engineers cannot, in good conscience, simply develop and provide facts and then back away from responsibility for the ultimate decision. ■

A Focus on Mentorship

Beth Phillips, Mark J. Stobart, Kyla L. Kirk
Consulting Engineers of the Manitoba Young Professionals Committee (CEM YPC)

Mentorship is an area that is quickly becoming a focal point in the engineering profession. To determine the expectations young professionals (YPs) have regarding mentorship, the Consulting Engineers of Manitoba's Young Professionals' Committee (CEM YPC) arranged an informal gathering of YPs from local consulting engineering companies to discuss what mentorship meant to them. The ensuing results were meant to initiate further discussions within engineering companies and assist them with the development of their own mentorship program. Despite the range of responses, several common themes and needs arose from the group discussions, with a focus on the roles and responsibilities of mentors and protégés.

Although there were many different areas of mentorship in which the YPs expressed interest, the main ones mentioned during the gathering were practical application and design, technical knowledge, business areas, and professional life. Formal mentor programs appealed to the YPs; however, it was understood that mentorship programs are only as good as the mentors themselves, and the amount of effort both protégés and mentors are able to contribute.

So what do YPs expect from mentors? They expect to be integrated. This includes sitting in on client meetings and phone calls, having access to proposal and budget information and learning about project management. They want to be challenged with questions that drive them to find innovative answers, and evolve by performing different tasks. They need to understand the thought and theory behind the work, and discuss lessons learned to increase efficiency and reduce mistakes.

YPs at the gathering recognized that respect between mentors and protégés is very important. The mentor must listen to the protégé's questions and suggestions, and encourage them when they do good work. Equally, protégés need to meet their mentors halfway and approach their mentors as needed. YPs want to explore different areas of work within their companies through rotational programs, and to attend professional development and networking events to meet and listen to other senior engineers. They understand that exposure to environments available outside their work site will cause them to appreciate their existing work environment.

Most importantly, YPs expect protégés to develop a relationship with their mentors outside of work in an informal casual basis, whether it be through social activities or fun work events. It is important that mentors do not become too busy to mentor the protégé. Mentorship will pay dividends down the road! A strong and engaged mentorship relationship can bring extraordinary benefits to both parties involved; however, effort, time, and understanding are required from both parties to create it.

The CEM YPC is always interested in hearing your mentorship ideas, so feel free to email the YP Chair Beth Phillips (Beth.Phillips@tetratech.com) with suggestions for creating and improving mentorship relationships. ■

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

Engineering Outreach: Partnering with the Assembly of First Nations

August 2010 - Engineers Canada has been working with its constituent associations to improve diversity within the profession with the goal of it becoming more representative of the actual makeup of Canadian society. One of our objectives is greater participation of Indigenous people in Canada's engineering programs and the profession. This objective led to the creation of the Indigenous People Outreach Task Force in 2006.

Nearly four percent of Canadians are of indigenous origin, and that population is growing at a much faster rate than the rest of the nation's population. But an estimated less than one percent of professional engineers are Indigenous people.

I am pleased to report that Engineers Canada signed a historic partnership agreement with the Assembly of First Nations on July 22, 2010. The goal of this partnership is to increase awareness of, and access to, careers in engineering for Indigenous youth. The partnership calls for the development of educational material and new initiatives to increase the awareness among young people of indigenous origin of career possibilities in the engineering sector and about available and future training programs. Engineers Canada believes that, as professional engineers, Indigenous people will provide fresh perspectives on the resolution of engineering problems in their own communities, as well as across Canada, ultimately enriching the quality of life. The Indigenous community has much to teach us about adaptability and sustainability, two qualities the engineering profession is constantly striving toward.

Indigenous people in Canada are in great need of adequate infrastructure. Many of their communities require improved resources for housing, better water quality, and often face additional infrastructure challenges because of their remote locations. Communities in the North are also experiencing climate change at a rate much faster than the rest of Canada. In addition, many communities are located on or near resources that, if accessed with the benefit of indigenous knowledge, could be of tremendous value with the potential to help alleviate many of their community and infrastructure issues.

Many Indigenous people see the problems facing their communities and want to do whatever they can to help. The partnership agreement we signed with the Assembly of First Nations is one step toward this goal.

Our view is that the most effective way to address concerns in Indigenous communities is not for outsiders to take over, but for the engineering profession to provide support in the development of Indigenous engineers who can then take the lead and guide other members of our profession in how to best work within their communities. No one else is more equipped to understand the realities of the great challenges these communities face than their own people; they provide the best bridge between our cultures and we are hopeful that working together will make a difference for all of Canada. ■

In Memoriam

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

Henry Lewis Dahl
Kenneth James Fallis
Austin Paul Rathke
Steve Grywinski
Allan Wilmot Knight
Stephen Dudley Davie

engineers without borders
ingénieurs sans frontières
Canada

Increased Yields through Family Farm Management

The people of Burkina Faso—the Burkinabè—are known as optimistic, good-natured and resilient. This despite the fact that Burkina Faso is one of the world's most impoverished countries, ranked 175 out of 177 by the UN's Human Development Index. Agriculture makes up a large part of the national economy, accounting for approximately 30 percent of the country's GDP and involving over 80 percent of the country's active workforce. Reductions in rainfall and availability of arable land are causing increased stress on the agricultural industry where farmers struggle to earn sufficient income for daily survival.

Shifting agriculture from farming for daily survival to farming as a lasting source of income is one of Engineers Without Borders' primary goals in Burkina Faso; EWB is providing technical knowledge and business training to farmers through farmer unions and federations. For most farmers in Burkina Faso, earning enough income to improve their lives is especially challenging because they never had the opportunity to obtain technical training or learn the business side of agriculture. So while farmers work hard cultivating their land, the absence of these skills is a limiting factor that too often prevents them from harvesting and bringing a high quality crop to market.

EWB has been working with the Family Farm Management program, which brings together farmer unions and federations, in helping to provide farmers with the planning, analysis and monitoring skills necessary to change this. Eight EWB volunteers currently work alongside field staff from each union and federation to improve their skills and better provide service to farmers looking to them for help.

Field staff member Adama Sidibé had little experience with the Family Farm Management program before EWB's involvement. With help from EWB volunteers in improving his facilitation, project management and budgeting skills, Sidibé is now a regional leader in the program which includes ten partner farm organizations. Sidibé is an example of EWB's commitment to lasting change in its development initiatives: building the capacity of local leaders in multiple countries with multiple organizations and roles to amplify the impact of each individual.

