ONE

THE MAGAZINE OF AECON GROUP
SPRING/SUMMER 2014, VOLUME 2, ISSUE 3

IN THIS ISSUE:

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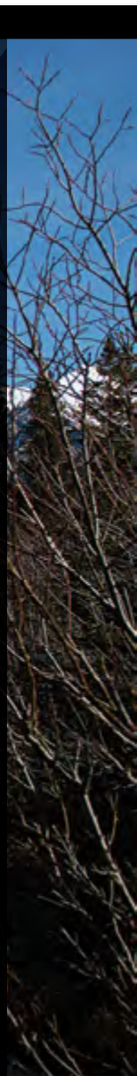

COVER:
PILE DRILLING, NEAR MOOSE JAW, SASKATCHEWAN

LEFT:
PARKWAY WEST NATURAL GAS FACILITY, ONTARIO

ABOVE:
KANANASKIS VALLEY, ALBERTA

BACK COVER:
REACTOR FACE, DARLINGTON, ONTARIO

2014 Best Employers in Canada
By Aon Hewitt

AECON'S VISION:
To be the first company people go to for building things that matter.

ONE is a magazine published by Aecon Group Inc. for its employees and clients. For more information about Aecon, visit our website at **aecon.com.**

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LEADERSHIP MATTERS

ONWARD

By Teri McKibbon
President and Chief Executive Officer

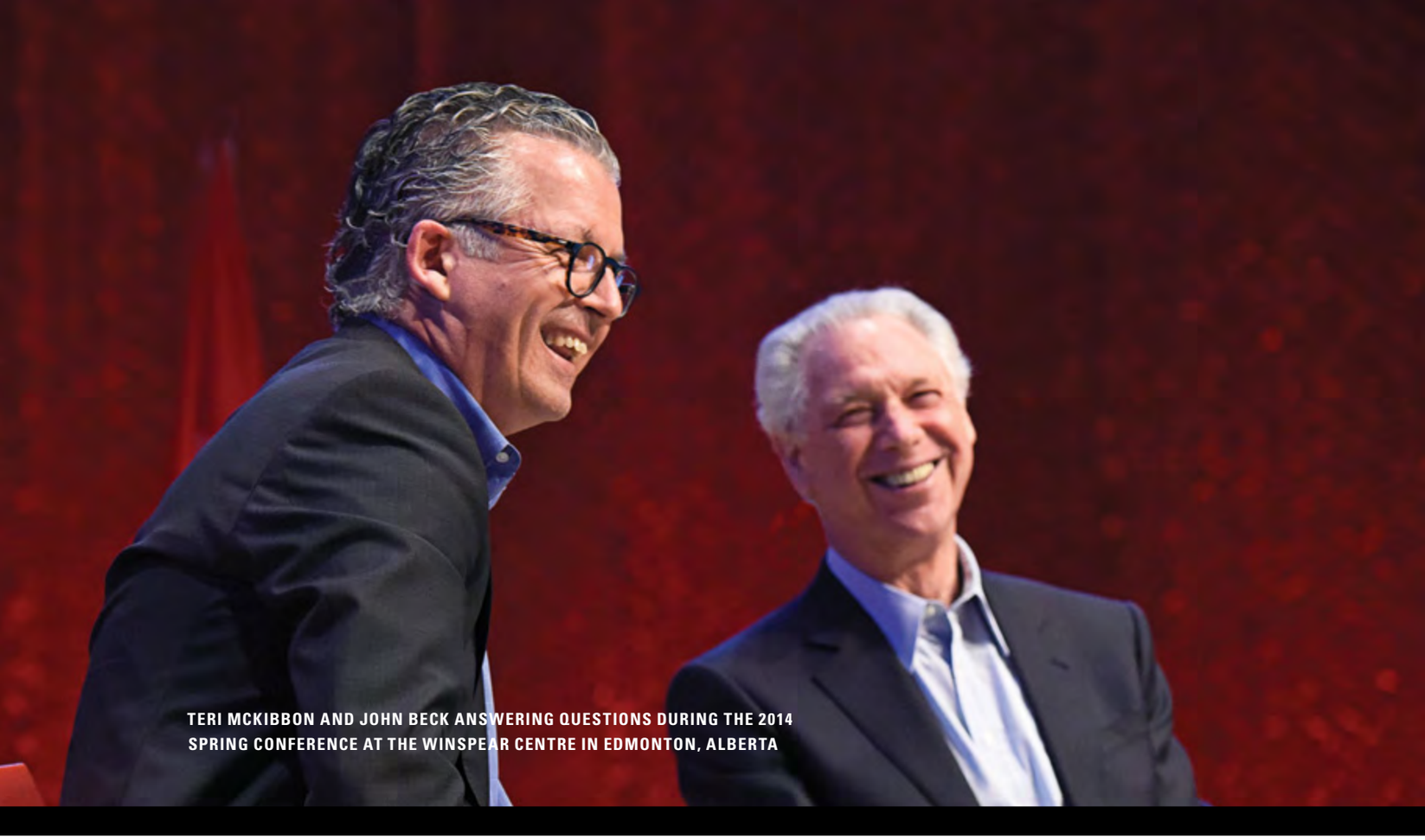
As we are now well into 2014 and our financial and safety performance remains strong, I'm pleased to report all indicators are pointing to a consistent and sustained march toward nine per cent adjusted EBITDA margin target in 2015.

It is this type of sustained performance through our "ONE Aecon" strategy that has attracted the attention of investors and, ultimately, business experts like Jim Collins, whom we were pleased to welcome as our keynote speaker at our recent Aecon Spring Conference. Highly acclaimed in his field, Jim has been a consistent figure on the bestseller lists for the last 20 years. His exhaustive research and analysis of companies across North America have been captured in popular business books such as *Good to Great, Built to Last, How the Mighty Fall* and *Great by Choice*.

Jim does not speak to more than a few businesses a year and, when he does, he speaks only to those select companies he feels are "good" companies on their way to becoming "great" companies. At our Spring Conference, Jim admitted to having researched Aecon for several years and accepted our offer to speak only after he believed we had demonstrated consistent financial performance over a sustained period of time. I believe his presence at our annual conference reflected his endorsement of our "ONE Aecon" strategy and commitment to stretch performance targets. I find Jim to be a real inspiration.

I also find great inspiration in my friend and mentor, John Beck, who transitions to the role of Executive Chairman, Aecon Group Inc. John's presentation at our Spring Conference reflecting upon his 50 years in the industry recounted for us how he took his parents' Prefac business from a small construction company into what is today Aecon Group Inc. John's retrospective, themed "Onward" (fittingly, also the title of our 2013 Aecon Group Inc. Annual Report), perfectly captured the straightforward, head-down, tenacious attitude John has led with throughout his career, and it is the same approach that's responsible for our recent sustained financial success at Aecon.

When we think about moving "onward", we must never forget the past. After all, it is our past that defines Aecon today. Without the breadth and depth of diverse experience brought to the Aecon table by our predecessor companies through many mergers and acquisitions, we would not collectively benefit today from the strength of our



TERI MCKIBBON AND JOHN BECK ANSWERING QUESTIONS DURING THE 2014 SPRING CONFERENCE AT THE WINSPEAR CENTRE IN EDMONTON, ALBERTA

WHEN WE THINK ABOUT MOVING ONWARD, WE MUST NEVER FORGET THE PAST. AFTER ALL, IT IS OUR PAST THAT DEFINES AECON TODAY.

"ONE Aecon" strategy, which really differentiates us from our competition in the marketplace. We must never forget that. Nor must we ever forget our rich and productive history of working in Canada, a history that stretches back to 1877 and the days of early Confederation, just 10 years into the birth of our nation.

With this in mind, we are adding a new column to ONE Magazine this month entitled "Did You Know?" It is a column dedicated to looking back at the rich history of Aecon and some of the really cool things we've done over the years. We kick it off with the CN Tower, perhaps Canada's most iconic landmark. Aecon predecessor company, The Foundation Company, built it in the 1970s and, for many years, it stood as the tallest free-standing structure in the world. It continues to draw millions each year as a popular tourist destination. In this issue we will also look at some of the exciting projects Aecon has under-way, including the Darlington nuclear RFR project, featuring an impressive $35-million mock-up facility that we built to ensure perfect execution when it comes time to work at the nuclear facility's live reactor face.

As we look forward, Aecon has a lot on the go. As noted earlier this year, I have been appointed Aecon's Chief Executive Officer (CEO) as a result of a motion on June 11, 2014, by our Board of Directors. I am deeply humbled and honoured by the trust the Board has invested in me. Following in the footsteps of my friend – and the only CEO Aecon has ever known – will be no small task. I am well aware that I have some pretty big shoes to fill! It has been an honour and a privilege to have served under John Beck's leadership since joining Aecon and to have been mentored by him these last few years. We are grateful, but John will continue to assume the role of Executive Chairman and continue to serve Aecon Group Inc. for many more years to come. As CEO, I will continue to build upon our success as we move onward with the help of our skilled employees.

Teri McKibbon is the President and Chief Executive Officer of Aecon Group Inc.

FACE to FACE

DARLINGTON ENERGY COMPLEX REACTOR VAULT MOCK-UP AND RE-TUBE AND FEEDER REPLACEMENT (RFR)

As famed football coach Vince Lombardi once said, “Practice doesn’t make perfect, only perfect practice makes perfect.” In the select world of nuclear reactors, consider it a mantra, for nothing goes forward unless every minute detail has been perfectly orchestrated and approved. In 2011, Aecon Nuclear reached that level of achievement on a nuclear fuel channel mock-up and replacement project. Now the team’s earlier success has helped pave the way to the big leagues at Ontario Power Generation’s Darlington facility. Here, a massive 480-fuel-channel mock-up and larger overall scope have opened the doors for Aecon to prove just how perfect practice makes you.

THIS MOCK-UP IS AN EXACT REPLICA OF A CANDU NUCLEAR REACTOR UNIT. IT GIVES WORKERS THE ULTIMATE TRAINING TOOL TO HONE THEIR SKILLS BEFORE WE ENTER THE ACTUAL NUCLEAR FACILITY TO REFURBISH OPG'S REAL CANDU UNITS.

—JEFF PALMATEER, CONSTRUCTION MANAGER, AECON NUCLEAR

Three years ago and newly equipped with its well-deserved N-Stamp – the nuclear industry's official mark of approval – Aecon Nuclear set to work building a nine-piece fuel channel mock-up for the world's largest operating nuclear facility, the Bruce Nuclear Generating Station (BNGS). Bruce Power currently operates the BNGS under a lease agreement with Ontario Power Generation (OPG). Over the course of many months of concentrated effort, the project team built and subsequently trained up to 80 workers on the reactor face mock-up before successfully performing two fuel channel replacements the following year at Bruce Nuclear Generating Station in Kincardine, Ontario.

Fast-forward to the present day, and Aecon Nuclear, fuelled by its successes and lessons learned on that project, is now firmly ensconced in a new contract. This time around it's for client Ontario Power Generation and calls for deliverables that far exceed the team's inaugural mock-up and fuel channel replacements scope.

MOCK 2: ONTARIO POWER GENERATION

While it's often said that no two things are ever quite the same, that doesn't hold true for the newly commissioned nuclear reactor vault mock-up located at Darlington Energy Complex (DEC) in Clarington, Ontario. Here, everything must be exactly the same. And it is here that Aecon Nuclear, working with SNC Lavalin Nuclear (SLN) in a joint venture, has ensured it is. Since being awarded this prized EPC contract in 2012, the team has already successfully replicated a massive, fully functioning mock reactor face equipped with a whopping 480 fuel channels, as well as replicated the entire vault in which it's housed, walls and clearances included.

No small feat, the Darlington Energy Complex reactor vault mock-up is a first of its kind. Built in a newly constructed 28,800-square-metre building, the mock-up will now help the team train and prepare workers for a series of upcoming fuel channel and feeder replacements to take place at the real Darlington Nuclear Generating Station (DNGS), located just down the road

5 INDIVIDUAL FEEDER MOCK-UPS

13 FUEL CHANNEL MOCK-UPS

480 PERFECTLY ALIGNED FUEL CHANNEL SITES

28,800 SQUARE-METRE FACILITY

PROJECT FILE

Darlington Energy Complex Reactor Vault Mock-Up and Re-Tube and Feeder Replacement (RFR)

LOCATION: Clarington, Ontario

AECON DIVISION: Aecon Nuclear

CLIENT: Ontario Power Generation (OPG)

JOINT VENTURE: SNC Lavalin Nuclear (SLN) and Aecon

PARTNERS AND KEY SUPPLIERS:
OPG, SNC Lavalin Nuclear, NA Engineering (Kincardine, ON), Laker Energy (Burlington, ON), Handling Specialty (Grimsby, ON), Konecranes (Oakville, ON), BC Instruments (Schomberg, ON), Senior Calorstat (France), LP Customs (Stoney Creek, ON), Wessex (Galt, ON), Cintube (Mississauga, ON)

TIMING:
Reactor Vault Mock-Up: March 1, 2012–March 15, 2014
Tool Performance Testing: May 2014–March 2015
Training: March 2015–October 2016
Darlington Refurbishment Start: Late 2016

TYPE OF CONTRACT: Engineer, Procure, Construct (EPC)

CONTRACT VALUE: $35 million for mock-up component

SUMMARIZED SCOPE:
// Engineer, procure and construct a replicated mock-up of the Darlington Nuclear Generating Station reactor
// Using mock-up to train workforce for the fuel channel and feeder replacements of Units 1 to 4 at Darlington Nuclear Generating Station

NUMBER OF EMPLOYEES: 30 (at peak)

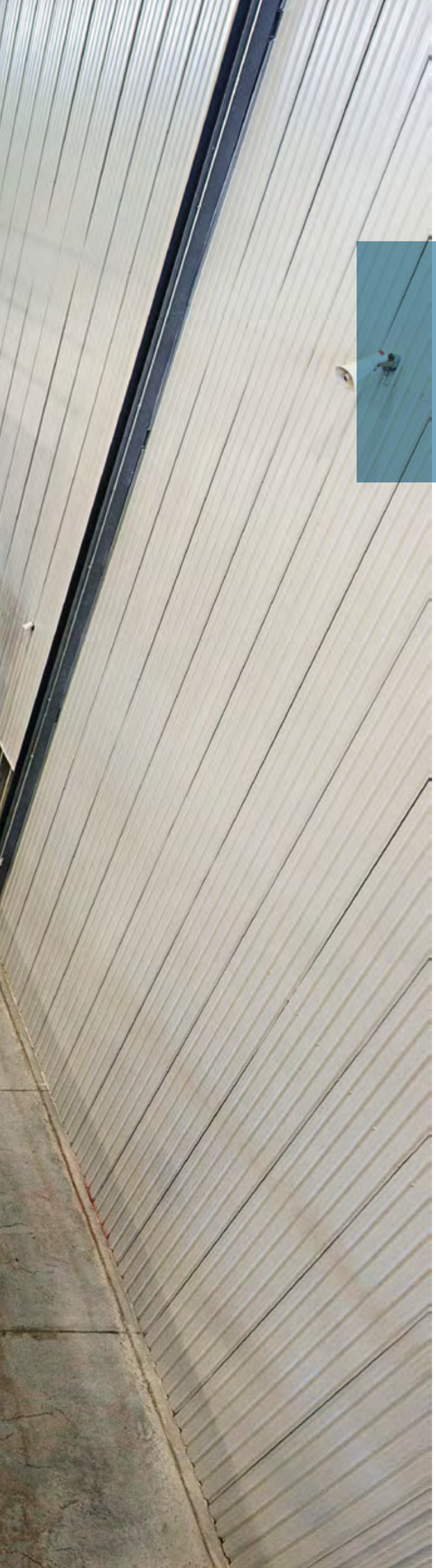
KEY EMPLOYEES:

Nuclear Construction
Robert Frasca, Project Manager
Jeff Palmateer, Construction Manager
Mina Khalil, Project Coordinator
Peter Kempton, Superintendent
Guy Krisza, Superintendent
Cory Wilson, Quality Control Supervisor
Kris Fairservice, Project Planner
Doug Templeman, Safety Advisor
Stacey MacPherson, Site Administration

Nuclear Fabrication
Eric Dyke, Project Manager
Patrick Gregus, Project Coordinator
Andrew Giralt, Project Coordinator

Nuclear Maintenance Services
Dan Olson, Project Manager
Matt Finn, Project Coordinator
Mike Kish, Project Coordinator


15,000 KG



USING THE LATEST IN LASER SCANNING TECHNOLOGY, ALSO KNOWN AS OPTICAL METROLOGY, THE INSIDE OF THE UNIT 2 VAULT WAS SCANNED TO PRODUCE A MODEL THAT WOULD ASSURE ALL DIMENSIONS, INCLUDING STRUCTURAL STEEL AND WALL TOLERANCES, WERE AS ACCURATE AS POSSIBLE.

from the mock facility. At the mid-point of its service life and, given Darlington's role as a key power contributor, a major refurbishment is in order to reach the end of the station's projected service life in 2055. Since fuel channel components are life-limiting factors of the reactor, critical components on the reactor core are on the docket for dismantling and replacing in a manner that calls for precision and targeted expertise.

