THE KEYSTONE PROFESSIONAL

Autumn 2007

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Demand and Supply of Engineers in Manitoba

Demand and Supply of Geoscientists in Manitoba

2007 Making Links Enginering Classic Golf Tournament

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Association of Professional Engineers and Geoscientists of the Province of Manitoba
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THE KEYSTONE PROFESSIONAL

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The Communications Committee would like to hear from you. Comments on your newsletter can be forwarded to us through the Association office. Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

Front cover photo by Barry Striemer, "The St. Boniface Cathedral"

The ruins of the old St. Boniface Cathedral is one of Winnipeg's most recognizable landmarks.

Barry Striemer is a Winnipeg based photographer concentrating on urban, landscape and nature photography in the digital format. Barry will be participating in the Manitoba Art Expo, November 2 - 4, 2007 at the Assiniboia Downs. Fine art prints are available of Barry's photgraphs and he can be contacted via E-mail at bstriemer@shaw.ca

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Robyn L. Taylor, P.Eng. PMP
President's Message

Our Future

APEGM aspires to be "the leader and a facilitator of the process that ensures excellence in engineering, geoscience and applied technology for the public of Manitoba". The goal of APEGM is to ensure that the public receives safe, effective products, as well as current, reliable advice.

We are all aware of the development boom taking place in Manitoba. These projects are creating strong demand for engineers and geoscientists throughout our province.

To ensure that we continue to maintain excellence in our professions, high quality graduates in Manitoba and foreign trained professionals are in high demand.

The future of Manitoba depends on the energy, resources, infrastructure and services that engineers and geoscientists can provide.

The feature topic of this Keystone Professional this month deals with the Shortage of Engineers in Manitoba, which is something we all need to think about.

As always, I can be reached by mail or fax via the APEGM office, or by e-mail at rtaylor@teshmont.com. ■

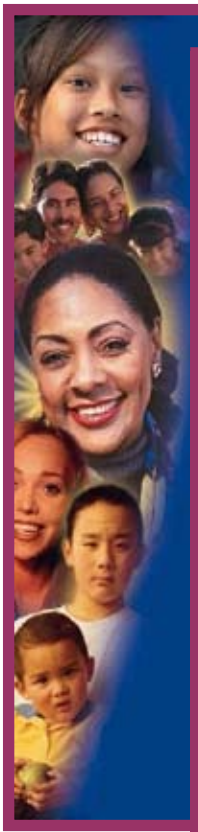
NOTICE

Notice to Members

Reports on the operations of APEGM, including year-end committee report, will be published in the Annual Report issued September 28, 2007, following the meeting of the Council on September 13, 2007.

The report will be available on the APEGM website, at the Annual General Meeting on October 26, 2007, or it can be obtained by contacting the Association office at apegm@apegm.mb.ca or telephoning (204) 474-2736.

Grant Koropatnick, P.Eng.
Executive Director & Registrar



Volunteer Opportunity!
Are you an engineer, or engineer-in-training, interested in sharing your Canadian engineering experience and expertise with a newcomer peer?

The International Centre of Winnipeg is looking for volunteer career mentors to advise and assist internationally trained engineers to develop a plan to re-enter the profession in Manitoba. Career mentors provide information, insight, support and encouragement to newcomers as they pursue their occupational goals.

Benefits to mentors include enhanced leadership and mentoring skills, as well as increased cross-cultural competence.

If you are interested in participating in the program, or you would like more information, please contact Catherine Cooke at the International Centre: catherinec@international-centre.ca 943-9158 ext 228

Engineering Philosophy 101

. . . responsibilities

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

In the summer of 1966, about a month after joining the Head Office staff of Beaver Lumber in Winnipeg, I was called to the President's office. I was told that I was being transferred to the Ontario division.

I would maintain my company wide design responsibilities and still report directly to the President, but, in addition, I was to "straighten out" the Farm Building construction operation in that division. The obvious question was, why me? Mr. Kennedy noted that I was an Engineer and that meant I had responsibilities beyond the economic interests of the company. He wanted me to exercise those responsibilities.

The drive east over the top of the lakes gave me time to consider what Mr. Kennedy meant when he spoke about my "Engineer's responsibilities". I was still wondering when we arrived in Toronto.

Within hours of arriving at the office, the Division Manager informed me that some Extension Engineers were "bad mouthing" the company and he expected me to make them stop. This "explanation" of the problem I had been sent to solve made no sense at all.

Some site visits and some discussions with the "offending" engineers quickly identified the "technical" problem: three of our Farm Building Salesmen were "substituting" materials. Buildings were priced and specified using construction grade lumber and Imperial gauge steel, but built using standard grade lumber and US gauge steel. This produced both a healthy profit and an inferior building.

The solution seemed simple enough. I confronted the Salesmen and ultimately fired them. I instructed the appropriate Store Managers to send out crews to upgrade the buildings. At this point it seemed like the "Engineer's responsibilities" Mr. Kennedy had spoken about simply came down to making sure that technical specifications were met.

When I got back to Toronto, I quickly learned that I had underestimated the magnitude of the problem. The Division Manager was waiting for me. He had the sales records for the Farm Buildings Division for the last two years. He "pointed out" that the three persons I had fired had shown the highest profits of all Farm Building salesmen.

He "suggested" that I had acted hastily and that if I didn't reverse my decision and apologize to these individuals, he would personally rearrange my physical structure. I suggested he speak to Mr. Kennedy before getting too carried away.

> "I was an Engineer and that meant I had responsibilities beyond the economic interests of the company"

The telephone conversation was short, and it ended with me being "asked" to get out of the Manager's office. It was the beginning of a less than cordial relationship, and it explained why Mr. Kennedy wanted me to report directly to him.

I must confess that I was grateful for his support. As far as I was concerned, I had simply stood behind the technical issue. I still didn't understand what Mr. Kennedy meant by my "Engineer's responsibilities".

As my tenure in Ontario continued, various situations developed that gave me some hints about the "responsibilities" issue. The story about the firings and the "upgrading" spread throughout the farming industry. Extension Engineers invited me to speak at their meetings. I ended up giving some lectures at the University of Guelph when one of the professors had to be away. And both sales and profits related to farm buildings increased.

Within the Division office, people responsible for other operations started to consult me on "technical" issues. Inevitably these issues related to "substitutions" that would improve mark-up, but compromise quality.

I became the "go-to guy" when debates developed with "the corner office". I was told that my view was always broader than theirs because I had the advantage of "being an Engineer". I think reporting directly to the President helped too.

About a year later, I decided to go back to school so I could become an academic. My Ontario experience was the first time in my career that I ever thought about "Engineer's responsibilities". But it didn't provide me with a clear understanding of what Mr. Kennedy meant. I think he knew (more than I did) that my ethical responsibilities as an Engineer required me to do what was "right".

This gave (gives) me the freedom (responsibility) to look beyond the narrow corporate agenda and say "wait a minute". I found myself doing a lot of that during my tenure in Ontario.

When I met with Mr. Kennedy to tell him of my decision to go back to school, he thanked me for what I had done and wished me good luck. I took that to mean that I must have met his expectations. And I've been wondering about those "responsibilities" ever since. ■

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

Mentoring Young Professionals

As I write this article, the "dog days of summer" are happening outdoors and it feels good to sit inside the cool comfort of our air-conditioned office. This summer, Manitoba grabbed the Canadian humidex record with a reading of 53°C recorded at Carman, MB on Wednesday, July 25, 2007. By the time you read this edition of the Keystone Professional, the "back to school" frenzy will be underway and the heat of July and August will be a distant memory.

On the second day back in the office after my vacation, I spent time re-focusing and setting direction for both myself and the Association. I tried to look at our membership from a high altitude vantage point. This involved asking a wide range of questions about what we are doing and where we are headed. One question that came to mind was: "What are we doing to ensure that young members are welcomed into the profession?" It got me thinking about a problem that we are encountering more often as graduates leave university, go out and get their first job and then apply to become an APEGM Member-in-Training (MIT).

THE PROBLEM WITH MITS

On an increasing frequency, Director of Admissions Sharon Sankar reports more graduates being employed in non-traditional areas. For example, some MIT applicants have been hired to work in food processing, telecommunications, lottery game generation, the motion picture film industry, bio-medical lab settings, and high-tech surgical imaging research.

Often this means that a graduate is hired and supervised by a chemist, doctor, pharmacist, research scientist, or business owner. This is a problem for the MIT. Without a "P.Eng. supervisor," an MIT applicant does not meet the requirements of the Manual of Admissions and the pre-registration program specified in the By-Laws and the Engineering & Geoscientific Professions Act (EGPA).

SO WHAT'S THE SOLUTION?

How can we register these MITs with a form of supervision that meets the requirements of the Manual of Admissions and the EGPA? What about mentoring? A mentor is defined as "somebody, usually older and more experienced, who provides advice and support to, and watches over and fosters the progress of a younger, less experienced person" (Encarta Dictionary).

> "What are we doing to ensure that young members are welcomed into the profession?"

In the Manual of Admissions, acceptable work experience must be obtained under the guidance and supervision of a professional engineer or geoscientist who assumes responsibility for the technical quality of the MIT's work.

A mentor could fulfill the supervisory requirements for an MIT whether or not they are the employer.

PROFESSIONAL LIABILITY

Sometimes members of the various APEGM committees debate whether or not the supervisor is taking professional responsibility for the MIT's work according to the Manual of Admissions. Some ask "how can you supervise the work if you're not the employer?" Well, it's simple really. A professional member supervising an MIT (when the supervisor does not work for the same employer as the MIT) is covered under APEGM's insurance.

Therefore, members serving on a volunteer committee (eg. Mentors Committee) can "assume responsibility for the technical quality of the work" performed by an MIT and be confident that they are covered for any risk associated with the MIT's work. The mentor does NOT have to be the employment supervisor, just a supervising professional engineer or geoscientist. Of course, the employment supervisor (chemist, pharmacist, et al) must ensure that their new employee (MIT) mitigates risk by following well-defined company policies. Moreover, risk associated with an MIT's work is low – employers and mentors have little to worry about.

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the eureka project

Smartpark's Incubator

The Eureka Project: Smartpark's Incubator just opened in January 2007 and already it has created quite a buzz. It turns out Winnipeg is full of budding entrepreneurs.

