Summer 2012

APEY

Association of
Professional Engineers of Yukon

YUKON EXCELLENCE IN ENGINEERING AWARD WINNER

MAYO B HYDRO ENHANCEMENT PROJECT

Contents

A MESSAGE FROM THE PRESIDENT

Carl Friesen, P.Eng., CLS, BCLS.

Summer has finally come to Yukon. All the APEY members are in full seasonal swing. I certainly hope everyone has a productive and interesting summer season.

In March we had what I thought was a very interesting AGM with a different format, some interesting discussions, the passing of some significant bylaws, loss of some very good Officers, Councillors and an Executive Director but the addition of some very qualified new blood to the table.

In the afternoon, prior to the business portion of the AGM APEY hosted a walkthrough of the new Correction Facility, which many found very interesting. The AGM format included a meal prior to the meeting and snacks and beverages afterward. I thought this format worked very well as it provided nourishment to get thoughts flowing for the meeting and the post meeting snack and beverages gave us all a chance to meet with the new and old Officers and Councillors. I hope we will give this format another try next year.

Unfortunately we lost 2 very good Officers, Sandy Birrell, PEng (Sec/Treas) and Cord Hamilton, PEng, FEC (Engineers Canada Dir.). But we welcomed equally qualified Chris Dixon, PEng (Sec/Treas) and Catherine Harwood, PEng, FEC. (Engineers Canada Dir.) Richard Trimble, PEng, FEC is of course still guiding APEY as Registrar and we thank him for yet another year of solid service.

Laura Markle has taken on the roll as Executive Director and we welcome her to APEY. She is doing wonderfully in her new duties and we look forward to having her with us for some time. I miss engaging with Bruce Underhill as our Executive Director, but he certainly appears to be happy and quite busy in his retirement. He is however still quite active in many committees of APEY. Kim King our Office Manager continues to do her excellent work on registration and finance.

We have lost Brian Crist, PEng, Chris Dixon, PEng and Virginia Sarrazin, PEng from our Council but have added Yesh Sharma, PEng, Geoff Quinsey, PEng and Jon Dixon, PEng. We wish the best to Brian and Virginia welcome Chris back as an Officer and welcome our three new Councillors to the table.

It is my pleasure to announce that Drew Pearson is being reappointed as our Lay Member of Council for 3 more years. This is great news as Drew brings many talents to our Council table.

This spring has seen a number of awards given. Cord Hamilton,

Keith Byram and Vern Haggard all received well deserved Fellowships to Engineers Canada (FEC). Congratulations to this distinguished engineers. Our First Annual Engineering Excellence Award was given to the Alliance Group consisting of KGS Group, Yukon Energy Corporation and the contracting company Kiewit Infrastructure Group for the Mayo B project. Congratulations to them and to the other 4 worthy submission.

During the AGM we passed a number of bylaws. Many were housekeeping matters but one bylaw vote created quite a bit of discussion. That being the bylaw allowing Council to set dues. While this was extensively discussed, requiring friendly and not so friendly amendments; in the end the vote was 2 votes from being unanimous. I would like to thank the membership for this vote of confidence and I can say for all of Council that we take this responsibility very seriously and will make every effort to earn the trust given to Council.

The new Council has only had a couple of meetings since the AGM but I would like to mention a couple of items of interest. The Act Review process has been put on hold temporarily. A number of years ago, the Act Review was largely precipitated by the idea of bringing the Geoscientists into our organization. However, recently the Act Review Committee and Council have agreed that this initiative should be reviewed to determine if in fact there is will from either the Geoscientists or the YG Government. This was thought necessary as there has not been any indication as such from either for quite some time and quite frankly is it up to APEY to champion this endeavour. The Geoscientists appear split on the issue and Government has yet to show any strong inclination. As such, the Act Review Committee and Council will have to decide if there is enough impetus within our organization to warrant an Act Review based on our own internal issues we might have with our Act.

Additionally, Council and Staff are reviewing the Strategic Plan. This plan is thought to be a living document, and as the Act Review played an important place in the plan, the priorities within the Strategic Plan may change.

"All our committees are active and engaged!"

All of our Committees are very active and engaged! The Awards Committee, as you have seen has been very busy and they are currently working on the Queen Elizabeth II Diamond Jubilee Medal, "for service to the profession and continued service in the community beyond the profession". So stay tuned for that result.

The Bridge Building Committee had a wonderful event this year and we thank them for getting the engineering message out to the young people of Yukon. CPD and Discipline continue their very busy efforts and our Historic Task Force is

well on its way to developing their products that we will all enjoy. Our Social Committee is working on a summer event, so again, stay tuned.

I must take this opportunity to thank Chris Dixon and Jon Dixon for their efforts on our Communications Committee. Not only have they produced this newsletter but they also have been working on a centralized communications plan (and bag of tricks) which I am sure will benefit all of our committees.

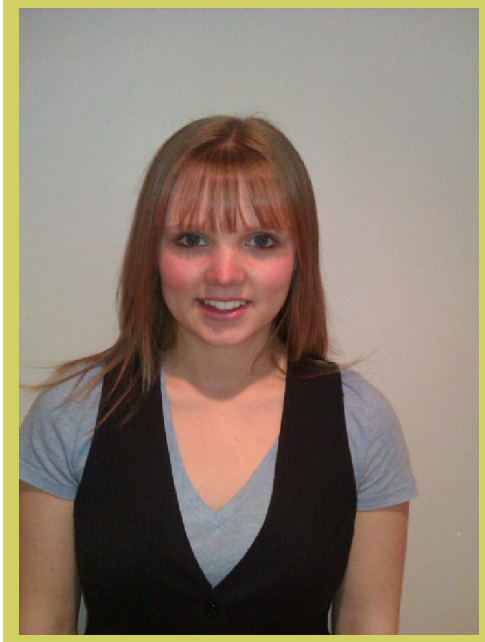
Thank you to all of the Committee chairs and members for all of their hard work.

So, enjoy the newsletter, enjoy the summer and please don't hesitate to call me if I can be of service.

Carl Friesen, President

STUDENTS WIN AWARDS

Educational Awards Handed to Anderson, O'Donovan



The Association of Professional Engineers of Yukon (APEY) is pleased to announce the awarding of the John D. Scott Memorial Educational Award and the Jim Y.C. Quong Memorial Educational Award to two outstanding engineering students. This year's recipients are Sarah Anderson (Jim Y.C. Quong Memorial Award) and Ryan O'Donovan (John D. Scott Memorial Award).