Each new farmer group that joins the Family Farm Management program has a different skill set with varying levels of business and education experience. By acknowledging their differences and offering a diversity of services such as access to credit, markets and inputs, the program is better equipped to address the specific needs of each farmer group.

When new services and training programs were made available through Simon Kadéba's farmer union, he made the most of the opportunity with encouraging results. Simon received business training and was able to purchase mineral fertilizer through his local union on credit. Thanks to the fertilizer, Simon's sorghum crop grew taller and healthier than in previous years. Simon's training and the increase in crop yield provided him with the extra income needed to send his children to school and give them access to sufficient medical care.

Simon Kadéba received business training through his farmer union, supported by the Family Farm Management program.

Despite having made a positive impact for over 2,000 farmers like Simon's, there are still limitations to the Family Farm Management program that need to be addressed. By identifying these limitations and working to find effective, lasting solutions, EWB hopes to improve the program and increase its positive impact in coming years. For instance, a country-wide Program Guide is under development, and will be available to all major stakeholders in the agricultural industry, including the national government.

Their creativity, technical skills and pragmatic engineering approach help to make EWB volunteers well-equipped to face

the challenges they meet and share those skills with leaders in Burkina Faso, as well as the other African countries where EWB is involved: Ghana, Zambia, and Malawi.

Ultimately, their work with partner organizations in each country translates into opportunity for rural Africans: with his extra income, Simon Kadéba was also able to continue work on a new house he had been saving to build for a number of years. "Look at my house," Simon told EWB volunteer Rosanne Chabot, nodding toward his red brick house with tin roof, "I have built this with the support of the training and my cereals." ■

EWB Local Chapter News

This winter we are planning a Fair Trade Wine Tasting event and a repeat of the successful Curling Bonspiel fundraiser. There will also be educational sessions, a Movie Night, and other ways to get involved.

For an update on the latest plans, visit our web page at winnipeg.ewb.ca and join our mailing list. If you have questions, are interested in getting involved, or would like to arrange for an EWB Lunch & Learn presentation in your workplace, you may also contact us at winnipeg@ewb.ca.

U of M students can check out the EWB Manitoba Student Chapter: umanitoba.ewb.ca.

Manitoba Flood Control and Protection

In past issues of the Keystone Professional, Heritage Committee articles introduced the importance of water to provincial development. This article introduces the problem of flooding and describes some of the works constructed to control flooding, thereby providing very significant benefits by reducing flood damages and costs.

NELSON RIVER DRAINAGE BASIN

Manitoba lies at the lower end of a gigantic 982,900 km2 drainage basin that extends east to near Lake Superior in Ontario, west to the Rocky Mountains in Alberta, and south to Lake Traverse in northern South Dakota. This huge area is drained by several major rivers including the Red, Assiniboine, Winnipeg and Saskatchewan. They flow through Manitoba into Lake Winnipeg and by the Nelson River to Hudson Bay. In the spring, runoff from melting snow frequently causes flooding on the lands bordering these rivers and their tributaries.

RED RIVER FLOODS

The Red and Assiniboine floodwaters can inundate large areas. For example, the Red River flood of 1950 covered approximately 1295 km² (500 square miles) of land.

The Red River basin floods often. There were several major floods in the 1800's, notably in 1826, 1852, and 1861. In the last century major floods occurred in 1948, 1950, 1966, 1979, 1996, and 1997. However, the flood of 1826 is the largest flood on record, much larger than the 1997 flood, the largest in the 1900's. The estimated flow was 7,362 m3/s compared with 4,587 m3/s in 1997 and 3,958 m3/s in 1950.

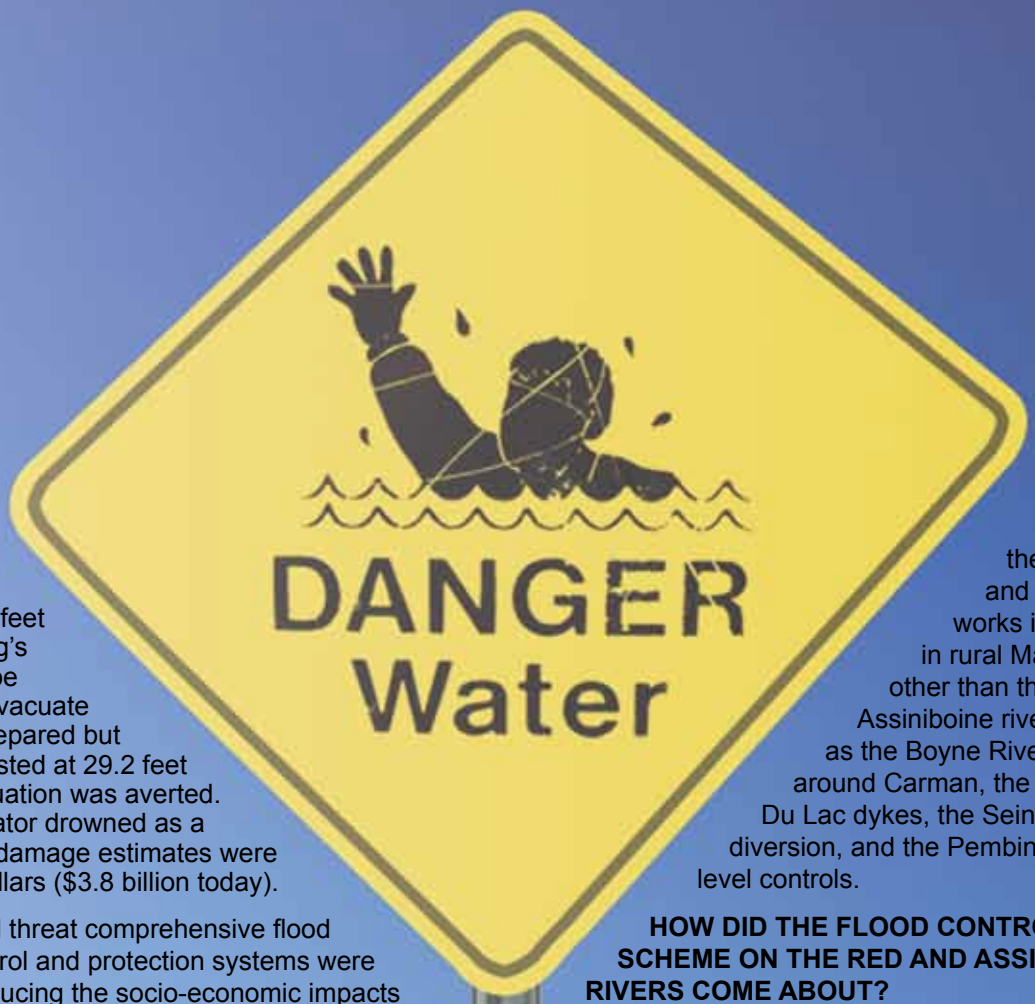
The 1950 Red River flood was classified as a great natural disaster. Many towns in the upper Red River valley, in both the USA and Canada, were evacuated. The towns of Emerson, St. Jean Baptiste, Letellier, Morris, St. Adolphe, Dominion City, and others were inundated. A sign on a hydro pole in Morris shows that the water was four meters deep on PTH 75, the main street in town.