Enter the SLN-Aecon project team.

Jeff Palmateer, Aecon Nuclear Construction Manager, explains that a significant portion of the larger EPC contract awarded to SLN-Aecon in 2012 has been the commitment to first build this full-scale mock-up in order for the team to subsequently carry out Darlington's fuel channel and feeder replacement (also known as RFR) deliverables.

"This mock-up is an exact replica of a CANDU nuclear reactor unit," he explains of the eight-metre-high reactor face, complete with 480 perfectly aligned fuel channel sites, feeder tubes and fuel channel assemblies." It's been invaluable in terms of planning the operation and perfecting the procedures we need to complete the replacement as efficiently and safely as possible. It gives workers the ultimate training tool to hone their skills before we enter the actual nuclear facility to refurbish OPG's real CANDU units."

The mock-up reached completion and was officially commissioned for service earlier this year (2014) ahead of schedule.

For the SLN-Aecon project team, the next two years are now all about tool performance and testing, as well as extensive workforce training on the mock-up unit in order to be fully prepared for the RFR replacement portion of the contract, scheduled to begin in fall 2016.

FROM START TO FINISH: HOW SLN-AECON BUILT A NUCLEAR REACTOR VAULT MOCK-UP

Replicating an entire facility, right down to the exact bend in every pipe, requires strict attention to detail. With OPG-provided drawings in hand, the SLN-Aecon team set to work digitally reconstructing an exact replica of Darlington's Unit 2 vault in 2012. Using the latest in laser scanning technology, also known as optical metrology, the inside of the Unit 2 vault was scanned to produce a model that would assure all dimensions, including structural steel and wall tolerances, were as accurate as possible. The drawings were then overlaid with the laser-scanned model to look for any discrepancies among the thousands of components.

"As joint venture partners, we felt very comfortable subcontracting the engineering portion of the project to SLN because we knew their nuclear experience wouldn't allow for even the smallest detail to be missed," notes Palmateer. "We also enlisted the support of NA Engineering, from Kincardine, who engineered replica components for us, like the mock-up fuel channel assembly."

Achieving an exact match in the design phase, Aecon submitted its final design for review to OPG in mid-December 2012. After receiving approval, Aecon set forth and mobilized on site in May 2013 – roughly nine weeks ahead of schedule – and began standing steel in June.

In order to move forward with recreating the reactor vault, many of the components first needed to be supplied or constructed by key vendors, some of which specialize in nuclear projects. The mock-up called for all relevant structural steel, vault cranes (provided by Konecranes Canada Inc. of Oakville), a fuelling-machine bridge (provided by Handling Specialty of Grimsby) and specialized arrays needed for feeder and fuel channel training, as well as tool proving. Cintube Limited of Mississauga bent all of the feeder tubes to precisely connect to the end fittings on the reactor face and the feeder headers, while maintaining tight tolerances.

Mock-up components requiring fabrication, such as the reactor face, mezzanines and feeder hubs, were built and modularized by Aecon's fabrication facility in Cambridge and brought on site for placement within the mock-up. The Aecon fab shop also manufactured framework, built support stands and railings, and provided five individual feeder mock-ups and 13 fuel channel mock-ups to be used for training, testing and troubleshooting purposes.

"This project implemented all of the lessons learned by OPG and the joint venture from previous refurbishment projects. Perfect coordination of all activities associated with the design, fabrication and installation phases of the mock-up were a key success factor for the project," notes Palmateer. "I'm proud to say we achieved most major milestones despite some engineering challenges and a few components arriving out of sequence. OPG's vision of this full-scale mock-up project – and our timely completion of it – now sets the stage for the next step, which is focused on training the reactor face crews."

Of course the main purpose of building a full-scale mock-up of this magnitude is to replicate the exact conditions the trained workforce will encounter when it comes time to perform at the live reactor face. Each of the workers using the mock-up will get a full taste of the

A PROJECT LIKE THIS COULD DEFINITELY SET AN INDUSTRY STANDARD FOR NUCLEAR WORK GOING FORWARD.

–JEFF PALMATEER, CONSTRUCTION MANAGER, AECON NUCLEAR

clearances and interferences found inside the Darlington Nuclear Generating Station vault as they try to perform tasks wearing full protective gear while hooked to a supply of oxygen.

Palmateer says providing an authentic experience also gives workers – many of whom may not have been in a reactor before – an opportunity to familiarize themselves with the tools required to complete the replacement. "Some of these tools are more than six metres long and extremely heavy, so you can just imagine how difficult it would be trying to complete a task without prior knowledge of the space."

Workers will receive training on the mock-up beginning in March 2015. Two crews will "leapfrog" as they alternate between training for a crew-specific task on the mock-up and actually performing it on site at the DNGS. That is to say, once a crew's task is complete on site, they will return to the mock-up for further training as the other crew is swapped in.

During their training, workers will be guided through the process and monitored by operators in a replica of the Re-tube Control Centre (RCC), a room built to simulate the base of operations where remote-controlled tools are used when removing reactor components. The RCC will feature all the required technology to monitor and control the tools during training.

Since reaching completion of the mock-up earlier this year, there's been no shortage of daily visitors wishing to take an in-depth tour of this one-of-a-kind facility.

"It really is a very high-profile project that's garnering lots of attention," notes Palmateer, rhyming off some of the notable visitors, who range from OPG senior executives and board members to media, government officials and industry suppliers. "A project like this could definitely set an industry standard for nuclear work going forward. Aecon Nuclear really has gone to great lengths to reproduce the level of detailed work required for this mock-up to ensure it was a high-fidelity facility."

STAND-ALONE MOCK-UP SEGMENTS, STATIONED OUTSIDE OF THE VAULT MOCK-UP, GIVE EASY ACCESS TO INTEGRAL COMPONENTS FOR EASE OF TRAINING

THE RE-TUBE TOOLING PLATFORM (RTP) IS USED TO PRECISELY POSITION SPECIALLY DESIGNED TOOLS ON THE REACTOR FACE

SETTING THE STANDARD

Having a mock-up of this size comes with serious benefits. The reality of working in a training area that doesn't actually house any nuclear material offers the SLN-Aecon joint venture the unique advantage of building expertise. Training workers how to properly complete inspections or how to efficiently change the feeder pipes on the mock-up without the radiation concerns is invaluable, not unlike the intense training Canadian astronaut Colonel Chris Hadfield went through in preparation for his space walk in the vacuum of space. Having the opportunity to work through the logistics of an issue outside the plant allows workers to identify and address a potentially threatening situation in a non-radioactive mock-up environment.

"Moving components and tools around in this type of environment inside the station always poses a challenge," notes Palmateer. "With the mock-up, we can recreate a potential roadblock and problem-solve it in the mock-up to mitigate any delays in the reactor vault on site. It also gives us a chance to prove out innovative solutions for increased time savings."

Strategically positioning workers inside the reactor vault, and instilling in them the importance of taking advantage of the many shielding schemes and personal protective equipment provided during reactor face work, can also drastically lower radiation doses. Training on the mock-up affords the joint venture an opportunity to enhance a worker's on-site orientation before going into the reactor. This principle is commonly referred to as ALARA (as low as reasonably achievable). Standing a few inches to the side could mean appreciably decreasing the total dose, a key tool toward improved worker safety.

One of the biggest benefits comes in the form of time and budget reduction. When an estimate is submitted to the client, it's a rough estimate of the time and money required to complete a contract. Performing practice runs on the mock-up gives a more accurate estimate of what to expect when performing the real thing.

TESTS, TESTS AND MORE TESTS

Tool performance testing is a critically important success factor for the RFR project. Specialty tools designed to perform specific tasks in the replacement process need to be thoroughly tested before they're deemed fit for service. Combining lessons learned from previous projects with feedback from the workers, the team will customize tools and improve where necessary during the year-long tool performance testing phase.

"If a tool were to break-down in the past, a critical path delay would occur, which is difficult to recover from when performing refurbishment work," notes Palmateer. "With this facility, we have the unique opportunity to rigorously test and improve the tools to make sure they're reliable before we're even conducting the actual replacement. It's really a hands-on approach that will enable workers to familiarize themselves with the tools and suggest improvements. This, in turn, will increase the effectiveness of the tooling and lead to or enhance worker engagement and buy-in."

In early May 2014, the joint venture will have begun testing the tools and refining the procedures. With an entire mock-up at the ready, tool performance testing will be more in-depth than ever before thanks to the unlimited potential in reactor face configurations and problem-solving possibilities. It also marks the first time the tool proving process will be conducted on such a detailed level.

"Each tool must be proven five times before it's cleared for use. We plan to run the tools through a timed exercise to ensure each tool performs as required as part of our tool performance guarantee. The data we gain from these exercises will form the basis of our refurbishment schedule for its duration."

FIVE INDIVIDUAL FEEDER MOCK-UPS WERE FABRICATED TO ADD AUTHENTICITY TO THE TRAINING

THE BIG DAY

All of the extensive tool testing and training will finally pay off in October 2016 when, according to plan, SLN-Aecon will begin the refurbishment phase of the first reactor at Darlington.

"The amount of precision and care required to perform an operation of this magnitude is immense," says Palmateer. "People and businesses rely on nuclear power, so we need to perform the replacement as efficiently and safely as possible to minimize the downtime. It's a big responsibility for us, but we're confident in our ability to deliver safely and on time."

The first phase in the reactor face replacement is the removal of target 30-year-old components. Any required temporary and permanent modifications will be made inside each of the reactor units based on any interferences, such as staircases, that may prevent work from being efficiently completed. Shielding bulkheads will be installed to seal off the two fuelling ducts on either side of the reactor face and to protect workers against radiation exposure. There will be a series of fuel bundle removal and drain/dry exercises where heavy water will be drained from the feeder pipes that run into the fuel channels. A platform, called the Feeder Platform, will be installed to help remove the feeder tubes. The feeder pipes will be cut into small, manageable pieces and lowered to the floor where they will be cut up even further for transport.

Once the feeder tubes have been removed using a large, elevating platform called the Re-tube Tooling Platform (RTP), the fuel channels will be cut in specific locations so the components can be pulled out and placed inside large shielded flasks, which help shield workers from the radioactive material. One by one and in sequential order, all 480 channels will be emptied of their components as the work progresses up the reactor face. After the removal, a series of inspections will take place in the calandria, a large cylindrical metal drum that normally contains the heavy water and houses the 480 fuel channels running through it. Robotic cameras will be used to inspect the various components and key areas to confirm all of the components are fit for continued service.

With the inspection complete, the installation of the new reactor components can finally begin. Beginning at the top of the reactor face, new calandria tubes will be inserted into position and rolled into the calandria tube sheet. In a clean room, end-fitting subassemblies are pre-rolled (one pressure tube rolled into an end-fitting) and transported to the vault, where they are installed into the calandria tube. The second end-fitting is then mated to the pressure tube, and final sealing of the fuel channel is completed. Workers will once again strategically work their way through each fuel channel, repeating the process 480 times per reactor unit.

With the channel components replaced, new feeder tubes will systematically be woven into the reactor face, welded to the feeder headers and bolted to the end-fittings.

Palmateer notes the tubes need to be placed and welded in sequence to avoid creating unreachable areas in the tight space. "There's literally no margin for error. Everything needs to go according to plan. Looking at this stage of the replacement, you can understand why the mock-up is such an important tool."

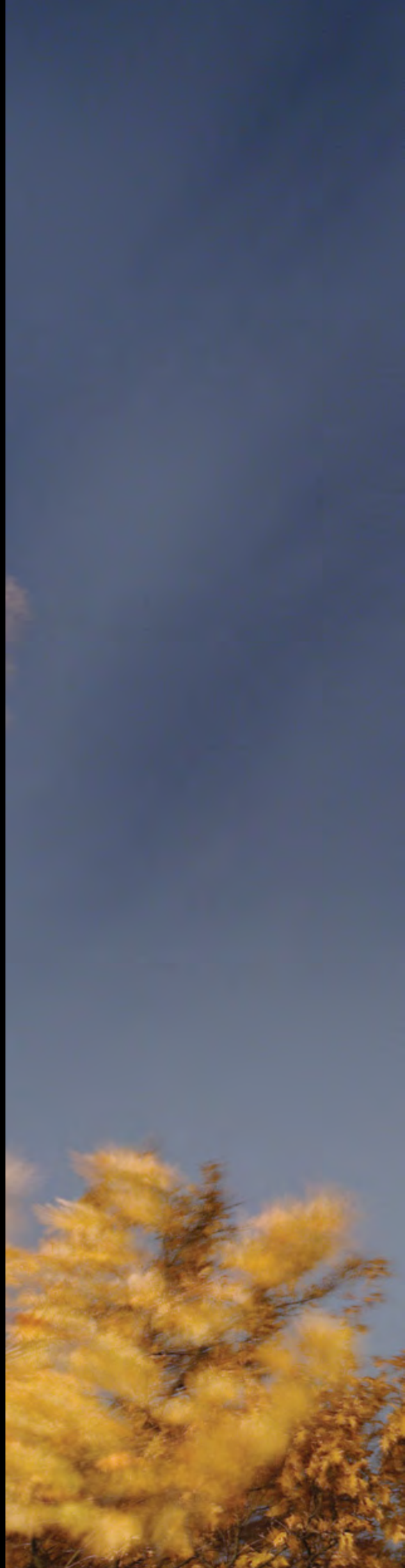
Once the reactor core and face are completely replaced and refuelled, heavy water will be reintroduced into the moderator and primary heat transport system. With everything back in order, the reactor will be on its way to return to service and will continue to provide the residents of Ontario with safe, clean and reliable electricity.

The fuel channel and feeder tube replacement portion of the SLN-Aecon contract is due to wrap up in 2023. To date, the team is well aligned with the overall project schedule and anticipates successfully delivering on its commitment. With far too much work still ahead to rest on its laurels, the team can nevertheless reflect with pride on the work accomplished to date, namely the exacting replication of a nuclear reactor face mock-up that has impressed both the general public and the nuclear industry at large.

DID YOU KNOW?

CN TOWER

The CN Tower has been a beacon on Toronto's cityscape since being crowned the world's tallest free-standing building in 1976. Even on days with low visibility, you simply can't miss it. Soaring 553.33 metres into the sky, the CN Tower remains one of Canada's most recognizable and celebrated structural icons, with an estimated two million visitors each year. But did you know that Aecon – through one of its predecessor companies – played a pivotal role in this record-breaking creation?