Sarah is a Mineral Resource Engineering student at Dalhousie University in Halifax and Ryan is a Building Engineering student at Concordia University in Montreal.

These students, and others like them, represent a bright future for the engineering profession here in the Yukon.

APEY would like to acknowledge the contribution to these awards by the Yukon Electrical Company Limited (John D. Scott Memorial Award) and the YTG Department of Highways & Public Works (Jim Y.C. Quong Memorial Award).

For information about the annual APEY Educational Awards visit the APEY website at www.apey.yk.ca

MAYO B PROJECT HONOURED

Yukon Engineering Excellence Award Recognizes Hydro Project

The Yukon Engineering Excellence Award was established by APEY in order to recognize eminent engineering achievements by Yukon Professional Engineers and to promote excellence in engineering applied to Yukon's northern climate and terrain in areas of applied research, design, innovation, construction and project management. By recognizing engineering achievements of our members the Association also serves to raise public awareness of the engineering profession in Yukon.

Nominations for the inaugural 2012 award were evaluated on the following criteria:

- Northern innovation/adaptation, services that enhance understanding of, and engineering in the northern climate;
- Sustainability, services that make environmental consideration of and/or increase the sustainability of northern communities;
- Service to the community including enhancement of community services; and, Enhancement of the quality of life through engineering and other works.

There were five nominations for this first annual Engineering Excellence award:

- Slims and Duke River Bridges Project – AECOM

- Wildplay Yukon – Mount Sima Wild Play Course - Cascade Engineering Group
- Kwanlin Dün Cultural Centre + Whitehorse Public Library – David Nairne and Associates
- Taku Inn Retrofit – Stantec Architecture
- Mayo B Hydro Enhancement Project – KGS Group, Yukon Energy Corporation and Peter Kiewit and Associates.

The submissions were strong, and demonstrate excellence in engineering achievements by our members. The selection was difficult, but the evaluation committee came to a consensus that the project submission that best demonstrated the key criteria was the Mayo B Enhancement project. The Alliance Group consisting of KGS Group, Yukon Energy Corporation and the contracting company Kiewit Infrastructure Group, were jointly selected to receive the 2012 APEY Engineering Excellence Award.

Some key features of the Mayo B project are noted below:

- A new powerhouse with two Francis turbines totaling 10.2 MW of generating capacity, was constructed 3.7 km downstream of the existing powerhouse. The powerhouse is founded on very poor, highly weathered and fractured bedrock. Anchors required for stability and seismic restraint were technically difficult to install, and a carefully managed installation methodology was developed to ensure the integrity of the anchors.
- A salmon rearing channel was constructed immediately downstream of the Mayo B powerhouse, with flows diverted from the Mayo B tailrace, as habitat enhancement. The Mayo River is an excellent salmon spawning river, and YEC will maintain minimum river flows through the existing Mayo A powerhouse to ensure that suitable fish habitat is maintained and potentially enhanced.

- A new power tunnel ties into the Mayo A tunnel immediately downstream of the existing intake structure and diverts water to the new Mayo B powerhouse. The new tunnel is approximately 280 m long with a width of 3.5 m and a height of 4.0 m after being lined with concrete. The bedrock was highly fractured and of poor quality, and demolition blasting near the intake required careful staging and an extensive grouting program to minimize leakage into the tunnel from the adjacent Wareham Lake.
- The new tunnel discharges into a 3.2 m diameter buried steel penstock (pipe) to the new powerhouse, dropping approximately 64 m in elevation over a distance of 3.7 km. The final penstock alignment was chosen to avoid permafrost zones while still achieving a cost effective and hydraulically efficient route. The installation required approximately 660,000 m^3 of overburden and rock excavation, and when completed the penstock was buried under 4 to 5 m of compacted fill acting as support and insulation to prevent freezing. The penstock was installed from April to December 2011, and welding of the pipe sections was a concern given the temperature ranges over this period. A procedure called "weld after backfill" was adopted, whereby the pipe sections are put in place, a protective heat shielding wrap applied to outside of the joint, the pipe is backfilled, and then welded from inside the pipe. This was one of the first times this technology was used in Canada and was selected to extend the short warm weather construction season in Mayo.
- To handle transient pressures in the penstock due to sudden changes in the turbine flow requirements, a surge facility was constructed upstream of the powerhouse. Normally consisting of a vertical tank, the topography and extreme elevation change between the forebay and the powerhouse required an innovative and non-conventional approach, and the surge facility was constructed as two sections of steel pipe extending up an incline.
- The project lies within the Traditional Territory of the First Nation of Nacho Nyak Dun (NND). Yukon Energy forged a partnership with the First Nation on this project and NND became one of the financial investors. Yukon Energy was engaged on an on-going basis with all stakeholders throughout the permitting, design, and implementation phases of Mayo B.From the beginning, the YEC-KGS-Kiewit team was committed to hiring local firms and personnel to the maximum extent possible, providing an immediate economic benefit to the region while minimizing costs. Local technicians and CAP Engineering personnel provided onsite supervisory staff and services. Kiewit engaged local construction firms and operators for much of the work, as well as personnel to run the 100-person construction camp.
- As a legacy project, the YEC Alliance team provided NND a new Community store located in Mayo, plus an ultrasound for the local clinic, and baseball diamond renovations for the Mayo community.

- Construction of the project was staged to minimize the impact to the local wildlife, and extensive heritage surveys were conducted prior to design completion, with the final penstock alignment routed around a historical site. The salmon habitat was not harmed, and the new salmon channel along with commitments made by Yukon Energy regarding steady water flows from the new powerhouse, are intended to improve spawning and rearing conditions. Prior to and during construction, a detailed environmental program was implemented which included acid rock testing and monitoring the Mayo River for water quality.

The award was presented by the APEY Awards committee to Lawrence Joudry, Yukon Energy's Director of Engineering Services and Operations at this year's Annual General Meeting. An awards luncheon held jointly to recognize the Fellowship of Engineers Canada recipients and the Engineering Excellence Award recipients was also hosted by APEY in May and attended by representatives of KGS and YEC. KGS, Kiewit and YEC were presented with plaques; and as promised the results of this award are featured in this newsletter and will be posted on our web site.

The APEY Awards Committee was very pleased with the interest in this year's award. Please join us in celebrating the success of the nominees and this year's award recipient. It is the intention of this committee to continue this award in 2013 and beyond. We encourage you to submit a nomination for the 2013 Engineering Excellence Award. More information will follow regarding the nomination process on the APEY web site and in future newsletters.