City Engineer William D. Hurst led the fight to save Winnipeg. He was named chairman of a committee with

View of the University of Manitoba

View of the Manitoba Legislative Buildings

"full power to take whatever steps were necessary for the protection of life and property and for the alleviation of distress." However, over 10,000 homes in Winnipeg - 60,000 people, were evacuated as one tenth of the city was covered in water. On May 10th, with the river at elevation 29.2 feet (level at the James Avenue pumping station – City datum



still in use), fears were that if the river reached elevation 32.5 feet the majority of Winnipeg's downtown area would be submerged. A plan to evacuate 350,000 people was prepared but fortunately the river crested at 29.2 feet and a large scale evacuation was averted. A volunteer pump operator drowned as a result of the flood, and damage estimates were $125 million in 1957 dollars ($3.8 billion today).

In response to the flood threat comprehensive flood warning, and flood control and protection systems were put in place, greatly reducing the socio-economic impacts of flooding.

In comparison, while the peak flow in the 1997 'Flood of the Century' was 16% greater than in 1950, few people in Winnipeg had to be evacuated. However, 25,450 people were evacuated from Emerson, Rosenort, St. Jean Baptiste, Morris, St. Adolphe, Ste. Agathe, St. Norbert, Letellier, Dominion City, Scanterbury, Halbstadt, Brunkild, Domain, Sanford, and Winnipeg. Over 7,000 military personnel were employed for 36 days to assist in preventing damage and for evacuations. Three people drowned and the costs were $815 million.

While most Red River floods occur in the spring, in the summer of 1993 Winnipeg was declared a disaster area. Flooding caused by heavy rainstorms between July 25 and August 14 caused sewer backup and other extensive damage to homes, power lines and agricultural land in Winnipeg, Selkirk, Springfield and Beausejour.

Over the last 50 years it has been estimated the Red River Basin flood control system has reduced flood damages by more than $6 billion as well as improving the quality of life for countless Manitobans.

A subsequent article will cover some of the flooding and flood control works in streams in rural Manitoba other than the Red and Assiniboine rivers such as the Boyne River diversion around Carman, the St. Rose Du Lac dykes, the Seine River diversion, and the Pembina Valley lake level controls.

HOW DID THE FLOOD CONTROL SCHEME ON THE RED AND ASSINIBOINE RIVERS COME ABOUT?

Concerns about the potential for severe flooding in the city of Winnipeg had been discussed for many years. A 1920 article by Douglas L McLean, an Engineer with the Manitoba Drainage Commission, argued the case in "The Canadian Engineer."

Despite McLean's carefully constructed case, it wasn't until after the 1950 flood that things started to happen. The Greater Winnipeg Dyking Board was established to upgrade the temporary dykes into the permanent Primary Dykes, including approximately 30 pumping stations to pump sewers into the river during high water. The Chief Engineer was Carson H. Templeton P.Eng. who came to Winnipeg following the 1950 flood from the Fraser Valley Dyking Board where, since 1948, he had been Assistant Chief Engineer. The permanent dykes were designed to contain a flood 1.2 metres below the


Flood Prevention Projects to Protect Winni

Unless Works Are Constructed to Control Flood Waters of Red River of the North, Next Inundation at Winnipeg May Cause Damage Totalling Millions of Dollars—Reservoirs, Dykes and Channel Improvements Proposed

By DOUGLAS L. McLEAN

Engineer, Manitoba Drainage Commission, Winnipeg, Man.

level of the 1950 flood with provision for emergency raising of the dykes to contain the 1950 flood level. This task was completed in 1951/52.

Also, following the 1950 flood, studies were undertaken on methods of dealing with the floods and particularly floods of greater magnitude. Despite the Government of Canada's reluctance to become involved, federal engineers in the Department of Resources and Development conducted investigations that included a wide range of flood control and retention/conservation measures. The studies were conducted by Manitoba Water Resources, the Prairie Farm Rehabilitation Administration (PFRA), the City of Winnipeg and rural municipalities and included public participation. The studies resulted in the Red River Basin Investigation Report, a nine volume document detailing engineering investigations into flooding and flood control. The engineers recommended three major schemes as worthy of support: a detention basin at Ste. Agathe formed by a 40 km dyke across the Red River Valley; a diversion of the Assiniboine River from Portage La Prairie to Lake Manitoba; and the Greater Winnipeg Floodway. Channel improvements through Lister Rapids were rejected as being ineffective and dyking was considered to be hazardous and also ineffective. The report had no economic evaluation or social analysis. This shortfall led to criticism and inaction as there were no indications of the cost-benefit ratios of the schemes that people needed to know to help them make decisions.

No permanent flood protection was implemented until a narrowly averted flood threat in 1956. After that the Provincial Government, led by Premier Douglas Campbell, established the Royal Commission on Flood Cost Benefits to evaluate a range of flood protection schemes. Cost-benefit analysis was an economic tool not well developed in Canada. The U.S. Army Corps of Engineers had established a procedure since the 1930's. It was published in 1950 by the U.S. Federal Inter-Agency River Basin Committee.

A controversy ensued over the engagement of Canadian consultants or the U.S. Army Corps of Engineers to perform the analysis. St. Vital engineer V. L. Dutton wrote to the subcommittee formed for the study, objecting to employing the U.S. Army Corps of Engineers. It suggested no one in Canada was competent and only encouraged young Canadian engineers to head south, he said. In the end the Province appointed Carson H. Templeton P.Eng., formerly of the Dyking Board and founder of Templeton Engineering Company, and a small team of economists headed by University of Manitoba economist Clarence Barber.