FACTS AT A GLANCE

CLIENT:
Canadian National (CN) Tower Limited

COST:
$63 million in 1973 (about $332 million in 2014 dollars)

HEIGHT: 553.33 metres

WEIGHT: 117,910 tonnes

STAIRS: 1,776

CONSTRUCTION TIME FRAME:
February 6, 1973, to April 2, 1975

WORKERS: 1,537

OPENING CEREMONY: October 1, 1976

ANNUAL VISITORS:
Two million people (approximately)

AUGUST 16, 1973 – EMERGING FROM THE FOUNDATION

AUGUST 5, 1974 – STRETCHING TOWARD THE SKYLINE

APRIL 21, 1975 – COMPLETED STRUCTURE

The 1960s ushered in an unprecedented construction boom in the city of Toronto. Over the course of just a few years, the waterfront skyline of Ontario's capital city would be transformed from a series of low-slung buildings into a cluster of corporate skyscrapers, marking the city's desire to increase its North American profile. And while the aesthetic was energizing, form had definitely outweighed function as serious communications issues began to emerge. Existing transmission towers were no longer tall enough to send clear broadcast signals over the top of the new skyscrapers, choosing to instead bounce off of the myriad of buildings without ever reaching their destination. City residents and businesses became increasingly frustrated as decision-makers contemplated how best to address the communications nightmare.

Enter the early 1970s and (then) Crown corporation Canadian National Railway Company (CN) to the rescue. CN was focused on providing the city the necessary solution for its communications issues while providing the country with a national icon that would herald the strength of Canadian industry to a global audience. Although a precise date does not exist on public record, CN awarded a major contract to The Foundation Company for the construction and construction management of the landmark structure. The Foundation Company is one of Aecon's predecessor companies, having been acquired by Armbro Construction through its BFC Civil acquisition of 1999.

On February 6, 1973, crews began removing more than 56 tonnes of earth and shale in preparation for the tower's foundation. Once the site was ready, the concrete pour commenced to create the structure's base. Coupled with CANRON Construction's subcontracted steel work, the CN Tower now had proverbial legs to stand on. Work continued on the tower's 335-metre shaft through continuous concrete pours using an innovative slip-forming construction method brought to Canada by Elgin Armstrong of Armbro Construction in 1971. The slip form moved up, gradually decreasing in size, with hydraulic pressure supported by a ring of climbing jacks until it passed the 15-metre mark. From there, three buckets mounted on the slip-forming deck took over to lift concrete up through the inside of the shaft around the clock, resulting in a growth rate of six metres per day.

While construction methodology was working in The Foundation Company's favour, Canada's notorious winter climate was not. To ward off its negative impact, an innovative insulated skirting was devised to shield the slip-formed concrete from exposure to the blistering cold winter air and subsequent cracking. During the long winter months, slip- forming work was limited to four metres per day due to the frigid temperatures.

***OLGA* AIRLIFTING THE FINAL ANTENNA PIECES**

LCPL GEORGE PATRICK JULIEN
LCPL Julien was a key CANRON employee instrumental in topping the CN Tower and a Canadian Army soldier, who was awarded the Military Medal for his actions at Hill 187 during the Korean War in 1953. The Military Medal is an official decoration awarded to a soldier who exemplifies bravery in battle on land. Roughly 50 years later, during the war in Afghanistan, a camp serving as the main base for the Canadian contingent of the International Security Assistance Force (ISAF) was named Camp Julien in his honour. *Photo courtesy of Library and Archives Canada – RG24, vol.18350, War Diary 3rd Battalion RCR Appendix 12. Date 1 May 1953-31 May 1953*

ON APRIL 2, 1975, THE COMMUNICATION FRUSTRATIONS OF AN ENTIRE CITY WERE SOON TO BECOME A THING OF THE PAST.

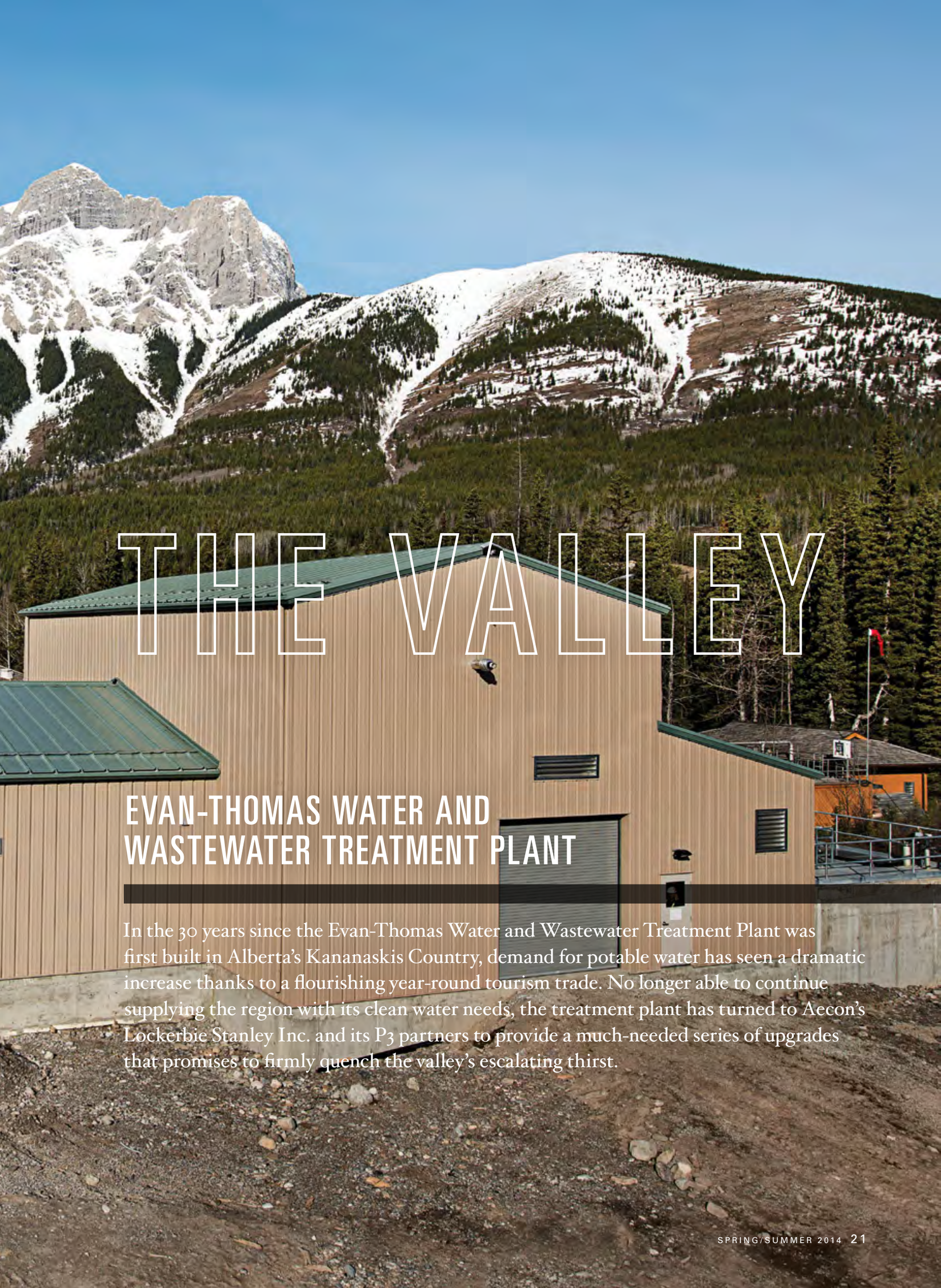
On average, some 7,650 cubic metres of concrete were formed each month, shrinking to 1,530 cubic metres a month as the tower stretched skyward. Heating equipment was also installed to maintain concrete specifications and to keep the overall working conditions tolerable.

After eight months, the concrete structure towered taller than any other structure in Toronto and, by February 1974, the CN Tower officially became the tallest structure in Canada. The following August, construction began on the seven-storey tower sphere that would eventually house the observation decks and revolving restaurant.

An orange Russian Sikorsky helicopter named *Olga* lifted 44 pieces of antenna into place atop the CN Tower as it inched toward completion. One of the men receiving the final piece was Lance Corporal George Patrick Julien, a subcontractor with CANRON Construction (see above caption). As piece number 44 was slowly lowered into the crew's hands and securely bolted down on April 2, 1975, the communication frustrations of an entire city were soon to become a thing of the past. Key microwave receptors installed on the tower at the 338-metre mark coupled with the airlifted antenna would collectively provide the clearest communications reception North America had ever experienced to date.

The CN Tower held the title of world's tallest building and free-standing structure for 34 years before being dethroned in 2010 by Dubai's current title holder, Khalifa Tower (829.8 metres). Months after Dubai's skyscraper was completed, the CN Tower was pushed into third place by Canton Tower (600 metres) located in Guangdong, China. And while it still retains its tallest free-standing building status for the Western Hemisphere and remains one of the Seven Wonders of the Modern World (as named by the American Society of Civil Engineers), the CN Tower will forever be known as the iconic landmark that put Canada on the global radar.

REVITALIZING



THE VALLEY

EVAN-THOMAS WATER AND WASTEWATER TREATMENT PLANT

In the 30 years since the Evan-Thomas Water and Wastewater Treatment Plant was first built in Alberta's Kananaskis Country, demand for potable water has seen a dramatic increase thanks to a flourishing year-round tourism trade. No longer able to continue supplying the region with its clean water needs, the treatment plant has turned to Aecon's Lockerbie Stanley Inc. and its P3 partners to provide a much-needed series of upgrades that promises to firmly quench the valley's escalating thirst.

Along the foothills and front ranges of the Albertan portion of the Canadian Rockies lies a picturesque valley befitting a postcard. Surrounded by majestic mountains and forests, Kananaskis Country, just west of Calgary, buzzes with year-round recreational activities as a leading tourist destination. Host to the 1988 Calgary Winter Olympics' alpine skiing events and the global G8 Summit in 2002, the valley has slowly outgrown many of the critical amenities it has relied on for the past three decades, the most fundamental of which is its potable water supply.

Despite only 300 people calling the valley home, clean water is in heavy demand by businesses such as the Delta Hotel and the Nakiska Ski Resort as they tirelessly cater to the thousands of travellers who annually flock to this popular destination. It was time for a series of significant upgrades to the valley's sole provider, the Evan-Thomas Water and Wastewater Treatment Plant. The required scope would involve bolstering the plant's capacity, enhancing fire protection services and updating technology originally installed in the early 1980s.

In a 2011 statement announcing the multi-million-dollar project, then Minister of Alberta Infrastructure Ray Danyluk noted the region's exponential growth since the plant was first built, as well as the urgency of seeking a solution. "It's time to move into the future," he noted, "taking advantage of today's innovations and technologies to ensure we can continue to meet the increasing demand for a safe and stable supply of water in the Kananaskis region."

IT'S TIME TO MOVE INTO THE FUTURE, TAKING ADVANTAGE OF TODAY'S INNOVATIONS AND TECHNOLOGIES TO ENSURE WE CAN CONTINUE TO MEET THE INCREASING DEMAND FOR A SAFE AND STABLE SUPPLY OF WATER IN THE KANANASKIS REGION.

—RAY DANYLUK, MINISTER OF ALBERTA INFRASTRUCTURE

PROJECT FILE

Evan-Thomas Water and Wastewater Treatment Plant Upgrade

CLIENT: Alberta Infrastructure

LOCATION: Kananaskis Country, Alberta

TIMING: November 2012–Summer 2014

P3 GROUP: EPCOR, Stantec and Aecon Infrastructure (Lockerbie Stanley Inc.)

TYPE OF CONTRACT: Public-Private Partnership (P3)

AECON CONTRACT VALUE: $32 million

SUMMARIZED SCOPE:
// 12 kilometres of distribution pipeline
// 2 x 2,800-cubic-metre reservoirs
// Potable water and wastewater treatment plant upgrades
// New membrane and administration building
// Potable water treatment building

AECON EMPLOYEES ON SITE: 100 (at peak)

KEY EMPLOYEES:
Glen Sinclair, Vice President, Lockerbie Stanley Inc.
Bill Morrow, Senior Superintendent
Jamie Abernethy, Superintendent
Mike Alaric, Project Manager
Gary Germscheid, Construction Manager

5 WATER CROSSINGS

17 ROAD CROSSINGS

9 PARKING LOT CROSSINGS

12 WALKING PATHS AND TRAILS

8,000 CUBIC METRES OF EARTH REMOVED FOR NEW RESERVOIR

12 KILOMETRES OF DISTRIBUTION PIPING REPLACED

THE MOUNTAINS ARE BEAUTIFUL BUT THEY CAN GIVE YOU A RUN FOR YOUR MONEY WHEN YOU'RE DEALING WITH HILLS PITCHED AT 40 DEGREES AND COMPOSED LARGELY OF COBBLE AND UNPREDICTABLE VEINS OF BEDROCK. ADD TO THAT LANDSCAPE PRESERVATION, AND MANOEUVRING EQUIPMENT IN RESTRICTIVE ENVIRONMENTS BECOMES A HUGE CHALLENGE.

–JAMIE ABERNETHY, SUPERINTENDENT, LOCKERBIE STANLEY

In cooperation with P3 Canada, Alberta Infrastructure issued a request for proposal (RFP) to identify capable partners who could design, build, finance, operate and maintain (DBFOM) the necessary upgrades. It marked the first time a facility of its kind was tendered under a P3 framework. After a rigorous evaluation process, the $59.6 million contract was awarded in October 2012 to the triumvirate of EPCOR Water Services Inc., Stantec Consulting Ltd. and Aecon's Lockerbie Stanley Inc. The trio shares more than 15 years of collaborative work experience on water and wastewater treatment plants across Canada. EPCOR would take the lead on the project's financing and operational needs; Stantec was to provide design and engineering services; and Aecon's Lockerbie Stanley Inc. was in charge of all on-site construction.

Subject to entering into the financing agreement with the Government of Alberta, the Government of Canada contributed up to $9.95 million through the P3 Canada Fund toward construction of the plant.

"P3s are increasingly becoming an innovative solution to delivering the public infrastructure Canadians need in a way that represents the best value for taxpayers," says Mark Rivett, Executive Vice President, Aecon Infrastructure. "This partnership has the ability to deliver a long-term, sustainable approach to water and wastewater management in the Evan-Thomas Provincial Recreation Area that's safe and environmentally sustainable to all surrounding communities and will maintain the pristine nature of Kananaskis Country."

Fast-forward to today and on-site work is well under way. Expectations are high that upgrades specific to the plant's capacity constraints will be completed by mid-2014, bringing the 30-year-old plant into environmental compliance status through improved services capable of supplying and safely treating water until 2029. The new plant will implement the strictest approval requirements in the province, fundamentally leading to healthier rivers and aquatic life in the area. The treatment solutions that will be used in the plant will also reduce potentially harmful nutrients entering the river. This, in turn, will improve the overall conditions for aquatic life found in both the Kananaskis and Bow Rivers.

KEEPING THE FLOW

An integral part of the Evan-Thomas Water Treatment project called for the replacement of 12 kilometres of distribution piping. Three distinct segments make up the entirety of the pipeline, which is fed directly by the plant. Each segment consists of pipes ranging from four to 20 inches in diameter, which are fused together directly on site. They transport water to the Mount Kidd Campground, Kananaskis Village and the Nakiska Ski Resort, among other valley stakeholders.

In completing the work, Lockerbie Stanley had to contend with no fewer than five water crossings (one of which was completed twice due to the catastrophic floods in Alberta in June 2013), 17 road crossings, nine parking lots and 12 walking paths and trails. To make it even more interesting, five of the 12 kilometres required work directly under 137-kilovolt power lines.

The first segment to undergo upgrading was the 3.6-kilometre-long Mount Kidd Campground pipeline, located south of the plant beyond the Kananaskis Country Golf Course. Ditches were dug and the piping installed piece

by piece as the team made its way from Mount Kidd back to the plant. Not too long after work commenced, crews began to discover challenges sporadically buried along their pipeline path.