The Eureka Project has already welcomed nine clients into its facility on the University of Manitoba's Fort Garry campus in the areas of engineering and advanced materials, information and communications technology, agricultural and nutritional sciences, health and biotechnology, and environmental solutions.

Eureka's goal is to provide start-up companies with the help they need to successfully build their companies into growth enterprises. In fact, entrepreneurs that seek the help of a business incubator are three times more likely to succeed than entrepreneurs that don't seek help.

The latest client to join the incubator is QuadCom Technologies. The electronics firm specializes in high quality systems design and test services, including printed circuit boards, FPGA-based IP, and embedded systems for both the commercial and military marketplace.

Company president Tom Wilson is joined by fellow University of Manitoba engineering alumni Bruce Chin, Gary Isliefson, and Norbert Wegner in this endeavor. All four were at PMC Sierra before the international company closed its Winnipeg office.

"When we discovered the Eureka Project we knew we had found a way to focus our many years of experience and wide-ranging technical skills into a successful business venture", said company President, Tom Wilson.

"The Eureka Project has not only given us the infrastructure a company needs to get started, but also the support and guidance to build for the future."

The Eureka Project is in the business of helping entrepreneurs, like those with QuadCom, with all the activities involved in starting and managing a business. Serial entrepreneur and resident director, Gary Brownstone, helps clients with strategic planning, business plan development, financing, marketing, and/or product development. Clients must also demonstrate a need for office and/or laboratory space or can join the virtual incubator program.

Another client company that is benefiting from the Eureka Project is SMT Research, a civionics company. Gamal Mustapha and his partner Jason Teetaert launched their company to tackle the problem of moisture in building envelopes that first made headlines during Vancouver's leaky condo crisis. SMT Research's wireless sensors detect moisture in buildings and immediately send a signal to the monitoring centre so that the building owner can be notified.

The company's most recent projects include installation of a leak detection system and commissioning of the green roof membranes on Manitoba Hydro's new downtown headquarters. SMT's wireless data acquisition system will be used to monitor targeted repairs in high rise structures and for building science research at the NRC Institute for Research in Construction.

The Eureka Project's start-ups also benefit from the advice of mentors. Each company is paired up with an experienced business person in their field that can help guide them through the various challenges of starting a business. Many mentors are drawn from Smartpark's own tenant companies.

Through the Eureka Project's collaborators in the business creation industry, clients are also provided with programs that can support the development of their business skills. These can include courses on accounting, hiring practices, sales taxes, or SR&ED tax credits.

To become a client of the Eureka Project, interested applicants can submit an application to the director, Gary Brownstone. Mr. Brownstone can be reached at 480-1062 or gary_brownstone@umanitoba.ca. For more details on the Eureka Project visit www.eurekaproject.ca. ■

continued from page 5, Executive Director's Message

MENTORS COMMITTEE

Many of you are probably saying . . . "Mentors Committee? I didn't know we had one!" In fact, a mentors committee does not officially exist at APEGM yet. However, I am asking all members to consider participating in such a committee.

Giving advice, support, and watching over and fostering the progress of a younger, less experienced professional is a rewarding experience. There is no better way to welcome young men and women into the profession than to walk with them for the first 48 months of their career. Your feedback is welcomed. If you have any ideas on this topic or would like to mentor an MIT, please email me at apegm@apegm.mb.ca. ■

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

Thoughts On Design

. . . AND THE HALF-LIFE OF TECHNOLOGY

It has been suggested that the half-life of "current" technology is about five years. The precision of this estimate is open to debate, but the reality of the concept is indisputable. Change is the one "constant" in our lives and technological change is what facilitates broader, publicly visible change. This is not a new phenomenon, but the pace is certainly increasing.

Technological change poses an inescapable personal problem for professionals who are held legally responsible for maintaining their technical competence.

Keeping "up to date" is a continuing demand of professional life. It is also what most of us do on a daily basis. Engineers design solutions to real world problems. Solutions to real world problems require change. So, our daily activities are a major cause of technological change. And consciously, or otherwise, we tend to be keeping "up to date".

As "normal" as the process is for those of us who practice our profession, it poses something of a philosophical problem when one considers the education/ training of future engineers.

From the perspective of time, a person can move from high school graduation to P.Eng. in a minimum of eight years. In reality, this is closer to ten years given that, on average, it takes 4.85 years to complete a four year degree, and very few candidates meet their four year MIT experience in four years.

During their time as undergraduate students, the curriculum is supposed to provide a "specification" that will help these young people learn the theoretical and procedural basics of "being an Engineer". This is followed with a period as a MIT in which they gain experience in applying those basics.

So, between 2015 and 2017 a significant number of the students who have just enrolled in the Faculty of Engineering will be receiving their licences to practice engineering.

They will have eight to ten years of exposure to the profession, and virtually all of the technological detail they mastered during their undergraduate education will have passed its half-life. The details they learned in their first year will have gone through the better part of two cycles.

In the terminology of the profession, a graduate from a CEAB accredited program is assumed to be "academically qualified". CEAB creates a broadly based "specification" for that qualification, but the academic staffs determine how to meet that "specification".

> "Education is too important to leave to academics"

Here in Manitoba, we strive to produce "Design-Ready" graduates. This ill-defined target raises discussions about the difference between "education" and "training", the former being more theoretical and the latter being more applied. Education should be less subject to a half-life decay than training, because it is much more fundamental in nature.

As an illustration of this dilemma, consider the world of computer applications. Personally I have gone through the evolution of this machine from its infancy. As a graduate student at Texas A&M, I became very comfortable with punch cards, FORTRAN IV, and coded error statements on dot matrix output paper. The training part of this process related to machine dictated formatting and an understanding of error codes.

From an education perspective, I learned ways in which the power of the computer could (at that point potentially) be used to design more effectively. By the time I got back to Canada, my training was obsolete, but my education persisted and grew. Both my training and education continue today (and the training part demands the most frequent attention).

My use of computer technology demands that I bring a knowledge of some type of engineering technology to which the computer technology can be applied. In that sense, I am no different from an undergraduate student. They need to know how to "use the tools" (training), but they also need to have an understanding of some area of engineering (education) so

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The following are some recent items from the news media which might of interest to APEGM members. The sources where these news items were reported have been cited. However, it should be noted that the comments are solely those of the author and do not reflect the opinion of either the cited sources or APEGM.

WIND POWER

The Government of Manitoba is seeking to dramatically increase wind power in the province. Currently, there is only one wind farm, at St. Leon, rated at 99 MW.

The proposal is to install another 300 MW by 2009, with yet another addition of 700 MW by 2018. The price tag for the 1000 MW expansion is estimated at $2 billion of capital investment. A "substantial number" of proposals have been received by Manitoba Hydro, who will take until the end of the year to evaluate them.

Not too surprisingly, the wind power expansion plans have sparked a bit of the "Not In My Backyard" syndrome. A group of residents of Elie and St. Joseph have expressed opposition to hosting wind turbines in their communities, but the original, and so far the only, host community in the province, St. Leon, seems to be quite satisfied with its power generator which also doubles as a tourist attraction.

(Winnipeg Free Press, July 20 and 21, 2007)

NUCLEAR MATTERS

The latest in the elaborate, slow-motion ritual surrounding nuclear fuel waste disposal was the announcement on June 14, 2007 by the federal government that it has approved the waste disposal technology proposed by the Nuclear Waste Management Organization (NWMO). The NWMO had made that recommendation to the government some months back. Now, the government will turn around and ask the NWMO to implement the proposal.

Natural Resources minister Gary Lunn announced the selection of the Adaptive Phased Management (APM) option as the recommended approach for managing used nuclear fuel in Canada over the long term. APM includes the isolation and containment of used nuclear fuel deep in the earth, with an option for temporary shallow underground storage.

It also has some provisions for retrieval. The public consultation, site selection and development will take several decades and cost billions of dollars. The first moves regarding nuclear fuel waste disposal were made in the late seventies. So far, not a gram of nuclear fuel waste has been disposed of.

(NWMO website)

Meanwhile over in Japan, reportedly the world's largest nuclear power complex, the seven-reactor Kashiwazaki – Kariwa plant, took almost a direct hit from a 6.8 magnitude earthquake in July. Damage and leak of radioactivity into the environment was minor.

However, the criticism centres on why the plant was built on a seismic fault line, and why it took the management several days to confirm the leak. Also shaken, was the industry's claim that nuclear plants are invincible to earthquakes or other disasters. But it is a plus for the industry, in that the facility suffered only minor damage during such a large earthquake.

(Winnipeg Free Press, July 21, 2007)

BIOFUELS

The Manitoba government is expecting to start enforcing a law by early 2008, which would require a certain percentage of ethanol in the gasoline sold in the province. This would reduce greenhouse gas emission in the province. The law could not be enforced earlier because of insufficient etanol production in the province.

However, Manitoba's only ethanol plant, in Minnedosa, is undergoing an expansion in capacity from 10 million litres per to 130 million litres per year. Meanwhile, an op ed piece argued that ethanol production, mainly from corn in this province, simply increases the price of food products because farm animals are fed corn.

(Winnipeg Free Press June 15 and June 27, 2007)

The provincial and federal governments allocated $614,000 for the expansion of a biodiesel testing facility in East Selkirk which would help the biodiesel industry by speeding up the testing required by them.

It is expected that by the end of the year there will be four biodiesel plants in the province – two in Beausejour and one each in Arborg and Winnipeg.

In early July, the federal government announced a $1.5 billion subsidy for producers of biofuels. The subsidy could amount to up to 10 cents per litre for ethanol and 20 cents per litre for biodiesel.

(Winnipeg Free Press, July 6, 2007)

Marie Lemay, P.Eng., ing.
Engineers Canada
CEO's Message

Studying Canada's Engineering and Technology Labour Market

Engineers Canada and its constituent members are hard at work implementing the recommendations stemming from our From Consideration to Integration project. Put into action in 2005, the recommendations are helping to facilitate the timely licensure and employment of international engineering graduates without compromising public safety or lowering professional standards.

One of the first recommendations identified within this project was to conduct a labour market study to provide a better understanding of the current and future employment picture within Canada's engineering and technology sectors. Accurate labour market information does not currently exist in these fields, making it difficult for potential immigrants, students, graduates and workers to make informed decisions concerning their careers.

Employers are also experiencing challenges in human resources and skills planning due to inaccurate labour market information. Canada is facing an expanding gap between the skills possessed by engineers coming into the workforce and the skills required by employers.

