

THE KEYSTONE PROFESSIONAL



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

JUNE 2002
www.apegm.mb.ca

Profession Honours Great Engineers

St. John's, Newfoundland, June 1, 2002 – Eight outstanding Canadian engineers whose work has enhanced people's quality of life in Canada and around the world, each received one of the engineering profession's highest honours – a Canadian Engineers' Award.

Presented annually by CCPE, the Canadian Engineers' Awards recognize engineering and teaching excellence, community and professional service, efforts to open the doors of the engineering profession to women, and entrepreneurship and innovation by engineers. They also honour engineering student for beneficial contributions to society that enhance the image of the profession, and exceptional engineering projects or achievements.

APEGM is proud to announce that, this year, the Medal for Distinction in Engineering Education was presented to University of Manitoba geotechnical engineering professor Dr. James Graham, P.Eng., and the Meritorious Service Award for Community Service was presented to W.M.A. (Bill) McDonald, P.Eng., former director of the Energy Division of the Manitoba Government and former President of APEGM.

Jim Graham, P.Eng. Receives National Award for Teaching Excellence

You often learn more from a bad teacher than a skilled lecturer. At least that was the personal experience of a young engineering student at Queen's University, Belfast, N. Ireland many years ago, one that inspired a life journey that has subsequently enriched the lives of engineering students at the University of Manitoba for more than 30 years.

Prof. Graham says his career was inspired by two of his own professors. "One was a teacher," he says.



Jim Graham, P.Eng.

"He taught a very structured course. His use of visual aids in those days was outstanding. It was all very well organized and it was almost painless. You could go into that class and it would just flow over you. And at the end of that year I decided that I knew very little about what he had been talking about."

His counterpart was the geotechnical engineering professor. "He was not a good teacher," Prof. Graham says. "It was quite clear that his lecture notes had been prepared on the backs of old envelopes about 20 years before. But he had a great respect for learning and he was active in research. He would send us off to the library and say 'Go and read up on something and come back next class and tell us all about it.'" Prof. Graham much preferred this second approach where students and professors share and learn together. So as Prof. Graham learned how to learn, he was also learning how to teach.

At the end of his undergraduate degree in geotechnical engineering, a path inspired by the not-so-good teacher, Queen's University invited him to pursue a doctorate. As a graduate student, he was given minor teaching duties and "got to the stage where I enjoyed just being



Bill McDonald, P.Eng.

involved in helping other people to learn." His career as an educator was launched.

Jim Graham's philosophy of education is simple. "I've taken the view that I can teach students nothing," he says. "The only thing that I can do is put them into a learning environment where they can teach themselves. University isn't a teaching institution, it's a learning institution."

Over the years Professor Graham has developed teaching methods and a learning environment that elicit praise from students and co-workers past and present. Professor Adrian Long, Dean of the Faculty of Engineering at Queen's University in Belfast, has known Prof. Graham for over 40 years. "At Queen's," Dean Long says, "he was an excellent role-model, exemplifying all the best qualities of a lecturer. At all times I have been impressed at the quality of his teaching and the amount of preparation he puts into lectures, whether they are for undergraduate students in Winnipeg or those attending an international conference."

Charles Kwok, P.Eng., National Operations Manager for Jacques Whitford and Associates Ltd., was

in Prof. Graham's class in 1980. "I vividly remember sitting with 50 plus students in the first soil-mechanics course listening to Prof. Graham's lecture on consolidation theory," Mr. Kwok says. "As most students, including myself, were struggling to understand, Dr. Graham pulled out a bag of unopened potato chips, started pressing on it with one hand, and proceeded to demonstrate the effect of poking small and large holes through the bag to let the air out from around the chips. This is just one example of his simple, but very effective, ways of demonstrating difficult concepts to undergraduate students."

Prof. Graham believes in delivering classroom experiences that, as closely as possible, mimic situations faced by engineers. In mini-projects, for example, he may ask students to put themselves in the positions of key-players in a contract situation – clients, consulting engineers, contracting engineers, regulators and even the media – compelling students to look at issues from all points of view.

His students also study real-life projects documented in publications such as the Canadian Geotechnical Journal. Students assess the predictions for a project prior to its construction and compare them with the actual results. "In doing this," he says, "students begin to see the value of published literature and also to build up some confidence that the design and analytical tools that they have acquired in the classroom, in fact, will be useful to them when they go out into practice."

While he enjoys undergraduate teaching, Prof. Graham cultivates a special relationship with his graduate students. Brian Stimpson, P.Eng., Associate Dean of the Faculty of Engineering at the University of Manitoba says, "Hardly a day passes that you will not see him with his graduate stu-

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850A Pembina Highway, Winnipeg, Manitoba R3M 2M7

Ph. (204) 474-2736 Fax (204) 474-5960

E-Mail: apegm@apegm.mb.ca

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The Communications Committee would like to hear from you. Comments 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.

Although the information contained in this publication is believed to be correct, no representation or warranty, expressed or implied, is made as to its accuracy and completeness. Opinions expressed are not necessarily those held by the APEGM or the APEGM Council.

New Members Registered March & April 2002

N.B. Barrett	M. Drouin (QC)	T.L. Kreiser (AB)	P.M.J. Schenk
D.D. Bell	M.A. Ellis (NB)	W.J. Malyk (ON)	S.K. Smart
D.L. Billard (SK)	A.J. Friesen	H.M. Meiklejohn	S.G. Tadros (ON)
D. Blouin (ON)	D.M.R. Fuchs	K.M.H. Morand	W.J. Vangool (ON)
S.W. Boyd (ON)	L.R. Grzyb	A.T. Myket (IL)	E.H. Wagner
S.D. Brown (ON)	H.K. Heinz (BC)	K.D. Norrie	S. Walberg
T.H.E. Cheng (BC)	D.L. Jubenvill	B.R. Paddock	C.W.T. Weber (AB)
R.P. DeMeyer (BC)	K.A. Kopczewski	M. Pouliot (QC)	A.N. Wilson (AB)
A.S. DeRaj	E.C. Klassen (SK)	J.S. Radford	

Members-In-Training Enrolled March & April 2002

K.S. Amy	H.T. Crocker	E.P. Hancox	J.E. Pinzon
L.F. Arango	M.L. Dragomir	S.W. Hay	P.D. Robertson
B.T. Bangert	D.J. Dyck	K.J.J. Highmoor	R. Sarauskas
S.L. Baryliuk	S.A.M. Farag	R.B. Jensen	S.W. Sauve
S.J. Boychuk	R. Faunal	K.W.G. Lenton	S.K. Sharma
N. Cicek	A. Ghorayshi	T.J. Peters	

Licences Issued March & April 2002

B.E. Guth (ID)	L.A. Robbins (FL)	M.K. Sjoblom (MN)
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Reinstatements March & April 2002

B.F. Burke (NB)	R.B. Minchin (AB)	D.O. Scott (NB)
M.J. McCormick (NB)	N.R. Murray	

Members De-Registered April 1, 2002

A. Altaee	P.V. Johnson	D. Miskic	J.N. Szuck
D.H. Anderson	R. Kapila	G.A. Morrison	H.S. Tataryn
W.R. Bezanson	K.C. Kapush	D.N. Murray	W.J. Thoburn
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R.G. Cameron	A. Kassam	B.D. Nielsen	M.R. Thorsteinsson
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H.J. Chorney	R.M. Lemaitre	D. Pristach	A.T. Tse
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X. Huang	C.A. Miller	G.C. Snider	

Members-in-Training Removed from Enrollment April 1, 2002

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S.C. Banks	R. Furletti	T.K. Ooi	M.R.A. Shantz
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L.A. Foronda	R.R. LeBlanc	I. Robinson	R.D. Yeaman

Certificates of Authorization Issued

ADI Limited	NAV Canada
Biogenie S.R.D.C.Inc.	SaskEnergy Inc.
Bluerock Engineering Ltd.	Thurber Engineering Ltd.
Brown & Co. Engineering Ltd.	Trus Joist, A Weyerhaeuser Business
Cascade Engineering Group	Veco Canada Ltd.
EB Systems	Ceco Building Systems
GC Engineering Ltd.	Team Engineering
J.D. Mollard & Associates Ltd.	