"For the 1988 Calgary Winter Olympics and again for the G8 Summit in 2002, utility lines were installed to accommodate the sudden influx of visitors to the village," notes Jamie Abernethy, Lockerbie Stanley Superintendent. "When the Kananaskis Valley normalized to pre-Olympic and G8 activities, the excess utility lines were simply abandoned in place. The problem is nobody recorded where the lines are located, so without any records or drawings, it was incredibly challenging to navigate through the terrain to install the new pipeline." Despite the unexpected trials and tribulations, the team pushed forward, taking the time to relocate anything they came across while installing every inch of pipe.

Additional challenges, however, were waiting on the second (and longest) pipeline segment, which runs north to the Nakiska Ski Resort.

"One of our first hurdles with the initial 12 kilometres of pipeline was obtaining all of the required regulatory approvals to work in and around all the creeks and rivers in Kananaskis," explains Abernethy. "Since each segment ran over at least one river or creek along the way, we had to work within the environmental regulations while still competing with very uncooperative terrain during winter months.

"The mountains are beautiful but they can give you a run for your money when you're dealing with hills pitched at 40 degrees and composed largely of cobble and unpredictable veins of bedrock," Abernethy continues. "Add to that landscape preservation, and manoeuvring equipment in restrictive environments becomes a huge challenge."

The 4.6-kilometre pipeline supplying potable water to the Nakiska Ski Resort actually required two crossings of Ribbon Creek and the Kananaskis River before climbing its way up the mountain to reach the resort.

By June 2013, the bulk of the Nakiska pipeline had been installed. Slightly west of the treatment plant, two crews had already made headway on upgrades to the pipeline servicing Kananaskis Village. One crew took on all the open excavation work as the other performed the drilling and boring. Nearly three kilometres of piping was needed to arch its way from the plant into the village, with a comparatively short offshoot making its way to the location of the new Kananaskis reservoir.

IN RESERVE

To store the water that will eventually supply Kananaskis Village and the Nakiska Ski Resort, two new reservoirs, each the approximate size of an Olympic-sized swimming pool, were installed over the summer of 2013 adjacent to the existing reservoir locations.

The Kananaskis reservoir, located just outside of the village, was built to work in tandem with an existing reservoir. As outlined in the contract, the new reservoir had to be built underground to maintain the landscape's profile. Some 8,000 cubic metres of earth were removed in the first stages of building the new 2,800-cubic-metre reservoir, which also required 900 metres of concrete to form what is essentially a large square pit. A divider wall was

installed in the middle of the new reservoir to create separate cells that can better facilitate required maintenance needs while ensuring the facility remains operational.

The new Nakiska reservoir was built in similar fashion but is different in purpose. Since potable water is not used in great quantity at the ski resort, the pre-existing 600-cubic-metre reservoir will continue to house the potable water pumped in from Evan-Thomas. The newly built 2,900-cubic-metre Nakiska reservoir will be used strictly to hold non-potable fire water for the valley. To prevent water from going unused or being wasted, the project team has linked the new reservoir to catch any overflow coming from the potable reservoir. The new reservoir is expected to release 250 litres of water per second when in use.

KEEPING IT FRESH

As the pipelines made their way to the very heart of the project, Lockerbie Stanley was hard at work decommissioning the Evan-Thomas Water and Wastewater Treatment Plant. An existing on-site lagoon also needed to be decommissioned to make room for two new buildings, a new membrane building (MBR), with components supplied by GE Power and Water, and an attached administration building.

With the lagoon taken care of, excavation of the site became the main focus in January 2013 and concrete began pouring for the MBR and administration buildings. Soon after the concrete structures were in place, the team began outfitting the two buildings in March 2013, and installed piping, pumps and membranes, the latter of which filters unwanted bacteria and particles from the water.

Not too far from the two new buildings is the site for the new water treatment plant, which will replace the existing outdated on-site system. The new building has a small footprint of only 8 x 16 metres long but contains all of the necessary components to ensure the valley receives the cleanest possible water. The raw water pumphouses that feed the plant were also renovated with new pumps, process piping and essential instruments.

At the same time, the team was retrofitting components in the headworks building, which had been in operation since the 1980s. Even though much of the building was scheduled for decommissioning, a new system was installed to allow raw sewage to continue flowing through the headworks until the plant conversion was completed. The Lockerbie Stanley project team performed all of the required electrical and mechanical scope in the building. Fabrication of the stainless steel piping was subcontracted to Benco. It was completed off site in Aecon's Calgary fabrication shop and subsequently shipped to the Kananaskis site.

The headwork's structure and several clarifiers within it were the only components relatively untouched during the decommissioning. Abernethy says reusing some of the infrastructure already in place has been a key money-saving tool for the project. The primary clarifiers have been retrofitted to act as emergency storage tanks that can hold a half a day's worth of sewage in the event of a major plant failure, while the secondary clarifiers were converted to holding tanks for the screened raw sewage.

THE KANANASKIS COUNTRY GOLF COURSE OVERRUN BY THE FLOOD
(PHOTOGRAPH COURTESY OF GAVIN YOUNG, CALGARY HERALD)

CATASTROPHE AND COMMUNITY

On June 20, 2013, Alberta was hit by the worst flood in the history of the province. As water levels dangerously rose and one community after another was placed under evacuation orders, the Canadian Armed Forces was deployed to assist in emergency measures. When all was said and done, an estimated $5 billion of insurable damages made this the costliest disaster in Canadian history.

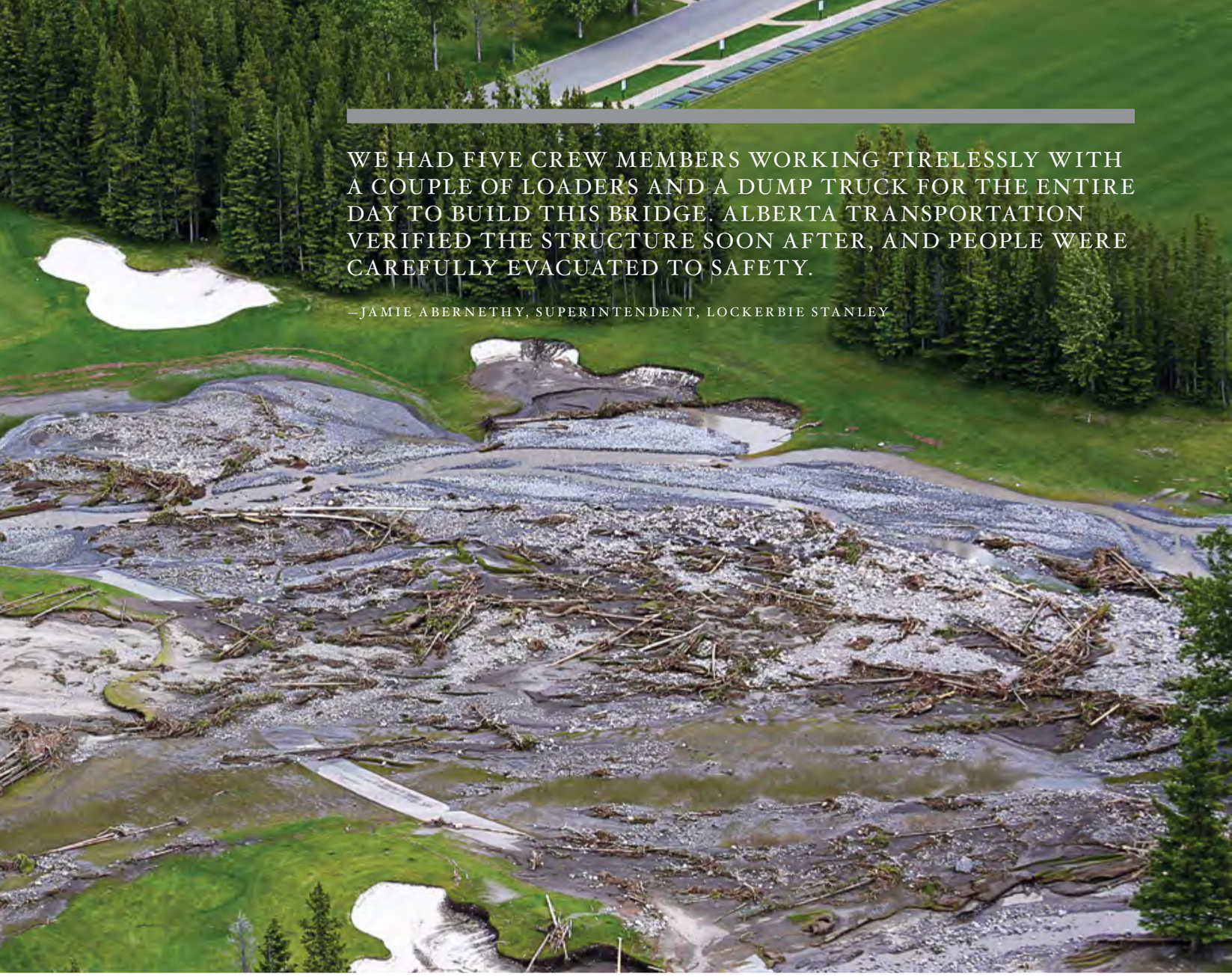
As was the case for so many in the region, the Evan-Thomas Water and Wastewater Treatment Plant was not left unscathed. Diverted water from the Evan-Thomas Creek and Kananaskis River rushed through the job sites and flooded the entire area. The open excavation area was filled with five to six feet of water, which then required pumping out and diversion in order for work to proceed. Stantec was brought in to perform assessments to ensure none of the structural integrity and mechanical components were compromised.

Further complicating matters, a portion of the 12-kilometre pipeline was washed away, setting the project team back several weeks. To illustrate the extent of the devastation, Abernethy recounts how a stretch of river that typically measured 10-metres wide had expanded to about 90 metres of rushing water and debris. It took crews two and half weeks to rebuild the broken pipeline. The damage caused by the flood, however, didn't stop there.

"One day, we're running around the submerged job sites shutting all the electrical off and the next we're hopping into loaders clearing landslides along Highway 40 and helping rescue people," recalls Abernethy. "Most of us were trapped at the Delta Hotel in Kananaskis Village because the bridge leading in had eroded and washed away. We had the equipment and bodies, so we went out there and rebuilt the bridge to evacuate hundreds of people to safety."

Rebuilding the bridge would require the right materials and some ingenuity. Fortunately, both were on hand. A mixture of materials was employed to build a temporary bridge structure, filling the 10-foot gap that had been swept away.

"We met with Ensign Energy Services Inc., who were in the village the night of the flood, and devised a plan," explains



WE HAD FIVE CREW MEMBERS WORKING TIRELESSLY WITH A COUPLE OF LOADERS AND A DUMP TRUCK FOR THE ENTIRE DAY TO BUILD THIS BRIDGE. ALBERTA TRANSPORTATION VERIFIED THE STRUCTURE SOON AFTER, AND PEOPLE WERE CAREFULLY EVACUATED TO SAFETY.

—JAMIE ABERNETHY, SUPERINTENDENT, LOCKERBIE STANLEY

Abernethy. "If Ensign was able to conjure up some rig mats, we felt it was possible to temporarily rebuild the eroded portion of the bridge to provide a safe exit from the Delta Hotel. Luckily, they had rig mats that we used to lay over the gravel to create a solid surface to drive over. We had five crew members working tirelessly with a couple of loaders and a dump truck for the entire day to build this bridge. Alberta Transportation verified the structure soon after, and people were carefully evacuated to safety."

A few kilometres away, the flooding at Mount Kidd Campground was so severe the army flew in a helicopter to evacuate those stranded by the flood.

Several days after it began, the flood had run its course. The Lockerbie Stanley project team returned to the job site and surveyed the damage. A significant portion of the infrastructure had been compromised and was in need of repair. Damaged roads were rebuilt, and excavation sites were drained and cleared of debris.

"Surprisingly, our job sites were pretty good, structurally, once we cleaned it up and regained access. The pipeline was definitely the worst of it, but we essentially picked up where we left off prior to the flood, and it was business as usual."

In addition to the construction assistance Aecon's project teams offered up during the Calgary flood, Aecon employees proudly raised thousands of dollars in donations for the Canadian Red Cross Alberta Floods Fund.

Fully recovered from the flood and with only a few months left to go until the plant becomes operational, the project team is in the final stages of putting the finishing touches on the headworks building and Kananaskis reservoirs. Commissioning and testing of the new treatment plant are well under way.

Once completed, the newly upgraded facility will be able to capably supply the Kananaskis Recreational District and its many popular destination areas with an ample supply of safe, clean water and advanced water treatment processing.

MEET:

PEOPLE MATTER

MELISSA MAKI

SURVEY MANAGER
AECON CONSTRUCTION AND MATERIALS LIMITED (ACML)

How many Aecon employees can say they hold a one-of-a-kind job within our company? The numbers are likely few, but Melissa Maki can confidently call herself one of them. Her unique skill set has facilitated an out-of-this-world level of precision, which she brings to her surveying work using some of the most current GPS technology available on the market today.

Not a lot of people know this, but you're a well-travelled individual.
When I was younger, I did a fair bit of travelling on my own after my school years to see what's out there. I went to places like Costa Rica, Africa and Europe. I tended to find work as I travelled, too, which let me stay where I was for a bit longer.

What sorts of jobs did you do while travelling?
I did electrical work for a bit, taught people how to use GPS systems or set them up for different companies. I've even sold tours on the beach.

It sounds like you're pretty adventurous then.
I was a bit of an adrenalin junkie back then. It's harder to be one now because I've mellowed out. Before, I didn't think twice about bungee jumping off a bridge or hopping out of a plane to skydive. I would grab my gear and go climb a mountain. Looking back, a cat only has nine lives, right? Now I just putter around in my yard doing some home gardening on my one-acre lot.

Despite seeing the world, you ended up circling back to work in construction back home.
My father was in residential construction doing renovations and stuff when I was growing up, so I was always around construction. I grew up in northern Ontario in Kirkland Lake, southeast of Timmins. It's a small mining town, and I knew I wanted to venture out because I never felt like there was much going on there. When I decided to go to school, the obvious choice would have been to attend one in Timmins, but I wanted to go further away. I knew for sure that I wanted to be in construction because it was a busy work schedule. You're always on the road, in a different town all the time. I'd rather not do that now, of course, but at the time it worked for me before returning to my roots in Ontario.

How did you fall into surveying?
Surveying wasn't even on my radar. I did a co-op in high school where I thought I wanted to be a veterinarian. That obviously didn't pan out. A friend of mine knew someone who ran a surveying company, and I was offered a job. I didn't have anything else to do at the time, so I went to work for him at Northland Technical Surveys. I found myself interested in what I was doing and all the equipment that came along with it. I was doing general surveying tasks mostly – topographic surveys, surface and ground readings, office work. Within the same year, I took the Survey Technician course at Loyalist College in Belleville (Ontario) and the Geographic Information Systems Technology course at Algonquin College in Ottawa (Ontario) a year later.

When did you first come into contact with GPS equipment?
Right out of school. TransCanada PipeLines handpicked me from a pipeline job I was performing using GPS surveying equipment with COREXCO. I ended up in a group of GPS surveyors in Winnipeg, and we went right across Canada, from Montreal to the Alberta border, mapping the landscape. That's when I really became interested in this type of surveying. It was fast-paced work, and that's what I always wanted in a job.

When I came to Aecon in 2000, we were just getting into GPS surveying. I was on a few jobs, the first being Highway 11 for the Ministry of Transportation in Ontario, where we were using fairly traditional surveying equipment. At that time, using GPS to survey was pretty new to construction, but we brought in a few pieces and ran with it.

It sounds like you hold a unique position at Aecon.
You couldn't have planned for this type of job because it didn't exist at the time. There are lots of types of surveying out there. Most people see surveyors using instruments that take high-precision measurements of the ground, called total stations, among other standard optical instruments, to map the land. That's what most people think of when they picture a traditional surveying team. Two people standing at a distance from each other, with one person pointing a laser at a grade stake that someone else is holding, to take measurements. I surveyed like that when I was starting out but now spend a lot of time outfitting heavy equipment with GPS gear and maintaining it across all of Aecon's business groups to ensure surveying work runs as smoothly as possible.

