ONE

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SPRING/SUMMER 2013, VOLUME 2, ISSUE 1

IN THIS ISSUE:

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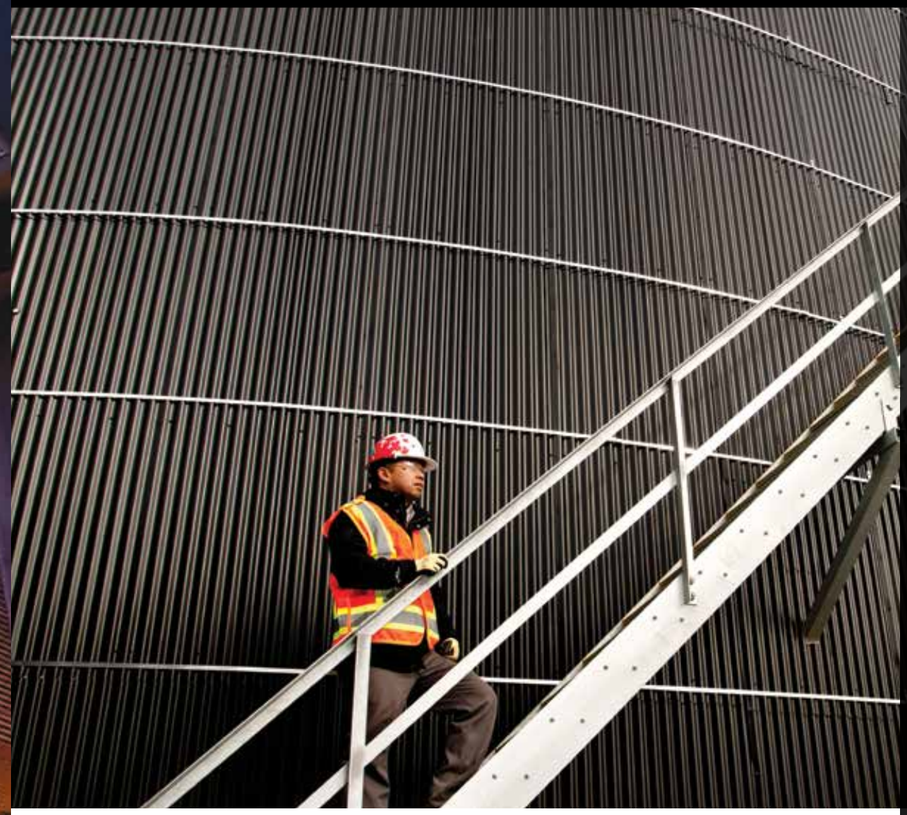

ALSO IN THIS ISSUE:

2013 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 biannual magazine published by Aecon Group Inc. for its employees and clients.
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For more information on any of the articles published in the magazine, please contact Rob Kinnaird at 1 877 232 2677 or email rkinnaird@aecon.com

COVER:
QUITO INTERNATIONAL AIRPORT, ECUADOR

LEFT:
MANX ELECTRICAL AUTHORITY POWER PLANT, ISLE OF MAN

ABOVE:
YELLOWLINE ASPHALT TERMINAL, HAMILTON (ON)

BACK COVER:
UNION PEARSON EXPRESS, TORONTO (ON)

LEADERSHIP MATTERS

A VERY DIFFERENT DYNAMIC

By John Beck
Chairman of the Board
and Chief Executive Officer

Toronto's Union Station is one of the finest buildings in the country. It first opened to the public in 1927. The ticket lobby – known as the Great Hall – has a beautiful vaulted ceiling, marble and limestone walls, and translucent glass windows, making it one of the most opulent stations in North America. The train shed, however, where the trains arrive and depart each day, is as crowded, dark and dingy as it was when first built.

Three years ago, Aecon was awarded a $196 million contract to transform the shed into a sleek, modern structure and create a landmark for the city's skyline, a project that will take almost six years to complete.

I recently visited our Union Station site to meet with the project principals and tour the progress to date. We're only about half way through construction but you can already get a sense of how spectacular the building will look once finished. This soaring atrium of steel and glass will give Canada's busiest transportation hub not only the form and function it needs, but also the presence it deserves as one of Toronto's esteemed landmarks. Yet, it's not just the actual building that will carry us into the 21st century, it's the framework within which Aecon is building it – an open book, fully transparent partnership with the owners, architects, engineers and railways. It is just one example of what is quickly becoming a new way of doing business.

In Saskatchewan, we are installing a wet and dry mill at Potash Corporation of Saskatchewan's mine in Rocanville. It is the largest single source project Aecon has undertaken to date. It has been a client partnership built on trust within a cost reimbursable model; not a traditional bid/build model. This project follows closely on the heels of our successful work for Potash Corporation in Picadilly, New Brunswick.

In Northern Ontario, we are working in partnership with Kiewit on Ontario Power Generation's largest hydroelectric project in 40 years, this time on a target price basis, sharing the risk with the owner.

These projects, like Union Station, are prime examples of this new open-book approach to building major infrastructure projects. Price is no longer the sole determining factor in selecting which contractor is best suited for the job. What is important is quality, safety, reliability, ingenuity and, above all, trust.

Traditionally, building and infrastructure construction projects have been handled through the design, bid and build process. The owner hires the architects and engineers to translate its requirements into a design, and then puts the project out for bid. Typically, the contractor with the lowest bid gets the job. It is a traditional contract model that asks the contractor to bear the risks and can often produce a confrontational relationship rather than a cooperative, true partnership approach to project delivery. This kind of project delivery model is in marked contrast to my recent experience at Union Station. Even though each of us has our own vested interest in the train shed project, we share a remarkable unanimity of purpose. It is a very different dynamic.

AS THE INDUSTRY HAS EVOLVED, SO, TOO, HAS AECON. WE ARE A MUCH DIFFERENT COMPANY TODAY THAN WE WERE 10 YEARS AGO. TODAY, MORE THAN 40 PERCENT OF OUR REVENUE COMES FROM LARGE COMPLEX PROJECTS VALUED AT $100 MILLION OR GREATER, MANY OF WHICH CAN ONLY BE REALIZED THROUGH UNIQUE PARTNERSHIPS AND ALLIANCES.