Certificates of Authorization Discontinued

Kvaerner Chemetics	Roberts, Sloane & Associates Inc. (changed to SNC Lavalin)
Sacre-Davey Engineering	Yoneda and Associates (changed to Stantec)
Inspec, Inc.	





Executive Director's Message

D.A. Ennis, P.Eng.

I will use this message to comment on two issues.

CCPE – More Than Just Insurance Plans

One of the comments we in the Association office hear about the Canadian Council of Professional Engineers (CCPE) is “all I ever hear from CCPE is about insurance plans”. I assure you that CCPE is more to engineers (and geoscientists too) than just insurance plans. A trip to the CCPE web site (which can be accessed through the APEGM site at www.apegm.mb.ca) is quite informative and, if you are interested in insurance and other financial services, you can learn more about them too.

CCPE is the national federation of the 12 provincial and territorial associations that regulate the practice of engineering in Canada and license the nation's more than 150,000 professional engineers. It assists the Associations in developing and implementing national guidelines focused on ensuring high standards of engineering education, professional qualifications, and conduct. It also provides a voice for its

member associations at the national and international level, and helps to increase public understanding of engineering and its contributions to society.

While there is extensive information on its web site, there is one aspect of CCPE's contribution to the engineering profession that merits special mention – the Canadian Engineering Accreditation Board (CEAB). Its significance to you is that your CEAB-accredited engineering degree (the basis for registration in Canada) is probably the most portable engineering degree in the world. It provides the basis on which a graduate of one of the degree programs at the University of Manitoba can apply for registration in British Columbia or Newfoundland and no questions are asked – something of value, and something to be proud of. Perhaps the least understood feature of the CEAB's accreditation process, and an accomplishment of which we can be proud, is that this national accreditation service is available to all Universities in Canada and does not cost the taxpayer a nickel. The professional engineers of Canada, largely through volunteer time, provide it all.

Supervisor's Reports

As many members will know, and certainly all members-in-training (MITs) do, the Association's admission process for first-time registrants involves a pre-registration program. One of the requirements is that the MIT reports his or her work-experience on a six-month basis. Each report names the professional member who serves as the MIT's supervisor. Once the report is received by the Association, that supervisor is contacted and asked to submit a separate report commenting on the information in the MIT's report and providing other information on the MIT's progress in his or her development as a professional. Timely receipt of that report by the Association is vital to the MIT's advancement toward registration.

If you are one of the majority of members who are up-to-date on submission of your supervisor's report – you needn't read further.

If you are still reading, regrettably, some supervisors are not submitting their reports in a timely manner, and that is a problem.

Understandably, the task of completing the reports is not fun. I have

been informed on more than one occasion that the task of providing the six-month reports is akin to a significant unpleasant sensation in the posterior. However, in the absence of extenuating circumstances, the inconvenience, or dislike for the task, is not an excuse for failing to live up to one's responsibilities to one's profession and one's obligation to support those who aspire to one day take their place in that profession. They have the right to expect your support. If they don't receive it they can be justifiably dismayed by the conduct of those who are expected to conform to a higher standard. If one accepts the privileges of a profession, one also has to accept the responsibilities.

I have noticed over the years that too many members do not take the time to read the Code of Ethics until they are annoyed or unhappy with another member. I know, also, that some MITs whose progress has been affected by the lack of co-operation from a supervisor have made note of fundamental canon number five of the Code of Ethics for the Practice of Professional Engineering and Professional Geoscience. It reads “Each practitioner shall be fair to colleagues and support their professional development”. That MIT is your colleague too.

So, you know who you are. If you have a request from APEGM for a report that is overdue and loitering in your in-basket, please attend to it promptly. ■

NOTICE

Secondary Professional Liability Insurance

The DPIC/Security Insurance Company of Hartford Policy No. 967000 providing secondary professional liability insurance coverage to members and members-in-training subject to certain exclusions and conditions came into effect on April 1, 2002.

A copy of the policy and other information on the plan is posted at the APEGM website at www.apegm.mb.ca. Members and members-in-training are advised to familiarize themselves with the policy.

A copy of the policy can be obtained by calling the Association office at (204) 474-2736, a facsimile request to (204) 474-5960, or an email request to apegm@apegm.mb.ca.

David A. Ennis, P. Eng.
Executive Director & Registrar

Notice to Designers

Below you will find a notice of a change to the National Building Code of Canada 1995 from the Canadian Commission on Building and Fire Codes. This notice was downloaded from the National Research Council of Canada's website with their permission. The underlined text in the article below are links and can be accessed by viewing this document at the following website: <http://www.nrc.ca/cbfc/changes/snowloads.shtml>

Special Changes to Snow Loads on Arched Roofs

This Special Change to the National Building Code of Canada 1995 (NBC) corrects a design shortcoming that affects the partial snow load requirement for arched roofs with a rise to span ratio greater than 1 in 10, and the unbalanced snow load criteria for arched roofs with a rise to span ratio between 1 in 20 and 1 in 10. The previous NBC requirements for snow load stated that only those arched roofs with a rise to span ratio equal to or less than 1 in 10 must be designed for both the specified uniform snow load on the

entire roof surface and the partial snow loading stipulated in [Sentence 4.1.7.2.\(2\)](#). The Structural Commentaries stated that the unbalanced snow load condition applies to arched roofs with a rise to span ratio greater than 1 in 10.

Research indicates that the partial snow load should also be applicable to roofs whose rise to span ratio is greater than 1 in 10 and that the unbalanced load applies to arched roofs with a rise to span ratio greater than 1 in 20.

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In Memoriam

The Association has received with deep regret, notification of the deaths of the following members.

Philip Henshall

James Walter Libby

Profession Honours Great Engineers

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dents gathered over a cup of coffee in a campus meeting-place avidly discussing some geotechnical or other topic. To these students he is both the guru and guide, approachable and respected."

Prof. Graham sees graduate students as junior colleagues, and the coffee chats, a daily routine he developed for both the students and his teaching colleagues, are a deliberate nurturing of their characters and careers. While topics range from sports to research partnerships, projects and grants, the discussions reflect Prof. Graham's core belief in sharing. "I just take the line," he says, "that together we are stronger than the sum of the individuals."

Over the years Prof. Graham has maintained a strong relationship

with the geotechnical community in Manitoba and around the world. His volunteer efforts extend to the Canadian Geotechnical Society and the Engineering Institute of Canada. He has made countless contributions as a writer/presenter to journals and conferences. Organizations like Manitoba Hydro and Atomic Energy of Canada enlist him as a specialist consultant, and he has served as a visiting professor and lecturer from Brisbane, Australia, to Oxford, U.K. These activities not only keep him current, but also allow him to point students to career or research opportunities that match their individual interests.

Prof. Graham is retiring in June. He's been planning his exit, building a team to take his place by mentoring his young teaching colleagues, striving to create a legacy not of course-content but of a learning, sharing, environment. His theme,

and one you don't always find in the competitive world of academia and research, is mutual support. "We've taken the approach here that the success of any one of us is beneficial to all the rest of us," he says of his co-workers.