Can you explain the major differences between traditional surveying instruments and GPS equipment?
With GPS equipment, we can create three-dimensional model images by taking measurements on a scanner. The scanner takes all the readings, which are accurate within two centimetres, and compiles the information into an image that we use to work from. All of the measurements are at our fingertips and can be called up any time after it's been taken. We then load the data onto a computer that's attached to a bulldozer. The computer tells us where to drive to get the centre line and how much material we need to put down or remove as we drive along. The operator can turn on the automatics, and the computer takes over the blade, elevating it to the exact position and angle it needs to be at to cut the surface. Traditionally, every measurement is recorded and calculated by hand using lasers and grade stakes, and the bulldozer operator manually adjusts the blade as he's driving.

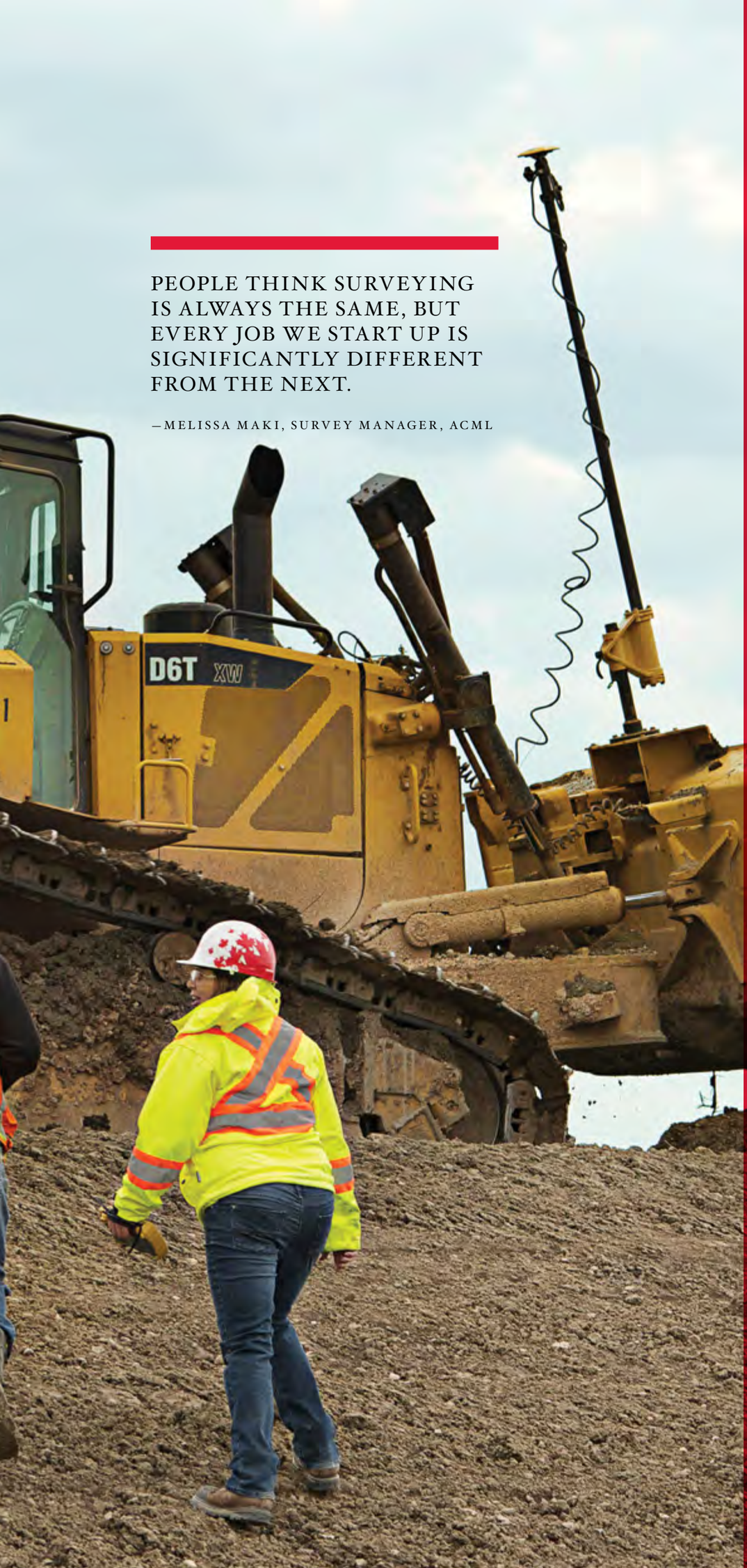
Does this save a lot of time in the field?
It saves on re-grading work and having to redo work in general. It's faster and more accurate than anything you can do with traditional instruments. To some extent it removes human error, like mathematical mistakes. Basically, it puts the onus on making sure the office work is prepared properly.

Has the adoption of GPS equipment changed the face of surveying?
Oh, for sure. If you think about a big construction site with a bulldozer working away, you would need a gradeperson following alongside to keep it on track. Now we have an automated system that, as long as it's running properly, lets the driver finish the work on his own without interruption. It takes some of the risk out of the work, too. When I worked on the ground with a dozer, I needed to have a really good working relationship with the operator to ensure our safety. Everyone wins because it's less stress for everyone involved.

What does a typical day look like for you?
Every time I think I have my day planned, something always comes along and changes it! I'm on my phone answering calls a lot. Sometimes, I'm called away to configure or fix surveying equipment on site. Other times, I provide technical support by answering questions or make sure the equipment is running on the most up-to-date data. I do a lot of training and site set-ups, too. It could be any number of things really. Our goal is to keep the jobs running smoothly to prevent any downtime, so priorities fluctuate on a moment's notice.

What are your favourite aspects of being in the surveying profession?
People think surveying is always the same, but every job we start up is significantly different from the next. We're on a fresh job site before anyone else is. Things move fast with Aecon – new products, lots of different work, finding new and faster ways of doing things to make things run smoother. It keeps me busy, and I like that. We also get to test new equipment before it's out on the market.

You like having your toys, don't you?
That's what I like the most – getting new equipment and figuring it out. I guess I'm still a little adventurous after all!



PEOPLE THINK SURVEYING IS ALWAYS THE SAME, BUT EVERY JOB WE START UP IS SIGNIFICANTLY DIFFERENT FROM THE NEXT.

—MELISSA MAKI, SURVEY MANAGER, ACML

EMPLOYEE FILE

MELISSA MAKI

POSITION: Survey Manager – Aecon Construction and Materials Limited (ACML)

DIVISION: ACML

YEARS SERVED: 14

EXPERIENCE:

1997	Northland Technical Surveys Survey Assistant
1997	Fairhall, Moffat and Woodland Limited (OLS) Polaris Division (part-time)
1997–1998	COREXCO Corrosion Engineering Firm Crew Chief
1998–1999	TransCanada PipeLines Survey Assistant
2000	Tem-Ron Contracting Inc. Grade Foreman/Survey Technician
2000–2001	Aecon Mining Inc. Surveyor
2001–2002	OPTRON – Precise Positioning Solutions Technical Support
2002–2009	Aecon Mining Inc. Survey, GPS Quantities Coordinator
2008–Present	Aecon Infrastructure Group Survey, GPS and Quantities Coordinator

EDUCATION:
Loyalist College, Survey Technician (1996)
Algonquin College, Geographic Information Systems Technology (1997)

BORN: 1975

HOMETOWN: Kirkland Lake, Ontario

CURRENT HOME: Hawkestone, Ontario

FAMILY: Angelo Cornacchia (partner), Superintendent, Project Manager for ACML

HOBBIES AND INTERESTS: Snowmobiling, riding motorcycles, travelling

Catching Business

LONG HARBOUR FISH HABITAT REHABILITATION/ENHANCEMENT

Through diligence and best-in-class service over the last four years, Aecon Mining has successfully morphed a $19-million general service site contract at Newfoundland's Long Harbour nickel processing plant into $146 million in additional contracts. Having a strong on-site presence every day and vast range of capabilities helped Aecon extend its stay, as the client, Vale Limited, sent the team upstream to complete work that not only got its feet wet but also showcased Aecon's ability to tackle any job, big or small.

PHOTO COURTESY OF GRAHAM OWEN ART AND PHOTOGRAPHY

BY STAYING THE COURSE AND CONTINUING TO EXECUTE ON-SITE WORK WITH PRECISION AND SKILL, THE AECON TEAM SOON FOUND ITSELF ON THE RECEIVING END OF TWO ENVIRONMENTALLY SENSITIVE CONSTRUCTION OPPORTUNITIES.

When Vale Limited first awarded Aecon a site service contract in March 2010, the scope was limited to general maintenance services that would keep the nickel processing plant running smoothly over the course of its multi-year construction phase. The joint venture group KBAC Constructors held the larger contract to provide mechanical, piping, electrical and instrumentation service to the buildings, while the buildings themselves were erected by BMA Constructors.

Although the Aecon contract called for daily deliverables such as dust control, roadway lighting and maintenance of all access roads leading to and from the site, it wasn't long before additional scope was added to the fold. Fully equipped for any task at hand, Aecon slowly began to take on small electrical, civil, mechanical and piping work, as well as the assembly of modularized office structures that had been shipped to site.

As time progressed, the reality of being on site and producing good work day in and day out began to reap additional returns. By staying the course and continuing to execute on-site work with precision and skill, the Aecon team soon found itself on the receiving end of two environmentally-sensitive construction opportunities located just minutes from the processing plant. The success of each would prove just reward for the team's diligence and resourcefulness.

FISHING FOR NEW OPPORTUNITIES: BACKGROUNDER

Spread across 105 hectares of land on the coast of Newfoundland, Vale Limited's Long Harbour facility was built to process nickel from the company's massive Voisey's Bay Mine in northern Labrador. Vale holds the mining rights for Voisey's Bay, considered to be one of Canada's largest mineral deposits and estimated to contain 141 million tonnes of 1.6 per cent nickel. It was a requirement of the provincial government that processing for these vast deposits stay within the province and contribute to the region's economy.

In order to prepare the Long Harbour site for construction, Vale had to first drain and backfill two ponds. The Department of Fisheries and Oceans (DFO) mandated that every square metre of habitat eliminated for Vale's new facility must be replaced by an equivalent measure of fish habitat. So Vale and AMEC Environment and Infrastructure set to work developing a plan to meet these federal requirements.

In 2011, Vale tendered the contract to rehabilitate and enhance an adjacent body of water to increase local fish use in order to meet its environmental obligations. Already mobilized at Vale's doorstep, Aecon jumped at the opportunity and formed a relationship with engineering firm AMEC to successfully win the bid to rehabilitate Rattling Brook.

SANDBAGS FILLED WITH GRAVEL PLACED TO CREATE A TEMPORARY COFFERDAM

PROJECT FILE

Long Harbour Fish Habitat
Rehabilitation/Enhancement

CLIENT: Vale Limited

LOCATION: Long Harbour, Newfoundland and Labrador

JOINT VENTURE: Aecon and AMEC Environment and Infrastructure

AECON GROUP: Aecon Mining

TIMING:
Rattling Brook: June 15–September 30, 2011
Forgotten Pond: July 1–September 30, 2012
Type of Contract: Time and Material; Cost Reimbursable

CONTRACT VALUE:
Rattling Brook: $3.1 million
Forgotten Pond: $2.8 million

SUMMARIZED SCOPE:
// Rattling Brook –Improve spawning grounds for native trout population
// Forgotten Pond – Enlarge pond to increase fish population and remove vegetation

AECON EMPLOYEES ON SITE: 30 (at peak)

KEY EMPLOYEES:
Roger Archambault, Senior Project Manager
Mark Noel, Trade Superintendent
Todd Soper, Trade Superintendent
Terry Hickey, General Foreman, Operating Engineers
David Hickey, General Foreman, Operating Engineers
Jamie Pike, General Foreman

LONG HARBOUR NICKEL PROCESSING FACILITY
PHOTO COURTESY OF VALE LIMITED

"Although Aecon has a history of successfully completing environmentally-sensitive contracts, this particular scope of work was relatively new to us," notes Roger Archambault, Senior Project Manager for Aecon Mining. "It was a new and exciting venture for us for sure. We approached this project with the utmost care and worked closely with AMEC, who was tasked with designing the rehabilitation, and we ended up achieving the exact results as outlined in the approved plan."

CONTRACT ONE: RATTLING BROOK

The $3.1-million Rattling Brook contract called for the team to enhance the spawning habitat for the native trout species and increase its rearing capacity. As outlined by AMEC's Fish Habitat Compensation Plan for the Freshwater Footprint, the first phase of the project had to take place between June 15 and September 30, 2011, which is outside the trout's spring spawning season.

Rattling Brook's banks had been severely affected by industrial and wood harvesting activities and were in desperate need of rehabilitation. Despite having the makings of an area highly suited for juvenile brook trout, many of the nooks and crannies needed by the fish for reproduction had been swept away due to the brook's profile and strong current.

When Aecon mobilized in the summer of 2011, Rattling Brook's most recognizable features – and, as it turned out, main source of work – were the large boulders and bedrock formations, known as substrate, which peeked out from the metre-deep water. The substrate covering the 277-metre-long stretch had to be rearranged in order to create a suitable spawning habitat. To achieve this, the reach – a term commonly used to refer to a length of stream between any two points – was first dewatered to create a dry working area. The fish, mostly trout, were carefully removed from the pond by AMEC. Site staff used a special technique that safely catches and removes the fish from the work area. The captured fish were then released downstream beyond the cofferdam wall for the duration of the rehabilitation.

Dewatering the reach required the construction of cofferdams, created by sandbags filled with gravel. The sandbags were then placed at the upstream and downstream ends of the reach, while a series of pumps rerouted the water flow from the construction area.

"Rerouting the water required us to keep a keen eye on the weather systems," recalls Marc Noel, Trade Superintendent. "A heavy rainfall could easily overwhelm the pumps in place causing the water to spill over the dam or even break through it entirely. I'm glad to say we never ran into that issue and were able to keep our work area dry without incident."

Water management, sediment control and minimizing disturbance to the area

PHOTOS – CLOCKWISE FROM TOP LEFT:
REARRANGING THE SUBSTRATE, EROSION CONTROL BLANKETS, SAFE FISH REMOVAL, A DEWATERED REACH

were of utmost importance in the interests of sustainability. To achieve this, the joint venture worked in smaller segments to keep the excavator, which was necessary for boulder removal and placement, stationary for as long as possible before moving to the next location.

Much of the substrate was removed or repositioned entirely so that a more defined channel could flow through the landscape once the brook was reopened. Trucks filled with suitable spawning substrate material carried in the loads on a pre-existing road and offshoot trail close to the excavator, which, in turn, placed the material where directed. Pre-existing boulders found in the brook were removed or placed on top of other boulders to provide additional cover for juvenile trout.

After the boulder repositioning, the stream bed was then excavated and contoured prior to the placement of gravel and cobble material. A slightly deeper area called the thalweg was contoured through the centre of the reach. The thalweg is designed to concentrate flow of the stream during lower water levels and to allow faster flows to pass through quickly without causing excess bed erosion. Once the stream bed was prepped for rewatering, the cofferdams were removed as the excavator recontoured its access location under the supervision of a biologist.