The construction industry has evolved over the last few decades and the general contracting model, while still appropriate under some circumstances, has given way to more sophisticated approaches to deliver results: Design-build projects bring project team members together at the design phase to improve constructability and fast-track the schedule; Public Private Partnerships (also known as Alternative Financing and Procurement projects) help minimize risk and allow the public sector to tap into private sector financing sources; and Engineer Procure and Construct contracts provide a one-stop construction solution.

Outside of the mega-projects, we're also seeing a departure from the older, traditional contract models in favour of long-term open book partnerships with clients like Union Gas, Enbridge Gas, and Bell Canada. We are also seeing this extend into our contract mining business. In fact, an estimated one quarter of our overall revenue comes from multi-year service contracts and alliance agreements. So, whether we're installing satellite dishes for Bell or pipelines for Union Gas, our clients rely on us to work together as effective partners to provide a quality service on their behalf.

As the industry has evolved, so, too, has Aecon. We are a much different company today than we were 10 years ago. Today, more than 40 percent of our revenue comes from large complex projects valued at $100 million or greater, many of which can only be realized through unique partnerships and alliances. For this reason, we have very methodically and very deliberately built a company that offers a unique blend of operational expertise, project management skills and financial strength, all underscored by a deeply ingrained triumvirate of values: safety, excellence and performance.

In short, we have positioned ourselves to be the kind of partner with which our clients want to work.

FLYING HIGH IN ECUADOR

QUITO'S INTERNATIONAL AIRPORT OPENS

A decade after the project began, Aecon celebrates a successful transition from old to new with the opening of Quito International Airport.

It was a big day. The President of Ecuador, Rafael Correa, Quito Mayor Augusto Barrera, and representatives of the Quiport consortium gathered at the site of the new Quito International Airport on February 19, 2013 to celebrate the official opening of the long-awaited airport in the Andes.

After more than a decade of development, Quito's old, tired, unsafe and inadequate airport was being replaced by a modern international air terminal to provide Ecuador, a rapidly developing country of 15 million people, a new window to the world.

THIS IS THE LONGEST RUNWAY IN LATIN AMERICA. THE CONTROL TOWER IS THE TALLEST IN LATIN AMERICA. WE DO NOT HAVE TO BE LESS THAN ANYONE. ECUADOR, ON MANY THINGS, IS AT THE FOREFRONT OF OUR AMERICA.

– RAFAEL CORREA
PRESIDENT
ECUADOR

President Rafael Correa summarized the extent of its influence last year when he visited the construction site: "This is the longest runway in Latin America. The control tower is the tallest in Latin America. We do not have to be less than anyone. Ecuador, on many things, is at the forefront of our America."

He could well have added the success of the new venture had a distinctly Canadian connection. The overarching deal would be promoted as a Government-to-Government transaction between the Government of Canada, through the Canadian Commercial Corporation (CCC), and the City of Quito. The airport would be developed, financed and operated by Canadian partners Aecon Concessions and Airport Development Corporation, partially financed by Export Development Canada, and built by Aecon Constructors under the CCC umbrella. Aecon Constructors led the joint venture that built the airport, and Aecon Concessions leads the consortium that will now operate it for the next 28 years.

Steve Nackan, President of Aecon Concessions, arrived in Quito a few days prior to the big event. For him, the inauguration ceremonies marked the completion of the monumental task of developing, financing and building a new airport in this mountainous region. Yet, it

AIRPORT FILE

QUITO INTERNATIONAL AIRPORT

LOCATION: Quito, Ecuador

OFFICIAL OPENING: February 20, 2013

ALTITUDE: 2,400 metres above sea level

RUNWAY: 4,100 metres long

SIZE: 1,500 hectares

PASSENGERS SERVED:

5.5 million currently; estimated 7.5 million by 2020

BUILDINGS
Terminal – 38,000 square metres
Ancillary buildings – 34,000 square metres
Additional developments – 54,000 square metres

CARGO HANDLING: 200 million tonnes per year

AIRLINES SERVED: 19

AIRCRAFT MOVEMENTS: 82,000 per year

RECOGNITION:

// UN Global Sustainability Award, 2009
// New Millennium Award – International Tourism, Hotel and Catering Trophy, 2011
// Social Responsibility Award, United Nations Institute for Training and Research, 2010
// Airport Marketing Prize, Routes Offical Airline Guide (OAG), 2009 and 2010
// Best Practices in Environmental Sustainability in the Americas Award, United Nations Institute for Training and Research, 2009
// Latin American Transport Deal of the Year, Project Finance Magazine, 2006
// Latin American Airport Finance Deal of the Year, Air Finance Journal, 2005

was not altogether the end of the project. For Nackan and the Aecon team, everything hinged on the completion of one last epic assignment: the consortium had to transfer operations from the old airport to the new airport…and it had less than a day to do so.

At 6:55 p.m. on the evening of February 19, the last flight – a TAME plane to Guayaquil – left Mariscal Sucre Airport and the runway lights were turned off for the last time. Waiting in the wings was a convoy of 200 trucks ready to make the trip through the Andes, from the old airport to the brand new facility.

"I can't emphasize enough how critical this transition was for the future success of the new Quito International Airport," recounts Nackan, "and just how much pressure there was on everyone to make our 'moving day' work. Nackan maintains it's an entirely rare occurrence in the aviation industry to see this sort of transitional operation. "For such a thing to go flawlessly is doubly rare. The entire aviation community was watching us."