Prof. Graham will remain at the university in a senior-scholar position. His wife predicts the only difference is he won't get paid. He credits much of what he has been able to accomplish to his wife's willingness to sacrifice her career, to uproot the family on a number of occasions to accompany him abroad, and to welcome his students as guests.

He's proud of U of M's reputation for success in geotechnical engineering education, but takes no personal credit. Rather, he says, "It's success that comes from the achievements of the individuals whom I've tried to influence. Trying to put people into a learning-environment – that has paid off. That has really paid off!"

Community Work Earns Bill McDonald, P.Eng., a National Award

Bill McDonald, P.Eng., is an engineer who likes meeting people, working with them and getting things done. For more than a quarter of a century, his joy in doing all three has resulted in major social infrastructures that are enriching countless lives in Winnipeg. For him, this service is more than a duty or an obligation. It is a way of life. Yet his service to the community as a professional engineer and skilled business manager have cost the community nothing.

Recognizing his countless volunteer hours on numerous projects that include Rossbrook House, the United Way, Habitat for Humanity, Winnipeg Christmas Cheer Board, Sage House and the Manitoba Cardiac Institute Reh-Fit Centre, the Canadian Council of Professional Engineers (CCPE) presented William McDonald with its 2002 Meritorious Service Award for Community Service.

Bill McDonald says his children inspired his initial involvement in volunteer endeavours.

Although the family always called Winnipeg home, Mr. McDonald worked for a construction company that transferred him, family in tow, from job to job across Western Canada during the '60s and early '70s. Upon resettling in Winnipeg after a stint in Vancouver,

Mr. McDonald went to enroll his two sons in hockey and his daughter in ringette at the local rink. The condition of the facility, he says, was appalling. When he commented on it, the reply was a challenge to "do something about it."

So he did. He became president of the Richmond Kings Community Club and within a couple of years they had tripled the size of their original facility and wangled a used compressor out of the University of Manitoba to make artificial ice. Thus began Bill McDonald's volunteer career, one that continues even now into his retirement years.

A successful engineer, Bill McDonald started his working career in construction and eventually went on to spend 15 years as the Director, Energy Division, Manitoba Department of Energy and Mines, where he became one of the province's most respected authorities on energy conservation. So when this high-level executive began volunteering, he knew how to tackle high-level projects. In fact, he sought them out.

He tells the story of helping his wife, also a dedicated volunteer, at a local soup kitchen run by the Sisters of the Holy Names of Jesus and Mary. The nuns asked if he would join his wife in more of her volunteer activities. Mr. McDonald said no, he'd rather serve on the board of Rossbrook House. They certainly didn't turn him down.

Rossbrook House is an inner-city centre for aboriginal youth in Winnipeg, operating on the motto that "no child who does not want to be alone should ever have to be alone." An alternative to the destructive environment of the streets, it offers supportive programs from recreation to education to encourage positive life-choices. Its doors are open from 8 a.m. until midnight during the week and 24 hours a day on weekends and holidays.

"Just after I got there we found one of their satellite buildings was in very dire straits," Mr. McDonald says. "The windows and doors were rhombuses, sloping in various directions as the building's foundations settled and heaved. The only viable solution was to tear the building down and rebuild."

He makes it sound pretty simple. But he's an engineer. He is familiar with things like cost analysis, risk assessment, and working with the construction industry. It's that engineering knowledge that gives him

2002 Manitoba Schools Science Symposium

By: T.B. Bowden, P.Eng.

Over 500 projects filled the gymnasium of the University of Winnipeg Duckworth Centre on April 25 - 28th. This year marked the 12th anniversary that APEGM members have volunteered to judge these projects created by bright Manitoba students in grades 4 to 12. Picking the winners wasn't easy as the caliber of the projects was first-rate. However, our ten judges were up to the task and after much deliberation, we chose the following winners:

Junior/Intermediate levels

- Daniel Fainstein from École Robert H. Smith
"Robotic Mine Detector"
- Hyan-jin Shin from Mennonite Brethern Collegiate Institute
"Magnets + Wire = Electricity"
- Kevin Zhang from Acadia Junior High School
"Crushing and Crumbling Energy"
- Gilles Messier from Grant Park High School
"A Better Airfoil"

Grade 12

- Chris Carter and Ashley Robertson from Kildonan East Collegiate
"Future Technology: Robotics"

The students in Grade 12 were each awarded a \$250 gift certificate

to the University of Manitoba Bookstore. The younger students were each awarded a digital camera! The Association was unable to award scholarships to the University of Manitoba's Mini University program due to unusually high early enrollment.

I hope our judge's interaction and encouragement of these young students will expand their interest in the field of engineering. I would like to thank all of our judges for lending their time and expertise to this event. John Paul Pelletier, Chris Kroeker, Shannon Strutt and Paul Fazio of Motor Coach Industries; James Pawluk and Brian Trenholm, St. Boniface Hospital; John Rooney, Standard Aero; Brent Evans, Boeing Canada. Thanks also to Lawrence Ferchoff, Vice-President of APEGM for awarding the prizes on behalf of the Association. ■



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the confidence to move forward with large-scale projects.

Once he accepts a challenge, Mr. McDonald sees it through. Sister Bernadette O'Reilly, Co-executive Director of Rossbrook, says during construction "Bill was like the on-site architect and engineer. He visited the site practically every day. He was so much able to keep the spirit of Rossbrook in that project. Whatever the needs are, he has the kids' interests at heart and wants to make things better for them."

People are his motivation. "I guess my strength has always been not so much in designing buildings but in working with people," he says, "and getting everybody seeing

where their wants and needs are, directing them all going in the same direction, getting something done."

He certainly accomplished a lot over the years and in an amazingly diverse range of fields. In addition to construction projects such as Habitat for Humanity, the restoration of St. Paul's College Chapel at the University of Manitoba, and the Victoria Beach Community Club, Mr. McDonald has been involved in fund-raising for the United Way, Winnipeg's Diabetes Research and Treatment Centre, the University of Manitoba's Drive for Excellence, and St. Paul's College.

He says he got a lot out of the engineering profession and felt he

owed it something. So he has volunteered for many years with this association, serving on the Practice and Ethics (now Investigation) Committee since 1987 and on Council, and eventually as President.

Then there are his lifelong sporting interests that include jogging and marathons. Back in 1998-99 he helped as a volunteer with the highly successful World Junior Hockey Championships held in Winnipeg. Today he works out at the Manitoba Cardiac Institute ReFit Centre five days a week, so when he was asked to join the foundation board of that facility three months ago, he agreed.

How does he find the time to fit

it all in? Again, he takes the simple approach. "Well," he says, "I just make sure I don't schedule two meetings at the same time."

Winnipeg's mayor, Glen Murray, says "Rossbrook House uplifts the spirit of the whole community. The unbelievable efforts of Sister Lesley and Sister Bernadette attract incredible volunteers like Bill McDonald. They manage to accomplish so much with so little every single day. Most of all they create a warm, safe, welcoming place for some of the most vulnerable children in our community. Winnipeg is a more humane place for all of us because of the commitment of Bill McDonald." ■

Designing Mines for Closure

By: W.W. Fraser, P.Eng. Director, Environment:
Hudson Bay Mining and Smelting Co., Limited; Flin Flon

Hudson Bay Mining and Smelting Co., Limited, a Canadian company and a wholly-owned subsidiary of Anglo American plc, has operated a copper smelter and zinc refinery at Flin Flon, Manitoba, for nearly 70 years. During that time, 30 mines have provided feed to nine concentrators. Four of the mines were combined open-pit and underground, with the remainder solely underground. Mines have ranged in size from fewer than 100 000 to nearly 60 million tonnes. At the moment, six mines are being operated or are in development as are three concentrators.