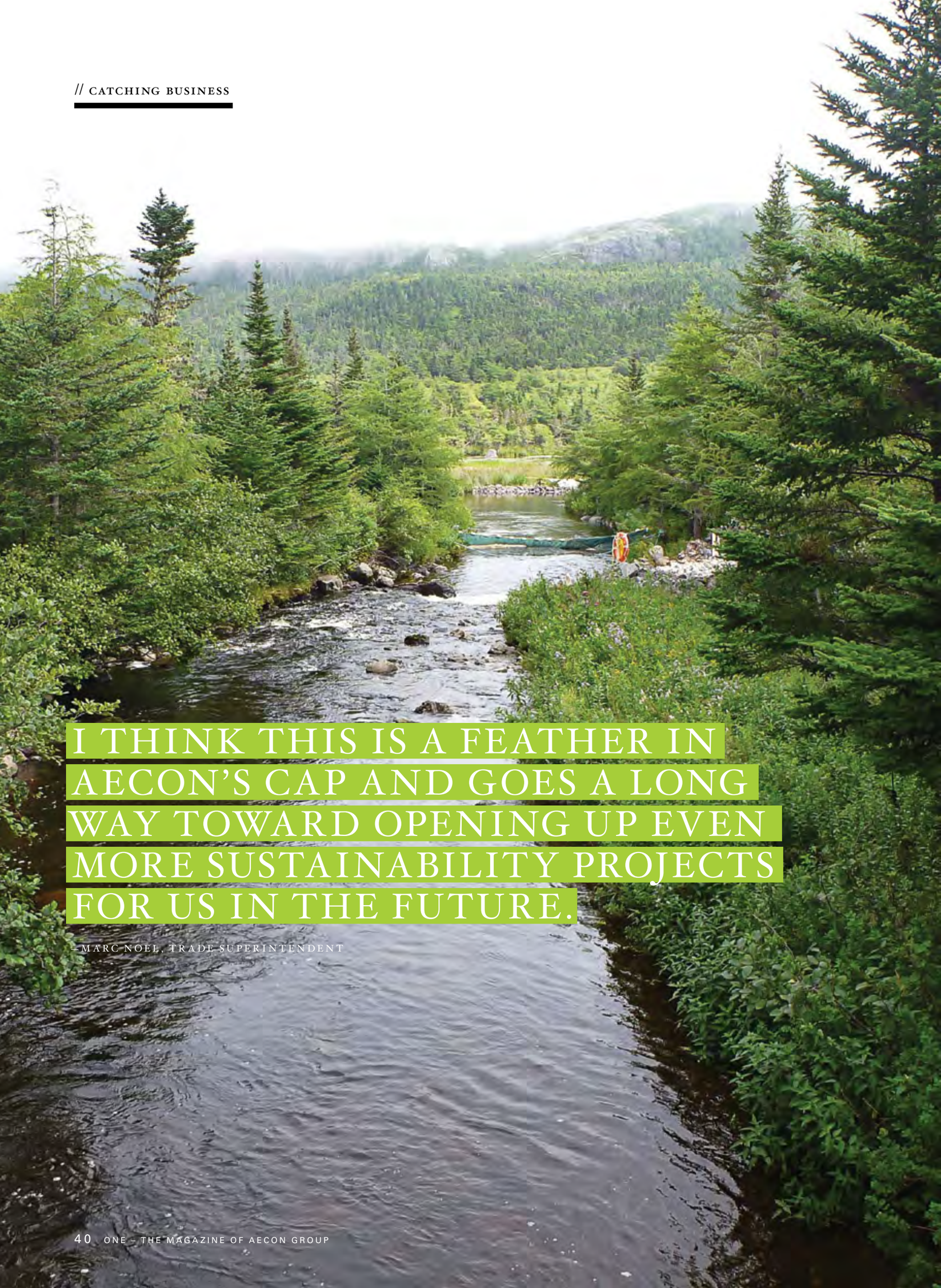
Given the environmentally-sensitive nature of the project, the Aecon-AMEC project team remained intent on ensuring all work was performed with the utmost care using best practices in accordance with strict environmental guidelines. It was imperative that the team's footprint be minimal within the habitat structure, most notably with regard to near-water construction and control of sedimentation.

Vegetation that was initially disturbed by the construction was fully rehabilitated to its original state once the machinery was removed from the area, with the entire process overseen by a botanist. The revegetation consisted of hydroseeding, transplanting larger vegetation from local sources, and replanting transplanted trees to assist in stabilization and recolonization of the disturbed area. Biodegradable erosion control blankets were also used to help promote ideal growing conditions.

CONTRACT TWO: FORGOTTEN POND

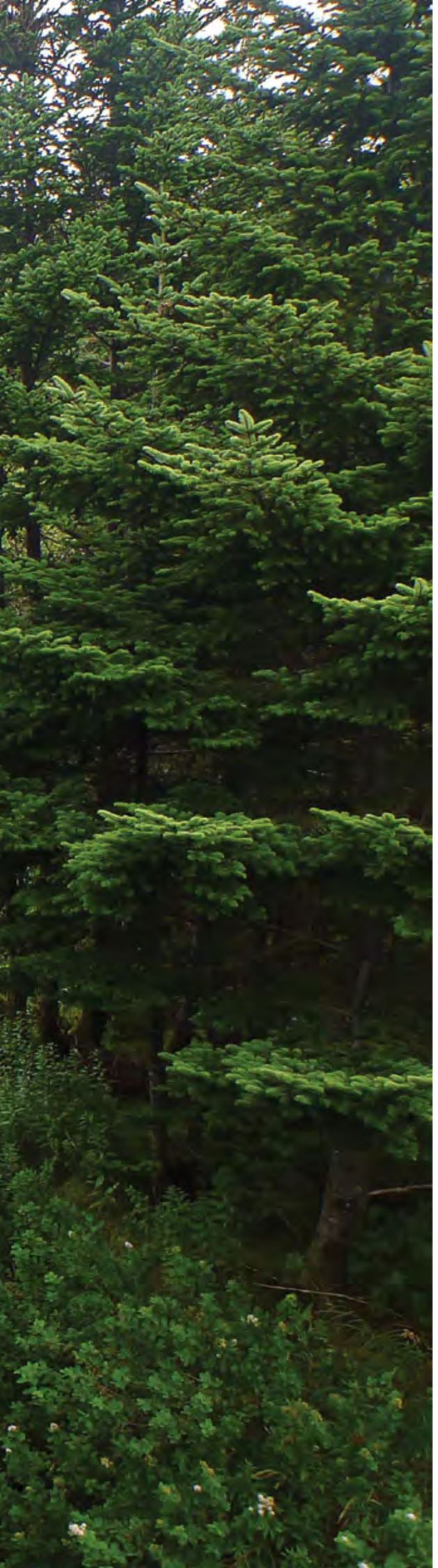
The ability to provide best-in-class service on an environmental rehabilitation project netted the team a welcomed opportunity the following year when Vale tendered a bid for a similar contract. As the winning proponent, the team was awarded the $2.8-million rehabilitation project and set to work on Forgotten Pond on July 1, 2012.

A small body of water relatively close to Rattling Brook, Forgotten Pond stretches roughly one kilometre in length. Scope of work on the project called for an expansion to the overall pond area in order to encourage spawning and increase the local fish population.



I THINK THIS IS A FEATHER IN AECON'S CAP AND GOES A LONG WAY TOWARD OPENING UP EVEN MORE SUSTAINABILITY PROJECTS FOR US IN THE FUTURE.

– MARC NOEL, TRADE SUPERINTENDENT



Unlike Rattling Brook, Forgotten Pond's rehabilitation did not require a complete drainage of the pond. Instead, the pond was segregated into eight segments and staged accordingly. Much of the shoreline required expansion and removal of excess vegetation to regain water depth lost to the advancement of the vegetation. In some areas of the pond, the advancement of the vegetation had been so aggressive that actual dry pockets had formed along the shoreline, taking away from the pond's overall volume.

As in Rattling Brook, the trout native to this pond required relocation. Turbidity barriers, which are barriers specifically designed to contain and control the dispersion of floating particles or silt in a water body, were built within the pond to isolate each one of the eight segments prior to the fish extraction. Once they were installed, AMEC fished the area using live capture techniques and relocated captured fish to an appropriate location.

Once the first pond segment was emptied, a long-reach excavator was brought in through a road that had been extended to the shoreline in order to perform the rehabilitation. Aquatic vegetation and shoreline were then strategically removed and placed above the high-water mark and secured with existing large rocks found in the area. Some of the material flagged for removal in two of the locations was taken away indefinitely, trucked off site for disposal.

The excavator then worked its way backwards along the shoreline using boulders and solid ground for support, the operator taking every precaution to ensure the machinery was safely parked on stable earth once it reached the next segment. The turbidity barriers were then taken down from the previous segment and re-erected at the new location, and the fish caught inside the barriers were once again carefully relocated before the excavation continued. The excavator continued its way around the pond completing each segment until it had reached the original access point.

By the time work wrapped up three months later in September 2012, the rehabilitation had created a much larger pond, ultimately bringing balance back to the pond and re-establishing the water's surface area and volume. With the rehabilitation complete, the land was revegetated and seeded with the aid of a botanist.

"Imagine a bunch of us construction guys planting and laying seed along a shoreline by hand! It's quite the picture, but that's what we did," notes Noel. "Lo and behold a year later, everything was nice and grassy. It actually looks better now than when we started. The entire experience was really interesting and something unique in my career. Working alongside the biologists was such a positive experience. I think this is a feather in Aecon's cap and goes a long way toward opening up even more sustainability projects for us in the future."

STANDING READY

As of March 2014, Aecon was in negotiations to extend its maintenance contract with Vale Limited for another year.

BUILDING A SOLID FOUNDATION

AECON FOUNDATION SERVICES GROUP

The work of deep foundations requires a skilled team that can adapt to the unpredictable nature of ground conditions and geotechnical challenges. The act of hammering a steel pile or drilling a hole and filling it with concrete actually calls for far more astute planning and experience than one might initially realize. The same can be said for introducing a new business. In true "ONE Aecon" fashion, the newly formed Aecon Foundation Services Group has combined skills and resources to expand the company's in-house expertise and, in turn, created a strong base upon which clients can firmly stand.

THE COMPANY'S INVESTMENT IN PILING EQUIPMENT AND ATTRACTING SKILLED PERSONNEL TO CARRY OUT THE WORK DOVETAILS NICELY WITH THE MYRIAD OF CONSTRUCTION PROJECTS ON THE HORIZON – ESPECIALLY IN WESTERN CANADA.

–LARS RICHTER, GENERAL MANAGER
AECON FOUNDATION SERVICES GROUP

Every structure requires a solid foundation. Without one, how could it defy gravity as defiantly as it does? Determining the dynamic of that foundation is a key stage in any new project and takes place long before the actual construction phase begins. Geotechnical engineers must first survey the ground conditions to ensure piling work can be performed smoothly and safely. Lars Richter, General Manager of Aecon's new Foundation Services Group, says our company's commitment to develop an in-house business around this crucial stage of the construction process not only gives Aecon more flexibility and control through self-performing the work but also makes perfect business sense.

"Entering the geotechnical market is a commitment because of its high entrance barriers," notes Richter, a 15-year industry veteran who's energized by being at the forefront of the piling industry. "The investment in tools and equipment is significant. Not only that, the handling of this equipment is very complex and requires skilled and diligent operators to see the work through."

Richter adds that a substantial percentage of a construction company's business can come from foundation work, so keeping the business in-house translates to "revenue generating opportunities that can stay with Aecon." Furthermore, says Richter, the company's investment in piling equipment and attracting skilled personnel to carry out the work dovetails nicely with the myriad of construction projects on the horizon – especially in western Canada. "Ultimately it generates project opportunities for us that otherwise wouldn't have been available," and, he adds, creates a more vertical integration within Aecon, "putting us closer to being a complete construction solution."

Richter is joined at the helm of Aecon Foundation Services by Senior Superintendent and 33-year industry veteran Otmar Frohlich. Together, the men share a solid foundation of their own, with almost a half-century of construction and foundation expertise under their collective belts.

Understanding all too well the challenges involved in sourcing a best-in-class team, Richter and Frohlich essentially handpicked their initial group based on first-hand knowledge of industry standouts; i.e., those with proven work experience who excelled at what they did. From there, the team grew organically into highly skilled, specialized piling crews.

BUSINESS PROFILE

Aecon Foundation Services Group

HEAD OFFICE/LOCATION: Edmonton, Alberta

STARTED: August 2013

RANGE OF SERVICES:
// Pile Driving
// Drilled Piles: Continuous Flight Auger (CFA); Fully Cased Drilling Piles (up to two metres in diameter); Belled Piles
// Shoring With Secant Pile Walls
// Technical Spectrum to be Added in 2014: Screw Piles, Dewatering

NOTABLE PROJECTS:
IPL Piling, K+S Potash Foundations

MARKETS: Mining and Infrastructure

COVERAGE: Western Canada – with plans to service Aecon nationally

KEY CLIENTS:
Inter Pipeline (IPL)
K+S Potash Canada

NUMBER OF EMPLOYEES: 40

NUMBER OF CREWS: 8

KEY EMPLOYEES:
John Singleton, Senior Vice President, Mining
Lars Richter, General Manager
Otmar Frohlich, Senior Superintendent
Joseph Hakim, Project Manager
Greg MacPherson, Engineering Manager


AECON

ULTIMATELY IT GENERATES PROJECT OPPORTUNITIES FOR US THAT OTHERWISE WOULDN'T HAVE BEEN AVAILABLE, PUTTING US CLOSER TO BEING A COMPLETE CONSTRUCTION SOLUTION.

—LARS RICHTER , GENERAL MANAGER
AECON FOUNDATION SERVICES GROUP

"I get a lot of enjoyment working on the foundations team because there's tremendous opportunity to learn and grow with a new business unit, both as an engineer and as a construction professional," notes Engineering Manager Greg MacPherson. "The team assembled for our group is top-notch. It's great to tap in and learn from their years of experience in the industry."

Based out of Edmonton, Aecon Foundation Services is currently focusing its services in Western Canada, providing direct support to Aecon Utilities for Inter Pipeline's (IPL) process plants and pumphouses and completing work with Aecon Mining at the K+S Potash Canada Legacy Mine near Regina, Saskatchewan. In central Canada, the group has already installed the equivalent of more than 10 kilometres of piling, providing a range of solutions on multiple projects.

STARTING BIG: K+S POTASH LEGACY MINE PROJECT

Having already completed several piling jobs in the first few weeks of its formation, Aecon Foundations was ready to roll last summer when news broke that the group had been awarded a contract for K+S Potash Canada's Legacy Mine, the first new greenfield potash mine to be built in Saskatchewan in nearly 40 years. Aecon Foundations was on tap for the installation of more than 2,000 piles to support the numerous buildings required to process the potash brought in from the mine. The evaporation process plant alone, as the site's single largest location, required 594 piles. Within two weeks, the group had mobilized on site, 50 kilometres north of Regina, and commenced drilling the first week of September.

All told, some 2,400 bell piles were to be drilled, cleaned and poured for the future location of Legacy Mine.

By industry standards, a piling project of this magnitude is "quite the undertaking" says Richter. To help paint the picture, he explains that piling contracts typically range between $3 million and $5 million. The contract Aecon Foundations holds with K+S is valued at $17 million. "The amount of work we're performing on this contract shows the level of demand for the type of work we do."

As outlined in the overall designs, each drilled shaft had to be exceptionally clean and clear of debris. Cameras were inserted into 100 per cent of the shafts to inspect the cleanliness of its base before moving to the next phase. Early on it became apparent that, due to difficult soil conditions, a conventional means of cleaning each pile base was going to prove challenging. A vacuum truck was introduced to extract loose and fallen debris; however, due to the size and weight of the materials, the vacuums were unable to remove the problematic objects.

THE DUTCHMAN

"Anything greater than four inches needs to be removed from the shaft to create a clean surface to pour concrete into, but we were finding boulders and large clumps of dirt at the bottom that no vacuum truck was capable of pulling up," says Frohlich. "Because of this, we just knew we needed to develop a one-of-a-kind cleaning tool, something completely unfamiliar to our industry, to really remove this debris."

In search of a practical solution, the group enlisted the aid of Mark Pryne, a welder friend of Richter's from the Netherlands. The decision would end up being a fruitful one as Pryne successfully helped the team invent the tool that wound up being dubbed on site as "The Dutchman." A cylindrical hydraulic cleaning tool, it was attached to the bottom of the piling rig and lowered 10 metres to the pile base. The tool was then spun around as two wing-shaped arms were extended out, cutting and grabbing any debris present on the surface. The arms were brought back in, pulling the debris into the cylindrical casing for removal. The tool was then lifted back out of the shaft and emptied before repeating the cleaning cycle.