FEC AWARDS HONOUR BYRAM, HAGGARD, HAMILTON

Vern Haggard receives his FEC Designation

Engineers Canada is the national federation of the twelve provincial and territorial associations that regulate the practice of engineering in Canada. It serves the associations by delivering national programs that ensure the highest standards of engineering education, professional qualifications and professional practice.

In 2007, Engineers Canada created the Engineers Canada Fellowship to honour individuals who have given noteworthy service to the engineering profession through long service to the national body at a senior level or in a volunteer capacity for an Engineers Canada constituent association. Recipients of the Fellowship are entitled to use the designation "Fellow of Engineers Canada" and the letters "FEC" following their names.

Three such designations were recently entitled to APEY members. Vern Haggard, Keith Byram and Cord Hamilton have all served APEY as executive members or officers and are more than worthy of this prestigious designation.

Vern Haggard

Vern Haggard was born and educated in Saskatchewan. His first exposure to Yukon was in the summer of 1963 on a geological field party for Shell Oil. He graduated from

the University of Saskatchewan in Geological Engineering the following year and for the following ten years worked for IBM in Ontario and Western Canada.

Vern moved to Yukon in 1974 to join Yukon Business Services as a computing specialist. Yukon Business Services at that time had the only commercial computing service in Yukon and Vern contributed to its growth and successful operation until 1990. Vern was registered by APEY in March 1975 and served the Association from 1980 to 1991 in the position of Councillor and also as APEY's Director to CCPE from 1986 to 1990.

Vern's career took off in a new direction in 1990 - into the world of amateur sport, fueled by his long time passion for and connection with hockey. He spent the next 20 years in the sports and recreation field as Executive Director of Sport Yukon and then as Sport Consultant of the Government of Yukon Sport and Recreation Branch. He is an Old Timers' Hockey League founder and hockey coach. He served as Chef de Mission for numerous Canada Summer and Winter Games, Western Canada Games and Arctic Winter Games and apparently delayed retirement so that he could help lead the Yukon contingent to the 2010 Winter Olympic Games in Vancouver.

Vern and his wife Kay were inducted into the Sport Yukon Hall of Fame for their devotion and contribution to Yukon hockey and Vern was honoured for his outstanding service to sports, leadership in the sports community and contribution to sport development. In both his engineering and sports careers and in his service to our Association, Vern was very principled, equitable and fair and always had a quiet, meaningful and well thought-out approach to resolving issues. Vern and Kay have retired to Saskatchewan.

For his service to our profession and community, APEY is pleased to confer the designation "Fellow of Engineers Canada" on Vern Haggard.

Keith Byram

Keith Byram graduated from the University of Manitoba in Civil Engineering in 1961. For the next eight years Keith worked with Defense Construction Ltd. on airport facilities and civil works in engineering positions of increasing responsibility. This work saw him live in nine locations from Comox BC to Gander NL. In 1969 Keith moved to Yukon to work for Canada's Department of Public Works as Design and Construction Engineer and was Construction Manager for the rebuilds of the Alaska Highway and Campbell Highway and construction of the Dempster Highway.

He was registered as a professional engineer in Yukon in January 1970. Keith served APEY in 1971 as Vice-President and in 1972 as President, and came back for a second round to serve as Vice-President from 1976 to 1978 and as President

Keith Byram and family.

in 1979.

Keith left Public Works Canada in 1976 to join General Enterprises, became a partner in the company in 1977 and for the next ten years was involved in many varied highway construction and mine development projects in Yukon, BC, NWT and Alaska. Keith founded Pelly Construction Ltd. in 1987 and from that date to the present he has been its President and President of Kluane Construction Inc. and R.K. Byram Engineering.

Pelly Construction has over the past 15 years chalked up an impressive record of completion of over 200 civil projects and has developed a specialization for highway and heavy construction and contract mining in northwestern Canada and Alaska. These projects include the Faro mine, Capstone's Minto mine, the Wolverine mine, Western Canadian Coal in the Chetwynd area of BC and the Golden Bear Mine, also in BC.

Cord Hamilton

Since 2009, Cord Hamilton has been a very busy contributor to a number of Engineers Canada committees. His hard work and dedication were recognized on June 1, 2012 in Niagara Falls, Ontario when Engineers Canada President, Brent Smith, FEC, P. Eng., presented Hamilton with an Engineers Canada Fellowship Designation. During his speech, Smith cited Hamilton's "approachability and eagerness to promote engineering as a career to the next generation, as well as his avid promotion of women in engineering," as the primary reasons for presenting Hamilton with this prestigious honour.

Cord Hamilton receives his FEC fellowship designation in Niagara Falls, ON. June 1, 2012.

Hamilton has worked on the Campaign Advisory, Executive, and Governance committees and the Communications Task Force and Indigenous Peoples Outreach Task Force. He has also chaired the Women in Engineering Committee and the Joint Committee of the Assembly of First Nations and Engineers Canada.

"You are also unafraid to face a challenge, and you provide valuable input to committee work, said Smith of Hamilton. "You're great at connecting the dots and realizing the wider implications of the work we do at Engineers Canada and connecting it to other work the Board is undertaking. Because of this you've been very helpful to the Qualifications Board in modifying guidelines so they are in line with other work taking place at Engineers Canada."

Hamilton was presented with a fellowship certificate and pin, along with a gift thanking him for his work on the Engineers Canada Board and its' various committees. Congratulations, Cord!

Continuing Professional Development Update

The CPD committee has been quite active in the first half of 2012 and is anticipating a similar level of activity in the remainder of the year. It is the mandate of the committee to offer at least two significant events per year to its membership and the committee has been following this path. Over the past years a significant event has been offered in conjunction with the AGM. The membership should expect two significant events to be offered in the last half of 2012. We consider "significant" as meaning a session that includes at least 7 hours of instruction, typically held in a single work day.

In addition to organizing two significant events per year, the committee is continuing to offered shorter events in the form of lunch-hour presentations. The committee is also supporting and advertising local courses and workshops offered by outside organizations that meet the CPD requirements. These presentations, courses, and workshops seem to be well-received so we intend to continue reviewing what's and advertising applicable events in the future. Although our focus is on locally offered events we will notify the membership when "outside" events of broad appeal are available.

In April 2012 the CPD committee welcomed new member, Geoff Quinsey.

Recent CPD Events:

January 31th: Layfield provided an informative three-quarter day technical seminar on soil reinforcement, slope stabilization and geomembrane containment systems. The seminar was well attended and included mining, environmental, and transportation infrastructure applications.