The Commission evaluated traditional structural approaches such as channel improvements, increased dyking systems, detention reservoirs, and also the more radical proposal, the diversion of floodwaters around Winnipeg. Two innovative aspects of the damage calculations were the categories of loss of income and extra costs that were typically neglected by many cost-benefit studies of the time and not included in the U.S. Federal Inter-Agency publication. The report was completed in December 1958. It was heralded as the first comprehensive benefit-cost analysis of a major project in Canada.

The December 1958 report recommended: a 60,000 cubic feet per second (cfs) Greater Winnipeg Floodway; a 25,000 cfs Portage Diversion; and the Russell Reservoir. The cost of the combination was estimated to be $72.5 million and its overall benefit-cost ratio based on present property values and incomes was 2.7. With allowance for growth over 25 years, a benefit-cost ratio of 4.1 was obtained. A Portage Diversion of 40,000 cfs had the highest benefit-cost ratio of any proposed works but the Russell Reservoir in combination with a 25,000 cfs Portage Diversion was similarly beneficial. The scheme provided protection against a one in 160 year flood.

The Duff Roblin government adopted the comprehensive flood control system recommended by the Royal Commission. The floodway was constructed from 1962-68 with the federal and provincial governments sharing the costs 60% - 40% respectively.

THE FLOOD CONTROL SYSTEM

The major components of the Red and Assiniboine rivers flood control and protection system are briefly described as follows:

RED RIVER FLOODWAY

The Red River Floodway, Manitoba's largest flood protection project, was completed in 1968 at a cost of $62.7 million ($982 million today) to protect the City of Winnipeg. The Floodway allows the water in the Red River to flow through Winnipeg during normal summer, fall and winter months. But in the spring when the discharge is greater than 850m3/s (30,000 cfs), the flow is divided between the Red River and the Floodway. The amount of water diverted into the Floodway is regulated by a control structure near St. Norbert. This structure maintains the Red River's natural level upstream of the Floodway (except during extreme conditions), but diverts up to 1699 m3/s (60 000 cfs) into the 40 km long floodway bypassing the City of Winnipeg. The water returns to the Red River just downstream of Lockport.

The floodway is currently being expanded to protect against a one in 700 year flood.

SHELLMOUTH DAM (Russell Reservoir)

The Shellmouth Dam, constructed on the Assiniboine River at the junction of the Shell and Assiniboine Rivers in 1972 at a cost of $10.8 million ($123 million today) is a multi-purpose facility. It reduces flood flows along the Assiniboine River protecting rural areas along the Assiniboine Valley as well as urban centres such as Brandon, and reduces the flow through Winnipeg. The dam, 21 m (70 feet) high and 1280 m (4200 feet) long, creates a reservoir with a storage capacity of 481 000 dam3 (390 000 acre-feet) extending upstream for 56 km (35 miles).

The other purposes of the facility are to augment the flow in the Assiniboine during dry periods in order to provide water supplies. Brandon, Portage La Prairie and other communities along the river upstream of Portage La Prairie, and the area along the Assiniboine from Portage La Prairie to Winnipeg served from a treatment plant near St. Eustache (after diversion into the LaSalle River) benefit. The St. Eustache plant supplies water as far east as Headingley. A third use of the Shellmouth Reservoir is recreation. The reservoir is called Lake of the Prairies and is a mecca for boating, fishing and camping.

PORTAGE DIVERSION

Overbank flows on the Assiniboine River between Portage la Prairie and St. Francis Xavier can result in widespread flooding because the surrounding land slopes away from the river channel. To alleviate this situation and to reduce flooding in Winnipeg, the Portage Diversion was constructed in 1970 at a cost of $20.5 million ($281 million today). The diversion conveys excess Assiniboine River flows from a point upstream of Portage la Prairie 29 km (18 miles) due north to Lake Manitoba. Diversion of water into the channel is accomplished by two control structures: a dam and a spillway on the Assiniboine River, and a gated structure at the inlet to the diversion channel. The Assiniboine River Diversion has a capacity of 708 m3/s (25 000 cfs). The diversion is put into use to maintain the Assiniboine within the dyked channel capacity of 12000 cfs, protecting agricultural land and communities between Portage La Prairie and Winnipeg. It is also used to assist in maintaining the water levels in Winnipeg below 18 feet at James Avenue.

WINNIPEG DYKING SYSTEM

A recommendation of the Royal Commission was maintaining and upgrading the dykes and pumping station in Greater Winnipeg. The system was initially implemented by the Greater Winnipeg Dyking Board noted above at an initial cost of $6 million. The system has been enhanced and expanded to the present time. The dykes protect areas of the City up to a primary level that leaves only a handful of properties to be dyked when the floodway can maintain levels below 20 feet at James Avenue, and up to the level of the 1950 flood during extreme flood events.

FLOOD FORECASTING

Flood forecasting is an essential element of the flood control and protection system. Accurate long-range forecasting identifies areas at risk and ensures that preparations are made to deal with flooding situations before they reach a critical stage. Shorter range flow and water level forecasts enable flood fighters and control works operators to make informed decisions regarding emergency dyking, closures, flood control works operation, and possible evacuation from flood risk areas.

Flood forecasting is provided by the Water Resources Branch, Manitoba Water Stewardship. Since 1997, computer mathematical models have supplanted rule curves and manual calculations. Data is collected from the entire drainage basins including the portions in the USA and synthesized by computer to enhance the stakeholder-driven process.

continued on page 22

Professional Development at the APEGM AGM

The 91st Annual General Meeting kicked off on the morning of October 29th at the Fort Garry Hotel. With attendees having enjoyed the deluxe continental breakfast that was provided, the official events kicked off just after 8:30 that morning. Outgoing President John Woods welcomed those in attendance, and introduced Jim Casey, a partner at Field LLP whose primary areas of practice are professional regulation, administrative law and labour and employment law. Having acted as legal counsel for numerous professional organizations providing advice in all areas of professional regulation, he was a perfect choice to provide a presentation on the hot button topic of continuing professional development entitled "Continuing Professional Development Programs: A Transition to a New Paradigm".

We have two fundamental expectations of a professional: competence and integrity. In the opinion of Mr. Casey, a third expectation should be added, and that is a commitment to life-long learning. He addressed the idea of the "old paradigm" by professional regulators as a system that addressed the entry level competence. However, competence is not a static concept. As your career and profession evolve, the required knowledge and competencies of the individual must also grow and evolve. In the past, regulatory bodies hoped that their members would address the issue themselves, providing opportunities to the individuals by making continuing education options available. In the case of an individual having a serious failure of professional competence, the discipline process would step in and force the individual to upgrade their knowledge base to a minimum standard if the member desired to maintain their standing.