Employers often tell me that the supply of engineers in their regions is limited or that they have difficulty filling certain engineering positions. On the other side, I still hear that in the Greater Toronto Area some engineers cannot find employment.

With the financial support of Human Resources and Social Development Canada, and in conjunction with the Canadian Council of Technicians and Technologists, the Engineering and Technology Labour Market Study has been developed and initiated to respond to these concerns.

Labour market information related to licensed/certified and unlicensed/uncertified engineers, technologists and technicians is being collected and analyzed to:

- Better understand the changing work and skill sets required by the profession;
- Depict a detailed picture of the nature of labour supply and demand;
- Identify labour force and skills implications from various economic realities; and
- Improve the integration of international engineering graduates.

Data collected will be categorized by discipline, experience level, industry, and economic region. This will help in validating and understanding any skills gaps that may be present and in providing the level of detail required to assist accurate human resources and skills planning in all regions.

Both government and industry consistently express a need for engineers, and the study will provide our profession with the facts concerning what types of engineers are needed and where. It will also develop a diversity study, an analysis of attitudes and policies towards licensure, certification, continuing competence and work task boundaries, and an analysis of the globalization of the profession.

Ultimately, the study will deliver a better understanding of our profession's current and future employment picture. It will inform the future strategic direction, policy recommendations and potential activities of Engineers Canada and its constituent members while supplying the evidence necessary to motivate businesses, academics, governments and communities to be more responsive to the labour market and skills development needs of the engineering, technician and technologist workforce.

The study will also provide an understanding of the extent to which the engineering profession and its education process must respond to various new realities, especially changing competency requirements. While the labour market study will not allow us to predict the future, it will better inform schools, students and graduates as to the future outlook for engineering supply and demand.

Looking forward, our goal is for the study to allow for the development of a labour market information-forecasting tool that will provide current, accurate and regionally relevant information to help students choose their engineering discipline and graduates to know where they are needed the most.

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Professional Development & Networking Events

Meeting Kyoto

Presentation By
David Grant, P.Eng.

May 17, 2007

Q. Menec, P.Eng.

Mr. David Grant, P.Eng., provided an informative luncheon to APEGM members on May 17th, 2007 and presented to the audience the reality of meeting Kyoto targets.

Most everyone is aware of Canada's agreement to the Kyoto Protocol which set a target for greenhouse gases (GHG) of 6% less than levels seen in 1990. Mr. Grant opened the session by describing the delicate forces on the planet that, when unbalanced, has led to instability in the heating/cooling cycle, creating a need to address the rising levels of GHG emissions.

Budgeting for change is Mr. Grant's message; "Each Canadian activity which makes GHG must be considered".

Whereas we have no control of natural changes of GHG levels due to volcanoes, biomass, etc., we can reduce our production of methane and CO2.

Mr. Grant proceeded to identify the various areas / industries which contribute to manmade Canadian CO2 production and to address each one in turn, providing an indication of what can be done to curb production.

The conclusion: "Further cuts are required" to counteract the growth that has and is occurring in the production of CO2, particularly with petroleum fuel use. Everyone needs to be motivated by action and a plan, not simply out of fear.

Looking beyond Kyoto, how do we sustain growth while attempting to follow a path of reducing GHG and CO2 levels? We need to meet Kyoto with simple life-style changes as we cannot house or feed our fellow citizens and still hope to meet the next round of targets. ■

The Dawning of a New Era

Presentation By
Ed Tymofichuk, P.Eng.

May 30, 2007

R. Minhaz, EIT

At a breakfast meeting held at the Norwood Inn on May 30, 2007, Ed Tymofichuk, P.Eng., Division Manager, Transmission System Operations for Manitoba Hydro, gave a presentation on Reliability Standards that became effective on June 4, 2007 to improve the reliability and security of the bulk power system in Manitoba.

The presentation started with an overview of North America's Power Grid Reliability Regimes during three time periods starting in 1965, followed by Managing Reliability in North America, Reliability Standards, an overview of Manitoba's Power System, Compliance, and Issues and Challenges for Manitoba Hydro.

During "The Old Boys' Club" era, 1965 to 1996, the electricity industry saw the formation of the voluntary North American Electric Reliability Council (NERC) in response to the 1965 blackout. Over time, ten regional reliability organizations were formalized under NERC to exchange and disseminate information, as well as to review, discuss, and assist in resolving interregional coordination matters.

The period 1992 to 1995, was the de-regulation and restructuring in telecom, airline, and other industries, and later on in other electricity jurisdictions of the world. Those other jurisdictions fueled the U.S. electrical industry to follow suit. Therefore, both the wholesale and retail market became competitive, and increasingly more investments started flowing. In Canada, Ontario and Alberta joined this movement.

Ed Tymofichuk identified the years of 1996 to 2005 as a "Paradigm Shift", when open access to transmission heated up the generation competition, followed by new rules for the industry. The de-regulation was blamed for the two blackouts in the U.S. during 1996.

To develop and implement regional standards, to determine and enforce compliance with those standards, and to provide bulk electric system reliability, the north central region of North America formed the Midwest Reliability Organization (MRO) in 2001. Manitoba Hydro had a seat on the balanced stakeholder board.

On August 8, 2005, the U.S. Energy Policy Act authorized the creation of a self-regulatory "Electric Reliability Organization", and stated Reliability Standards will be mandatory and enforceable, with sanctions and financial penalties.

In Canada, electricity is a provincial jurisdiction and for the new NERC, the United States and Canada signed a Memorandum of Understanding where Bilateral Electric Reliability Oversight Group (BEROG) will mediate difficult issues, such as remands, and multi-jurisdictional processes.

On March 15, 2007, the Federal Energy Regulatory Commission (FERC) approved NERC Reliability Standards, the first set of legally enforceable standards for the U.S. bulk power system effective June 4, 2007. The Reliability Standards include rules for the planning, design, and operation of generation, transmission, and major loads within the grid, and provide continuous supply at acceptable voltage and frequency, minimize

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BUILDING ON ENGINEERING* KNOWLEDGE

ENGINEERS CANADA NATIONAL SCHOLARSHIP PROGRAM

2008 SCHOLARSHIP COMPETITION

Engineers Canada invites engineers to enter the 2008 National Scholarship Program competition.

Eligibility Requirements

Applicants must be:

- ✓ a P.Eng., Eng. or *ing.*
- ✓ a Canadian citizen or a permanent resident of Canada.
- ✓ refer to the application form for the complete list of eligibility requirements.

Engineers Canada - Manulife Financial Scholarships

Value:	$10,000
Number:	Three
Field:	**Engineering**
Criteria:	Candidates must be accepted or registered in a faculty of engineering, beginning their studies no later than September 2008.

Engineers Canada – TD Meloche Monnex Scholarships

Value:	$7,500
Number:	Three
Field:	**A field other than engineering.** The field of study chosen should favour the acquisition of knowledge pertinent to enhancing the performance of the candidate in the engineering profession.
Criteria:	Candidates must be accepted or registered in a faculty other than engineering, beginning their studies no later than September 2008.

Application forms are available at:
www.engineerscanada.ca

or by contacting the:
National Scholarship Program
Engineers Canada
1100-180 Elgin Street, Ottawa ON K2P 2K3
Tel: 613-232-2474 / Fax: 613-230-5759
E-mail: awards@engineerscanada.ca

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

ingénieurscanada
Ingénieurs Canada est le nom commercial utilisé par le Conseil canadien des ingénieurs

Deadline: March 1, 2008

*The term engineering is an official mark held by the Canadian Council of Professional Engineers

Join the Engineers and See the World

P.H. Boge, P.Eng.

Or at least a lot of it. Such is the case for C.O. (Chuck) Brawner, author of ***Engineer . . . Around the World in 50 years*** (Bitech).

It's a personal recollection of his travels and technical challenges as a geotechnical engineer on projects that spanned every continent except Antarctica.

Brawner examines engineering projects undertaken in Canada, the US, Russia, Africa, China, and many others. For example, he reviews the fatal slides from the failure of a coal mine pile in BC, a highway development in Saudi Arabia, and a stabilization project in Malibu.

He develops the key technical points and provides the problem-solving steps he took in designing solutions to various problems.

He demonstrates the quintessential engineering battle between safe designs and economic designs from a geotechnical perspective. Mixed in with his technical treatise are his humorous comments.

Geotechnical engineers will be especially interested in this book as it provides an in depth look at various engineering projects and will provide some new insights into the wide range of problems facing the geotechnical profession.

Brawner earned a B.Sc. degree in Civil Engineering from the University of Manitoba in 1953. He has primarily practiced geotechnical engineering with an emphasis on large excavation and mining projects.

He has practiced engineering in more than 40 countries. On top of his numerous awards, Brawner has been elected a Fellow of the Engineering Institute of Canada, Canadian Institute of Mining and Metallurgy and Canadian Academy of Engineers. ■

CANADIAN
ENGINEERS' AWARDS
PRIX DES INGÉNIEURS
DU CANADA

R. Minhaz, EIT

The Canadian Council of Professional Engineers (CCPE), now known as Engineers Canada, presented the 2007 Canadian Engineers' Awards to a selected group of engineers to recognize their engineering excellence, as well as their contributions to their profession, their community and to the safety and well-being of Canadians, at a gala ceremony, held on May 26, 2007, at the Winnipeg Art Gallery. Engineers from across Canada, representatives from all provincial and territorial engineering associations, families, relatives and friends of award winners attended the Award gala to honour the Top engineers of the year.

Established in 1972, the recipients of the Awards are selected by the Engineers Canada Awards Committee based on the terms of reference and selection criteria for each award. Key factors considered by the Committee include engineering significance, service to the engineering profession, service to the community and contribution to engineering education.

This year's recipients include two exceptional engineers who are making a dramatic impact on the way in which engineering is taught and accredited in Canada; an engineering student who is working tirelessly to show how Canadian engineering can have a global impact on developing countries; a respected business leader dedicated to supporting the engineering profession; a high-tech entrepreneur who is helping launch the careers of other women in engineering; and a top-notch telecommunications engineer who is applying decades of senior management experience to help brighten the lives of sick children.

Dr. Robert L. Papineau, PhD. ing.