In the early days, two mill-sites and seven mine-sites were dismantled or turned over to others. Over the last decade the remainder have become environmental liabilities requiring decommissioning. One mill and fourteen mine-sites have

been completed; work is currently underway on one additional mill and four mine-sites; plans are being prepared for closure of one operating mine and mill. Nearly twenty million dollars (Canadian) have been spent or committed to date for these projects; many more millions will be required for the remaining sites.

During decommissioning, one point continues to emerge – had planning, construction and operation been done differently, very large sums of money could have been saved at the time of close-out. The concept of designing for closure is, in principle, simple – look into the future to the end result and the waste products that will be left behind and design the most economical management and operating plans which will cause the least harm to the environment.

Over the history of mining, our industry has traditionally disposed



Konuto Mine.

of waste products into the environment in the most economical manner. The general attitude was to concentrate efforts on the extraction of the mineral and pay little attention, if any, to the nature of the waste products, their long-term stability, and the impacts that they could have on the environment. Today, the consequences of such waste-management practices are well documented. Engineering principles have been evolving that address the long-term stability of waste products. We can now examine both the chemical and physical stability of waste materials.

Mine-sites should be made as small as possible while access roads and power- and pipeline-routes should be curved to prevent a direct line-of-sight from public areas to the mine. Buildings should be designed with dismantling in mind; concrete should have structurally acceptable break-points or could have plastic tubing cast in-place for later packing with explosives. Of greater concern is mine rock, much of which is chemically unstable, and with time, can deteriorate and generate sulfuric

acid. When we do exploration drilling to define an ore body, we are in the position to determine a great deal about the host rock through which we will be driving declines, sinking shafts, and doing development work or that we will be stripping for open-pit mining. By doing the acid/base accounting on the rock, we can determine, before mining, whether the rock will present a problem. If the acid-generating potential exceeds the neutralizing ability, net acid will probably result. Various rules of thumb are available to assist in interpreting the acid/base data.

With a prediction of the probable stability of particular rock units while they are still in the ground, a decision can be made as to whether the rock can be safely used for civil works – roads, site levelling – or whether it should be stockpiled for later rehandling or mitigated in the short term. In Canada, under a joint industry-government research program called MEND – Mine Environment Neutral Drainage – some \$20 million (Canadian) was



Shist Lake Mine after closing.

U of M Hosts the Great Northern Concrete Toboggan Race 2002

By: S.C. McClellan, EIT

A concrete toboggan is unlike your average toboggan as every surface touching the snow is made from concrete.

The Great Northern Concrete Toboggan Race (GNCTR) is a civil engineering tradition that began in 1975 as a Canadian alternative to the Concrete Canoe competitions held in the United States.

The University of Manitoba hosted this past year's competition, which ran from January 30 to February 3, 2002. The event attracted 330 participants in 17 teams from universities and colleges across Canada as well as one American team. In a previous year, a team from Europe entered and brought their disassembled toboggan over in their luggage.

To enter the competition, concrete toboggans must be equipped with a steering system, a method of braking, accommodation for five racers and weigh less than 300 lbs. Awards are given for Top Speed, Shortest Braking Distance, Best Concrete and Reinforcement Design, Best Aesthetics, Team Spirit, and Most Spectacular Run (a.k.a. Biggest Crash).

One of the unique features of GNCTR is the emphasis on camaraderie between teams. Participants were grouped into new mixed teams for a day of activities, which



Northern Alberta Institute of Technology races their concrete toboggan in GNCTR 2002.

included bowling, broomball, and spongee. Nightly social events promoted goodwill between competitors and allowed participants to experience Winnipeg's attractions and hospitality.

Teams are encouraged to enter the competition with a theme as a basis for team costumes and toboggan aesthetics. This year's themes included Care Bears (U of M), Doozers (Waterloo), Los Banditos (Alberta), Locomotives (Calgary),

Top Gun (Queen's), Vikings (Carleton), and Superheroes (McMaster).

Toboggans were judged and were on public display during the Technical Exhibition held on Friday, February 1 at the U of M Campus. Judges of the competition were Engineering professors and industry professionals selected for their unique expertise.

Toboggans have become elaborate in their design with pneumatic or electromagnetic braking systems

being some of the latest improvements and the competition has broadened to include mechanical and electrical engineering as well. From circular bases to concrete skis, toboggans in the competition often use the latest technology in concrete and reinforcement. Last year's team from the University of Manitoba even used sensors embedded in their slab to collect stress data as the team went down the hill.

The run at Springhill Winter Park was designed with a slight curve in the track, but after the first four teams ran unsuccessfully, the course was re-groomed to shorten the course. With a 130 metre run and a slope of 4:1, some of the top speeds in GNCTR history were reached with sleds travelling up to 58 kilometres per hour. Teams were shocked and amazed that such a great hill could be found on the prairies but not surprised that the average temperature for the week was -20°C.

Race day concluded with several candidates for Most Spectacular Run. Luckily, only a few minor injuries were incurred as a result of toboggan crashes. This was in part due to safety guidelines requiring that everyone wear a certified motorcycle helmet, and toboggans must be equipped with a solid frame and roll bar.

This year's competition was fortunate to receive local and national media attention with an article in Maclean's, front page photos in both local papers, spots on local TV and radio, and a two-page photo spread in Sports Illustrated.

With a registration fee of only \$100 per participant, GNCTR 2002 relied heavily on the support of sponsors such as Lafarge, Inland, the Engineering Dean's office, Engineering Endowment fund, and many others to make the competition possible. The competition was successful due to a committee of 21 engineering students and EITs that devoted an entire year to coordinating every aspect of the event.

The overall winner of GNCTR 2002 was the University of Waterloo. Second place went to the University of Alberta and third place to one of the two teams entered from the University of Manitoba. The University of Calgary won a special \$2000 award for Most Professional Design sponsored by RJC Engineering.

The tradition continues next year as the University of Alberta plays host to GNCTR 2003. ■



UNIVERSITY
OF MANITOBA

Canada Research Chair

The University of Manitoba invites applications for a Tier II Canada Research Chair in the Faculty of Engineering, within the mandate of ISIS Canada, in the area of sensors and instrumentation technologies.

Complete application details are posted on the University of Manitoba website at www.umanitoba.ca or contact the Search Committee Chair:

Dr. Aftab A. Mufti, P.Eng.
President, ISIS Canada
Room 227 Engineering Building
University of Manitoba R3T 5V6 Canada
Email: muftia@cc.umanitoba.ca

The University of Manitoba encourages applications from qualified women and men, including members of visible minorities, Aboriginal peoples, and persons with disabilities. All qualified candidates are encouraged to apply; however Canadians and permanent residents will be given priority.

Review of applications will begin on July 15, 2002, and will continue until the position is filled. All Canada Research Chairs are subject to review and final approval by the CRC Secretariat.

Women's Engineering Network Evening – March 7, 2002

By: B.A.K. Danielson, P.Eng.

On March 7, 2002, the Women's Action Committee hosted an evening reception attended by approximately 50 people featuring Dr. Elizabeth Cannon as the guest speaker. Dr. Cannon is the NSERC/Petro-Canada Chair for Women in Engineering and Science for the Prairie region.

The NSERC/Industry Chairs for Women in Science and Engineering were initiated in 1997 for five-year (renewable) terms. Each of the five regional Chairs receives support from both NSERC and their sponsoring industry partner. The objectives of the Chair held by Dr. Cannon were: visibility and leadership; to provide a focal point for groups working on women's issues in science and engineering; encouragement for girls and women to consider science/engineering careers; to increase the enrollment of women in science/engineering programs across the prairies; and to increase the retention of women in science and engineering careers.

Dr. Cannon described the pipeline model which illustrates where girls/women are lost from the fields of science and engineering along the path from elementary school through to industry and/or academia. Some of the initiatives implemented to overcome these losses were highlighted during the presentation.