February 2nd: Many thanks to the Yukon Research Centre's Chris Hawkins, Stephen Mooney, Lacia Kinnear, Clint Sawicki, Valoree Walker, and Heather Dundas for providing a presentation about "What's Happening at the Yukon Research Centre". The presentation included a summary of the capabilities of the research centre, details regarding cold climate innovation, sustainable development in the north, current and future research projects, and outreach. Please see the link below for additional information about the Yukon Research Centre.

http://www.yukoncollege.yk.ca/research/

March 29th: A tour of the new Whitehorse Correctional Centre was provided to APEY members on the day of our last AGM. The attendance was relatively small however this allowed for a very thorough tour of the facility into areas where a larger group may not be been able to go. The tour guide was the Superintendent, Glen Dahl, who clearly knew the facility well and was happy to allow a bunch of

engineers into the inner workings of the building, where we were able to ask all kinds of technical questions, possibly bordering on geekiness. All good fun! Having Glen's perspective was especially beneficial to understanding the challenges of how the operational constraints needed to be accommodated by the engineering of the building and its systems.

May 7th to 12th: The Yukon College offered the second annual "Advanced Seminar on Permafrost Engineering Applied to Transportation Infrastructure". This was an advanced, graduate level seminar that included a description of permafrost environment and dynamics, and the principles and methods for site investigation, design and management of roads, airstrips, railways and other linear structures built in permafrost environments. The seminar also included two field visits to sites where interesting permafrost and engineering features were observed.

May 23rd: Yukon's Departments of Highways and Public Works project engineer, Paul Murchison, provided a presentation about Transportation Infrastructure on Permafrost. The presentation focused on the challenging construction and maintenance issues in permafrost regions and the research being undertaken by the Yukon Government to determine the best methods to stabilize transportation infrastructure over degrading permafrost. Paul also provided interesting details on the construction of infrastructure in permafrost regions in China that he gathered while travelling Chinese sites at a cold regions conference.

June 5th: Hilti Canada provided a half day "Fire Stop Life Safety Seminar". The seminar included an overview of life safety and how compartmentalization fits in with detection and suppression, details of fire stop testing and the limitations of different systems, a summary of acceptance and limitations within construction, and many other topics.

June 14th to 17th: This course was offered by Yukon Energy, Mines, and Resources and the Yukon Research Centre. It provided an introduction to the principles of electric vehicle propulsion systems with participants conducting practical design projects culminating in a complete plug-in electric vehicle conversion.

June 25th: 2012 marks the 100th anniversary of the beginning of the construction of Dredge #4 near Dawson City. As such, the timing was appropriate for the dredge to have recently been dedicated as a Historic Civil Engineering Work by the Canadian Society of Civil Engineers (CSCE). The nomination for the CSCE designation was spearheaded by Mr. Ken Johnson, P.Eng. and he graciously made a presentation to APEY on the history of the dredge and how the historic dedication was achieved.

Future Events and Other Activities:

There will be a summer break from APEY coordinated CPD events. Our members have demonstrated that summertime is

not a preferred time for additional APEY events so we intend to have additional offerings beginning in the fall.

Significant Event: We intend to hold two significant events this year. Topics being considered are YESAB workshop, Law & Ethics, Project Cost Control.

Lunch-And-Learn: Expect to see an announcement regarding the next event in August. Subject(s) to be announced.

Engineers Canada Continuing Competence Committee – The APEY CPD committee participated in the May 14th meeting of this Engineers Canada committee. These meetings are useful as we learn of what other associations are doing in their CPD programs. One of the benefits of this is that some associations have web-based CPD seminars or have recorded their live seminars and made them available on the internet. Most often, our members have access to these web-based sessions and we have been providing the links to our membership and will continue to do so as we learn of them.

Suggestions:

As always, the CPD committee is very interested in receiving any ideas from the membership for CPD event ideas that should be offered in the future, and any general comments on how we can improve the CPD program. Suggestions can be sent to any one of the committee members, or to the executive director, Laura Markle, at the email addresses below:

The committee looks forward to receiving suggestions from the membership and to continued offerings of CPD opportunities.

Regards,

Paul Murchison, P.Eng.

CPD Committee Member

The CPD Committee is:

Rod Savoie - Rod.Savoie@stantec.com

Paul Murchison - Paul.Murchison@gov.yk.ca

Geoff Quinsey - Geoff.quinsey@whitehorse.ca

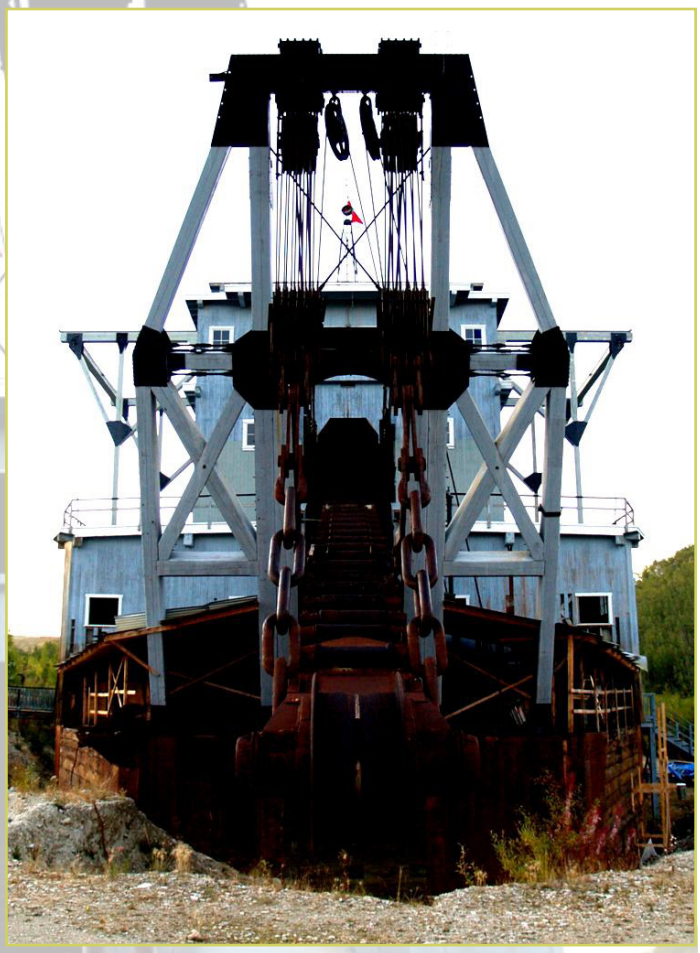
Executive Director of APEY:

Laura Markle - exec.dir@apey.yk.ca

DREDGE #4 DESIGNATED

Accepted as National Historic Civil Engineering Site

The Canadian Klondike Mining Company Dredge Number 4 (floating elevator dredge) was recently designated as a National Historic Civil Engineering Site. Here are a few particulars on its' history as well as some of the engineering behind an important piece of Yukon's rich civil engineering history.