"The tool has been a great success and cleans the surface better than anything we've ever used before," Richter notes with pride. "What's really nice is we've received a lot of recognition from K+S and geotechnical consultants, commending us on how innovative the tool is."

As of May 2014, more than 1,500 piles have been built on site for the Legacy Mine but not without challenges. The frigid temperatures of Saskatchewan over the winter months dropped far below the threshold deemed safe for workers or equipment. Piling equipment is certified to safely operate in temperatures as low as -25°C but the harsh prairie winter brought with it several days of temperatures hovering closer to -40°C. Since the equipment is quite sophisticated, fluids used in the hydraulic systems can slow and eventually freeze, causing damage to the machine and putting workers at risk. The particularly severe weather translated into numerous work stoppages for Aecon Foundations in order to prevent undue risk and ensure overall safety. These kinds of measures, notes Richter, are accounted for in the project schedule. And yet, despite the weather, the Foundations team still managed to work more than 60,000 man hours without a single lost time injury – an impressive achievement under any circumstance, let alone harsh winter conditions.

WHEN WE BUILD FOUNDATIONS FOR A PROJECT AND HAND IT OFF TO ANOTHER AECON BUSINESS, THE CLIENT KNOWS THEY'RE IN CAPABLE HANDS RIGHT FROM THE BEGINNING. THIS TRANSLATES INTO SAVINGS FOR THE CLIENT, BOTH IN TERMS OF COST CERTAINTY AND SCHEDULE INTEGRATION.

–LARS RICHTER, GENERAL MANAGER
AECON FOUNDATION SERVICES GROUP

DRILLING FORWARD

Proud of the team's accomplishments thus far, Richter now looks to the future. In order to expand the business, the group will need to invest in more equipment and carefully manage overhead costs. Since foundation work is a specialized business, Richter says the key for success is to have consistency within the crews to build strong team composition.

"People play a key role in the success of our business," he explains. "We give our team members ownership over their work, which, at the end of the day, shows through in the work they've completed. The team we've assembled understands the strategic context of this type of work, which is important in order to develop business across Canada. We have a lot of potential at the moment, but we will safely keep pushing forward one pile at a time."

After six months, the group is 40 strong, owns three state-of-the-art pile driving rigs from European companies Liebherr and Junttan and has on-call access to an additional five rentable rigs to help cover peak times. As the rigs feature complex hydraulic and electronic systems, the team includes a specially trained mechanic, qualified for this type of equipment, to keep the machines in peak running condition.

Although in its infancy, Aecon Foundations already comes well equipped with the experience and knowledge required to handle the unpredictable nature of the piling business, due in large part to its veteran team members. Further backing is provided by the extended resources available to the new business unit through the company-wide "ONE Aecon" business strategy.

"The key for any client is to cut down the risk involved with a project," notes Richter. "When we build foundations for a project and hand it off to another Aecon business, the client knows they're in capable hands right from the beginning. This translates into savings for the client, both in terms of cost certainty and schedule integration."

A key differentiator for Aecon Foundations in the marketplace, says Richter, is the group's ability to operate under Aecon's well-established environmental health and safety construction management system and project controls. "Not many piling contractors can say they operate under the same level of rigour as us. We're a new business built on Aecon's solid foundation of business practices, safety program and project controls. I think that's something that really establishes our credibility right from the get-go."

MEET:

PEOPLE MATTER

PETER MEZITIS

SENIOR QUANTITY ESTIMATOR
AECON CONSTRUCTORS CANADA

Peter Mezitis can detect the smallest detail in a drawing and visualize an entire project just by reading a series of curves and lines. And while the world of drafting may have been largely overshadowed in recent years by computer-generated 3D modelling images, Mezitis still prefers to use the skills he has spent the last 42 years fine-tuning, offering proof that you can change the times, but you may not always be able to change the man.

Looking back on your career, what highlights come to mind?
It would have to be the people that I've worked with over the years. They've been really thoughtful, respectful and easy to get along with. I got to know a lot of them on an individual level and not just as co-workers. They were interested in the work I was doing and were also great at their respective jobs. If you had a question, you could always ask and get straightforward answers. I've worked with many of the same co-workers for years. They're my work family.

Did you envision yourself in an office working with people?
Not at all. Growing up, I envisioned myself out in the forest being a game warden or something of that nature. I was into hunting, fishing and outdoor activities very early in my life and continued to do those activities all through high school. I was a Junior Ranger and in Scouting during my teens, so I spent a lot of time outside with friends camping, planting trees and such.

Why didn't you pursue a career in it?
It's very difficult getting into that type of career. Unless you knew a connection or lived out in the country, your chances of being hired back then weren't very high. Despite it being a government job, the pay wouldn't have been all that great either. During high school, I started looking into construction instead. I started working at various construction jobs during the summer as a result.

Did anyone nudge you toward a career in the construction industry?
I just kind of fell into it because of my summer jobs. I was a plumber's helper, general labourer, those kinds of things. It naturally flowed into construction from that point. My parents were just happy that I found a job that paid!

What happened next?
I went to Seneca College for their three-year Civil Technologist program and began looking for work right after I graduated.

How long did it take to find your first position?
I graduated near the beginning of May. I'm not sure why I remember this date so vividly, but by June 12 I was working at Pitts Engineering Construction Company as their Design Draftsman. Finding a job that quick with a fair wage was unheard of in those days. I made about $27,000 a year, fresh out of college.

So you were making some decent money. What did you do with it?
Well, I was 21 at the time, so I went out and bought myself a '68 Camaro. I stayed with my parents for about a year and a half before moving out on my own. They never made a fuss or anything about me living there, but I wanted to have my own place.

It's interesting that an outdoorsman like yourself would end up with an office job.
I would get to go out in the field for a month or two, which was about it. I'm basically working in the office all the rest of the year, but I definitely make up for it on the weekends. I spend as much time outside as possible or I'm out at my cottage doing things.

What did your role look like as Design Draftsman at Pitts?
I did a lot of bridge work, so I looked after excavations of footings, formwork for bridge decks, scaffolding, etc. This was a time before computers. I used pure paper, pen and pencil. I used a big drafting board, about four by eight feet in size. You grab a piece of paper and start drawing everything to scale.

Do you still draft this way?
I haven't done any drafting in quite some time, but I prefer it that way when I do. I'm more comfortable with the tools I've honed my skills on. I'm trained on and occasionally use AutoCAD, but there's so much to know and learn that it's easier for me to draft by hand. The program can make a lot of things easier in some ways, but I still get a lot of quantities off of drawings that I'm given. I find the 3D modelling software that we're using to be more useful though. Being able to see the space and how everything fits together in 3D is a big advantage compared to envisioning it in your mind.

Do you think technology has taken away from or improved he art of drafting?
For an old guy like me, they've made it difficult. If you're growing up with it, it makes it much easier because you don't have to do a lot of the complex thinking and calculations that are involved. On the other hand, if you do a calculation wrong or you input the incorrect numbers into the program and didn't catch it, you might have a difficult time going through everything to find out where you made a mistake. One benefit to using software is it shows you how everything fits together. For instance, you can catch a mislaid pipe that's been placed right through a steel beam and correct it so it goes around it. Those things need to be visualized in the mind's eye when you're drafting on paper.

You were promoted to Quantity Estimator after a few years. Did the drafting stop at that point?
Yes, it more or less tapered off, and I spent more time doing estimates.

Your background must have set you up quite nicely for that.
That's right. Since I could read a drawing easily, I knew exactly what to look for, even in the most complex drawings, like electrical, mechanical or piping drawings.

Can you explain the role of a quantity estimator?
When we bid on a contract, I'll receive physical and digital drawings of the project to look over. I will figure out how much of what quantity is needed and whether or not we need to subcontract any of the work. Since I have the dimensions and geometry from the drawings, I can figure out the quantities of materials we're going to need to complete the job.

Sounds like a lot of math.
Math happened to be my worst subject in school, but they're all simple calculations. You run through the list of items that you need to complete each phase of the project. In order to pour concrete, you need forms. So, you figure out what kinds of forms are needed depending on where the forms are being made. Then you might need scaffolding and things like that to hold it up. Everything needed to complete the job is quantified and documented. Once we have all the numbers, I move on to pricing the job by contacting suppliers. I give them the information, and they give me their quotes before the day of the tender – all that goes into our estimate.

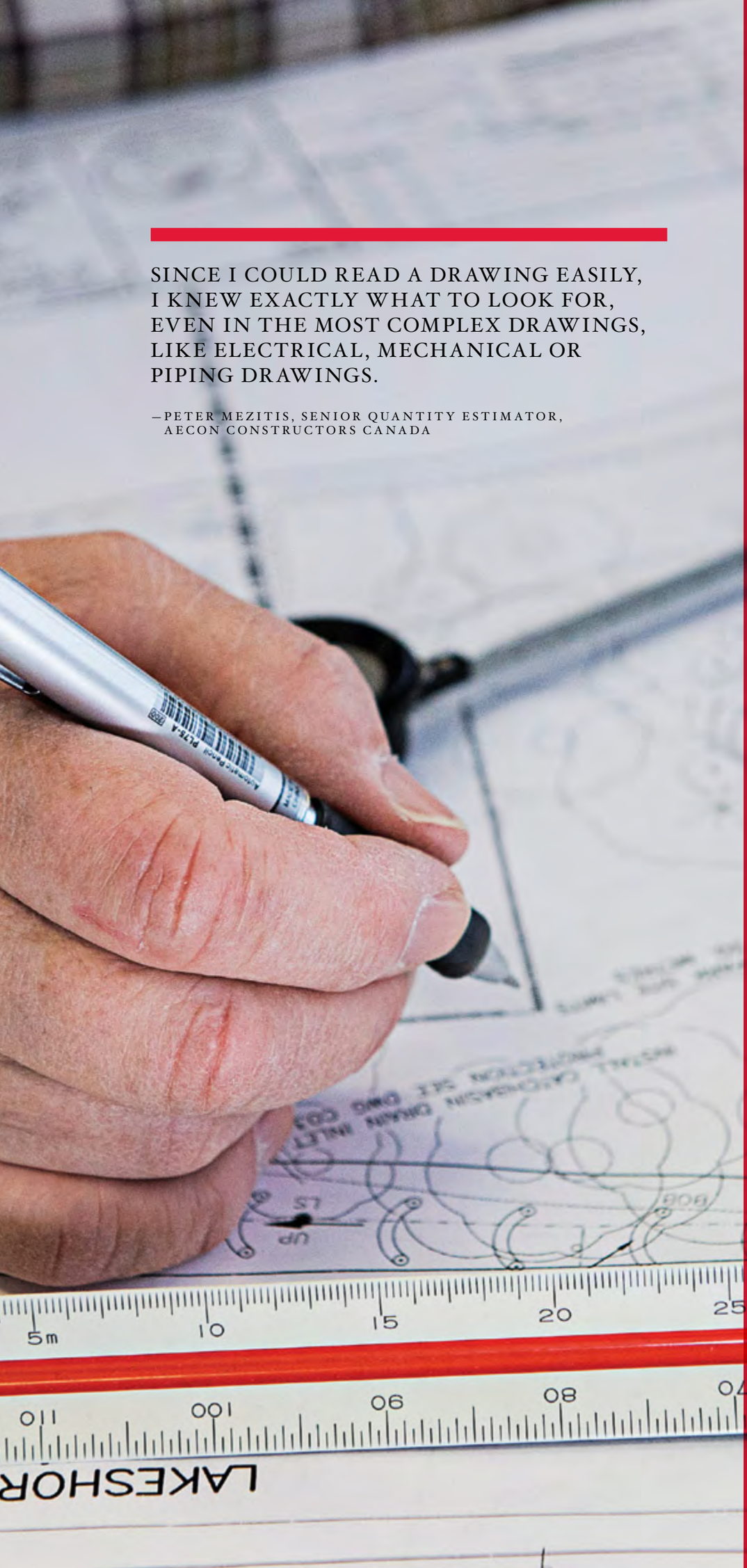
I would imagine staring at drawings all day could become frustrating at some point.
Sometimes I need to step away from them when something isn't working out right. I'll switch gears by working on a different area and then come back to it. Usually, I have the project broken up in my mind by how the construction would actually be performed. I start from the ground up, just like you would put a building together. It's like a checklist.

Since you're working behind the scenes before construction even begins, do you have the opportunity to see the projects you've worked on?
Not usually, but I've stopped in at a few finished projects to have a look at them over the years. It's interesting thinking about the projects I worked on and then comparing it to the completed product.

Is there a completed Aecon project that you haven't yet seen but really would like to experience?
I think the Quito Airport would be interesting to see. Just to see what the guys had to go through to get the work done in a different country would be neat.

What knowledge can you impart to the younger generation?
Be diligent. Get up in the morning and do the best work you can with your peers. Learn from your team and don't be afraid of failure. Get in there and just do it!

What does the future look like for Peter Mezitis?
Mornings are getting harder to wake up to, but I don't want to retire just yet. I'll work another few years. I might even work past 65, unless they kick me out first.



SINCE I COULD READ A DRAWING EASILY, I KNEW EXACTLY WHAT TO LOOK FOR, EVEN IN THE MOST COMPLEX DRAWINGS, LIKE ELECTRICAL, MECHANICAL OR PIPING DRAWINGS.

—PETER MEZITIS, SENIOR QUANTITY ESTIMATOR, AECON CONSTRUCTORS CANADA

EMPLOYEE FILE

PETER MEZITIS

POSITION: Senior Quantity Estimator – Constructors Canada

DIVISION: Constructors Canada

YEARS SERVED: 42

EXPERIENCE:

1972–1979	Pitts Engineering Design Draftsman, Quantities
1979–1985	Pitts Engineering Quantity Estimator
1985–Present	Constructors Canada (Aecon Constructors) Senior Quantity Estimator

EDUCATION:
Seneca College, Civil Technologist (1972)

BORN: 1950

HOMETOWN: Toronto, Ontario

CURRENT HOME: Holland Landing, Ontario

FAMILY: Roely (wife), Erin (daughter), Mark (son), Lucy (granddaughter)

HOBBIES AND INTERESTS: Hunting, fishing, camping, working at the cottage and reading

KEEPING UP THE PRESSURE

UNION GAS' EXISTING PARKWAY EAST FACILITY, LOCATED ACROSS HIGHWAY 407 ETR AND EAST OF THE NEW CONSTRUCTION SITE

PARKWAY WEST COMPRESSOR STATIONS

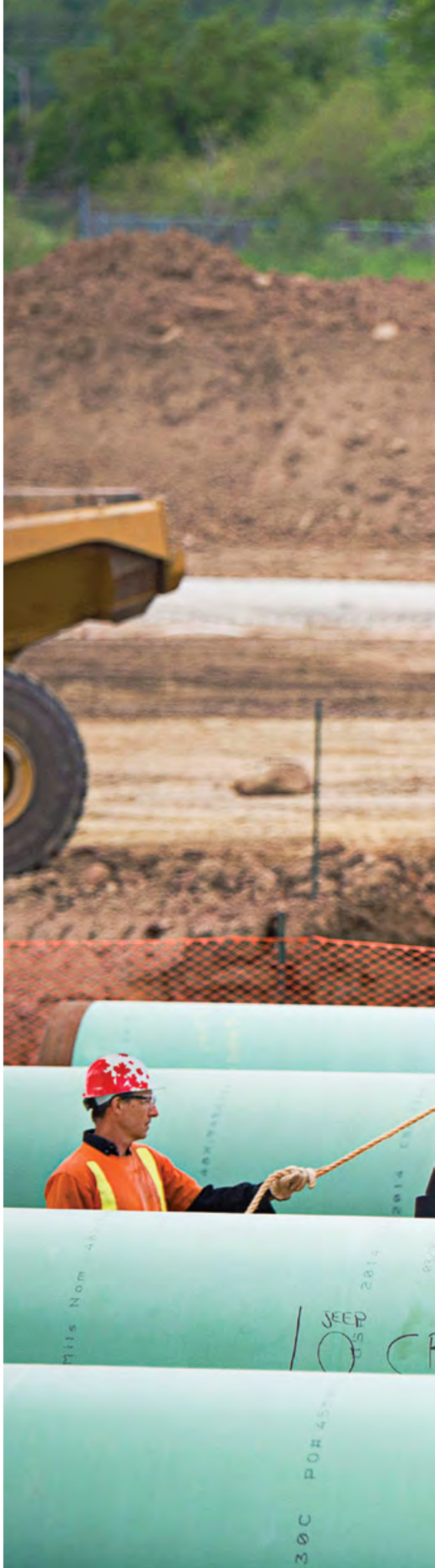
Aecon's history with Union Gas, Ontario's largest natural gas service provider, stretches back almost three decades. From building pipeline integrity projects and building compressor stations across the province to placing thousands of kilometres of pipe, Aecon has been there to help get the job done. Now, under the "ONE Aecon" framework, several Aecon business groups, each holding separate relationships with Union Gas, have come together to begin construction on the multi-million-dollar Parkway West natural gas expansion project.