At the high-school level, an "Explore IT" conference was held in Calgary which resulted in 83% of the girls attending indicating a positive attitude change towards computers and careers with computers. While only 28% had previously considered a career in IT, 73% of the girls attending the conference said afterward that they would consider an IT career. Another program that has been implemented in Alberta is SCIBerMENTOR, an e-mail program for girls aged 11 to 18. This program is a collaboration between the University of Calgary, the University of Alberta, and the Alberta Women's Science Network (AWSN) and is supported by Alberta Innovation and Science and PanCanadian Energy. The mentors are university students and professional women scientists or engineers.

At the undergraduate level across Canada, women make up slightly over 20% of all students (2000 data). The percentages vary among the different programs, ranging from about 15% for the more traditional (e.g. civil, electrical, mechanical) programs to over 40% for programs such as environmental and chemical engineering. The number of undergraduate women engineering students in Canada has increased substantially since 1975 when only 3.6% of the total were women. During the five-year period between

1995-2000, the percentage of women studying engineering has been consistently between 19 and 20%.

Dr. Cannon's research has also investigated factors that influence the choice of engineering as a career and some issues affecting the retention of women in the profession. The next steps will include capitalizing on the large increases in the participation of women in engineering and science programs and addressing concerns about reaching a plateau. Some ideas include focusing on how science and engineering contribute to society and overcoming the challenges of retaining women in the profession.

Future Women's Engineering Networking

In order to evaluate the interest in future networking meetings for female engineers, approximately 300 people were asked to complete a survey to evaluate their preferences. The surveys were mailed to all female members of APEGM, and were handed out at the reception. Our thanks to Brenda Sonntag, a market research professional, who volunteered to assist the committee by evaluating the survey results.

Of the 42 respondents, 41% were Professional Engineers or Professional Geoscientists and 45%

were Engineers-in-Training; the remainder represented the science community. Most respondents requested that networking meetings be held quarterly, on weekday evenings, and with informal formats such as wine and cheese or coffee and dessert. The most popular topic for networking evenings was work-life balance, followed by academic and then professional topics. Most respondents preferred to have some topic rather than just an informal get-together for networking.

Of the respondents, 60% were interested or highly interested in attending networking events, with the P.Eng.s and P.Geo.s having a higher overall level of interest in such events than the EITs. The Women's Action Committee hopes to increase the level of interest by continuing the events on a quarterly basis, as the survey respondents have requested. However, in order to continue organizing these events, as well as to consider implementing of some of Dr. Cannon's ideas within Manitoba, our Committee will require more new members. All members of APEGM interested in volunteering to serve on the Women's Action Committee are asked to contact the Chair, Brenda Danielson (474-3138), or Lesley McFarlane (958-2984), to learn more about our Committee. ■

Professional Development

Project Management Through the Eyes of PMI

By: W.T. Jackson, P.Eng.

The interest and curiosity about Project Management was evident as more than 60 people attended a lunch meeting sponsored by the Professional Development Committee on April 17 at the Viscount Gort. In ten years, the world-wide membership in the Project Management Institute has grown from five thousand to more than 80 thousand members.

Les Howard, the President of the Manitoba PMI chapter, and Ron Amann, PMI's Marketing director, explained the concept of project management by defining 39 unique project management processes.

Project Management standards are contained in a Guide book known as PMBOK (Project Management Body of Knowledge) which provides the basic structure for understanding project management and the environment in which projects operate. The guide also lays out a generalized view of how various project management processes commonly interact.

PMBOK defines the concepts of project management through two views – Process Groups and Knowledge Areas. There are nine knowledge areas including management of scope, time, cost, communi-



Ron Amann (left) and Les Howard.

cation, risk, human resources, quality, procurement and integration. Scope management, for instance, includes the processes required to ensure that the project includes all the work and only the work required to complete the project successfully. The Process Groups occur within each phase of a project's life-cycle and they include opening, planning, executing, controlling and closing.

The planning processes are then broken down into separate core processes. By way of example, scope definition is one of the processes in the knowledge areas and includes inputs, tools and techniques, and outputs.

PMI's Project Management program is ISO 9001 certified, and is the first certification program in the world to achieve the honour. ■

Council Reports

Wednesday, March 6, 2002

By: A.N. Kempas, P.Eng. (Ret.)

COUNCIL REVIEWS THE ORGANIZATION'S "ENDS"

This meeting was unusual in several respects. Firstly, it began at 11:00 a.m., instead of the usual 12:30 p.m., and secondly, former President Alan Pollard chaired the meeting for President Moe Barakat who was away on business. Attendance was excellent with Councillors Ferchoff, Permut, Syme, Gilmore, Harfield, Goldsborough, Poetker, Cornell, Silk, and Gaudry in attendance. Also present were CCPE Director Washchshyn, and CCPG Director Bailes.

Proceedings kicked off with routine items, approval of the agenda, and a review of the minutes of the January meeting. Changes to the minutes were minor. The most humorous erratum involved Councillor Silk, who was said to have "indicted," instead of "indicated". What a difference a letter makes.

Under the Policy Governance® form of management adopted by APEGM, we are committed to review our "Ends" policies annually. On paper, APEGM's "Ends" occupy several sheets of paper with our objectives laid out on grids. Chairman Pollard said they should ensure the "Ends" are clear and they should know how to accomplish them. Council waded into the review with gusto, but after two hours of discussion not quite half of the "Ends" were done. Council was torn between what was deliverable and what was principle. When they reached the section on peer review, some Councillors said they'd lost the sense of what it meant. Chairman Pollard said that was also the problem for other items. Fatigue had set in so Council decided to complete the review at a future meeting.

Next, CCPE Director Peter Washchshyn addressed Council on a topic that will affect all APEGM members. For many years CCPE provided, for a fee, an initial assessment of the professional credentials of prospective immigrants. These initial assessments provided a significant portion of CCPE's income. The passage of the new Immigration and Refugee Protection Act (Bill C-11) wiped out the need for initial assessments and removed about \$3 million from CCPE's revenues. In anticipation of this change, CCPE reassessed its budgets and made the necessary changes. In

spite of this, an increase in fees must be passed on to constituent associations. This would mean that fees would rise from \$8.65 to \$17.30 per full member. It would be up to individual associations to decide if the increases would be passed on to members, but it's very likely this would be the case. Executive Director Dave Ennis said the APEGM budget was due in June, so he would need to know what to do. Councillor Silk said that while the increase was small, it was a hard sell for the membership. He said they should show members that it was a good deal for them. Councillor Gaudry said that under Policy Governance®, Mr. Ennis should, at the next meeting, report to Council on the merits of membership in CCPE. This motion was passed by Council.

At the last meeting Councillor Permut agreed to provide an estimate of the time-commitment required for the complete fulfillment of Presidential duties. This was done so that Council might find ways to share the load with the President. Council realized that the time-commitment for one person was too much to expect from an unpaid position. According to Councillor Permut, a few associations paid their Presidents, something that wouldn't be acceptable to APEGM members. The bottom line was that 574 hours were required from the President. To get the ball rolling, Councillor Gilmore agreed to attend the CCPG and Alberta association meetings in April. The subject was then tabled until the next meeting.

Once more, Council turned to the task of choosing a Vice President and Executive Committee member. They'd been singularly unsuccessful several times before and it was getting rather late in the year to fill these positions. Everyone agreed to start the process again with a clean sheet of paper. Members wrote the names of nominees on small slips of paper which were then duly examined by Executive Director Ennis and an independent witness. Councillors Cornell, Gilmore, Goldsborough, Harfield, Silk, and Syme were nominated. Now came the moment of truth; each Councillor was asked if they would stand for election. One by one they declined and the positions remained vacant. Council must try again at the next meeting.