The Gold Medal Award - the profession's highest tribute - presented to **Dr. Robert L. Papineau, PhD, ing.**, Dr. Papineau is considered one of the great figures of engineering education in Quebec's universities. His achievements have helped shape two major engineering institutions in the province: the École de téchnologie supérieure and the École polytéchnique de Montréal. As director general of both schools, Dr. Papineau has transformed engineering education in Quebec and continues to adapt the engineering profession to future challenges.

R. Charles Terreault, ing.

R. Charles Terreault, ing., honoured with the Meritorious Service Award for Community Service. After a remarkable career as a researcher, manager, teacher and senior telecommunications consultant, R. Charles Terreault now devotes his time and talent to ensuring that Quebec hospitals benefit from the services of Dr. Clown, a non-profit humanitarian organization inspired by the philosophy of Dr. Patch Adams.

Hollis B. Cole, P.Eng.

Hollis B. Cole, P.Eng., presented with the Meritorious Award for Professional Service. Dedicated to protecting and promoting the field of engineering in Atlantic Canada, Hollis B Cole's selfless contributions to the profession are significant and have been ongoing since he received his professional accreditation 30 years ago. In addition to carrying out his responsibilities as the head of one of Atlantic Canada's largest engineering firms (ADI Group Inc), Cole has spent decades supporting the engineering profession by serving on numerous professional engineering committees. He is a past-president of the Association of Professional Engineers of New Brunswick (APEGNB), and a past-president of Engineers Canada.

Claudia Ng, P.Eng.

Claudia Ng, P.Eng., received the Award for the Support of Women in the Engineering Profession. With her "anything is possible" outlook on life, Claudia Ng is widely recognized as an inspirational entrepreneur and

role model for women in the field of engineering. Currently the senior VP, Products and Services at Infowave Software Inc., she devotes much of her time mentoring young people through her work with The Wired Women Society and S.U.C.C.E.S.S—an organization dedicated to helping foreign-trained professionals integrate into Canada.

Dr. Kimberly A. Woodhouse, P.Eng.

The Medal for Distinction in Engineering Education awarded to **Dr. Kimberly A. Woodhouse, PhD, P.Eng.** A distinguished professor at the University of Toronto, Woodhouse is considered a superb educator who has shaped the teaching style within the Faculty and the curriculum itself. Her appointment as Dean of the Faculty of Applied Science at Queen's University effective July 1, 2007, is a testament to the impact she has made on the way that Canada's future engineers are being educated.

This year, the Young Engineer Achievement Award presented to **Sridhar Krishnan, P.Eng.**, Ph.D. At just 35 years of age, Krishnan is chair of the Department of Electrical and Computer Engineering at Ryerson University. Responsible for the delivery of five degree programs, he has made substantial contributions to the establishment of a successful graduate program and coordinated the first-ever accreditation of the B.Eng. program in computer engineering at Ryerson.

Sridhar Krishnan, P.Eng.

Alejandro Gómez-Juliao

Alejandro Gómez-Juliao, a third-year electrical engineering student at the University of New Brunswick, received the Gold Medal Student Award. He devotes much of his time and energy doing school outreach work and raising funds for Engineers Without Borders—an organization in which engineers apply their expertise to further humanitarian efforts. His service in Africa will encourage the young generation to be a global engineer by being part of the engineering development in developing countries. ■

Information & pictures of award winners provided by Engineers Canada.

continued from page 7, Thoughts on Design

they can use the computer technology. The problem arises as we attempt to determine how much of each part of the package to include in those hectic 4.85 undergraduate years.

As we increase the "depth" of current technical detail in an undergraduate program, we must decrease the breadth of understanding that will allow graduates to move into the world of engineering applications. However, if we focus entirely on the details of the world after graduation, the new grads will not have any technical competencies upon which to base their careers.

There are fundamental components associated with "being an Engineer" that have served most of us for many years. In my view, these components represent the "education" we received. That original "education" has been complemented by further "education", both formal and informal, as well as significant amounts of "training".

Each of us has followed a unique path with individual elements dictated by the career opportunities we have chosen to pursue. We have applied, and we continue to apply, our unique combinations of "education" and "training" that have allowed us to contribute as Professional Engineers.

At this point in my career I find myself in a position in which I am called upon to help design undergraduate curricula. The design we are undertaking requires decisions about the mix of "education" and "training" in our undergraduate programs. What is the half-life of technology and how do we prepare these keen, eager, bright young students to cope with the world of change they will help shape?

My colleagues and I need input from those who have taken different career paths so our decisions will reflect the needs of both our students and those who will employ our graduates. Education is too important to leave to academics. ■

APEGM Annual General Meeting

October 26, 2007
The Fort Garry Hotel

Professional Development Conference

AGM Business Meeting

Awards Dinner & Dance

See the Brown Sheet for more information

2007 Making Links Enginering Classic Golf Tournament

P. Kochan, P.Eng.

The fourth annual Making Links Engineering Classic (MLEC) was held on June 14, 2007 at Quarry Oaks Golf Course in Steinbach, MB. The tournament is put on every year by the APEGM Sports Committee in association with the University of Manitoba. Net proceeds from the MLEC go to the education of Manitoba's future engineers at the University of Manitoba.

Friends, colleagues, and family gathered for a beautiful day making this year's tournament a huge success. This year's tournament boasted an attendance of over 220 registered golfers and raised over $12,500 for the Faculty of Engineering at the University of Manitoba.

Once the golfing was finished, the golfers indulged themselves in a tasty prime rib dinner. Wine on the tables was generously provided by City Mix Concrete. As the evening went on, dinner was cleared away and the formalities of the evening began.

Speeches were made by John Stevenson from Group Retirement Services, the major sponsor for the 2007 tournament, and by Dr. Doug Ruth, Dean of Engineering at the University of Manitoba. Grant Koropatnick, Executive Director and Registrar for APEGM also said a few words. Many thanks were given out on behalf of the University of Manitoba for the generous donation from the MLEC golf tournament.

Hit a Ball For MS: 141 participants raised $720 for the MS Society

The 2007 MLEC had several competitions and sponsors including a Hole-in-One contest sponsored by Birchwood Honda. The Chipping Contest and Par 3 Poker were sponsored by Lafarge Canada Inc. Hit a Ball for the MS Society was present at the tournament and raised over $700 for charity.

The other competitions included: Straightest Drive competitions sponsored by Stantec Consulting and North Garden Restaurant; Longest Drive competitions sponsored by Cowin Steel, Lavergne Draward & Associates Inc., and Fast Air Executive Aviation Services; and Closest to the Pin competitions sponsored by Lewis Instruments, Standard Aero, and Wolesely Engineered Pipe.

The Putting Contest sponsored by the Canad Inn Fort Garry

There was also an astounding amount of prizes available to the players. In addition to the tee gift which included a cooler bag and other goodies, each player received a numbered prize at

random from a large selection of items ranging from power tools to home accessorizing equipment.

This year's tournament winners were Howard Proceshyn, John Schubert, Brian Blahey, and Dave McKibbin.

The Landon Cup (2nd place) was awarded to the team of Ken Rosin, Jim Thompson, Gil Mourant, and Ron Weatherburn.

The Sullivan Cup (3rd place) went to the team of Norm Ulyatt, Don Kuryk, Brad Sacher, and Bill Menzies.

The APEGM Sports Committee would like to thank all the people that came out to play, who doing so, helped support the future of Manitoba's Engineers at the University of Manitoba and made tournament festivities possible. Hope to see you all next year on June 12, 2008. Watch for more details to come. ■

This area is in recognition of those who have endeavoured to support and fund the MLEC, without whom, we would not be able to bring you such an outstanding day of golf and networking.

Please support our Sponsors in turn, so they may continue to thrive and grow, and continue to finance this opportunity to support the future of Manitoba's Engineers at the University of Manitoba.

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The Personal Insurance Company
Wolesely Engineered Pipe Group

Faculty of Engineering at the University of Manitoba plays host ot International Conference

Over 100 delegates converged on the Faculty of Engineering at the University of Manitoba July 22-24 for an international conference on design engineering. The Canadian Design Engineering Network (CDEN) and the Canadian Congress on Engineering Education (CCEE) met together for the first time in Winnipeg, July 22 - 24, 2007.

Delegates were invited to discuss issues related to engineering education and engineering design.

Delegates and presenters came from across North America for the conference which featured technical presentations, workshops and social events including an aboriginal smudge ceremony and dinner at the Manitoba Museum. ■

NSERC Design Chair, Dr. Ron Britton, officially welcomes delegates to CDEN/CCEE Conference

Council Reports

Thursday, March 8, 2007

A. Kempan, P.Eng.(Ret.)

The meeting started at 12:33 p.m. and began with the normal routine items; approval of the agenda and the minutes of the last meeting.

Council had a special guest at the meeting, Mr. Gordon Greaves, a representative from the Canadian Manufacturers and Exporters (CME), who was there at the invitation of President Robyn Taylor. CME was one of APEGM's designated linkage associations. Mr. Greaves said his organization formed from other organizations stretching back 100 years. Presently CME is a partner with the province of Manitoba in an advanced manufacturing program. He had an interesting fact for the meeting: at a time when most of the world was an importer of Japanese products, Manitoba had the distinction of exporting pork into that country.

Next, Mr. Greaves came to the heart of the issue; how could CME work with APEGM? He thought immigration of professionals, training, rural development, and lean productivity were potential areas for cooperation. In the question and answer session Councilor James Blatz asked if the Kyoto targets were a concern for Manitoba companies. Mr. Greaves said Kyoto wasn't scaring companies away from Manitoba. What was drawing manufacturers to Manitoba? It wasn't so much a case of drawing companies here, he said, the major effect was the improvement in manufacturing processes within the province, for example, the success of lean manufacturing initiatives at Canada Post and in the bus manufacturing sector.

In April of 2007 a delegation from APEGM visited the Westman chapter in Brandon and met with Department of Geology professor Dr. Hamid Mumin and two of his faculty members from Brandon University. The question posed by the professors was "why is it easier for students to register than for the people teaching them?" Councilor Blatz said the Alberta association considered teaching to be the practice of engineering. The issue of registering professors wasn't resolved at this meeting, but Executive Director Grant Koropatnick said a professor lacking some courses didn't endanger the public and that APEGM must keep looking for a way of getting professors registered.

Council reviewed the list of action items. Grant Koropatnick said a new staff hire had been approved and a candidate search was on. The quest for a name change for the school science fair may have received a boost with the news that Digvir Jayas had joined the board of directors of the Manitoba Schools Science Symposium.