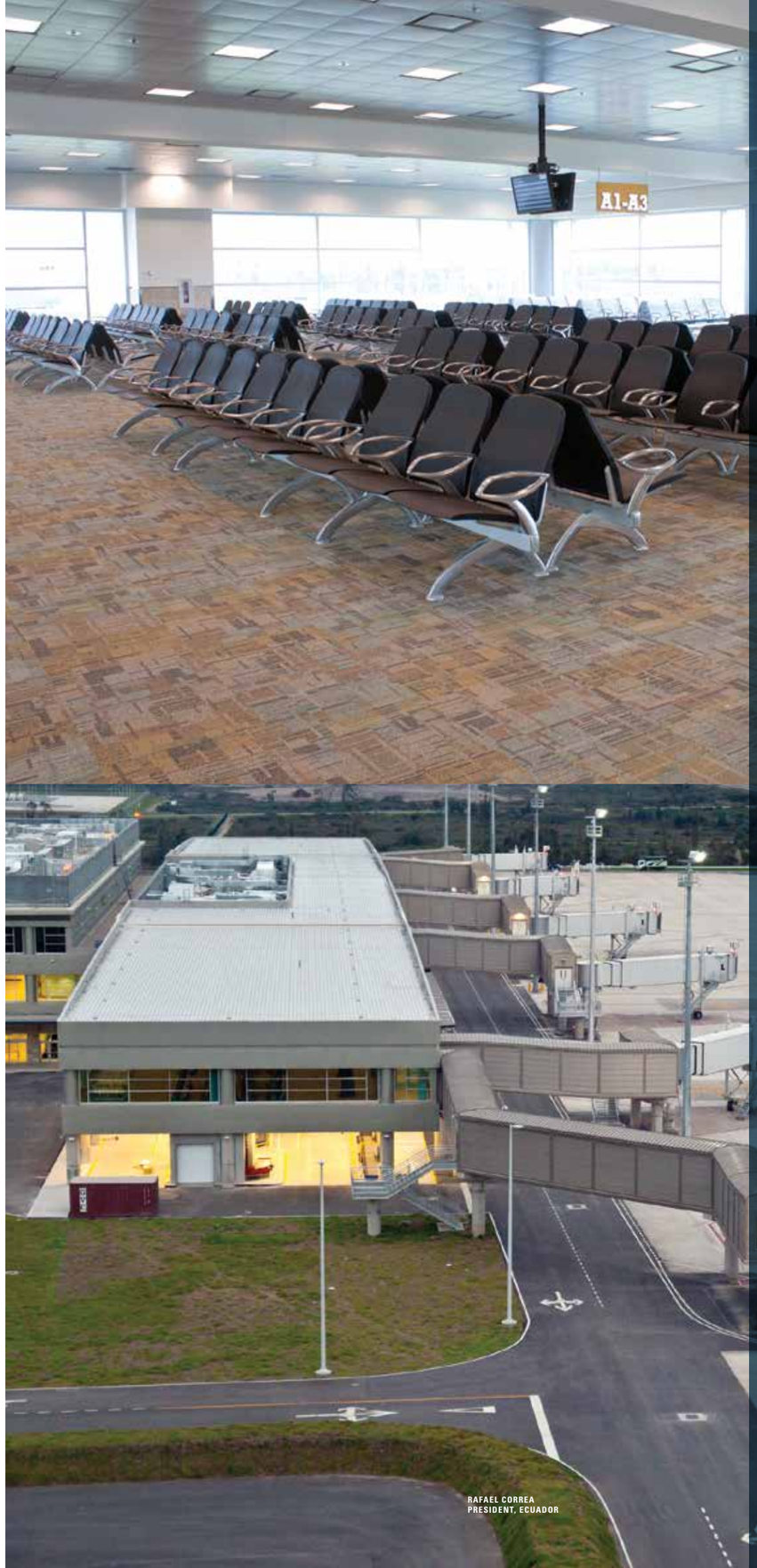
By the next morning, moving day was over. At 9 a.m. a TAME plane returning from Guayaquil successfully landed at the new airport. The transition had gone flawlessly.

> WHEN YOU THINK BACK TO THE BROAD, DUSTY PLATEAU THAT WE FIRST SAW 10 YEARS AGO, THE TRANSFORMATION IS QUITE INCREDIBLE. NOW WE'VE REACHED THE FINISH LINE. THIS IS A MODERN INTERNATIONAL GATEWAY THAT RIVALS ANY IN SOUTH AMERICA.
>
> – DOUG STEELS
> PRESIDENT
> AECON CONSTRUCTORS INTERNATIONAL

OUT WITH THE OLD, IN WITH THE NEW

When Mariscal Sucre Airport opened in 1960 in the northern outskirts of Quito, the facility was more than adequate for the airline industry of the time. By the turn of the century, however, it was showing its age. An outdated and cramped terminal struggled to cope with the roughly 2.2 million passengers a year, and the inadequate cargo facilities were hurting international trade. At 2,800 metres above sea level, it was one of the highest altitude airports in the world. The short runway and thin air meant planes only had enough fuel for one four-hour flight. With the city of Quito growing to more than 2.5 million people and the urban population engulfing the airport, there was no room for a much needed expansion. What's more, the proximity to residential neighbourhoods, the mountainous terrain, and the propensity for fog raised serious concerns about the airport's safety.

In 2002, Ecuador awarded Corporación Quiport – a consortium led by Aecon Concessions, Airport Development Corporation and the Houston Airport System (HAS) – a 35-year concession to design, build, finance and operate the new airport, as well as operate Quito's existing airport, until the new facility was finished. In 2004, Brazil's Andrade Gutierrez Concessoes and Constructores joined the Quiport team.



RAFAEL CORREA
PRESIDENT, ECUADOR

PROJECT FILE

QUITO INTERNATIONAL AIRPORT CONSTRUCTION

SCOPE:
A new international airport, 18 kilometres east of Quito, Ecuador

// New runway – 4,100 metres
// New terminal – 38,000 square metres
// New hangar – 5,000 square metres
// New control tower – 41 metres high
// New support buildings

CONSTRUCTION COST: US $500 million

TIMING: July 2006 to October 2012

GENERAL CONTRACTOR: A joint venture between Aecon Constructors and Andrade Gutierrez Constructores of Brazil

EMPLOYEES: 3,000 at peak

KEY AECON EMPLOYEES:
Nick Smortchevsky – Project Manager
Albert Furlong – Chief Financial Officer
John Whitaker – Contracts Manager
Walter Kolodziej – Senior Project Manager, Buildings

AECON BOARD MEMBERS:
Doug Steels – President,
Aecon Constructors International
Andre Jordan – EP Manager and Director

In July 2006, Aecon Constructors, the managing partner of the construction joint venture, working with its Brazilian counterpart, Andrade Gutierrez Constructores, broke ground for a new airport designed to serve the city for the next century.