Near the end of the meeting Councillor Poetker reported on progress at the architects' and engineers' Joint Board. He said the Board had some good meetings, but now progress was becoming harder. One of the regulations that engineers wanted to change was the one which prevented an architect from working for an engineering firm. This would require a by-law change.

Six hours after the meeting began, it was over. The promise of shorter meetings suffered a setback this time. ■

Wednesday, April 10, 2002

By: A.N. Kempas, P.Eng. (Ret.)

COUNCIL CHOOSES THE NEXT PRESIDENT

President Moe Barakat was back at the head of the table after a month's hiatus. He began on a promising note by stating that the meeting would be short and productive. Before Council adopted an agenda, Executive Director Dave Ennis went through several items that he thought should come off the consent agenda and come up for discussion. "Consent agenda" items are routine items which usually aren't voted on or discussed. If someone thinks a consent agenda item needs discussion its status is changed. In this case Mr. Ennis thought the Inter-Association Agreement on Discipline and Enforcement merited discussion.

Under the "Ownership Linkage" portion of the agenda Council noted Dr. Douglas Ruth's article "What is Engineering Education?." Next was a letter from Mr. H. Boge, P. Eng., asking Mr. Ennis if it was possible for APEGM to purchase group professional liability insurance for all APEGM members. Mr. Boge outlined several areas where company liability insurance wasn't adequate. It was agreed that APEGM would write CCPE to see if anything could be done to facilitate a group purchase.

When the item "Revision to the Manual of Admissions" came up on the consent agenda, Councillor Syme asked for it to be removed for discussion. He pointed out an inequality in the treatment of geoscientists and engineers. When a geoscientist registered in another Canadian jurisdiction applied for membership in APEGM, he or she was required to write the Professional Practice and Ethics exam. This was not the case for engineers. After some discussion, no one could think of a good reason for this difference. Councillor Permut requested that Mr. Ennis go back to the originating com-

mittee to find the reason for the inequality, and to harmonize the requirements for both geoscientists and engineers.

Last month's meeting ended with several items of "unfinished business." Council returned to its annual review of the Association's "ends," as required under the Policy Governance® model of management adopted by APEGM. Mr. Ennis had tweaked the wording of many items since the last go-round. President Barakat said that the word "include" in the top statement made it difficult to write what followed, and that perhaps, a new word was needed. Council completed the review and adopted Mr. Ennis's new version.

Another component of the Policy Governance® model is a resource-allocation which states how many dollars are going to support each "end." After some prodding by the Policy Governance® coach a resource-allocation was presented to Council. The largest item was \$593,400 for self-governance of the engineering and geoscience professions. Mr. Ennis remarked that it was difficult to match resources and ends because it was unclear where to place certain items. President Barakat said Mr. Ennis would need to tweak the number occasionally but that he liked the way the numbers lined up.

Council turned to the on-going discussion on the division of Presidential duties. President Barakat opened by remarking that it was also designed to give Councillors more experience. (At this point Councillor Permut, who had fielded a number of cellphone calls during the meeting, announced that the cause for these interruptions was a sewage backup on Pembina Highway. Councillor Cornell was quick to ask if it was a special event.) Councillors Permut, Harfield, and Mr. Ennis discussed a trip to Saskatchewan. They decided that Mr. Harfield would visit Saskatchewan with Mr. Permut acting as backup.

The granddaddy of unfinished business returned when Council considered the election of a Vice President and Executive Committee member.

Continued on page 12

2002 Manitoba Awards of Excellence in Consulting Engineering

By: R.G. Rempel, P.Eng.

Service to society, innovation, and technical excellence were celebrated April 4 at the 2002 Manitoba Awards of Excellence in Consulting Engineering held at the Fairmont Winnipeg. Winners were announced at a dinner attended by 300 guests including representatives of the engineering industry, government and Manitoba's business community.

Hosted by the Consulting Engineers of Manitoba (CEM), this prestigious annual event recognizes the achievements of consulting engineers in Manitoba and their contributions to society, and prominently showcases the industry's outstanding products and services. The CEM Awards were, by popular demand, hosted by Master of Ceremonies Mr. Peter Jordan, Gemini-award winning host of the hit CBC television show "It's a Living" and popular personality covering the 2002 Olympic Winter Games in Salt Lake City.

Eighteen projects, ranging in size and complexity, were submitted by consulting engineering firms in one or more categories. From this selection, Awards of Excellence and Merit were presented in six categories: International, Resource Development, Environmental, Innovation, and two new categories covering Infrastructure/Buildings and Industrial projects.

Judging was conducted by a "Blue Ribbon" panel of esteemed independent industry professionals, chaired by the University of Manitoba Faculty of Engineering's

Engineer-in-Residence Mr. Malcolm Symonds, P. Eng. . The judging panel included Mr. Barry MacBride, P. Eng., City of Winnipeg, Dr. Doug Ruth, P. Eng., Dean of Engineering, University of Manitoba, Dr. Glenn Morris, P. Eng., Professor Emeritus, University of Manitoba Faculty of Engineering, Ray Scouten, P. Eng., Bob Eastwood, FRAIC, MAA, OAA, M. Arch., Number Ten Architectural Group, and Esther Paterson, RPA, Lombard Place Limited. Each project was subjected to a critical review and evaluated on its demonstration of innovation, added value, advancement of technology, technical excellence, degree of difficulty, management of risk, and, most importantly, benefit to society.

For the first time, an overall "Best of Event" award was presented to the project that best demonstrated the standards of excellence in product and service upheld by the Awards of Excellence Program. A distinguished engineer selected by CEM presents this new award, titled the Keystone Award, each year to the best overall project of the CEM Awards. Mr. Les Wardrop, P. Eng., was selected by CEM to present the first-ever Keystone Award in honour of his distinguished record of service to the consulting engineering community. Mr. Wardrop presented TetrES Consultants Inc.'s George Rempel, Mike McKernan, and Dave Morgan with the first Keystone Award for TetrES' work on the Garrison Northwest Area Water Supply Project.



TetrES Consultants accepting the Keystone Award presented by Les Wardrop and International Award of Excellence for Appeals of the Garrison Northwest Area Water Supply.

The CEM Awards of Excellence Program has grown in size each year. Once again, attendance was up substantially with attendance including those who influence most the course of consulting engineering in Manitoba. This year's theme was the Iron Ring and the tradition of excellence, history, and pride that engineers and the general public know is associated with engineering and the wearing of the ring. The renaissance of the University of Manitoba's Faculty of Engineering infrastructure was also celebrated, with prominent displays showcasing the design for the new Engineering and Information Technology Complex to be constructed at the University of Manitoba. Dean of Engineering Doug Ruth was one of several guests to speak to the audience about the exciting times ahead for engineering in Manitoba. Councillor John Angus presented a particularly memorable speech that paid strong tribute to the crucial role and extraordinary achievements of consulting engineers in Manitoba. National representatives of the Association of Consulting Engineers of Canada (ACEC) were also in attendance, offering greetings on

behalf of the national consulting engineering industry. APEGM member and Minister of Industry Trade and Mines, the Honourable MaryAnn Mihychuk, also addressed the audience.

The Awards Program continues to grow in profile. A combination of print media appearances, in addition to engineering project showcase initiatives launched by the Government of Manitoba and the University of Manitoba's Faculty of Engineering, ensure that winning projects are celebrated in the public eye throughout the year leading up to the 2003 CEM Awards of Excellence. All projects entered in the 2002 Awards Program will be showcased in the coming weeks in a multi-media DVD production produced by CEM.