The meeting began to wind down with a review of informational items. The Fair Registration Practices in Regulated Professions Act, which was before the last legislative session, was intended to assist foreign professionals to integrate into the workforce. With the predicted shortages of engineering manpower this act could affect APEGM membership in the coming years. Although the Fair Registration Practices act wasn't passed in the last legislative session, it's expected to return in the fall.

The councilors were rewarded for running a tight, efficient meeting by being done at 3:10 p.m. ■

Structural Failure

Interstate 35W bridge in Minneapolis collapsed on Wednesday, August 1, 2007, killing at 13 people. The bridge had recently passed inspection.

Underground Mine Cave In

Six miners were trapped by a cave in at Crandall Mine in Huntington, Utah, on Monday, August 6, 2007. A subsequent cave in killed three rescue workers and injured six others.

Look to future articles in upcoming issues of the Keystone Professional for updates on these and other related subjects.

Demand and Supply of Engineers in Manitoba

N. Soonawala, Ph.D., P.Geo. (Ret)

(From contributions by A. Erhardt, EIT.; P. Boge, P.Eng.; Q. Menec, P.Eng.; S. Jurkowski, EIT; and R. Song, EIT)

Next time you are at a meeting at your office look around the table. How many of your colleagues are graying? How many were born and trained outside of Canada? How many feel they are not being paid fairly in Manitoba and are therefore looking for jobs in other provinces? Do you wonder if in the years to come that conference table will have the same mix of talent and expertise around it as now?

A complex mix of factors controls the number and quality of engineering professionals available to industry. These include: age demographics; number of new graduates available and the type and quality of training they have received; number of professionals immigrating to Canada and the programs available to them to adapt to Canadian conditions and standards; and the compensation offered to professionals relative to other jurisdictions.

There are signs that many issues in the above list need attention, and if we in the profession in Manitoba do not act now, the flow of qualified personnel, the lifeblood of the profession, will be constricted in the future. The consensus is that, today, the demand for qualified engineers exceeds the supply.

In Canada as in most of the Western world, a disproportionately large number of people were born roughly in the period 1945 to 1960, i.e., the baby-boom generation. The older people in this group are now ready for retirement. Compounding the problem is the fact that the 1960s were a period of high immigration, and therefore those professionals belong to the same demographic group as the older Canadian-born baby-boomers.

By 2010 more persons will be leaving the workforce in Canada than entering it. By 2020 there will be only three workers for every retired person. Sixty-seven percent of APEGM members are over age 40 and 28 percent are over 55. This means over 1400 APEGM members older than 55. Personnel in this age group are by now in senior positions of responsibility, which will

make their replacement even more difficult, unless the organization has in place an effective succession plan.

The number of new engineering graduates entering the Manitoba workforce is less than the demand. The University of Manitoba supplies about 85 percent of entry-level engineers and statistics show that in the period 2001 to 2006 the number of engineers graduating from this university varied from a low of 154 in 2005 to a high of 221 in 2001, whereas 260 graduates per year could easily find employment in the current Manitoba market, according to APEGM Executive Director Grant Koropatnick.

Dean Doug Ruth of the University of Manitoba told the Keystone Professional ". . . enrolments are beginning to slip, particularly in Electrical and Computer. Biosystems, Civil, and Mechanical are strong and we have never had many students in Manufacturing".

The attached charts show the breakdown of enrolments and graduations from the Faculty of Engineering, University of Manitoba for the three most recent years.

In preparation for this issue of the Keystone Professional, we sent a questionnaire to several prominent Manitoba engineering companies. They all indicated that they had about two to four unfilled engineering positions at any given time. Moreover, they indicated that their requirement for additional engineers was increasing over the years. The average age of engineering professionals in these firms is mostly in the 35 to 45 years grouping.

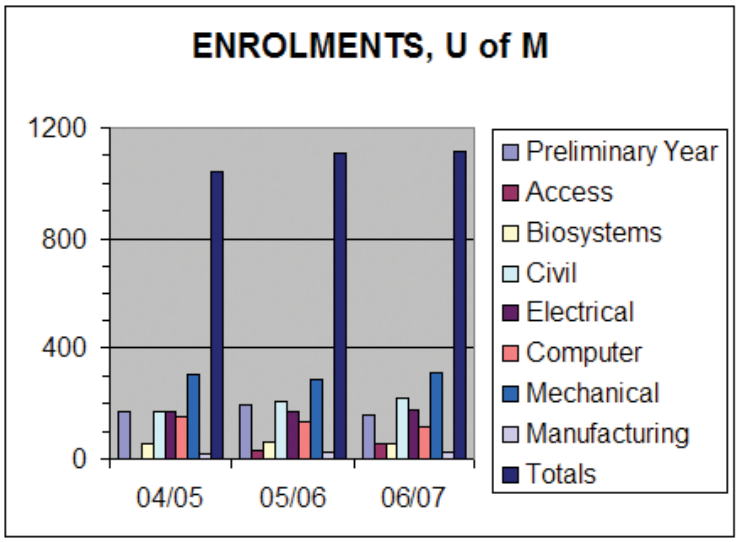
A negotiator for the Professional Institute of the Public Service of Canada (PIPSC), the national "union" of public service professionals, has stated that in his view, the government of Manitoba simply does not have sufficient engineers needed to fulfill its commitments regarding roads and other infrastructure.

PIPSC estimates that the number of engineers working for the Government of Manitoba has dropped by over 30 percent in the last two decades. The assistant deputy minister in charge infrastructure for Manitoba said in late 2006 that two senior engineers had just retired and another six to eight were expected to be gone within the year.

Employers are generally satisfied with the quality of entry level engineering graduates of the University of Manitoba. Manitoba Hydro, the largest employer of engineers in Manitoba, told the Keystone Professional that ". . . Manitoba Hydro has been quite successful in attracting high quality graduates from the University of Manitoba for the Corporation's Engineer-in-Training Program".

Manitoba Hydro also told us that their challenge is not only to attract high quality engineers, but to attract engineers in the disciplines and specialized areas needed by the corporation, such as water resource engineering, power system engineering, geotechnical engineering, structural engineering, project management engineering, and distribution engineering.

Hydro is working closely with the Engineering Faculty at the University of Manitoba to address this need. The aerospace industry has also cooperated with the university in setting up an aerospace option for the Mechanical Engineering degree, in order to meet its needs.



(from data provided by Dean Doug Ruth)

On the other hand, a respondent from a prominent Winnipeg firm expressed deep disappointment with University of Manitoba graduates because he felt they were lacking in practical experience and skills and their training was too academically oriented.

He said ". . . we get highly academically trained people from the university who have not got even a clue as to what construction is about, and/or have had the most minimum of training in HVAC or plumbing . . . I believe that our entire economy is under tremendous pressure due to the lack of number and quality of technical people available. This is more pronounced now, but it has been a problem for many years".

The City of Winnipeg, one of the biggest employers of engineers in Manitoba, told the Keystone Professional that they have an increased demand for engineers,

especially Civil, Mechanical, and Environmental, because of a significant increase in the capital program for the Water and Waste Department.

Four members of the Senior Management group are eligible to retire now, and a total of fifteen professional engineers will be eligible for retirement within the next four years. The city has difficulties attracting senior, experienced engineers.

The Water and Waste Department will be introducing two changes to its recruitment plans: begin to hire students currently enrolled at the University of Manitoba and offer higher salaries to EITs; and develop a Professional Engineer Designate Program, in collaboration with APEGM, by which non-registered engineers working under the supervision of experienced engineers will be able to obtain their professional status.

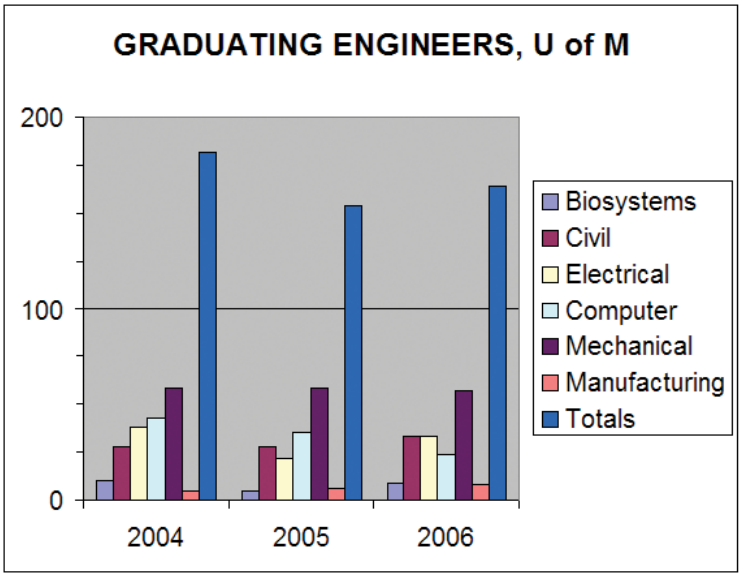
A respondent to our questionnaire pointed out the importance of things such as life balance and career development in retaining valued employees. He told us: "Our recruitment program attempts to address the needs (life balance) and career aspirations of potential staff. In complete concert with the employee, we develop and track our employee's careers utilizing our own developed career path system.

This is a good example of what we as employers have to be cognizant of and how we have to differentiate ourselves from our competition to attract engineers and, in general, our staff. Winnipeg is a small market and the pool of resources available is also small.

We have found that engineers which are experienced are complacent and don't move easily in Winnipeg. We have taken on summer students and graduate engineers in our attempt to develop their skill sets and nurture them to be the future professional engineers we all seek, however recruitment locally and internationally continues."

Immigrant engineers have long been recognized as a much needed source of engineering talent, and over the past several decades, their contributions have been significant. Their offshore experience would be an asset for their Canadian employer competing in the global marketplace. However, these talented and experienced individuals have to meet Canadian standards before they are eligible for APEGM membership and become productive members of the profession.

If suitable orientation or training is not available to them, we end up with highly undesirable results. We have all heard of the cab driver with a doctorate degree. The Faculty of Engineering at the University of Manitoba, in collaboration with APEGM and the Government of Manitoba, initiated the Internationally Educated Engineers Qualification (IEEQ) Program, whose pilot phase is just ending.



(from data provided by Dean Doug Ruth)

There is another article in this edition of the *Keystone Professional* devoted to IEEQ on page 26. The usefulness of IEEQ has been endorsed by numerous individual firms as well as umbrella groups such as those representing the aerospace industry and consulting engineers.