Built on a bare mountain plateau nestled in the Andes Mountains, about 18 kilometres east of Quito, the new facility boasts all the requisite features of a modern, world-class airport: a 4,100-metre runway to accommodate the largest jets; a spacious and attractive terminal building to process more than five million passengers a year with ease; new hangars and cargo facilities; and the most technologically-advanced air traffic control systems.

Originally scheduled for completion in October 2010, airport construction came to a grinding halt in August 2009, about two-thirds of the way through the project, for some delicate re-negotiations between the Ecuadorian government and the consortium. The discussions led to a two-year delay but, once the issues were resolved, construction was once again underway with a firm completion date of October 2012.

"This has been an enormously ambitious project," says Doug Steels, President of Aecon Constructors International. "We had to move about seven million cubic metres of earth to prepare the site, and then build the runway, terminal, control tower, hangars and all the other buildings that are to be used for maintenance, security and safety – a project worth half a billion dollars. What's more, we had to do all this in a remote location that operates quite differently from what we are used to."

One of the biggest challenges, Steels notes, was working with the local labour force, which, at its peak, reached 3,000 employees, 95 percent of whom were Ecuadorian.

"We gave the local workers tremendous training, emphasizing safety all the way, and they really responded. The quality of work has been second to none."

In April 2012, the runway, taxiways and control tower were turned over to the civil aviation authorities and the first test flight was successfully completed. The terminal, hangars and support facilities were turned over to the tenants in stages over the next few months so they could complete the interior work for the stores, offices and lounges.

"When you think back to the broad, dusty plateau that we first saw 10 years ago, the transformation is quite incredible," notes Steels. "Now we've reached the finish line. This is a modern international gateway that rivals any in South America."

Yet, although the construction has come to a halt, this is one project Aecon won't be leaving behind. After more than a decade of airport development and construction, and 10 years spent managing the old Mariscal Sucre Airport, Corporación Quiport now embarks upon 28 years as the manager of the new Quito International Airport. Owned by Canadian and Brazilian interests (including Aecon Concessions), and staffed by local personnel and expat aviation professionals, the Quiport group is responsible for managing every aspect of the airport, with the exception of air traffic control. In return, it receives 89 percent of all regulated airport revenues (the other 11 percent going to the Ecuadorian government) and 100 percent of airport commercial revenues.

"We are hoping to be in this for the long haul," concludes Steels.

And, with another major expansion of the airport planned in the next five to seven years, it may not be very long at all before Aecon Constructors is back on the job.

MOVING DAY

February 19, 2013: Moving Day. Also known as the day when thousands of employees and multiple airlines made the switch from the old Mariscal Sucre Airport to Quito's new international airport. It's also a date that was boldly circled in red on Steve Nackan's calendar. Not that he really needed the reminder. He had been planning for this day for more than three years.

"We had less than 14 hours to transfer and activate an entire airport community: 4,000 employees, 19 airlines, 30 airport service companies, retail and food and beverage businesses, tour operators, a number of car rental companies, banks, cargo handlers, and government agencies – literally everything, everyone,

AECON CONSTRUCTORS LED THE JOINT VENTURE THAT BUILT THE AIRPORT. AECON CONCESSIONS LEADS THE CONSORTIUM THAT WILL NOW OPERATE IT FOR THE NEXT

28 YEARS

ONE OF THE BIGGEST CHALLENGES: WORKING WITH THE LOCAL LABOUR FORCE, WHICH, AT ITS PEAK, REACHED

3,000

EMPLOYEES, 95 PERCENT OF WHOM WERE ECUADORIAN.

every business and every service provider that was required to manage and service over 5.5 million passengers per year; handle over 82,000 aircraft movements per year; and move over 200 million tons of cargo per year." notes Nackan, President of Aecon Concessions and a member of the Quiport Board of Directors.

It was, indeed, an enormous task, and one that required some epic logistical planning.

Nackan offers a fitting analogy: "It's a bit like picking up a small, town and moving it – lock, stock and barrel – down the highway to a brand new location. People would go to sleep in their homes and wake up the next morning 20 kilometres away, relying on us to make sure that everything carried on as if nothing ever happened."

Last year, Quiport formed a dedicated Operational Readiness and Transition Team (ORAT) with airport staff, politicians and bureaucrats from key government agencies and ministries. The ORAT team also included operational advisors from Munich Airport and logistical experts from the world's largest speciality firm, DHL Industrial Projects.

An enormous amount of effort went into planning a smooth and orderly transition, with no detail considered too small to be ignored.

"Think of the poor guy who flew out of the old Mariscal Sucre Airport the day before it closed and arrived back at the new airport a few days later," poses Nackan. "How does he get his car from the old parking lot?" Nackan then rhymes off a list of some of the thousands of considerations that had to be covered:

"How will the meat supplier for the restaurants know when to make his last delivery to the old airport and when to start delivering to the new one?

"Will the customs and immigration employee know how to get to work at the new airport? Does she know where her desk is and will her computer work?

"What about Ecuador's most notable export – flowers? Will the refrigeration facilities at the new airport be ready to handle the roses?"

In the six months between July 2012 and January 2013, the ORAT team held 24 trial sessions at the new airport. Chief among their deliverables was ensuring the physical space was ready and available, the newly installed IT and mechanical systems were set to go, and airport personnel were comfortable with the new facilities before the big opening day. More than 7,000 people participated in the trials, which included simulations of peak day operations involving airline staff, ground handling crews, government agencies, operations personnel, 3,700 passengers and about 33,000 pieces of baggage.

Supplementing these preparations was the development of a Cut-Over Program by Quiport and its Munich Airport and DHL advisors, to help wind down operations at the old airport and transfer all to the new facility.

At the same time, DHL was getting the plans in place for Moving Day. DHL and local city police and fire department officials established a Unified Control Unit to oversee the move and carried out a number of trials to test the timing of the move, communication protocols and emergency response measures. The Unit also established control points along the transfer routes that would be staffed to respond to emergencies, and designated security points where police and army would be stationed to respond to disturbances or roadblocks.

On February 19, more than 200 trucks were at the airport waiting to transfer the last pieces of equipment from the old airport to the new. Also on hand to help coordinate the move: 80 traffic police officers, 33 firemen, 335 police and military personnel, three helicopters, and almost 100 motorcycles and patrol cars.