However, this reactive approach is unacceptable in the eyes of government regulators, stakeholders and the general public. As such, there is a need to shift away from the old paradigm to a new mentality. Mr. Casey outlined five main reasons for this paradigm shift. The first of which was that utilizing the discipline system to address competency issues while necessary, is inefficient. Discipline tends to focus on one individual and often only one incident. The process is time consuming and expensive. Couple this with the fact that many cases of serious incompetence are never even brought to the attention of the regulator, and clearly the system as it stands is flawed.

The second reason for a shift is that there is a desire for regulators to be more pro-active. By addressing incompetence via the discipline process, a failure has already occurred with the damage having already been done. The process addresses preventing future failures, but does nothing to address what has already been done. Two graphics were used to help drive home these points. Consider the case of a sharp turn in a road built on the side of a large hill. Does it make more sense to have an ambulance waiting at the bottom of the hill for when a car drives off, or to put up a guard rail on the road way thus preventing such an occurrence?

The third reason was the impact of technology and rate of change in professions. With the exponential increases in knowledge and technology that are seen today, maintaining competence is much more challenging that in the past. A focus on more formal continuing professional development programs is now required in order to ensure that minimum standards are maintained.

The recognition of the existence of serious failures in the voluntary model is the forth reason for a paradigm shift. There have been some very serious failures with the voluntary approach to maintaining competence. By no means will a mandatory continuing competency program prevent all future failures, but the perception of policy makers is that things must be done to prevent as many failures as possible. This leads directly into the fifth reason for a shift, which is governmental and societal cynicism of the system of professional self-regulation. Currently, the skepticism of the value of self-regulation is at an all time high. This has led to the loss of self-regulation for some traditionally self-governing professions. With today's media

and the proliferation of information, professional organizations are under increased scrutiny by government, consumer groups and the public on the whole. This results in "meta-regulation", which boils down to regulating the regulators. One example of this is the Fair Registration Practices in Regulated Professions Act here in Manitoba.

These five factors have resulted in many groups adopting mandatory professional development programs. While many forms of these programs exist, they each have their advantages and disadvantages. What Mr. Casey suggests, is that for a mandatory professional development program to succeed, there are nine key aspects that the program must offer. Varying from focusing on core competencies, to membership buy-in, to ease of use and continual program improvement via membership feedback, these factors must be considered and included to allow the paradigm shift to occur.

Following the formal presentation and some brief discussions, outgoing President John Woods introduced APEGM's proposed Continuing Professional Development (CPD) program. Having used APEGGA's program as a starting point, the proposed time line was outlined, and a formal presentation of the program and systems in place was made by APEGM's Professional Standards Officer Mike Gregoire. The key point that was consistently reinforced during the presentation was that continuing professional development does not always equal formal training. The online reporting system was also demonstrated, having been officially linked to the APEGM members' website on the morning of the AGM.

At this point, the floor was opened for comments and questions in a fireside chat setting, with Jim Casey, outgoing President John Woods, President-Elect Bill Girling, Professional Standards Officer Mike Gregoire and Councilor Don Spangelo fielding questions from those in attendance. The two main focuses of questions were the auditing of the new proposed system, and the possibility of opting out for those who are in the twilight of their careers.

The online reporting system and CPD guidelines are available for review on the member homepage of the APEGM website, along with access to the members-only forum where questions, comments and feedback are welcome. ■

91st Annual General Meeting Awards Dinner and Dance

This year's theme was a black tie masquerade ball as many masked APEGM professionals gathered together to celebrate the 91st Annual General Meeting Awards Dinner and Dance at the Hotel Fort Garry's Crystal Ballroom. Following introductions and greetings, the awards segment of the evening began.

As those in attendance began to enjoy their appetizers, a brief video profile of each award winner was shown prior to the formal presentation of the awards. All of the winners took the opportunity to thank those most important to them, both personally and professionally. Congratulations go out to all of the winners of this year's awards!

Following an outstanding four course meal, two-time Canadian juggling champion Robin Chestnut took to the stage. It didn't take long for Robin to win over the room as his light hearted sense of humour coupled with some amazing feats of skill and focus had the crowd roaring. It's not every day that someone manages to juggle with a five foot step ladder balanced on their face! Whether it was juggling pins, rings, a bowling ball or a head of lettuce, Robin delivered a show that had the audience laughing and cheering from start to finish.

Following Robin's grand finale from high above the stage, the evening shifted over to the other side of the 7th floor where the Tek-9 Dance Band took to the stage. With three lead vocalists and five musicians, the band played everything from ABBA and the Bee Gees to Ricky Martin and Eric Clapton. Those who didn't hit the dance floor were lined up in front of a classic photo booth that was set up to add a little "flash" to the evening.

A special thank you goes out to the event sponsors Crosier Kilgour & Partners. Seemingly just after it had all begun, the night was over and the Crystal Ballroom emptied out. A perfect close to a busy day spent celebrating Engineering and Geoscience in Manitoba with friends, family and fellow professionals. ■

Dave and Melita Ennis;
Winners of the Best Dressed contest!

more pictures continued on page 19

APEGM 2010 AGM Business Meeting

The AGM business meeting that occurred October 29th, 2010 at the Fort Garry Hotel was one of the most memorable business meetings in recent memory.

The meeting was called to order at 11:40 am. The meeting was well attended with 80 voting members attending, so quorum was easily achieved. The first 16 items on the agenda were dealt with in a routine manner. The proposed by-law changes were carried and will now go to the members for a vote.

The business meeting got very interesting when item 17 on the agenda was reached. For the first time in about five years there was a resolution from the floor. The resolution's mover was Dave Ennis. The resolution concerned the routing of the next HVDC transmission line (Bipole III) by Manitoba Hydro down the west side of Lake Manitoba. Dave Ennis submitted a revision to the resolution. Please visit the APEGM (www.apegm.mb.ca) website for a copy of the resolution and the business meeting agenda.

After the Chair confirmed that the resolution was properly submitted, the Chair asked for an opinion from the Association's legal counsel on whether the resolution was in order or not. Their opinion was that the motion is null and void and out of order. Their opinion was that the motion's content at first look seems to fall within subsection 3.c of the Engineering Act but when reading the Act as a whole, 3.c is limited by section 3.a which relates to the practice of Engineering. Their argument is that the substance of this issue is a political and management related issue and not an Engineering decision. Therefore it clearly falls outside the scope of the Engineering Act.