Salary levels lower than elsewhere may also be a factor in the shortage of engineers in Manitoba. The hyperactive Alberta economy can offer wages higher than those available in Manitoba, in addition to signing bonuses, tuition programs and other perks.

PIPSC estimates that the Government of Manitoba pays its engineers nine percent less than the national average. Head offices leaving Manitoba, which is a trend these days, take with them high paying leadership positions. A respondent to our questionnaire also noted that attracting engineers to operations outside the Winnipeg area is a problem.

It can be concluded that the engineering profession in Manitoba has an increasing need for professionals, but the supply of new graduates from the University of Manitoba is near static in total numbers and declining in some disciplines.

Age demographics point to an increasing number of retirements in the near future. Also, there is a perception that salary levels in Manitoba are lower than elsewhere, which is particularly true when competing with the overheated Alberta market.

These issues can be addressed to a large degree by increasing university enrolment with more targeted training for the students, and by training and registering immigrant professionals. Also, increased employee satisfaction with lifestyle and professional development will reduce attrition. The situation is not a crisis, but something that requires a careful watch. ■

Demand and Supply of Geoscientists in Manitoba

N. Soonawala, Ph.D., P.Geo. (Ret)

The demographics of geoscientists in Manitoba indicates that many of them are ready for retirement in the next decade or so, while at the other end of the spectrum, supply of new talent from the universities is not keeping up with the demand.

Mineral exploration in the province has increased because of several reasons such as the government's introduction of the Mineral Exploration Assistance Program, and an increasing world wide demand for minerals and commodities. For example, there is a revival in uranium exploration in the extreme northwest corner of the province, adjacent to Saskatchewan and Nunavut, after a hiatus of almost thirty years.

Geoscientists are also in greater demand in environmental monitoring and protection because of the recent nation wide increase in environmental awareness. The expertise of Canadian geoscientists is admired throughout the world, and also because of the global nature of exploration, many leave Canada to pursue interests elsewhere. All of the above could lead to an increasing shortage of geoscientists unless the issues are adequately addressed.

Geoscientists are a very small group in Manitoba. Manitoba Job Futures estimates that in 2007 there are only 160 geologists, geophysicists and geochemists practicing in the province. However, it should also be noted that since most of the exploration companies operating in Manitoba are not headquartered in this province, many geoscientists from outside the province may also be involved with Manitoba projects.

The age distribution amongst this profession (see Figure) shows that 40 percent of geoscientists in Manitoba are over the age of 50, while only 14 percent are in the group age 40 to 49.

At the national level, a census by the Geological Association of Canada (GAC) published in 2002, the most recent available, shows a similar trend. A full 58 percent were in the age group 40 to 59, with another 17 percent in the age group 60 to 69.

Another national survey by the Prospectors and Developers Association of Canada (PDAC), published in 2005, showed that the age group 40 to 54 years represented over 50 percent of the workers. Note that the PDAC survey includes the entire minerals and metals industry,

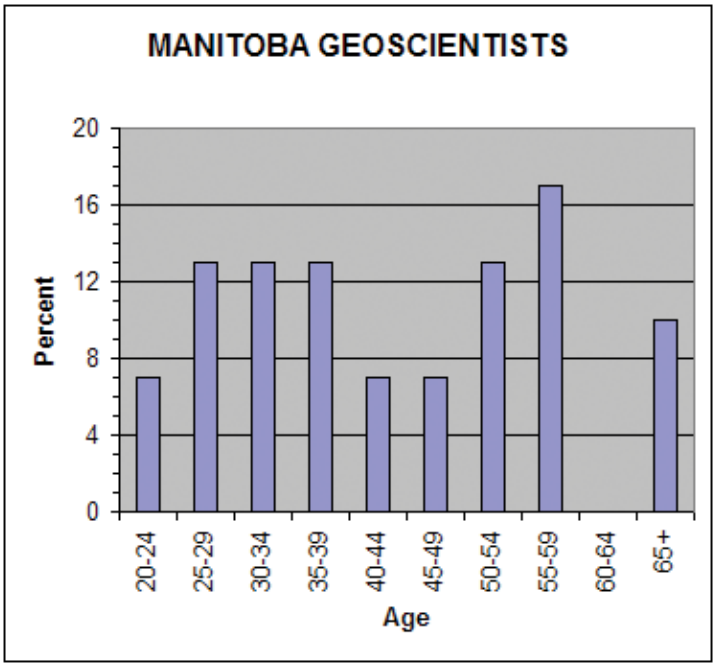


Figure (source Job Futures website)

not just the geosciences. All three surveys show that about 10 percent of practicing geoscientists are above the formal retirement age of 65. Is this because of a lifetime of field work in the fresh, clean air?

Nancy Chow, Professor and Head of the Department of Geological Sciences at the University of Manitoba, told the Keystone Professional that all their students who wanted jobs in the geosciences have been able to do so. Many students, particularly the top ones, have had multiple job offers. Companies are doing their on-campus interviews earlier in the year than they used to, having realized that if they leave it until January or February there are few students still available.

Mineral exploration in Canada has in the past been generally cyclic -- years of intense activity followed by little activity. This directly affects university enrolment, but unfortunately, the demand - supply cycle is out of sync by the number of years it takes to acquire a degree. GAC reports that first-year class sizes fell dramatically from 1989 to the first half of the 1990s.

Another factor that has skewed the age distribution in geoscientists towards the graying faction is that several major organizations such as the Geological Survey of Canada, and possibly many provincial geological surveys, offered early retirement incentives in the second half the 1990s and implemented a hiring freeze, thus failing to recruit youth, which will translate into a shortfall of geoscience professionals in the near future.

Though it is obvious that attrition due to retirements and an expansion of demand due to increasing activity will make geoscientists hard to find, there are sources of qualified personnel that the industry has not been successful in tapping so far.

In Manitoba only 17 percent of geoscientists are women. On a national scale, in 2002, the GAC reported only 11 percent were women. The PDAC reports a 13 percent female work force in the Canadian metals and minerals industry as a whole in 2003, contrasting with the 46.9 percent for all industries in Canada.

Aboriginals are another untapped source of geoscience talent. Involving them would be very appropriate since most mineral exploration is carried out in their backyards. JobFutures indicate that only seven percent of geoscientists in Manitoba self-identified themselves as aboriginal. PDAC reports that only 4.8 percent of the workforce in the minerals and metals industry is aboriginal, but still that is a lot better than the 2.6 percent for the entire Canadian workforce. ■

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The Influence Engineers Deserve Requires a New Relationship with

R.G. Rempel, P.Eng.

Within the last few years, the Consulting Engineers of Manitoba and APEGM have faced situations where pending provincial legislation was announced with potential for significant impacts to the profession of Professional Engineering in Manitoba.

Frequently, APEGM - the regulatory body for professional engineering, and CEM - the advocacy group representing the business of engineering, are not adequately consulted prior to the development of legislation that can be highly relevant to our industry. APEGM/CEM joint opposition to proposed changes in legislation regarding architectural services, is one recent example where the engineering community had to mobilize rapidly in order to ensure the perspective of professional engineering was factored into changes in government legislation.

The "Engineers Count" initiative in 2005 was highly visible and was generally regarded as an effective collective effort by professional engineers of many disciplines but we've since witnessed many situations since which could significantly benefit from improved communications and trusted relationships between governments and professional engineers.

Today's issues such as excessive professional liability assigned to professional engineers in contracts, improper or poorly structured procurement practices, and the current shortage of qualified engineers are pressing challenges. We have these and many more issues requiring us to work closely with all levels of government in order to help these representatives understand our industry and our industry's goal of providing the public with expertise, innovation, safety and best life-cycle value in engineering.

The "Engineers Count "initiative was born out of frustration with a ruling in 2005 that aspects of the Architects Act superseded the Engineering Act. New legislation that followed this ruling needed the perspective of the professional engineering industry in order to be effective for the public.

Governments can benefit a great deal from hearing from us early in their processes. Sometimes we, as engineers, are aware of pending issues that could have cost and scheduling implications for the government and its goals. A recent example of this is changes to the National Building Code that result in Manitoba being re-classified as a seismic zone, thereby requiring specific changes in structural designs in order to resist seismic damage.

CEM discussed this with some MLAs in early 2007, and the government was not aware of the changes in the Code and the potential costs associated with designing new structures to be resistant to earthquakes in Manitoba.

Could the government benefit from a new "trusted advisor" relationship between its elected members and a group of Professional Engineers? Could our profession benefit from having an established 2-way conduit between a team of practicing engineers and our local levels of government? The answer in Manitoba and in other jurisdictions that have already moved to forge a closer relationship between engineering and government is a resounding YES.

In B.C., the Consulting Engineers of British Columbia (CEBC) has created "Adopt an MLA Program" with some very favourable results. This is an MLA Outreach Program established in order to create ongoing channels of communication with key government officials and decision-makers as well as other opposition MLAs.

The program is intended to inform MLAs on all sides of the legislature about the expertise of CEBC member firms and also to assist each MLA in understanding engineering-related issues as they develop at the constituency level. At CEM's annual Business Practices meeting in January of 2007, CEM member firms reviewed features of the CEBC MLA Outreach Program and endorsed adapting a version of it for application in Manitoba.

The spring provincial election required delaying early implementation of this program in Manitoba; however action will begin this fall to actively engage

Local Governments

the Province and the City of Winnipeg in order to enhance both governments' understanding and awareness of important issues in the engineering profession.

Furthermore, CEM has been meeting with APEGM to discuss ways to best coordinate a strategy for establishing effective lines of communication and an advisory role for engineers with local government representatives. CEM recognizes that its role representing the business of professional engineering is different than APEGM's role as the regulator of the profession.

In our meetings thus far, both organizations see the value in advancing the engineering profession with a unified voice, but in a manner that does not confuse the public if that messaging is heard from APEGM and other organizations involved in engineering advocacy.

The methods used to gain a better understanding of government decisions and to make government more aware of issues facing the engineering industry in Manitoba are many, and jurisdictions with effective programs in place are eager to share what works and what is not effective.

The U.S. National Society of Professional Engineers has an Engineer Ambassador Program that immediately notifies a list of specific engineers about major legislative situations in congress. This notification explains the issue and its impact on engineering, and provides a list of talking points for use by the Engineering Ambassador in discussion with his or her elected representative. The American Society of Mechanical Engineers even offers a DVD providing engineers with valuable advice to creating your own plan for successful communication with legislators.