Date of construction

Dredge #4 originally constructed in 1912 and was operational on the Klondike River in 1913; the dredge was completed reconstructed at a new operating site in 1941 using the original machinery and replacing all of the timber.

Name of key professional personnel associated with the project:

Joseph Whiteside Boyle (born 16 November 1867 in Toronto, Ontario, died 14 April 1923 in Hampton Hill, Middlesex, England), better known as Klondike Joe Boyle, was a Canadian entrepreneur and businessman responsible for the land acquisition and equipment procurement associated with the construction and operation of Dredge #4. Boyle was early to recognize the potential of large-scale gold mining in the Klondike gold fields, and his company, the Canadian Klondike Mining Company imported equipment to assemble enormous electric -powered dredges that took millions of ounces of gold from the creeks.

National civil engineering significance of the project:

Dredge #4 is the largest vessel of its kind in North America for picking up gravel from a creek bed washing it with water to separate the gold and discarding waste rock at the discharge end. Dredge #4 is the only intact artefact of the industrialized placer gold mining that occurred in the Klondike region in a 65 year period from 1900 to 1966. Dredge #4 and its counterparts were the end beneficiary of a civil engineering works that included the White Pass and Yukon Railways (transportation of machinery and

timber), the Yukon River stern-wheelers (transportation of machinery and timber), the Klondike Mines Railway (transportation of machinery and timber), the Yukon Ditch (a 115 km series flumes, ditches, piping used to supply water for hydraulic mining), and the 12 Mile River and North Klondike hydro electric projects (used to provide power for Dredge #4 and other dredges operating in the area).

Comparable or similar projects:

Dredge #4 was a unique mining technology that was originally developed in New Zealand in the 1880's, and refined in the United States. Floating on a pond of its owns creation the dredge lifted the gold bearing gravel by means of a chain of buckets each with a capacity of 16 cubic feet. The buckets emptied into a hopper which fed in into an inclined revolving circular screen (or trommel) where the gravel was washed by immense volumes of water. The fine material passed through the holes in the trommel into gold saving tables where it was sluiced and the gold was collected in a series of riffles and mats. A total of 19 dredges have operated in the Klondike region over the period of 1900 to 1966; dredge #4 is the only remaining intact dredge of the 19 dredges that were operating in the Klondike region.

Unique features or characteristics which set this project apart from other civil engineering works:

All of the machinery and wood structures used in the construction of Dredge #4 were shipped unassembled from the south. The machinery was purchased from the Marion Steam Shovel Co. of Ohio and all of the wood structure was precut in southern British Columbia. The unassembled machinery and wood was shipped on a route that included ocean vessels, narrow gauge railways, and stern wheeler river boats. Dredge No. 4 is 2/3 the size of a football field and 8 stories high. It has a displacement weight of over 3,000 tons (2,722 t), with a 16 cubic foot (.45 cubic metre) bucket capacity. The dredge could dig 48 feet (17 metre) below water level, and 17 feet (5 metre) above water level using hydraulic monitors and washing the gravel banks down. The dredge has a pumping capacity of 5000 USGPM. The cost of the dredge in 1912 was about

$500,000 ($12 million today).

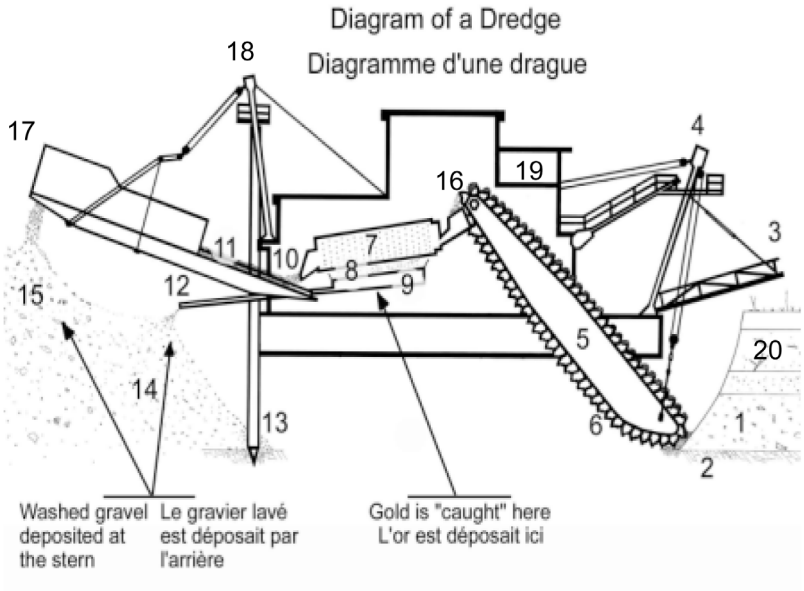
Contribution which this project made toward the develop of the civil engineering profession:

The large scale mining era in the north that followed the Klondike Gold Rush pioneered techniques in northern planning, northern transportation, northern water resource development, northern mining, and the associated construction that is unique to the north because of the cold weather, permafrost, and isolation.

The operation of the Dredge #4 required the development transportation systems (land and river) capable of managing individual components that weighed as much as 20 tons - the transportation logistics for the equipment alone were immense for a 2500 kilometre transportation route from the Port of Vancouver . Once on site in the Klondike the equipment required complete assembly.

Powering the dredge required electricity which was provided by the development two hydro electric projects (12 Mile River and North Klondike River). Unique permafrost engineering techniques were developed to thaw the ground where the dredges operated; these techniques included thawing by water injection (originally steam was used), which required a window of up to 5 years in advance of the dredge operations.

Community development in Dawson City also benefited from the operation of the dredges with the availability of goods and services not available in other northern communities until decades in the future.