The 2002 Consulting Engineers of Manitoba Awards of Excellence were awarded to the following firms in seven categories:

Keystone Award

Presented by Mr. Les Wardrop, P. Eng. (Best of Event Award)

TetrES Consultants Inc.— Appeals of the Garrison Northwest Area Water Supply

Continued on page 12



KGS Group accepting Resource Development Award of Excellence.



Crosier Kilgour & Partners Ltd. accepting the Infrastructure/Buildings Award of Excellence with Faculty of Engineering's Dean Ruth.



UMA Engineering Ltd. accepting the Innovation Award of Excellence with ACEC's Andrew Steeves.

THOUGHTS ON

Design

...are we educated or trained?

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

I took golf lessons last spring, and in the process found myself examining some realities about the inputs associated with design. Unfortunately that seems to be the only measurable outcome of the lessons.

As I stood on the smooth artificial turf in the Golf Dome, my instructor kept reminding me to check my grip, balance my weight, swing through the ball, etc. His comments after each swing were intended to help me develop a consistent, repeatable swing that would result in the ball going straight ahead and into the end of the dome. He was training me to use a five-iron properly without having to spend a great deal of time thinking about the process. Just address the ball and hit it.

At about the same time, I was going through the training manual for a new piece of software that promised to make me more efficient in my work. The feedback loop in the training program was remarkably similar to the feedback loop at the Golf Dome. Both were intended to get me to the point where I could use a "tool" without worrying about the operational details. I was being trained. If I turned out to be successful in this training process, my "game" would improve. I would have gained "value".

Let's assume for a minute that my golf lessons had worked. Within the constraints of time and season, I would have come away with an enhanced skill using a specific golf club under "ideal" conditions. Under the conditions in which I received

my training I could use that particular tool with improved skill. But when I headed out to face the Manitoba golf course environment, complete with wind, sloped surfaces, trees, water and mosquitoes, well would my specialized training fit into this "bigger picture"? Notwithstanding my newly acquired skill with my five iron, the other ten clubs remained less than useful.

The ultimate route to improving my golf game requires that I become able to transfer my improved five-iron swing to the other ten clubs. Why does a driver require different adjustments than a pitching wedge? What fundamentals of the swing change, and what fundamentals remain constant? Then, I need to understand what adjustments are required for various situations on the golf course. This understanding comes from an education that develops after the training foundation has been established. Think about Tiger Woods who is an excellent example of someone who has been educated in the game of golf. I, on the other hand, have merely been trained in the care and handling of the five iron.

So what does this have to do with design?

We all experience various sorts of training to provide us with specific skills that we use on a daily basis. People of my generation have had to become computer literate. Once that skill has been acquired, we integrate it into our approach to design. The training associated with those specific skills keeps changing, and the level of competence we require changes as well. All of us are constantly being retrained to a greater or lesser degree. Our education, both formal and informal, dictates the nature and extent of this re-training. But our education provides the base upon which we function.

Education must underlie what we are and what we do. Training is the sharpening of specific skills that are necessary to utilize our education efficiently. Education begins with formal academic programs and grows as we learn from dealing with the undefined and uncertain problems we are regularly faced with. It is an enabling background that does not become obsolete with the emergence of new programs, but expands because the new tools allow us to probe beyond the limits we once faced. Yes, we receive training, but we make use of that training because we have the education that permits us to adapt.

Now, if I could just get beyond the training stage with my golf game. ■



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Program sponsored by:



Notice to Designers

Continued from page 3

The following changes to the NBC Part 4 and to the Structural Commentaries were approved by the CCBFC to rectify the situation:

- the limits for the rise to span ratio for arched or curved roofs be removed from the partial snow load condition in Sentence 4.1.7.2.(2) of the NBC
- in Figures H-2(a) and H-2(b) of the Structural Commentaries, the limit on Case II of 2 Ss be replaced by a limit of 3 kPa, and the trigger for the application of the unbalanced load criteria be lowered to roofs with a rise to span ratio of 1 in 20
- a transition formula be introduced in Figures H-2(a) and H-2(b) to account for the rise to span ratio of the roof

It is advisable that existing arched or curved roof structures with a rise to span ratio greater than 1 in 10 be analyzed for the partial snow load criteria of Sentence 4.1.7.2.(2) of the NBC as modified by this Special Change, and those with a rise to span ratio between 1 in 10 and 1 in 20 be reviewed against the unbalanced snow load of revised Figures H-2(a) and H-2(b) of the Structural Commentaries.

The following background paper (see website) provides more general information.

Detailed information regarding the revised snow load design criteria can be obtained by contacting the Canadian Codes Centre at (613) 993-9960 or by e-mail at codes@nrc.ca. ■

Letter to the Editor



The EIT Program – A P.Eng.'s Perspective

Until only a few years ago, a graduate from an accredited university engineering program needed only to write a "practice & ethics" exam and work two years under the supervision or mentorship of a P.Eng. in order to qualify for registration. There was no mandatory community service, or professional association activity, or coursework, or continuing education, or semi-annual reporting of experience.

In the past six years APEGM has instituted a new "internship" program which mandated all these requirements to better prepare Engineers-in-Training (EITs) for professional registration. For the most part, the program has worked well. The community-service requirements help to reinforce our

duty to the public. The association activities develop better understanding of, and respect for, the profession. The continuing-education requirements are essential to maintaining technical competence in a rapidly changing world. The four-year minimum program duration for each EIT is reasonable in the context of the onerous responsibilities that engineers assume upon achieving professional status.

As a practicing P.Eng. for over 26 years, I have been privileged to work with many EITs under both the old program and the new. I believe that certain aspects of the current program need to be reviewed and changes made.

In an attempt to force EITs to take a disciplined, rigorous approach to the program, association staff and committee members seem to have adopted a "no forgiveness" philosophy. When an experience report is submitted more than two months after the period that the report covers, one month of experience is subtracted for every month that the report is late, regardless of the quality of the experience that is gained in that period. After enrollment, one EIT had his first 12 months of experience downgraded to five months because of the timing of submission. He had been working long hours of overtime, much of it away from his Winnipeg office, and had not read any APEGM document

suggesting that such a harsh penalty could be imposed. The fact that it was his first report was not considered. His appeal to the committee and council were rejected.

It is interesting that APEGM will consider up to 12 months of pregraduate (or pre-enrollment) experience toward the four-year requirement. Pregraduate experience will have been gained several years before the committee gives credit for it. This long lag-time between experience, reporting and getting credit stands in sharp contrast to the experience gained during the EIT program, where any experience gained prior to eight months before reporting is considered null and void. Similarly, it seems that it is easier at times to get credit for pre-enrollment experience than for experience gained as an EIT. One EIT remarked to me recently that since APEGM will grant up to 12 months credit for pre-enrollment experience (with no semi-annual reporting, no deductions for "late" reporting, etc), APEGM is demonstrating more flexibility to those graduates who do not enroll as EITs immediately upon graduating than for those who do join immediately. This state of affairs demonstrates inconsistency.

It is troublesome that our EIT program is out of synch with some other provinces. This does not mean that our objectives are wrong but more needs to be done to achieve a consistent Canada-wide approach to registration require-

ments. A recent applicant to our firm had his "P.Eng." status in three other provinces but could not get it here. This was despite being a U of M graduate with about six years' work-experience here in Manitoba. He expressed some frustration with the inflexibility of our process and was glad to accept a job offer from our Saskatoon branch office where he can proudly declare his P.Eng. status. In this instance, our program may have contributed to the westward "brain-drain" that has so negatively impacted Manitoba.