In BC, the CEBC reports their MLA Outreach program, while still young, has been an effective initiative. CEBC also hosts a MLA Breakfast on a regular basis and this event is usually fully attended by MLAs, including the Premier of BC.

In Manitoba, we continue to request the Premier's attendance at our CEM Awards Gala and other events without success.

In 2006, the Mayor of Winnipeg held his "City Summit" to examine economic, social and infrastructure development opportunities and barriers for Winnipeg's future development and not one engineering entity was on the list of invited attendees! It is easy to be offended when engineers are not "invited to the table" when it appears other professions get opportunities to add their input.

However these other professions appear to work quite hard at establishing and maintaining their trusted relationship and 2-way pipeline of communication with government.

Professional Engineering has traditionally shied away from these efforts, and we now find ourselves in a situation where demand for our profession has never been higher, governments are finally preparing to reinvest to rescue a vast network of aging infrastructure and we exist somewhat out of the loop with our local government decision-makers.

As we have seen, decisions will be made in our absence whether we act or not. It's exciting to see engineering associations, firms and individuals in the profession indicating that we've got to find a way to liaise better with our elected officials. APEGM and CEM are eager to create the conditions needed to create effective government outreach.

The CEM invite all professional engineers to join us in getting our profession's voice heard for the benefit of sustaining our industry and maximizing the public's return on their engineering investments. What better time to act than right now for the betterment of our esteemed profession? ■

Roger Rempel. P. Eng. Is the past-president of the Consulting Engineers of Manitoba for 2006-2007 and is an environmental engineer with TetrES Consultants Inc. If you have ideas you wish to share on this issue, please e-mail rrempel@tetres.ca

Internationally Educated Engineers Qualification Program Now Fully Funded

On July 18, 2007, the President of the University of Manitoba received a letter indicating that the Internationally Educated Engineers Qualification (IEEQ) Program has received baseline funding.

The level of funding is consistent with the request that was made by the Faculty, and enables the program to evolve from its current Pilot Project stage into a fully functional, Faculty and Senate approved program within the Faculty of Engineering. APEGM/University cooperation associated with the admission process will continue as a unique feature of this made-in-Manitoba program.

Among other inputs, by fiscal year 2010/2011 there will be six new tenure track faculty members (one in each program), 10 to 12 new courses spread across the Faculty and available to all Engineering students, and at least 40 immigrant Engineers per academic year in senior level courses.

In the near future we will begin our search for academic staff with industrial experience, the necessary academic qualifications, and a desire to teach engineering students about design.

Both the Faculty of Engineering and the Engineering profession as a whole will realize significant benefits from this funding and this program. ■

Capturing Manitoba's Engineering Achievements

W.M. Klymochko, P.Eng.

The Heritage Committee has been meeting regularly to discuss how it may best support the Association and its members in the recognition, documentation, and preservation of our rich engineering and geoscience heritage, both within the province and internationally.

We have identified our committee direction to be three-fold: Planning, Liaison (educating and interacting) with the general public as well as other committees and associations of interest, and finally retrieving all of those artifacts that describe our heritage so that we can find a home for them.

The Heritage Committee's first challenge is to identify important events and achievements in the development of Manitoba's engineering and geoscience heritage, along with the names and the biographies of those associated with these milestones.

While the Heritage Committee is relatively large and diverse, it does not have a comprehensive understanding of the heritage that it will need to document and preserve. The committee needs to have a focus on the most important aspects of our heritage and an appreciation of the breadth of that heritage. That is why we are asking the membership for help.

What do you believe constitutes Manitoba's engineering and geoscience heritage? A quick list will likely include the Floodway, the development of the Inco mines, the Black Brant rocket program, the Pinawa Atomic Research facility, Hydro-electric generation with HVDC transmission, and the individuals and companies associated with these developments.

In your professional opinion, which engineers and geoscientists should be recognized for their contributions to their field, in Manitoba and abroad?

We are asking you to help your Heritage Committee. Comments can be sent to apegm@apegm.mb.ca. Please include in the subject line: Heritage Committee. ■

continued from page 9, Engineers Canada CEO's Message

The first survey of the Engineering and Technology Labour Market Study, for engineering and technology employers, is now underway, and a second survey for employees is under development. Results for these two components of the study are expected before the end of this year, and the study's final report is expected before the end of 2008.

For more information about the labour market study, or if you are interested in participating in the surveys, please contact Engineers Canada's Manager of Research, Samantha Colasante at samantha.colasante@engineerscanada.ca More information, including links to the surveys, can also be found at the Engineering and Technology Labour Market Study website, accessible through www.engineerscanada.ca

Canada is a vast country with numerous regional differences and our profession is comprised of many disciplines. Labour market issues are complex, requiring solutions that are implemented over the long-term. The Engineering and Technology Labour Market Study provides us with an opportunity for better accuracy in labour force planning. I believe that this will further assist our profession in serving the needs of the Canadian public. ■

continued from page 10, The Dawning of a New Era

instability, uncontrolled separation, cascading failures, and uncontrolled flows.

Good business practice, improvements in grid reliability, and managing Manitoba Hydro market access are some of the reasons that Manitoba Hydro complies with these standards. Self-declared, MRO/NERC compliance audit, NERC readiness audit, system disturbance, spot audit, and complaints can be used to rate Manitoba Hydro's compliance. MRO will be the compliance police.

Some of the main features of the new Reliability Standards are more clarity and audit ability. The new standards apply to all owners, users, and operators of the power grid. Specific requirements apply to specific entities: violation risk factors, levels of non-compliance, and cyber and physical security standards.

Since June 4, 2007, Manitoba Hydro has been enforcing the new NERC Reliability Standards. Ed Tymofichyk noted that it will take several years to mature and develop the right culture where violations will decline in conjunction with grid reliability and consumers being benefited. ■

New Members Registered May, June & July 2007

J.K. Addison (BC)
H.K. Al-Hadidi
M.A. Al-Hashimy (ON)
K.E. Anderson
T.R. Bacquet (SK)
S.D. Baker
D.M. Borneuf (BC)
A.B. Bowman (ON)
W.J. Camier
J.F. Chretien (QC)
S.P. Clark
C.M. Clary-Lemon
J.E. Crowder
C.N. Damiani
M.R. Doucet
J.N. Drapack
D.G. Dreger
N.H. Fernuik (BC)
S. Filizadeh
R.J. Frenette (ON)
J.E. Gnitecki
M. Hamm
S. Haque (AB)
D.A. Hildebrand
W.R. Hurley (ON)
C.P. Hwang (SK)
S. Jurczenia (QC)
D.C. Jurkowski
V. Kauskik
B. Khoral (ON)
Y.H. Kim (AB)
S.D. Klamer (AB)
H. Kolodenko (AB)
P.M. Kotelko
S.P. Kristen (AB)
N. Leboeuf (QC)
P.B. Lestition
W. Liu
G.B. Marks (ON)
C. Martens
K.F.J. Matusiewicz
S.G. McGinn
D.W. McLarty
I.A. Mitchell (AB)
C.P. Mota
W.S. Murison
C.W. Nation
A.J. Newton
Y.I. Nodarse Soler
A.G. Odeshi
D.L. Parry
J.T. Pattie
J.R. Pinter (AB)
L.G. Pinter (SK)
P.L. Pulak
V. Raina (ON)
D.E. Ranta
K.A. Salzauler (SK)
S.T. Saul
D.N. Shelvey
P.S. Smerchanski
R.D. Southey (QC)
S.M.A. Sumar
J.L. Taschuk (AB)
M.M.P. Tetrault (QC)
W.S. Tutton (AB)
T.D. Underwood (BC)
K.W. Unger
L. Wang (ON)
C.D. Webster (ON)
J.T. Wedge
J.D. Williams (TX)
R.F. Williamson (IA)
R.J. Wilson (ON)
H. Zhao
M.G. Zubach

Licensees Enrolled May, June & July 2007

W.G. Deneen (MN)
C.M. Putnam
J.W. Sneed (NE)

Members-In-Training Enrolled May, June & July 2007

M.M. Abdelfattah
J.T. Austma
J.E.E. Bartz
K.E. Baxter
C. Becker
R.S. Benipal
A.R. Bromley
D.S. Brouillette
C.W. Brown (SK)
A. Bucarciuc
W.J. Burgess
K.B. Carnegie
J.M. Carvell
J.R. Catris
D.J. Dainard
V.G. Dominguez Tarango
J.J. Donkersloot
N.A.T. Dueck
B.J. Earl
D.M.R. Enns
M.J. Falvo
A.G. Fogg
R.D. Fougere
M.I.J. Friesen (ON)
D.A. Godkin
R. Hertanto
D.M.C. Huminicki
J.T.M.G. Johnson
S.M. Kassam
J.A. Katz-Totton
K.J. Kehler
D.M. Klassen
P.J.R. Koop
B. Kryniewska
S.H. Ma
B.D.D. Machula
I. Maiga
J.M. Martinez
S. McFarlane
A.J.A. McMillan
T.W. Middleton
A.R. Moore
M.F. Pauls
B.M. Puchajda
R.G. Scott
J. Sethi
S.J. Sethi
P. Toniotti
C.F. Walford
M.E. Warkentin
V.G. Watson
P.J. Wheatley
A.D. Zilinsky

Reinstatements May, June & July 2007

S. Rangarajan (NJ)
R.T. Seepish (AB)
A.H. Young

Certificates of Authorization May, June & July 2007

3916481 Manitoba Ltd.
Armtec Limited Partnership
Barr Engineering Company
Charleson Engineering Ltd.
Design & Systems Inc.
Edwards Sprinkler, Part of Troy Sprinkler Limited
FB Consulting Ltd.
Johnston-Vermette Consulting Group Inc.
Meridian Environmental Inc.
N.A.R. Environmental Consultants Inc.
Neumann Associates Limited
Pinter & Associates Ltd.
Sade Engineering Associates
SafEngServices & technologies Ltee.
SNC-Lavalin Environment Inc.
Thunder Bay Testing & Engineering Limited
Thurber Engineering Ltd.
U.S. Aquatics, Inc.
Utility Engineering Corporation
Webster Structural Engineering Inc.
W. L. Gibbons and Associates Inc.