Dave Ennis challenged this opinion and said at the risk of practicing law he disagreed with the legal opinion. He noted that legal counsel failed to mention section 3.b of the Act which would bolster the argument that this motion did indeed fall within the scope. The Chair then made the decision to put to vote not the motion itself but a vote on whether the motion should be considered.

The vote was carried with a fair number of abstentions. The members abstaining asked to have their names recorded by the registrar.

After the vote the motion then went to the floor for discussion. Dave Ennis spoke about how public advocacy should be a role that the APEGM embraces. After a few members spoke in favor of the motion it was put to vote. The resolution was carried.

After this rather spirited part of the meeting, retiring councilors were recognized and the Gavel ceremony for the incoming President Bill Girling, P.Eng. was held.

Good luck as new APEGM President. If this year's business meeting was any indication, there will be many interesting challenges ahead of you.

After closing announcements the meeting was adjourned. ■

continued from page 19, Awards Dinner and Dance

continued from page 4, Engineering Philosophy 101

Each of us is required, under the Engineering and Geoscientific Professions Act, to comply with the APEGM Code of Ethics. Each of us should ponder the scope of "... the laws of the land." Is there a line that defines serious "disobedience?" Clearly if an individual was found to be guilty of murder they would not be in compliance with Fundamental Canon One. But what about a speeding ticket? And what would constitute a violation of the requirement to "...uphold and enhance the honour, integrity and dignity..." of the profession?

Think about it. ■

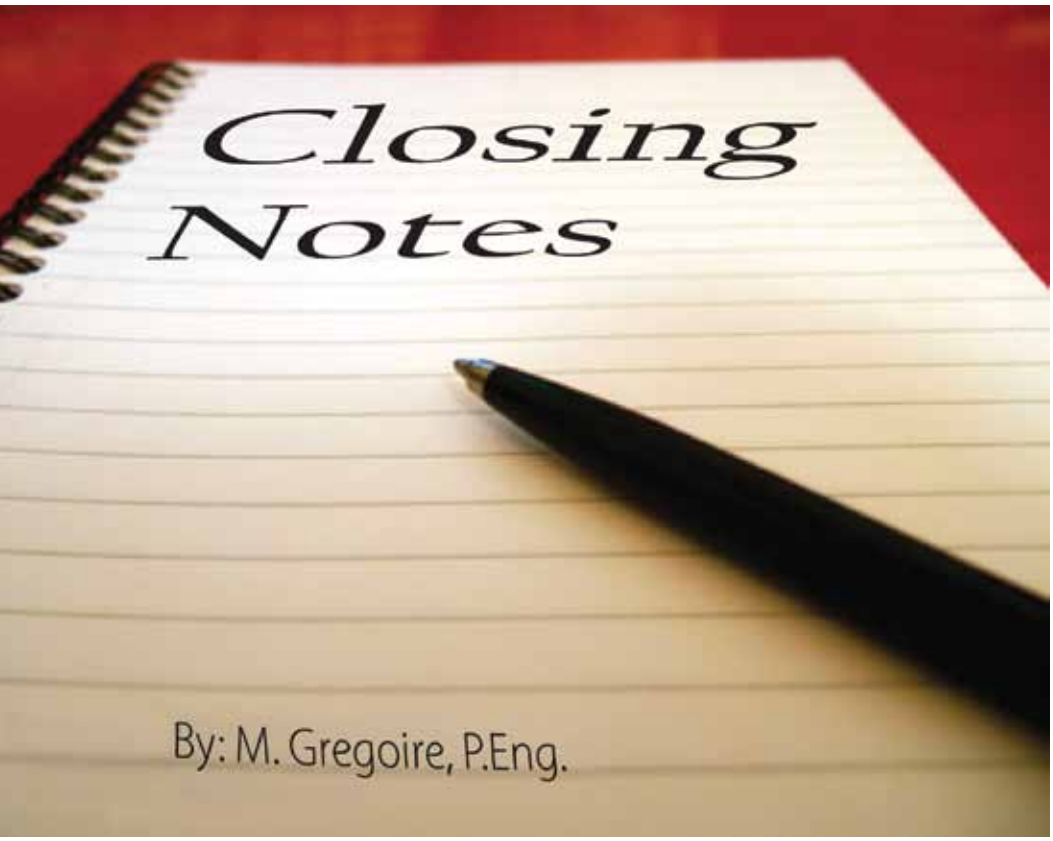
continued from page 15, Manitoba Flood Control...

FLOOD RESPONSE

Flood warning and emergency response mechanisms are in place throughout the populated areas of Manitoba. These are constantly being updated in light of changing circumstances. These mechanisms cover the gamut from flood warnings to flood fighting to emergency evacuation in critical situations.

The foregoing summarizes the major components of the Red and Assiniboine Flood Control and Protection System now in place. Today, Professional Engineers monitor and assess flood damage reduction requirements to ensure the continuing protection of the people of Manitoba – the major mandate of The Association of Professional Engineers and Geoscientists of Manitoba.

In a future article we will focus on the challenges of flooding in the many tributary streams in Manitoba. The Heritage Committee wants to hear from you on this and any other engineering or geoscience story. You can contact the committee at heritage@apegm.mb.ca or through the APEGM office. ■



The Next Step in APEGM's Continuing Competency Assurance Program

Although we are all familiar with the term 'continuing professional development', I wonder how many members know what 'continuing competency assurance' means. The latter is a concept in the regulation of professionals that relates to how an association can provide evidence that its members have the acceptable level of skills to perform their duties. A program requiring continuing professional development would be one form of continuing competency assurance.

Although CPD is one of the most common forms of continuing competency assurance (CCA), it's not the only one being employed by regulators. For example, some have chosen to implement a requirement for formal skill training through pre-approved courses. The MAA, as well as other Canadian associations of architects, use this as part of their CCA program. Another option is for the regulator to perform practice reviews of its members, which consists of a peer review of sample projects. OIQ is an engineering association that performs random practice reviews of its members on an annual basis.

When APEGM's Council decided that its CCA program should be updated, the above were all options that were considered. In the end, it was decided that requiring formal educational hours would be too limiting on professionals with such a diverse range of disciplines. Practice reviews were determined to be unnecessarily burdensome for both the member as well as the Association. In the end, a CPD Reporting program similar to that used by APEGGA was deemed the next best step.

APEGGA implemented their CPD Reporting System more than a decade ago. Many APEGM members already participate in that program due to their registration as a Professional Engineer or Geoscientist in Alberta. The simplicity, time-tested nature and wide-spread use of that program were good reasons to implement it, but it also provides an added benefit to the member. APEGM further hoped that it could make minor adjustments that would improve the program further.