The last plane left the old Mariscal Sucre Airport on schedule at 6:55 p.m.. Six hours later, the last of the trucks were on the road heading for the new airport. Even though the two airports are only 20 kilometres apart, the routes winding their way through the mountains are a bit more circuitous. Forty-five trucks, mostly with oversized loads, took the southern route, a two and a half hour, 110 kilometre trip. The remainder took the shorter northern route, covering the 64 kilometres in just under two hours.

The last of the trucks arrived at the new airport at five o'clock in the morning, where an army of workers was waiting to unload the cargo and install the equipment. By 8 a.m., everything was in place and, at 9 a.m., the airport welcomed its first arriving flight.

Everything had gone according to plan. Moving Day was over and the new Mariscal Sucre International Airport was officially open for business.

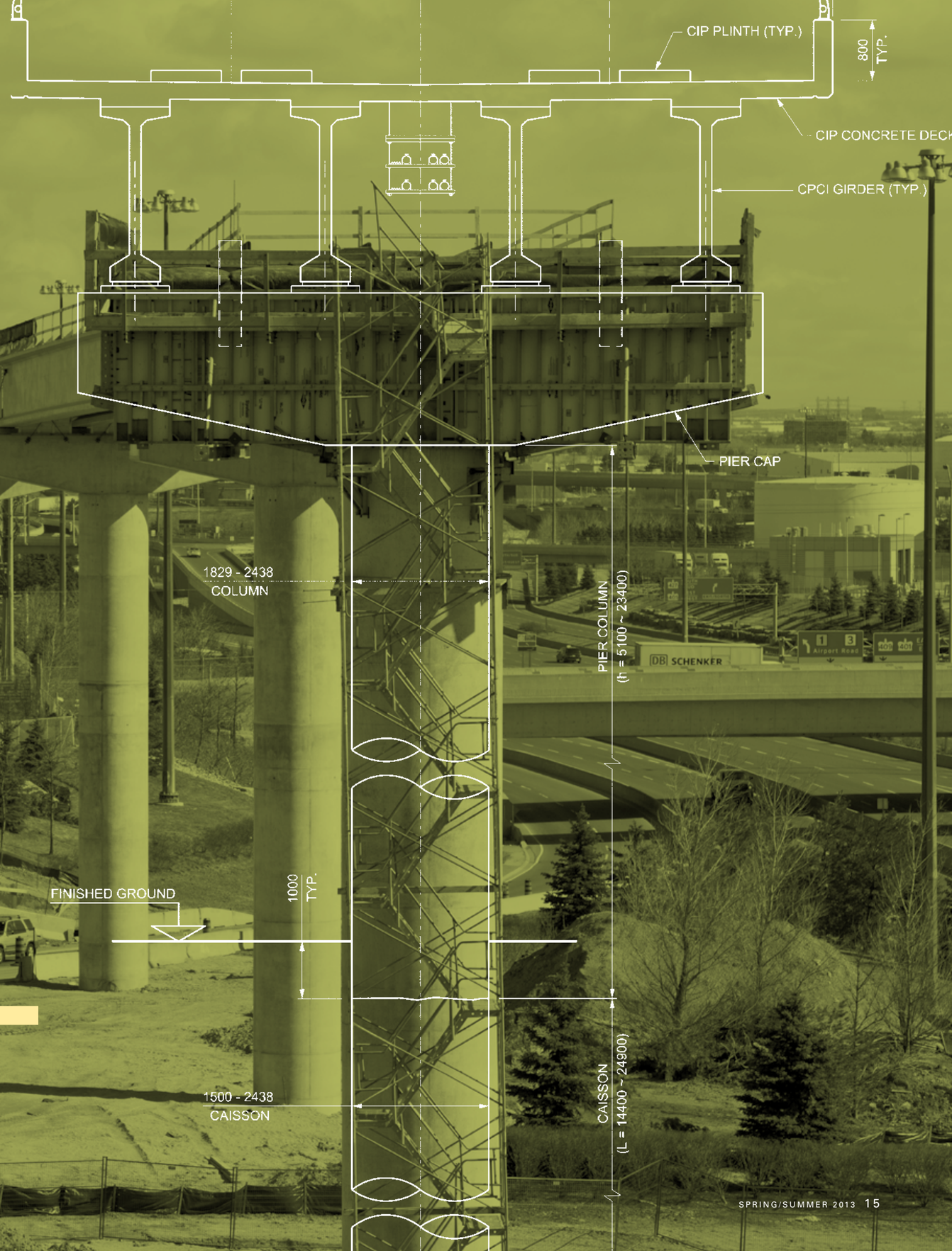
With all the moving parts, Nackan says the pivotal day was bound to be chaotic and more than just a little nerve-racking, but it was also tremendously exciting; a once-in-a-lifetime opportunity to be part of something so incredibly monumental. What's more, for the first time in months, Nackan knew he could finally flip the calendar to a new page.

> THE QUITO AIRPORT PROJECT IS ILLUSTRATIVE OF WHAT CANADIAN FIRMS BRING TO COMPLEX INTERNATIONAL CONSTRUCTION PROJECTS: CONSTRUCTION EXPERTISE, STATE-OF-THE-ART ARCHITECTURAL DESIGN AND ENGINEERING, AS WELL AS THE SUCCESSFUL IMPLEMENTATION OF A PUBLIC-PRIVATE PARTNERSHIP. THIS DECADE-LONG ACHIEVEMENT WOULD NOT HAVE BEEN POSSIBLE WITHOUT THE SUCCESSFUL PARTNERSHIP BETWEEN CANADA AND ECUADOR. IT IS A PLEASURE TO CELEBRATE THIS ACHIEVEMENT WITH OUR CANADIAN AND INTERNATIONAL PARTNERS AND LENDERS, THE REPUBLIC OF ECUADOR, AND THE MUNICIPALITY OF QUITO.
>
> –JOHN BECK
> CHAIRMAN AND CEO OF AECON GROUP INC.