An APEGM Memory on Engineering Responsibility

Lorne Lautens, P.Eng.

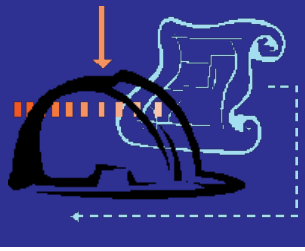
In 1975, when I was a young bridge Engineer-in-Training for the Province of Manitoba, this actually happened to me.

I frequently stayed overnight in Brandon, Manitoba, while we were twinning the Trans Canada Highway west of Portage La Prairie. I would check into the hotel and sign my name, Lorne Lautens, and pay the $25 bill. Everything changed, however, on the day I received my P.Eng. designation.

On that day, I checked into the hotel and proudly signed my new professional name, Lorne Lautens, P.Eng. The clerk said the bill was $30. I said that can't be right. He said the bill was $30 because there are two of you. "Two of me? What are you talking about?"

He said, "You, and a certain Mr. P. Eng., are sharing a room and the bill is $30 for the two of you. It's still $25 for a single."

Right there and then, I learned that being a P.Eng. meant extra responsibility, both financial and professional. ■



The Brown Sheet

CPCI Design Manual 4 Seminar

CPCI is a non-profit institute founded in 1961 to stimulate and advance structural and architectural precast and post-tensioned concrete. CPCI members operate 38 precast plants across Canada. See: www.cpci.ca for a list of members and services available.

Date: September 25, 2007

Time: 8:30 a.m. - 4:30 p.m.

Cost:
$149.00 Early Bird
$179.00 Registration
$85.00 Student

Location: Norwood Hotel, 112 Marion Street, Winnipeg, MB

Riverbank Erosion Study for City of Winnipeg

This presentation will include information on the background of the erosion problem, the methods being used to obtain the data on the Red and Assiniboine riverbanks, and some of the hoped-for or expected outcomes of the research.

Presented by James Blatz, P.Eng., Associate Professor and Associate Head of the Faculty of Engineering at the University of Manitoba.

Date: September 26 2007

Time: 7:00 a.m. - 8:30 a.m.

Cost:
$10.00 Pre-registration
$15.00 Walk-ups
$6.00 Student Members

Location: Holiday Inn South, 1330 Pembina Hwy., Winnipeg, MB

APEGM Annual General Meeting Professional Development Conference

Recruitment and Retention

In today's competitive market, business leaders are faced with many challenges. One of the most pressing issues is the recruitment of talented staff to meet the demands from the services and products they supply. Another challenge is the retention of their experienced, talented staff in a very competitive staffing environment.

Dr. Neil Fassina will explore issues regarding both the recruitment and retention of talented staff in today's competitive marketplace. He will discuss the importance of human resource planning, recruitment strategies to assist in finding the talented people you desire, and the problem of retaining the talent you already have in your organization.

Date: October 26, 2007

Time: 8:30 a.m. - 11:15 a.m.

Cost:
$100.00 Early-Bird
$125.00 Regular

Location: The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

APEGM 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 required, lunch and door prizes included.

Date: October 26, 2007

Time: 11:30 a.m. - 2:00 p.m.

Cost:
Complementary with Registration

Location: The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

APEGM AGM Awards Dinner & Dance

A first-class evening honoring member achievements and corporate contributions to the professions. This special event will be followed by an evening of great entertainment and dancing with the Ron Paley Band -- Winnipeg's Hottest Dance Band.

Ron Paley formed the Ron Paley Big Band in 1976 after playing bass with the big bands of Buddy Rich and Woody Herman, with whom he recorded two CDs. He has recorded two big band albums and one trio album. In 2004, the Big Band performed with the Royal Winnipeg Ballet, playing jazz arrangements of songs by Rogers and Hart for "A Cinderella Story".

Date: October 26, 2007

Time: 6:00 p.m. - 11:30 p.m.

Cost:
$60.00 Tickets
*All Professional Members & MITs:
Buy one, Get One Free

Location: The Fort Garry Hotel, 222 Broadway, Winnipeg, MB

PHEV 2007 Conference

Canadian Plugin Hybrid Electrical Vehicle Conference Public Forum

Presentations by panelists, describing how they see the future of PHEV, will be followed by a Q & A session. The forum will give the public the opportunity ot understand the role of PHEV in sustainable transportation and interact with PHEV world leaders.

It will provide them with the opportunity to discuss their ideas with industry, government, and academic researchers involved in renewable transportation.

For more information, visit www.pluginhighway.ca.

Date: November 1 - 2, 2007

Cost:
$265.00 Early Bird
$355.00 Registration
$50.00/day Student

Location: The Delta Winnipeg, 350 St. Mary Avenue, Winnipeg, MB

Ethics and Technology

This customized training is designed specifically for technical professionals in the engineering and geoscience fields who need to understand the ethics and reasoning behind their decisions.

By the end of the course participants will be able to

- Define ethics
- Describe at least two popular ethical theories
- Describe the role reasoning plays in making an ethical decision
- List at least four ethical roles of the technical professional
- Recognize key elements of the APEGM Code of Ethics

Counts as 7.0 Professional Deveolopment (PD) contact hours.

Date: November 23, 2007

Time: 8:00 a.m. - 5:00 p.m.

Cost:
$365.00 Registration

Location: The Place Louis Riel, 190 Smith Street, Winnipeg, MB

Sharpening Your Written Communication Skills

This will be a highly interactive two days of instruction. The course leader will provide detailed instruction on, and provide numerous opportunities to practice, how to identify key information and focus readers' attention on it, and plan and write email, letters, reports and proposals. There will be exercises with individual and group practice, followed by discussion and feedback.

Counts as 14.0 Professional Deveolopment (PD) contact hours. Optional: Textbook "Get to the Point!" for an additional $34.95 This course fills up quickly as there are only 25 spots.

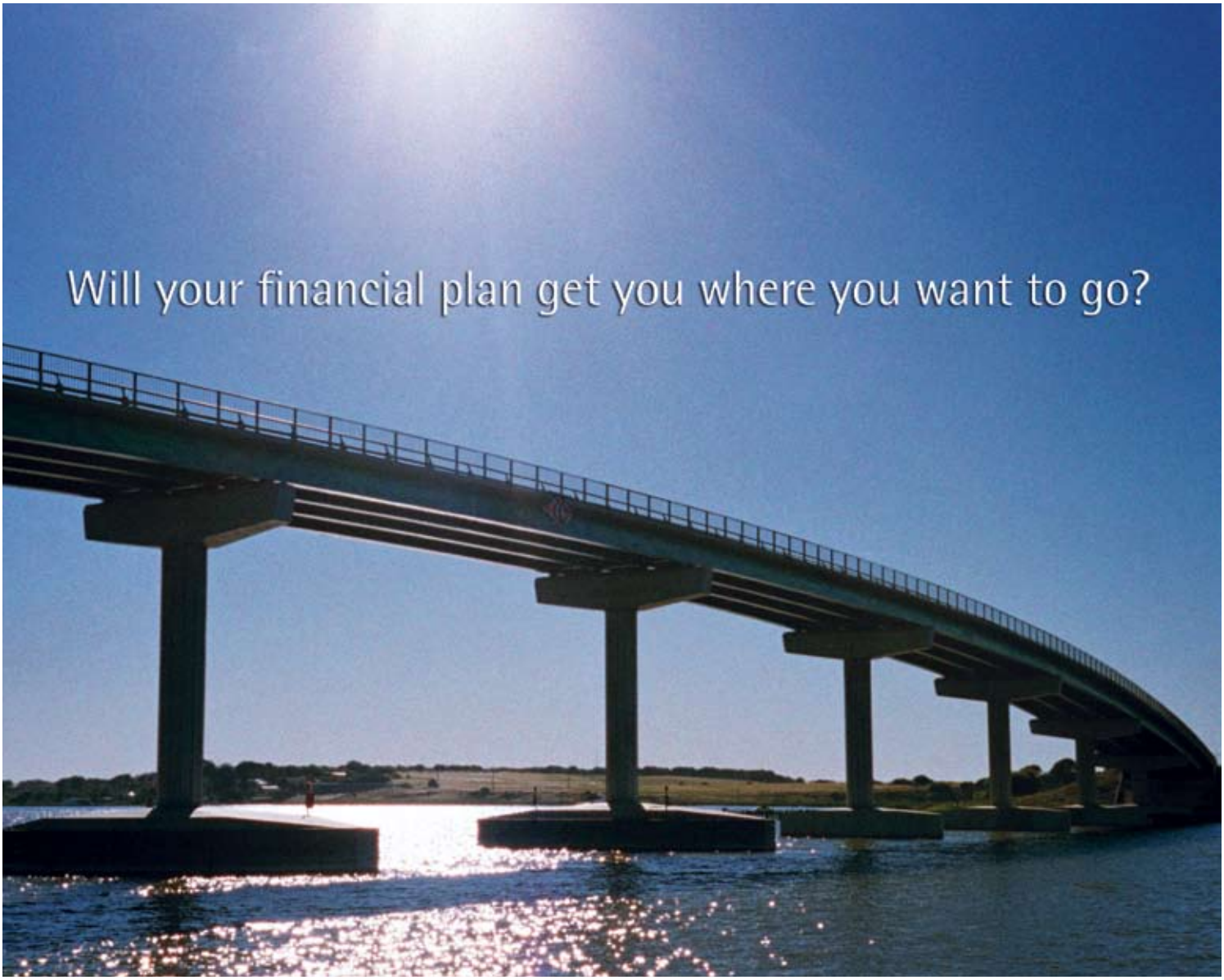
Register Early!

Date: November 26 - 27, 2007

Time: 8:00 a.m. - 5:00 p.m.

Cost:
$365.00 Registration

Location: The Place Louis Riel, 190 Smith Street, Winnipeg, MB



A truly effective retirement or savings plan is a combination of solid, competitive products and attention to detail. That's why Engineers Canada has selected the Financial Security Program administered by Great-West Life. Our financial advisors and retirement specialists will work with you to develop the right plan for you, drawing from our impressive range of RRSPs, non-registered savings and retirement income plans as well as plans for your family members. With lower-than-market investment management fees and enhanced interest rates, Great-West is the logical single source for financial planning that will help you reach your goals.

For details, go to www.engineerscanada.ca/e/prog_services_4.cfm or call 1-800-724-3402.

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