1 Gold bearing gravels
2 Bedrock limit of excavation
3 Gang plank for access to dredge
4 Forward gantry for supporting digging ladder
5 Digging ladder or bucket arm
6 16 cubic foot buckets
7 Rotating screen or "trommel" to separate coarse gravel from fine gravel
8 Screenings (fine gravel washed through trommel)
9 Dredge sluices (riffles and coconut mats for catching gold)
10 Course tailings from trommel
11 Course tailings conveyor
12 Fine tailings chute
13 Anchoring point or "spud"
14 Fine tailings
15 Course tailings deposited by tailings stacker
16 Hopper where water is pumped into trommel system (5000 USGPM)
17 Tailings stacker and entry point for power supply
18 Stern gantry supporting "spuds" and tailings stacker
19 Control room
20 Overburden soils (permafrost) to gold bearing gravels

National Historic Civil Engineering Landmark Nomination
Dredge #4 – Klondike Goldfields

AGM 2012 HELD IN MARCH

New Councillors Welcomed

AGM 2012 was held at the Gold Rush Inn, Whitehorse on March 29, 2012. Forty-one members were present. Carl Friesen and Paul Murchison were each acclaimed to their second year as President and Vice President respectively. Jon Dixon, Geoff Quinsey and Yesh Sharma were acclaimed as new Councillors.

New to AGM this year was a display of the work contracted by the History of Engineering Task Force. Around the room were displays of five prominent engineers who worked in Yukon in the early part of the 20th Century: Ken Baker, Warren McFarland, John Phelps, James Quong and John Scott.

Several bylaw revisions were discussed at the meeting. These revisions were circulated to the membership 21 days prior to the meeting and can be reviewed on page 25 of this newsletter. The proposed new bylaw was withdrawn as advance notice was not given to membership that it would require deletion of current bylaw 2e and 2f. All other proposed changes were approved as presented.

Another new addition to the AGM was the presentation of the Excellence in Engineering Award. Ryan Martin, Past President and Chair of the awards committee, announced the winning project is the Mayo B Enhancement Project. Lawrence Joudry of Yukon Energy Corporation received the plaque on behalf of the group.

Several Council members departed this year. Outgoing Councillors Brian Crist, Chris Dixon and Virginia Sarrazin were acknowledged and thanked by Carl Friesen. Catherine Harwood made a presentation to Sandy Birrell thanking her for six years of service as APEY Secretary –Treasurer. Chris Dixon has been appointed by Council as Secretary-Treasurer for 2012-13. Richard Trimble, Registrar, made a presentation to Cord Hamilton who is stepping down as the APEY Engineers Canada Director. Cord has served as APEY Vice-President, President, Past-President and, for the past three years, as Engineers Canada Director. Council has appointed Catherine Harwood as the next Engineers Canada Director effective June 2, 2012.

The meeting concluded with an opportunity to enjoy the History Task Force displays and socialize.

THE DAY OF MASS DESTRUCTION

Annual Bridge Building Competition Held in Whitehorse

APEY and Science Adventures (Yukon College) once again coordinated the annual Bridge Building Competition in Whitehorse, Yukon. A number of Whitehorse schools and two other communities participated, with excellent results. Carcross and Dawson students sent in their bridges, and some bridge builders and their families came to Whitehorse on the "day of mass destruction," April 14, 2012.

The competition took place at Porter Creek Secondary School. The staff and students there were very helpful, as usual. Replacing gym class with putting down protective mats couldn't have been the best part of their week!

The competition is for bridge builders of all ages. Grades 4 to 12 have their own categories, but every year we have families who build together, and even the youngest members of the family get involved. For the first time this year, the Bridge Building organizing committee also built a bridge. It certainly didn't win, but that's good because we didn't want to be accused of rigging the results!

"Builders are given standard wooden stir sticks, as many as they want, and may also use dental floss and glue."

Builders are given standard wooden stir sticks, as many as they want, and may also use dental floss and glue. Those are the only building materials allowed. The bridges must be between 800 and 1000 mm long, and must span a gap 700 mm wide. In addition, they can be no higher than 300 mm from top to bottom. It is astounding how many designs are dreamt up using wood, glue, and floss.

The competition, which began in 1993, was initially sponsored by APEY and organized by two real bridge engineers, Eric Gibson and James Morgan, who both worked for Transportation Engineering Branch at the time. The first competition used sand in buckets as the load for the bridge. While sand had the advantage of a very gradual application of weight (and therefore accurate measurement of the final load taken before the bridges broke), it just wasn't sufficiently dense to break the bridges easily.

That first year, one bridge had to be taken back to the lab after the competition to be broken there. Steel weights were used instead in subsequent years. Progressively smaller weights are used as each bridge approaches its breaking point.

Each bridge receives a score that is directly proportional to the weight supported and inversely proportional to the square of the bridge

weight. This encourages efficient bridge design. The highest bridge score ever (when the span was 500 mm) was for a bridge that weighed 100 g and carried 100 kg. A bonus score is awarded for the written portion of the competition where each builder explains why they entered the competition, where they got the idea for their design, how much weight they predict the bridge will take, and where they think the bridge will fail. How many engineers get to design and build without the inevitable report? We try to create the full engineering experience for them.

Sixty four bridges were entered this year, built by 105 students, teachers, families, and engineers. Volunteers from the engineering community attended the Yukon Teachers Association conference in September, gave presentations in schools over the winter, became- took part in the organizing committee, helped set up the testing stations, registered and register the bridges, and FINALLY, broke the bridges to prove which ones were the strongest and most efficient.

This competition has an excellent record of participation, and receives great media coverage and feedback from teachers and students every year. It is one of the ways we, as engineers, can connect with students about our profession in Yukon. Next year will be the 20th Annual Bridge Building Competition. We plan to make more presentations in the classrooms this winter. We also plan to launch a new challenge to the community at large to participate in April 2013. The highlights of this year's competition were gaining new members on the organizing committee and seeing a brand new batch of testers on the competition day. Some of our regular builders come back too, including one family who couldn't participate last year because their house had burned down.

"Sixty four bridges were entered this year, built by 105 students, teachers, families, and engineers."

Our Masters of Ceremonies did a fantastic job as well; thanks to John Streicker and Charly Kelly for entertaining the audience in an educational way! And thanks to Phil Borgel and Dick Stilwell who anchored the Bridge Building Competition committee and led the building of the committee bridge.

Every year I am reminded about how proud I am to be an engineer in this territory and to be involved in the Bridge Building Competition. Thank you to all the APEY members who make this even possible year after year. We look forward to your continued involvement in the lead up to the 20th Annual Bridge Building Competition which will take place at Porter Creek Secondary on April 6, 2013.

FUNSPIEL!