FROM PLANE TO TRAIN

THE NEW UNION PEARSON EXPRESS

When the 10,000 athletes and up to 250,000 tourists arrive in Toronto for the Pan American Games in 2015, they won't have to brave the long line-ups for taxis at Pearson International Airport. A short walk to a brand new station at Terminal 1 and passengers will find a sleek modern train waiting to whisk them to Union Station.



Toronto has been waiting for decades for an air-rail link, looking enviously at other major international airports that have long enjoyed rapid transit links to their downtown cores. London's Heathrow is on a subway line. Charles de Gaulle and Frankfurt airports offer connections by rail. New York's bustling John F. Kennedy Airport has a rail link to a nearby subway station. But for the 33 million passengers using Toronto's Pearson International Airport each year, the only way to get to and from downtown is by car, bus or taxi.

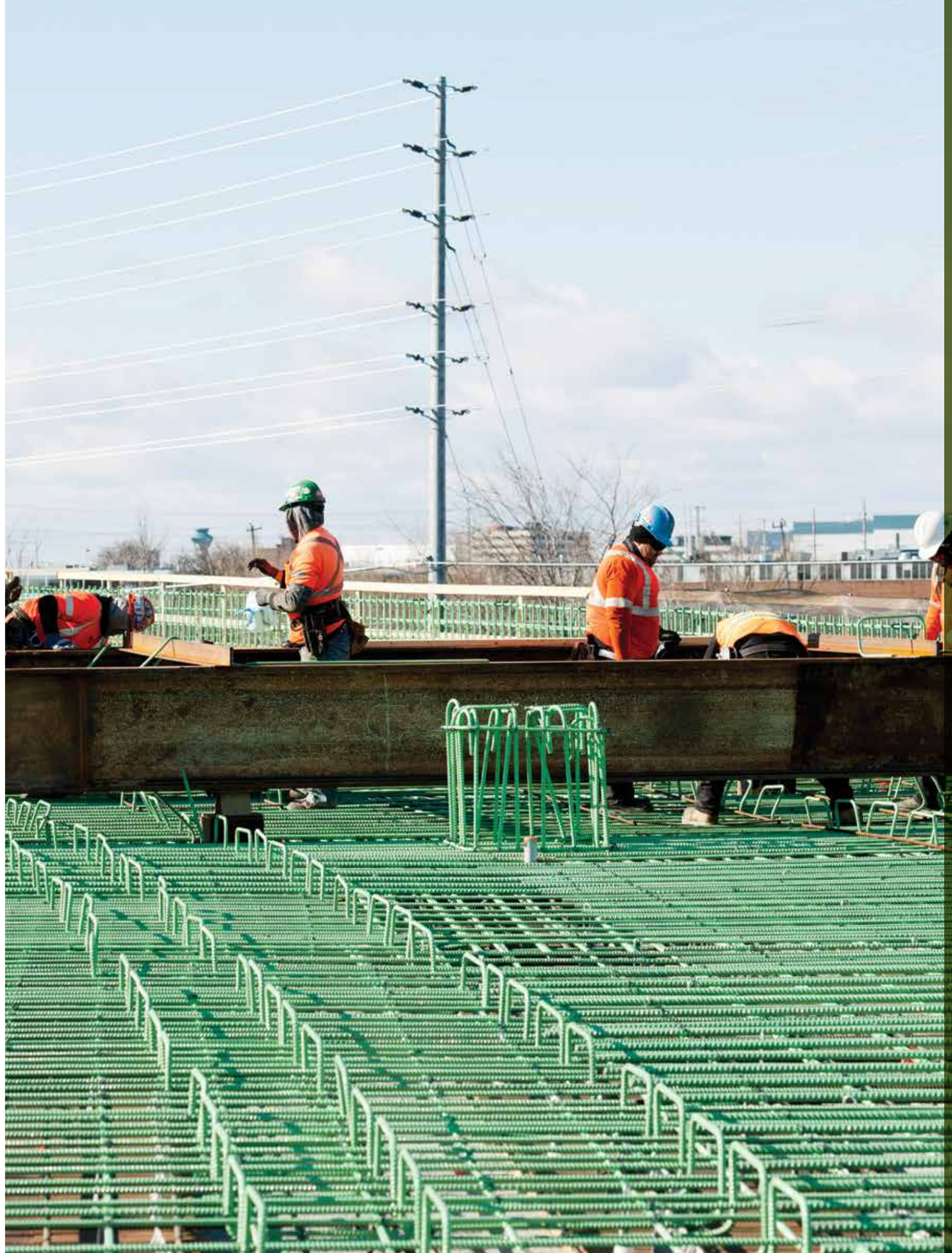
The solution has always been tantalizingly close. Just three kilometres from Pearson, GO Transit's Georgetown rail line carries thousands of commuters a day to and from Union Station. There was just one problem: When Pearson Airport was built, there were no provisions for a rail link. To get to the airport, the rail line would have to go over or under a tangled web of highways and access roads – an expensive and potentially disruptive proposition.

In 2001, Transport Canada kick-started the project with a proposal for an elevated rail link to connect the airport to the nearby train line, but it wasn't until 2010, after several preliminary designs, proposals and environmental assessments, that the provincial government finally got the project underway. It gave Metrolinx, the provincial agency that integrates transportation in Ontario's Golden Horseshoe, a mandate to build and operate the link.

In December 2011, Metrolinx awarded AirLINX Transit Partners, a joint venture between Aecon and Dufferin Construction, the contract to design, build and finance the spur line, as well as a new station at Terminal 1. A decade after the first conceptual proposal was drafted, the much anticipated construction of the Union Pearson Express was finally underway. The cost of the project: $130 million.

DRIVING INTO THE AIRPORT GIVES YOU A SENSE OF HOW THE LINE WILL LOOK, BUT WHAT YOU CAN'T SEE IS THE ENORMOUS AMOUNT OF WORK THAT WENT ON BELOW THE GROUND...