APEGM Council's proposed next step in the evolution of its CCA was unveiled during the PD seminar prior to the AGM on October 29. The guideline detailing the new program is now available on our website along with the feature that serves to make the program even more appealing: on-line reporting. The latter is now open and ready for use by all registered members by logging in through our secure portal.

The new program requires that members participate in 240 hours of continuing professional development over any three year window. It's important to note that CPD, in APEGM's context, is not simply formal training but is defined as any of the following six categories of activities:

- Professional Practice
- Formal Activity
- Informal Activity
- Participation
- Presentations
- Contributions to Knowledge

For most members, the bulk of their CPD hours (to a maximum of 150) will be obtained from the first category. This category recognizes how important day to day work activities are in our development as professionals. Another large majority of CPD hours can then be obtained in the Informal Activity (to a maximum of 90 hours), which includes conferences, PD seminars, and reading technical/trade journals.

The program has one other important minimum requirement. Each year, members must include CPD in at least three of the categories. This requirement recognizes the importance of a diverse range of CPD activities and urges us all to maintain our competency through new resources.

In conjunction with APEGM's 2000 guideline on CPD, the new program aims to provide two functions. One is to prove to the public that we, as a profession, take our right to self-regulate seriously and choose to take proactive action with regards to ensuring public safety. This kind of proactive thinking helps to avoid meta-regulation, where policy makers choose to impose Acts that supersede ours. It also avoids the possibility of us losing our right to self-regulate.

The other function that the new program aims to provide is one for each member as an individual. We all recognize the benefit and need for continuing professional development and this program helps to define the minimum level that we should each be striving for. But, more importantly, the program serves as a tool for us to shape the direction of our career. It is only by reviewing what we have done, and planning what we will do, that we can achieve our goals.

The new CPD Program is live and participation at this time is voluntary. Please log in through the APEGM web site secure portal and give it a whirl. Any feedback would be greatly appreciated and can be sent directly to me or added in to the discussion forum. ■

Detach page for posting

Upcoming Events

Building Envelope Testing

Of utmost importance in providing a functional and durable building envelope such that building performance meets or exceeds the Owner's Performance Requirements, is the development and integration of functional performance testing into the building envelope commissioning program.

This presentation will discuss the many aspects of functional performance testing, from preconstruction laboratory materials and assembly testing, to mock-up testing, through to quality control and quality assurance on-site field testing, focusing primarily on the air, water, structural and thermal performance of fenestration and cladding components used on building envelopes. This will include a discussion of how to design a functional performance testing protocol, including the desired end results of functional performance testing, the different test methods and procedures commonly utilized both in laboratory material and system testing and field component and assembly and whole building testing, mock-up testing versus field testing and the common ways that minute field alterations have significant effects on performance, and sampling procedures.

This presentation hopes to dispel some of the myths regarding these tests, and discuss some common misunderstandings about the test procedures and their effectiveness. The presentation will conclude with a discussion on the interpretation of test results and identify some common examples of how test results can be misinterpreted.

RSVP Required.

If you are interested in attending this seminar, please RSVP your attendance to Louise Hardman at: lhardman@buildingprofessionals.ca.

Date: December 15, 2010
Time:
3:00 - 5:00 p.m.
Cost:
FREE for MBEC Members
$10.00 Non-Members
Location: Dalnavert Museum, 61 Carlton St., Winnipeg, MB

Snow Loading - USING MODELING FOR DESIGN

Frank Kriksic, Rowan Williams Davies and Irwin Inc. (RWDI) principal, will speak about the study of snow, ice and wind as design issues in cold climates particularly as they apply to buildings, master plans, roadways, and building components such as building and sports facility roofs. He will introduce the modeling tools used by RWDI over its 38 year history working with designers and planners throughout Canada, the Antarctic, the USA and parts of South America and northern Europe, as well as China. Specific projects will be featured to illustrate the analysis, problem solving, and solution development processes.

In addition, his seminar will put this snow and ice practice into the context of a suite of engineering modelling tools used by the firm for other climatic impacts affecting: ventilation, human comfort, energy alternatives, vibration, and air quality, and more.

For more information, please see the APEGM website at www.apegm.mb.ca.

Date: January 26, 2011
Time:
11:30 a.m. - 1:30 p.m.
Cost:
$20.00 Pre-Registration
$15.00 Student Members
$25.00 at the door
Location: TBA

ED 100 - Fundamentals of Light and Lighting

This is a 9 week course providing introductory instruction on lighting practices. It provides material on systems, equipment, calculation procedures and terminology. This course is ideal for those who have a basic awareness of lighting and professionals who want a thorough overview of the field. This course is offered once every two years and will be offered this year based on student demand.

To register as a potential student, please contact Nazra Gladu by e-mail at ngladu@hydro.mb.ca.

Date: February 2, 2011
Time:
6:00 - 9:00 p.m.
(Wednesday nights)
Cost:
$400 (IES members)
$500 (Non-IES members)
$200 APEGM Student Members
Location: MB Hydro, 820 Taylor Ave., Winnipeg, MB

Floodproofing Highway 75

Lance Vigfusson will be speaking on PTH 75 – A Strategy for Enhanced Flood Protection.

Given that PTH 75 is a Major International Transportation Route, connecting Manitoba and Winnipeg to the Emerson Port-of-Entry and the American Interstate System, the reliability of the highway is critical to Manitoba's economy. PTH 75 also is a vital transportation link serving the communities of the Red River Valley.

However, the reliability of highway access has been in jeopardy many times over the years as a result of Red River flooding. For example, in the past 15 years the highway has been closed on four occasions and threatened to be closed on another four occasions. These closures and near closures have been a tremendous inconvenience, and created stress and additional costs to the people and businesses of the Red River Valley, Winnipeg, and Manitoba.

As such, the Province is studying options to reduce disruption to traffic, including raising the highway in the Morris area. The challenge is to cost-effectively reconstruct the highway, without creating undue impacts on residents within the Red River Valley.

For more information, please see the APEGM website at www.apegm.mb.ca.