We held our annual Christmas get-together for members and families at the Whitehorse Curling Club in December of last year. It was a fun evening of curling, food and prizes. We had a great turn-out of about 30 curlers ranging in skill from "never-stepped-on-the-ice-before" to "Chad Cowan". People were broken up into teams of 4 and there was a mini-funspiel of two end games. Everyone had a great time and most people stuck around to have a beverage and a bite to eat afterwards. A big thanks to our social committee for organizing this event and keep watching for future social events to be put on by APEY.

APEY SPRING AND SUMMER ACTIVITY SCHEDULE

Over the next several months APEY will be looking back and ahead.

The History of Engineering Task Force applied to the Yukon Historic Resources Fund and in February was awarded $5,000 to research early Yukon engineering works and engineers. (See http://www.gov.yk.ca/news/12-027.html) The project goals are to inform the public about Yukon engineering history and prominent engineers, promote the profession to youth, and provide members with information about their history in Yukon. APEY has allocated $10,000 in the 2012 budget to this project.

In March, the Task Force requested expressions of interest from several local researchers and chose Patricia Halladay Graphic Design from those interviewed. The Task Force is currently working with Ms. Halladay to finalize the specific research topics. The expected project completion date is November 2012.

This is the second research contract let by the APEY History Task Force. Michael Gates, the History Hunter, was contracted in 2011 to research the contributions of five prominent Yukon Engineers: Ken Baker, Warren McFarland, John Phelps, James Quong and John Scott. Draft products were on display at AGM 2012.

The contributions of several current members of APEY were celebrated in May and June: three Fellowships of Engineers Canada were conferred and the first ever awarding of the Yukon Excellence in Engineering Award. More information about these awards can be found in this newsletter and on the APEY web site: www.apey.yk.ca

Additional items recently added to the APEY web site are: Secondary Liability Insurance Policy and FAQ (bilingual), updated APEY bylaws, and a pamphlet developed for the discipline committee describing the complaints procedure.

Looking ahead to the summer months, the discipline committee will continue to work with APEY's Legal Counsel to develop handbooks for the Registrar and Council members. These handbooks will guide Council in the event of a complaint or appeal. Training in the area of privacy and confidentiality will also be undertaken this summer by APEY staff and interested discipline committee members.

PROPOSED AMENDMENT OF APEY BYLAWS

The following bylaw changes are recommended by Council to AGM 2012. The changes have been broken into three sections:

(i) amend existing bylaws
(ii) proposed new bylaw
(iii) replace existing bylaw

(i) The following bylaws are recommended for amendment: 1(a), 2(b), 10(c), 13

Motion: To approve the changes to bylaws 1(a), 2(b), 10(c) and 13 as presented below.

Bylaw Number: 1(a)

Recommendation: Amend

Original Text
1. The head office of the Association of Professional Engineers of Yukon (APEY) shall be established by Council through consideration of the operational needs of the Association and the convenience of the members.

(a) the physical location of the head office shall be made known to the members in writing immediately after its selection or relocation.

Revised Text
1. The head office of the Association of Professional Engineers of Yukon (APEY) shall be established by Council through consideration of the operational needs of the Association and the convenience of the members.

(a) the physical location of the head office shall be identified to the members and the public on all correspondence, advertisements, and through posting on the Association's website. Any change in the location will be identified to the members and the public at least seven (7) days in advance of its effective date through public advertisements, website notices and direct correspondence to members.

Rationale
There are several issues with the original wording. Firstly, "immediately" is a subjective term which is difficult to measure. Secondly, increasingly communications with members will be in the form of e-mail and so specifying "writing" may be too limiting. Finally the "or" statement between "selection" and "relocation" makes the meaning imprecise.

Bylaw Number: 2 (b)

Recommendation: Amend by Reorganizing. No change in wording.

Original Text
(b) the President may at any time convene a meeting of Council. Seven days notice shall be given to all Council members of the date, hour, place and purpose of such a meeting. The President shall convene a meeting of

Council upon receipt by the Secretary-Treasurer of a written request, with state purpose for a meeting from any two members of Council.

Revised Text
(b) the President may at any time convene a meeting of Council. Seven days notice shall be given to all Council members of the date, hour, place and purpose of such a meeting.
(c) the President shall convene a meeting of Council upon receipt by the Secretary-Treasurer of a written request, with stated purpose for a meeting, from any two members of Council.
Note: As a result of this change, the subsequent sections in Bylaw 2 will be re labelled accordingly

Rationale
The original text contained two distinct actions by the President. The proposed change separates these actions.

Bylaw Number: 10 (c)

Recommendation: Amend

Original Text
(c) Council may choose to appoint an Executive Director to assist in the management, administration and daily operation of the Association.

Revised Text
(c) Council shall appoint an Executive Director to assist in the management, administration and daily operation of the Association.

Rationale
The proper management of the affairs of the Association in this day and age will always require that this position should be filled. Therefore, it should be identified as a "shall" statement.

Bylaw Number: 13

Recommendation: Amend

Original Text
The financial operation of the Association shall in general be the responsibility of Council.

Revised Text
The financial operation of the Association shall in general be the responsibility of Council.

Rationale
The Engineering Profession Act s.9(2) clearly provides Council the authority for complete management of the business and Affairs of the Association:

The Council shall manage and conduct the business and affairs of the Association and exercise the powers of the Association in the

name of and on behalf of the Association.

By deleting "in general" from the original text, the bylaw will specifically establish Council's responsibility and accountability for the business and affairs of the Association.

(ii) The following new bylaw is proposed to address the issue of vacancies on Council.

Motion: To approve the proposed new bylaw as presented below.

Bylaw Number: New

Recommendation: Adopt as a new bylaw (Insert as a new bylaw between 9 and 10. Call this bylaw 10 and renumber the remaining bylaws).

Original Text: None

New Text

a) A member shall be deemed to have resigned from Council:
- on the death of the member;
- when the member's written resignation is approved by Council;
- when the member has been absent for more than three consecutive meetings of Council without informing Council;
- when the member has resigned as a member of the Association;
- when a member's certificate of registration has been suspended or cancelled.

(b) A vacancy on Council may be filled by Council for the period between the date of such resignation and the next Annual or Special General Meeting of the Association by appointing a member who has previously served on Council.

Rationale

The suggested text defines a vacancy and outlines how it would be filled:
- Council would have the ability to fill the vacancy immediately with a member who meets the specified criteria.
- The appointment would terminate at the next AGM or SGM where elections are held.

Declaring and filling a vacancy may be necessary to ensure Council has the capacity to meet its responsibilities and obligations between the time of the resignation and the next Annual or Special General Meeting.