–VICTOR BRAGUES
PROJECT MANAGER



PROJECT FILE

UNION PEARSON EXPRESS (AirLINX)

AirLINX TRANSIT PARTNERS: A joint venture between Aecon and Dufferin Construction

CLIENTS: Metrolinx and Infrastructure Ontario

SCOPE:

// Construction of an elevated rail link from Toronto Pearson International Airport Terminal 1 to the existing GO Train line
// Construction of a new train station at Terminal 1

AECON GROUPS:

Aecon Construction and Materials Limited (ACML) – General construction, concrete placement
Aecon Buildings – Station construction
(AME) – Materials testing, Quality Control/ Quality Assurance
(AGI) – Electrical, lighting
Miwel – Sewer and watermain
Lockerbie & Hole – Station electrical/lighting

CONTRACT TYPE: Design/Build/Finance

TIMING: January 2012 to October 2014

CONTRACT VALUE: $130 million

LENGTH: 3.2 kilometres

GUIDEWAY DESIGN
Concrete deck – 11 metres wide
Concrete columns – 3 metres to 30 metres high; 180 to 240 centimetres in diameter
Concrete girders –35 to 40 metres long; 2.3 metres deep
Concrete caissons –up to 20 metres deep

STATION
Length: 100 metres
Width: 12 metres
Area: 1,255 square metres on three levels

MATERIAL QUANTITIES
// Concrete – 25,000 cubic metres
// Reinforcing steel – 3,000 tonnes
// Precast girders – 11,000 metres
// Caisson footings – 1,800 metres
// Rail track – 12,000 metres
// Structural steel girders – 250 tonnes

NUMBER OF EMPLOYEES: 200 (at peak)

KEY EMPLOYEES
Victor Bragues – Project Manager
Giuliano Covassin – Senior Superintendent
Anthony Thoms –Superintendent
Mike Trotman – Assistant Superintendent
Matthew Kopczinski – Senior Project Coordinator
Ian Munro – Environmental Health and Safety (EHS) Advisor
Les Weidman – T1 Station Project Manager

RIDING THE RAILS

The elevated guideway that will take the Union Pearson Express into and out of the airport will give visitors a dramatic introduction to Toronto. Carried on an 11-metre wide deck supported on slender concrete columns – some as high as 28 metres – the line will weave a path around buildings and over three major roads, providing a panoramic view of the city on what some have called "a civilized roller-coaster ride."

AirLINX Partners started construction in January 2012 and already, with little more than a year into the work, the elevated line is starting to take shape. Most of the concrete piers have been poured, most of the girders are in place and five bridge decks have been completed to date.

But what you see above ground is only the tip of the iceberg, says Victor Bragues, Project Manager for the joint venture.

"Driving into the airport gives you a sense of how the line will look, but what you can't see is the enormous amount of work that went on below the ground in order to get to where we are today."

Mapping out the route to carry the rail link around all the above-ground obstacles was one thing; avoiding all the below-ground obstacles was quite another. The rail spur line is built entirely on land owned by the Greater Toronto Airports Authority (GTAA) and the route is criss-crossed by underground cables, gas lines and steam heating lines. It took the joint venture six months to complete a topographical survey of the property to identify all underground obstructions in order to locate the caissons (the underground foundations supporting the columns) with precision, and keep utility relocations to a minimum.

By July 2012, AirLINX was ready to start pouring the caissons. Using a crane with a giant auger, the foundation crew drilled through the overburden until it reached bedrock, up to 20 metres below the surface, and then installed a rock socket to anchor the caisson. They then lined the hole with a steel form, typically about two metres in diameter, set the rebar cage in place and poured the concrete. Two weeks after the first caisson had been poured and the concrete cured, the second crew moved in to build the pier that supported the column.

To pour the columns – a process almost identical to that used to pour the caissons – the crew bolted two semicircular steel forms together and anchored the form to the ground with tie wires for stability.

> THIS ISN'T A TYPICAL RAIL LINE. WE DON'T HAVE A NICE CLEAR WIDE RIGHT-OF-WAY. THIS IS MORE LIKE BUILDING A RAPID TRANSIT LINE IN THE HEART OF THE CITY.
>
> –VICTOR BRAGUES
> PROJECT MANAGER

After the rebar cage had been installed, the concrete was poured and left to cure. The forms were then stripped and reused down the line.

Once the columns were set, another crew poured the pier caps that support the girders and bridge deck.

Work continued throughout the winter and early spring months of 2013, with the columns and piers substantially completed by the end of May 2013

AirLINX crews started lifting the precast girders into place last October (2012), each one measuring 35 to 40 metres long, 2.3 metres deep and weighing about 28 tonnes. Most of the spans will have four parallel lines of girders, although in a few places, as many as eight girders will be used. It typically takes about one day for the crews to place the girders across two spans.

With most of the structure in place, all that remained to be done was to pour the deck - an 11-metre wide slab of concrete measuring 25 centimetres thick. Work on the deck actually began in November 2012, shut down for the winter months and commenced again this past spring (2013) with the pouring of the deck. Once the deck is complete, PNR Railworks, a subcontractor from Alberta specializing in rail construction and maintenance, will lay the 12,000 metres of track.

Although Project Manager Victor Bragues says work on this project has gone relatively smoothly, his recounting of the sequence of events masks just how complex the scope has been.

"This isn't a typical rail line. We don't have a nice clear wide right-of-way. This is more like building a rapid transit line in the heart of the city. We're working in tight areas, constantly concerned about our surroundings and what may be hidden below the surface…and we're playing with traffic every day. This is Canada's busiest airport, so everything