THE PARKWAY WEST PROJECT IS A DIRECT RESPONSE TO THE OVERWHELMING DEMAND FROM THE EVER-EXPANDING GTA AND SURROUNDING AREA POPULATION SURGE.

Located in Milton, Ontario, on the northwestern tip of the Greater Toronto Area (GTA), the 43-hectare Parkway West site is being hailed as the largest project Union Gas has ever undertaken and is the first greenfield compressor station to be commissioned by Union Gas in 20 years. Far more than just a compressor station, however, the Parkway West project is a direct response to the overwhelming demand from the ever-expanding GTA and surrounding area population surge. In many instances, a retrofit of an existing natural gas compressor station along a mainline pipe could do the trick to meet an increase in demand. This time around, however, the demand is so great that construction is all new and substantial in scope: three metering stations, two natural gas compressor stations, one administrative building, replacement of 1.5 kilometre of mainline pipe and general site development.

On site with construction already under way just south of Derry Road between Eighth Line and Highway 407, Aecon plans to tap into the Union Gas mainline pipe once they've replaced a 1.5-kilometre section of pre-existing pipeline to accommodate the greater flow. When the new station is in operation, natural gas from the Union Gas Dawn Hub storage facility in southwestern Ontario will travel 200 kilometres east along the existing Dawn-Parkway transmission system and into the new natural gas compressor stations Parkway C and D.

The Union Gas Dawn-Parkway transmission system is supplied by the Dawn Market Hub, the largest integrated natural gas storage facility in Canada, located in Sarnia, Ontario, close to the U.S. border. In recent years, the trend in eastern Canada has been toward a marked decline in available natural gas supply from western Canada while the northern states of Pennsylvania and Ohio have emerged offering abundant gas supplies closer to the peak Ontario market. This means the demand for natural gas transportation along Union Gas' Dawn-Parkway transmission system has been on the rise. The new Parkway West facility on the outskirts of Toronto will provide the much-needed capacity to deliver this increased flow to the more than five million residents currently residing in the GTA and eastern Canada.



BUSINESS PROFILE

Parkway West Natural Gas Facility

CLIENT: Union Gas

LOCATION: Milton, Ontario

AECON GROUPS:
Aecon Energy – Industrial Central, Utilities, AGI, AUE
Aecon Infrastructure – ACML, Buildings, AME

TIMING: October 2013–December 31, 2015

TYPE OF CONTRACT:
Target Price, awarded October 2013

CONTRACT VALUE: $100 million

SUMMARIZED SCOPE:
// 3 metering stations
// 2 natural gas compressor stations
// 1 operations centre
// Replacement of 1.5 kilometres of mainline pipe
// Site development (approximately 48 hectares)

AECON EMPLOYEES ON SITE: 160 (at peak)

KEY EMPLOYEES:
Tim Austin, Senior Project Manager
Larry Taylor, Construction Manager
Eric Von Der Recke, Piping Superintendent
Britt Jessop, Pipe Coordinator
Michael Still, Project Control Manager
Mark Taylor, Civil Project Engineer
Frank Mailloux, Senior Superintendent
Joe Boland, Project Manager
Keith Bonner, Electrical Superintendent
George Kelly, Senior Project Manager
Don Mincault, Utilities Superintendent
Ian Munro, EHS Advisor
Kevin Hope, QC Inspector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43 HECTARE SITE

2 NEW NATURAL GAS COMPRESSOR STATIONS

3 NEW METERING STATIONS

1.5 KILOMETRES OF MAINLINE PIPE TO REPLACE

SITE CIVIL WORKS AND UTILITY WORK IS IN FULL SWING AT THE PARKWAY WEST SITE

UPON COMPLETION, THE NEW PARKWAY WEST FACILITY WILL RESEMBLE THE CURRENT PARKWAY EAST STATION, SHOWN HERE

HAVING THE SAME SAFETY PROGRAM ACROSS ALL BUSINESS UNITS AND PLACING THE SAME HIGH PRIORITY ON SAFETY PUT EVERYONE ON THE SAME PAGE. IT ALSO ELIMINATES ANY NEED FOR RETRAINING AS WE SHIFT TO THE "ONE AECON" FRAMEWORK, AND ON A PROJECT OF THIS SCALE, THAT'S A HUGE BENEFIT.

–TIM AUSTIN, SENIOR PROJECT MANAGER

Two pre-existing natural gas compressor stations located slightly east of the Parkway West site, named Parkway A and B, will also be upgraded. Since "A" was built in 1988 by Nicholls-Radtke (an Aecon predecessor company) and "B" by Aecon in 2007, the on-site metering stations will require retrofits to accommodate the increased flow of natural gas. The electrical buildings on site are also scheduled for expansion later in the year.

"ONE AECON" HARD AT WORK

Although Aecon has enjoyed a long-standing relationship with Union Gas for almost 30 years, a new framework was required to work as "ONE Aecon" on this project. Aecon's Utilities, Industrial Central and Buildings groups each hold separate alliance agreements with the utilities provider, yet the three Aecon business units have yet to work together on the same contract. The Parkway West project has created a unique and natural opportunity for Aecon to now capitalize on combined resources and capabilities of our diverse business units.

"Our separate alliance agreements with Union Gas are actually quite different from one another," notes Tim Austin, Senior Project Manager, "So, we're still working through the logistics of key components like pricing." Austin adds that an Aecon cross-divisional governance team is in place to help ensure seamless integration for the duration of the contract. Aecon Industrial Central will take the lead as primary Aecon point of contact for Union Gas and will manage the flow of information to create synergy among the Aecon business groups.

One thing that remains staunchly consistent and front of mind is Aecon's environmental health and safety (EHS) program. "Having the same safety program across all business units and placing the same high priority on safety put everyone on the same page," notes Austin. "It also eliminates any need for retraining as we shift to the "ONE Aecon" framework, and on a project of this scale, that's a huge benefit."

Aecon first mobilized for the Parkway West project in October 2013. Much of the site infrastructure was completed during the colder months before ground conditions became unfavourable due to the spring thaw. Despite the 2013/2014 winter being one of the coldest on record in Ontario, work continues to safely progress as planned and in accordance with the project schedule.

In May 2014, fabrication began on the kilometre-and-a-half section of 26- and 34-inch mainline pipe replacement. Pieces of the mainline pipe were cut out, removed and replaced as they moved along the utility corridor. At the same time, Aecon began building suction and discharge headers for the two compressor stations that are to tap into the mainline.

Compressor stations serve a vital role. They keep the natural gas pressurized as it travels many kilometres through the pipeline. To ensure the natural gas remains pressurized, compression is periodically required because the gas will otherwise expand during transport. To address this, compressor stations are typically placed at 65- to 160-kilometre intervals along the pipeline. The natural gas enters the compressor station, where it is compressed by an engine, and then pushed further down the pipeline.

When it comes to the metering stations, a key Aecon project milestone will be to have one of the three metering stations fully functional and tapped into the mainline by the end of 2014. Metering stations allow Union Gas to measure the natural gas flow to its customers.

For its part, the Buildings group will be on site constructing a new operations centre. Construction of the compressor buildings and installation of the accompanying turbine compressors by Aecon's Industrial teams will also be taking place during this time.

When in operation, the Parkway C compressor station will provide backup compression in case of an unplanned compressor outage, and Parkway D will provide additional compression to support the growing demand for natural gas at the existing station. From an aesthetics vantage point, both stations will look similar to Parkway East's B compressor station.

By the end of May 2014, the contract was approximately 10 per cent complete. Clearing of the site is well under way, and a few roads and stormwater ponds will be in place to control potential flooding. Aecon's goal is to have the contract wrapped up and fully commissioned by fall 2015.

KEEPING AN EYE ON GREEN WORKERS

By Mike Archambault
Senior Vice President, Chief Safety Officer

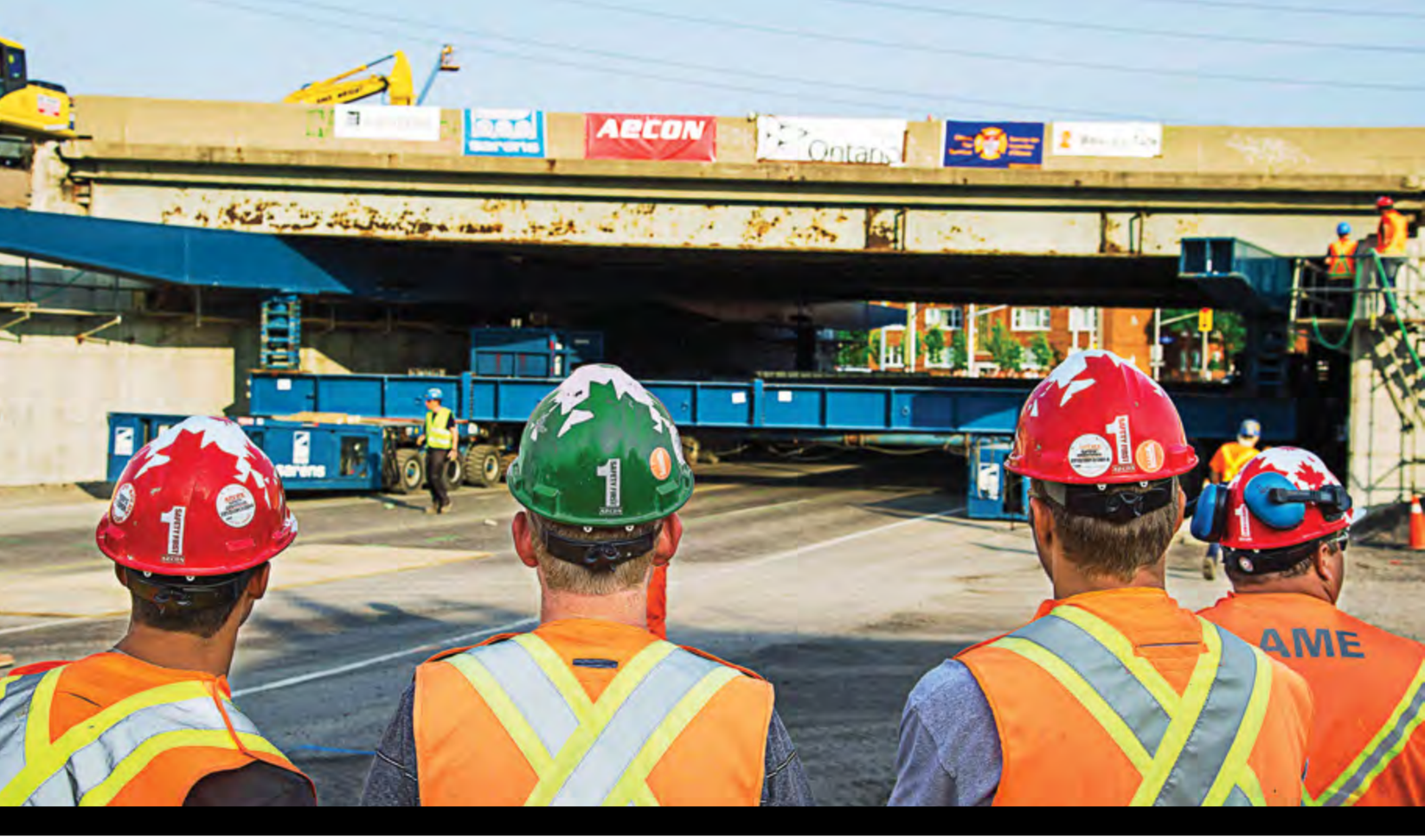
For each of us, life holds many first experiences. At one point or another, this includes entering a new workplace.

More often than not, young and inexperienced workers arrive on the job from day one eager to prove themselves and demonstrate their capabilities. Despite being a positive and admirable trait, this enthusiasm can have severe consequences on a construction project without proper mentorship and guidance. These keen workers may fail to recognize hazards or hesitate to speak up and ask questions. From the perspective of our senior workers, many of whom are also parents, there is a profound awareness of the responsibility that comes with a son or daughter entering the workplace and the need to have them understand that personal safety is not something to be taken for granted. We encourage everyone to not only ask questions about safety matters but also ensure they are scheduled for workplace safety orientation. Initiating an open conversation to discuss the risks and hazards that our young workers face on the job is a big step toward keeping everyone safe.

NEW WORKERS AT AECON

As part of our commitment to new and inexperienced workers at Aecon, we have designed a detailed New Worker Orientation Program to help ease our new employees into the workforce. The program focuses on specific safety orientation as it pertains to workplace hazards, embracing one's role in workplace safety and hazard recognition, and supervisor support via a mentorship focus.

An integral part of our New Worker Orientation Program is the introduction of a customized version of our iconic Aecon hardhat to help raise on-site visibility. Moving forward, all new workers on site will now wear a green-leaf hardhat. This identification will let other experienced



INITIATING AN OPEN CONVERSATION TO DISCUSS THE RISKS AND HAZARDS THAT OUR YOUNG WORKERS FACE ON THE JOB IS A BIG STEP TOWARD KEEPING EVERYONE SAFE.

workers instantly recognize who among us could use support and assistance as they grow into their roles with Aecon.

New workers are defined as someone with less than six months of industry experience. Our ability to embrace this key demographic by mentoring and guiding them toward safe on-site conduct can have a major impact on their future attitude toward staying safe. Each of us is accountable for working together to instill a positive safety culture within our workforce.

TIPS FOR STAYING SAFE

1. Get trained on your task; understand what is needed to work safely and what to do in an emergency situation.
2. Build a relationship with your supervisor; get to know his or her mentorship role and the support available to keep you safe on site.
3. Ensure you receive training on how to wear all required Personal Protective Equipment (PPE), i.e. hardhats, boots, safety glasses, gloves, reflective clothing, etc.
4. Understand and ask questions on the risks associated with your task. (Will I be working from heights? Are there any occupational health risks from chemicals, dusts or fumes, tripping hazards, vehicle movement, etc. that I should be aware of?) Never be afraid to ask a question when it comes to your personal safety!
5. Follow the health and safety rules identified during your orientation; they have been provided for your safety.
6. Know what to do in the case of an emergency: Where is the first aid facility located? Whom do I contact? Where are the muster points located if I need to evacuate the workplace?
7. Report all incidents, accidents and safety opportunities to your supervisor, regardless of the severity.
8. Familiarize yourself with the safety staff in your workplace and discuss any safety issues or concerns with them; they are there to help you.

While new employees have a responsibility to understand what is expected of them to stay safe on site, it's equally important for existing employees and supervisors to be positive role models and lead by example.

When you see a new worker identified by the green-leaf Aecon hardhat, we encourage all employees to welcome them and positively reinforce any safe behaviours you see them exhibiting. Conversely, when required, take the time to provide the necessary coaching to help our new workers learn and, ultimately, live the safe "Aecon way" every day.

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