Date: February 3, 2011
Time:
11:30 a.m. - 1:30 p.m.
Cost:
$20.00 Pre-Registration
$15.00 Student Members
$25.00 at the door
Location: TBA

New Members Registered August, September, & October 2010

R.R. Abrams
M.F. Akhtar
J.A. Arango Diaz
J.R. Baldwin
P.P. Baxi
J.S. Beaty
S.J.R. Begg
A.S. Beveridge
M.A.K. Bhuiyan
R.V. Bischoff
M.C. Brandt
R.E. Brannan
T.B. Bratrud
D.A. Buchanan
B.C. Campbell
D.G. Campbell
R. Caouette
R.W. Carroll
P. Chang
D.T. Charville
D.O. Clark
J.P. Conway
D.J. Dainard
S.F. De Vera
W.A.B. Dinwoodie
C.A. Dougherty
N.J.M. Douville
D.D. Drolet
T. ElMekkawy
D.M.R. Enns
A.D. Erhardt
D.A.L. Evenson
K.J. Fabian
J.L. Ferchoff
A.J. Flak
V.G. Fontaine
J.V.L. Ford
J.R. Garatti
S. Gauthier
A. Gill
G.C. Gonnason
B.J. Harrigan
H.R. Harris
V.P. Hartog
D.W. Hultman
D.R. Ireland
T.S. Irlandez
B. Jayasekara
M. Jiao
A. Kanan
P.J.R. Koop
K.M. Krut
S.H. Kulbida
R.N. Lafont
L.S. Lane
K.E. LaRose
A.G. Laufer
I. Levesque
J.R. Long
M.E. Lopez de Leon
S.A. Loptson
L.E.K. Marciniwe
S. Marshe
K.M. Martel
A.J.A. McMillan
G.N. Mediwake
W.B. Mills
L.J.J.G. Monette
G.Y. Muluye
A.G. Mutasingwa
T.M. Nelson
P.J. Nicoll
O.T. Olorunniwo
O.C. Ong
D.V. Passmore
M.B. Persaud
M. Plenzik
N.J. Proper
S. Raczkowski
K.W. Ramakers
C.A. Rempel
H.P. Roerig
R.L. Samborski
R.D. Schmidt
A. Sharon
V.K. Shenoy
J.W. Sneed
M.L. Stairs
T. Stevens
C.J.I. Stewart
M.R. Stock
R.D. Stolz
S.M. Stowkowy
S.G. Suderman
C.P. Surgeoner
Z. Sykora
Y. Tang
R.B.V. Thadani
T.K. Tikka
C.H.W. Tse
A.Z. Tsisserev
R.W. Tweedie
C. Vellaichamy
D.E. Veydt
P.V. Villard
D. Vujadin
H. Wang
J.S.W. Wiebe
N.P. Wikstrom
B.F. Woldegiorgis
J.N. Woodhouse
U.P. Wyss
X.P. Ye
R. Zhang
Z.M. Zhang
A.D. Zilinsky

Licensees Enrolled August, September, & October 2010

J..E. Fee

Members-In-Training Enrolled August, September, & October 2010

T.O. Adelani
V. Afanasev
A.J. Agomuoh
P.D. Amirault
D.F. Arenas
L.M. Ataya
D.G. Beernaert
A.N. Blue
S.M. Buller
I.M. Bursey
J.R. Campbell
G.G.G. Cao
K.M. Champagne
A.M. Condon
N.E. Crawford
S.T. Cull
E.G. Dawson
R.D. De Koninck
Z.I. Dedov
A.B. Dehkordi
A.S. Deol
P.I.K. Dhingra
N.G. Domingo
K.G. Eckhardt
K.S. Esau
A. Fazel Darbandi
D.J. Fehr
G. Feng
Y. Fu
K.A. Gadient
D.A. Giesbrecht
M.D. Globush
H.K. Graham
K.A.G. Hayes
L. He
B.S. Jablonski
N.D. Jackimec
A. Jianfar
S.S. Joshi
S. Joshi Rajbhandary
D. Kahiri
M. Kandic
K.M. Khan
S.M. Klimek
D.O. Koop
H.L. Kozak
P.R. Lamont
A.D.G. Lazaro
H.Y. Lee
S.C. Leung
P.J. Lindell
P.H. Livingston
T.J. Loewen
M.A. Lusty
K.J. Mamchuk
J.J. Manzano
Z.C. Martin
A.H.M. McAlear
A.A.C. McKay
G.E. Mechael
S.B. Minglana
J.G. Newton
C.J. Nowell
D.A. Nuessler
J.K. Nugent
S.T. O'Brien
S.J. Page
P. Pirompak
R.R. Poapst
A.E. Poppel
C.J. Pyziak
G.S. Rahman
A. Rajbhandary
K.S. Rajeev
C.M. Robak
N.K. Samarawickrama
K.K. Sapiak
S.D. Sapukotana
C.M. Sholikowski
S. Sidhu
D..R. Sigurdson
L.R.D. Sintra
A.P. Smaluck
J.D. Sneath
W.K. Somerville
R.J. Swanson
J.R.B. Taylor
G.D.O. Templeton
G. Thomas-Vargas
J.A. Thompson
J.S. Toews
M.J.F. Vieira
L.M. Visaya
D.J.R. Weber
A.L. Weiss
G.A. Welch
T.P. Wickramasinghe
D.A. Wiebe
Z.M. Win
D. Yang
R. Zhai
B. Zhou

Certificates of Authorization August, September, & October 2010

Adjeleian Allen Rubeli Ltd.
Beck Engineering (1992) Ltd.
BNG Specialized Engineering Services Ltd.
BSE Welding Engineering Limited
Caltech Senex Oil & Gas Group Ltd.
CYBERTECH AUTOMATION INC.
DUMA ENGINEERING INC.
Enhanced Engineering (E2) Consulting Ltd.
Ernie H. A. Walter Architect Inc.
ESRS, a division of Cunningham Lindsey Canada Claims Services Ltd.
Falcon Engineering Ltd.
Firth Engineering Ltd.
Geomorphic Solutions (A Member of The Sernas Group Inc.)
ISL Engineering & Land Services Ltd.
Lanmark Engineering Inc.
LVM inc.
Manitoba Hydro International Ltd.
MFRA, Inc.
MGM Consulting Inc.
North Perimeter Construction Ltd.
NORTHSHORE ENGINEERING
NuSteel Industries (2008) Ltd.
Parkland Geotechnical Ltd.
Paul J. Ford and Company
PH ENGINEERING
Prairie Dynamic Engineering
Rangeland Engineering Company Ltd.
Rice Engineering, Inc.
SMA Consultants Inc.
Tacoma Engineers Inc.
Teletek Structures Inc.


What's under your tree?
Happy Holidays
from the APEGM staff
APEGM