(iii) Bylaw 15 is recommended for deletion and replacement.

Motion: To delete bylaw 15 and replace it with the new bylaw presented below.

Bylaw Number: 15

Recommendation: Replace

Original Text

15. The schedule of fees for Association membership is as follows:

(a) an application for membership in the Association shall be accompanied by a non-refundable application fee as follows:

- in the case of an applicant who is at the time of application an engineer-in-training in good standing with an Association or Corporation of Professional Engineers in a Province or Territory of Canada or is registering as an engineer-in-training for the first time the fee is $75.00.

- in the case of an applicant who is at the time of application a registered member or a permit holder or an engineer-in-training in good standing with an Association or Corporation of Professional Engineers in a Province or Territory of Canada for a period greater than five years the fee is $75.00.

- in the case of an applicant who is at the time of application a registered member or a permit holder or an engineer-in-training in good standing with an Association or Corporation of Professional Engineers in a Province or Territory of Canada for a period less than five years the fee is $150.00.

- in the case of an application for a limited license, the fee is $2500.00.

- in the case of all other applicants $200.00.

(b) fees for examinations shall be as follows:

-for the professional practice examination $50.00 and the National Professional Practice Exam at cost

-for technical examinations as determined by the Board of Examiners $130.00 per examination.

(c) the annual membership fee unless otherwise provided in the Regulations for each calendar year shall be $240.00. If an application for membership is accepted after August 31 in any calendar year the annual membership fee shall be reduced to 50% of the annual rate.

(d) the annual membership fee for an engineer-in-training for each calendar year shall be $72.50 If an application for enrolment is accepted after August 31 in any calendar year the enrolment fee for that calendar year shall be 50% of the annual rate.

(e) the annual fee for a new member or an engineer-in-training is due and payable upon notification of acceptance.

(f) the annual fee for all members is due and payable in advance on January 1 of each year.

(g) a late payment fee of 25% of the fee owing shall be assessed upon any member who has failed to pay the annual fee prior to February 1.

(h) if annual fees payable, including any late payment assessments, have not been received by the Association prior to May 1 strike off procedures will be initiated.

(i) at its discretion and for due and sufficient reason Council may waive, refund, reduce or defer payment of any fee

New Text

15 (a) The annual fee for each class of membership shall be as specified from time to time by Council. Any

change in the dues will be capped at 10%. An increase over 10% will have to be brought forward to the membership for approval

(b) Annual fees shall be payable by January 31st of each year, subject to such discount as Council from time to time may direct.

(c) The application fee shall be established by Council from time to time for each class of membership plus any other fees payable with the application. Any change in the dues will be capped at 10%. An increase over 10% will have to be brought forward to the membership for approval

(d) Special levies, including late payment fees, shall be specified from time to time by Council and become payable according to terms and schedules determined by Council and posted by the Association. Any change in the dues will be capped at 10%. An increase over 10% will have to be brought forward to the membership for approval

(e) At its discretion, and for due and sufficient reason, Council may waive, refund, reduce or defer payment of any fee or levy.
Rationale
The original bylaw presents a listing of fees, dues, etc. many of which have been amended several times since 1995. It does not include the special levy, approved by AGM 2008, for non-reporting in the CPD program.

The suggested text eliminates the fee details and gives Council the authority to set all fees and membership dues.

Adopting the suggested text would not significantly differ from the reality of the current process where an quorum of only 20 members can establish fees and membership dues at AGM.
This authority has been granted to Councils the following Canadian engineering regulatory bodies: BC, AB, MB, NWT/NV, NS, NB, NL.

A NOTE FROM THE REGISTRAR...

Please remember that APEY is a "Self Regulating Profession" under the Engineering Profession Act and that it is the responsibility of all members to make sure that only those properly licensed to practice in the Yukon are doing engineering work here. If you are aware of any infractions, please advise the Registrar by email or phone. Additional information on this is presented on our website.

Registrar's Report

(Dec 2011 to May 2012)

P. Eng. Designation

Darlene Atkinson, P. Eng.

Mohammad Shahrestani, P. Eng.

Andrew Vizer, P. Eng.

Ashley Dent, P. Eng.

Matthew McCartney, P. Eng.

Gordon Stephenson, P. Eng.

Christoffe Desage, P. Eng.

John Robson, P. Eng.

Thomas Fudge, P. Eng.

Dmitry Dumsky, P. Eng.

Matthew Henney, P. Eng.

Arnold Con, P. Eng.

Hui Cen, P. Eng.

Geoffrey Quinsey, P. Eng.

William Moore, P. Eng.

Dennis Long, P. Eng.

Daniel Roth, P. Eng.

Kevin Szelewicki, P. Eng.

Sean Twomey, P. Eng.

Alan Heartfield, P. Eng.

Ronald Byrne, P. Eng.

Jeffery Nyman, P. Eng.

Khusru-U Zaman, P. Eng.

Lindsey Beaton, P. Eng.

Virginia Renty, P. Eng.

Gregory Frank, P. Eng.

Christian Ludwig, P. Eng.

David McClellan, P. Eng.

Stephen Grinnell, P. Eng.

Troy Meyer, P. Eng.

William Mains, P. Eng.

Brian Lange, P. Eng.

Jacques Ouellet, P. Eng.

John Spitzley, P. Eng.

Dennis Inman, P. Eng.

Wenguang Li, P. Eng.

Barry Carlson, P. Eng.

Dale Larison, P. Eng.

Sean Daigle, P. Eng.

Hany Shehata, P. Eng.

Stephanie Whitehead, P. Eng.

Scott MacRae, P. Eng.

Calvin Vanbuskirk, P. Eng.

Larry Betuzzi, P. Eng.

Muhammad Suleman, P. Eng.

Phi Ho, P. Eng.

Suresh Shrestha, P. Eng.

Dixie Simon, P. Eng.

Edward Harrison, P. Eng.

EIT Designation

Ian de la Mare, EIT

Douglas Yokoyama, EIT

Gareth Earl, EIT

Ryan Wilson, EIT

Allen Lee, EIT

Michaela Horner, EIT

Campbell Malloch, EIT

Etienne Giroux, EIT

Permits to Practice

Stantec Architecture Ltd.

Schweitzer Engineering Laboratories

KDR Engineering Consultants Ltd.

Magna IV Engineering

Engineering Technology Inc

Tech-Con Engineering Services

Interralogic, Inc.

Terratech Consulting Ltd.

Acumen Engineering Ltd.

Association of Professional Engineers of Yukon

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