Another problem with the current program involves engineering supervisors who do not respond promptly when sent an APEGM form to verify an EIT's six-month report. At a recent meeting of EITs and supervisors, one supervisor claimed that he was too busy to respond in a timely manner, and the implication was that we should be prepared to wait for six months or a year. This is an interesting reflection on our profession: we expect our EITs to maintain a high standard, but accept something far less from our P.Engs. That does not send a consistent message about responsibility and quality.

Thinking back again to that EIT meeting, it is interesting to note that there were several dozen EITs and a very few supervisors present. This suggested to me that some supervisors don't value highly either their EITs or the program. You will have to forgive me for

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Meet Your New Appointed Councillor – Kathy Gaudry

By: V.L. Dutton, P.Eng. (Ret.)

Our new Councillor was raised in Windsor Park. Being bilingual, she attended school at École Lacerte in Windsor Park and then went off to College Louis-Riel. She studied accountancy through the program of studies offered by the Certified General Accountants Association. She received her CIM from the University of Manitoba, a Certificate in Human Resources from Queen's University at Kingston and, in 2000, was honoured by the Certified General Accountants Association of Canada by being made a Fellow.

Kathy's professional career has included roles with Canada Post, Workers Compensation Board, Scotiabank, and Manitoba Telecom Services where she was Corporate Manager of Organizational Development.

With this experience she started her own company – Acumen Succession Planning Inc. – offering a full-range of strategic human resource services including succession planning, leadership development and performance management

Kathy is active in the community and is a volunteer Chair with the

Board of Winnipeg Enterprises Corporation, the entity that looks after the Winnipeg Arena and Canad Inn Stadium.

Kathy has two sons; both are in their early twenties and live at home.

In spite of her work and running a household that includes two hungry young men at the table, Kathy still finds time for her hobbies – duplicate bridge, golf, and fishing.

The members of our Association should be very pleased with our new Councillor. ■

APEGM VISION

APEGM is the leader and a facilitator of the process that ensures excellence in engineering, geoscience, and applied technology for the public of Manitoba.

Letter to the Editor

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concluding that some P.Eng. supervisors (or P.Engs. in general) don't value the Association, its mandate, and our professional responsibilities. Many will argue that point, but actions (and poor attendance) speak for themselves.

We can make improvements to the program. Accept that EITs are human and will occasionally misinterpret the requirements for reporting. Allow at least one "forgivable" error or oversight in conforming to the program. Consider annual reporting instead of semi-annual; the

suggestion that EITs and supervisors cannot remember what happened more than six months ago is ridiculous, especially since pre-graduate experience from two or three years before is considered. And sanction supervising P.Engs. who can't find 15 or 25 minutes to fill in a form within a month of getting it from the Association. Sanctions could include listing them in a "dishonour roll" in the Keystone Professional to shame them into taking seriously their professional responsibilities. And yes, I do believe that a diligent approach to EIT supervision is a serious responsibility, as that is the only way we P.Engs. can sustain

protection of the public: we need to nurture young engineers and develop their best qualities to provide replacements for ourselves and thereby assure protection of the public over the long term.

That last point is important. We need to encourage people to choose engineering as their profession, and to become registered in order that they assume their responsibilities. The ratio of P.Engs. to other technical staff in our office is declining, in part because of an apparent shortage of appropriately qualified individuals. Many of the people we are hiring are foreign-trained and are excluded from the profession because they are graduates of foreign universities which, at this point, have not been listed as having

equivalent accreditation systems. Others we are hiring are technologists who look at the long years of university and subsequent long years of EIT status as being impediments. This is not a suggestion that we should lower the standards of admission but that we should review those standards to assure fairness to all who might aspire to be P.Engs. Taking a hard look at the EIT Program is a good place to start. We cannot protect the public if there are not enough individuals in place to become P.Engs. As it stands, we may be discouraging registration to the detriment of the profession and especially to the detriment of the public.

W.H. Brant, P.Eng. ■

CEM Awards

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Awards of Excellence

International

TetrES Consultants Inc. – *Appeals of the Garrison Northwest Area Water Supply*

Resource Development

KGS Group – *Roseport Flood Protection Project*

Infrastructure/Buildings

Crosier Kilgour & Partners Ltd. – *Holding Up Time – The Structural Stabilization and Temporary Support of the Princess Street Facades*

Innovation

UMA Engineering Ltd. – *Seine River Siphon Slope Stabilization*

Environmental

TetrES Consultants Inc. – *Effects of Combined Sewer Overflows on Water Quality, City of Winnipeg*

Awards of Merit

International

Acres International Limited –

Ham Thuan Hydropower Project, Vietnam

Resource Development

Acres International Ltd. – *Northwest Ontario 2001 Dam Safety Assessment Program*

Infrastructure/Buildings

UMA Engineering Ltd. – *City of Winnipeg Sewer Management Study*

Environmental (2 awards of merit)

UMA Engineering Ltd. – *St. Theresa Point and Wasagamack First Nations Airstrip and Connecting Road Environmental Assessment*

KGS Group – *Churchill Marine Tank Farm Environmental Upgrade*

Industrial

KGS Group – *Gerdau-MRM Steel – No. 5 Mill Expansion*

Congratulations to all firms entered in the 2002 CEM Awards Program, in particular to the firms who won Awards of Excellence and Awards of Merit. Visit www.consultingengineersmanitoba.com for more information regarding this year's awards event as well as for further information and photos of the winning projects. ■

Designing Mines for Closure

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spent researching ways and means of achieving control of acid-generating materials. The best method has been determined to be placing fresh material underwater. Second choice, and a distant second, is covering the material with an engineered, multi-layered soil cover. Better than both of these is leaving the suspect rock where it was – in the mine – or placing it there post-operation.

All of HBM&S's recent mine developments – Photo Lake, Konuto Lake, Chisel North and 777 – have been designed with these concepts in mind. At the shorter-life mines, equipment which would normally

be fixed is skid-mounted. Concrete has been designed for easy removal and all mine rock is sampled and assayed before it is excavated and moved to surface. The result? Whereas similar-sized mines from the past have cost up to \$1 million to decommission, these new operations may cost as little as \$100,000. In terms of costs incurred to realize this savings, there is very little up-front expenditure in doing things properly rather than the way they were in the past.

Closure plans are part of good environmental management. It is reasonable to do what we can to minimize ultimate closure costs. As an industry, we have learned to recognize the issues and develop appropriate plans. ■

Council Reports

Continued from page 8

President Barakat said they weren't going home until the positions were filled. Councillor Silk, who was participating by teleconference, asked how he might vote. Peter Washchyshyn was duly chosen to act as his proxy. As an inducement, President Barakat said that the Executive Committee member wouldn't have much to do with Policy Governance® in place. The ballots were passed around and the following were nominated for Vice President: Cornell, Ferchoff, Gilmore, Harfield, Permut, and Silk. One by one the nominees were asked if they would stand for election. Only Councillors Cornell and Ferchoff agreed to run-off. Another round of balloting, and Mr. Ferchoff emerged victorious. This also means that Mr. Ferchoff will be President

of APEGM this fall.

Only the Executive Committee position remained. At this point Mr. Harfield asked why the Executive Committee position was run in tandem with the Vice Presidential election. The answer was that someone who failed to become VP might want to run for Executive Committee. Nominated for Executive Committee were Councillors Syme, Silk, Permut, Gilmore, and Cornell. Out of these, Silk, Permut, and Cornell agreed to an election. Ultimately, Mr. Cornell emerged the victor and, in the process, confirmed why these positions were run together.

At the end of the meeting Council submitted to a brief self-evaluation. According to Councillor Harfield, the clock said it all. (It was 4:24 PM.) Mr. Silk agreed. The next meeting is on June 19, 2002. ■



TetrES Consultants Inc. accepting Environment Award of Excellence with representatives from DPIC Companies and Oldfield Kirby Esau Inc.