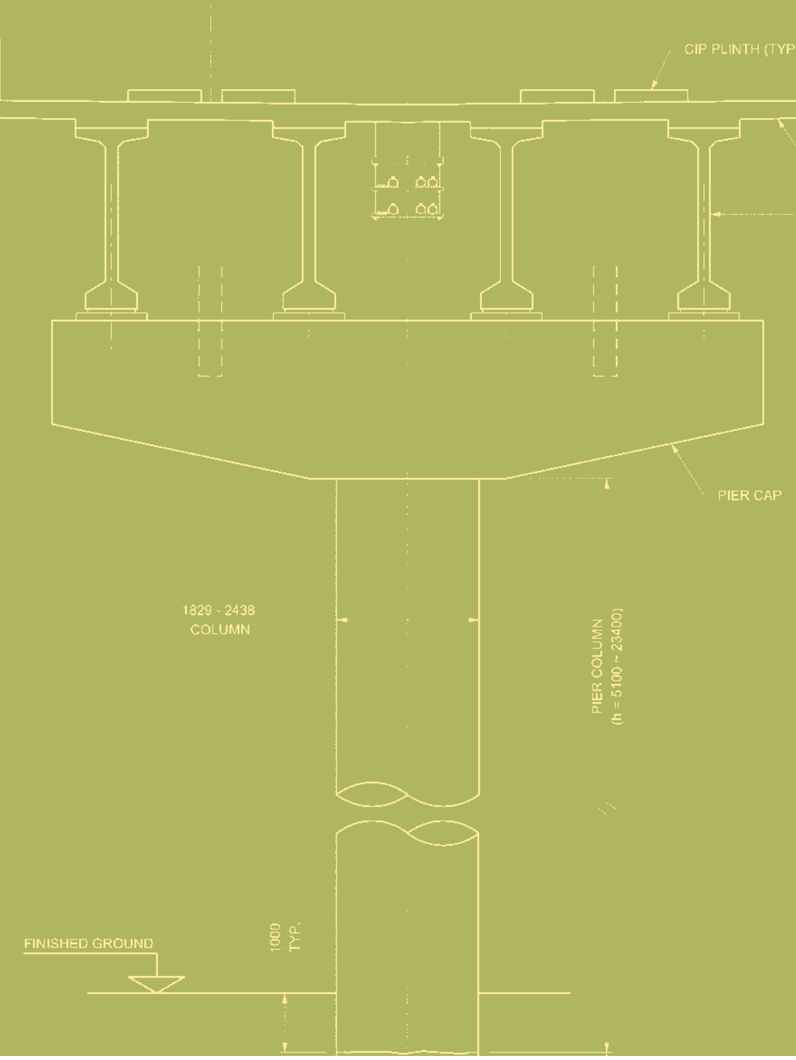
THE COST OF THE PROJECT:

$130 million

USING A CRANE WITH A GIANT AUGER, THE FOUNDATION CREW DRILLED THROUGH THE OVERBURDEN UNTIL IT REACHED BEDROCK, UP TO

20 metres

BELOW THE SURFACE, AND THEN INSTALLED A ROCK SOCKET TO ANCHOR THE CAISSON.



STRUCTURE

Rail lines carried on four concrete tracks

CONCRETE DECK
// 11 metres wide
// 25 centimetres thick

PRECAST CONCRETE GIRDERS
// 35 to 40 metres long
// 2.3 metres deep

CONCRETE PIER CAP
// 11 metres wide
// 2 metres deep

CONCRETE PIER
// 3 to 24 metres tall
// 1.8 to 2.4 metres in diameter

CAISSON CAP
// 4 metres wide
// 4 metres deep
// 9 metres long

CAISSON
// 14 to 25 metres deep
// 1.5 to 2.4 metres in diameter

ROCK SOCKETS
// 3 metres long

has to be coordinated with the GTAA. We can't do any work without their approval."

That said, Bragues is quick to compliment the strong working partnerships on this project, noting the smooth progress to date is due in no small part to the "exceptional cooperation" of all involved, "and not just between the joint venture team of Aecon and Dufferin Construction, but from Metrolinx, the GTAA, and the subcontractors as well. It really has been a team effort."

Bragues expects the guideway will be completed by December 2013.

LAST STOP – TERMINAL 1

The elevated guideway may be the most spectacular part of the project, but the station at Terminal 1 may be the most critical.

The Union Pearson Express passenger station at Toronto Pearson International Airport, conveniently located between Terminal 1 and the parking garage, will be the transfer and embarkation point for travellers. The station will be just a short walk from the terminal and adjacent to the station for the airport's Automated People Mover (APM), a cable-driven train on an elevated guideway linking Terminals 1 and 3.

The station, about 100 metres long and 12 metres wide, will feature a lounge for passengers and two tracks on either side of the enclosed platform. It will also offer, for the first time in Canada, a platform edge protection system that will keep waiting passengers on the platform well away from the tracks.

Given the tight confines of the site and the heavy traffic moving in and out of Terminal 1, building the station would be a huge challenge under normal circumstances but, notes Bragues, there is one additional complication: an APM typically ferries airport passengers between the two main terminal buildings at Pearson. As of mid-March 2013, the Union Pearson Express project had to shut down the APM in order to construct the new station.

"That's what is really dictating our construction schedule", notes Bragues of the shutdown. "We have just six months to get all the structural work done before the APM reopens in September."

Until that time, airport passengers will move between the terminals via a fleet of buses as Aecon's Buildings group sets to work on building the station. All interior work is expected to be completed by the end of the contract.

MEET:

PEOPLE MATTER

GIULIANO COVASSIN

SENIOR SUPERINTENDENT (STRUCTURES)
AECON CONSTRUCTION AND MATERIALS LIMITED (ACML)

He's been building bridges all his life, and, at 70 years of age, Giuliano Covassin is still putting in a full day's work doing what he enjoys the most: supervising the construction site. Currently, it's the new rail link at Toronto Pearson International Airport.

"Some say concrete is an official food group for my diet," he laughs, but it only takes a few minutes of chatting with the man about his career to realize he's not really joking at all.

It's no secret that you're 70 years old and yet, long after most people have retired, you're still working. What project are you on now and how is it coming along?
I am overseeing the mega-structure for the new rail link project between Toronto Pearson International Airport and Union Station [Union Pearson Express – AirLINX]. Our portion of the contract is the elevated guideway that takes passengers on the rail link from the GO Train line to the airport.

I've been building bridges and tunnels my entire career and this is about as big a structure as you can get: more than three kilometres long, with 80 concrete columns (some almost 30 metres high and two metres wide) and 294 precast concrete beams. Overall, there are over 25,000 cubic metres of poured concrete.

We have lots of challenges on this job, including drilling caissons that are 25 to 30 metres deep. Prior to drilling, we did locates to find all the buried gas, chilled water and fuel lines and we have had to do some major relocations of sewer mains, utilities, and communication fibres.

We started working on this project in January 2012 and expect to finish by the end of summer next year (2014).

You were born in Italy. When did you come to Canada and how did you get into construction?
I left Italy by boat in 1961 when I was 19 years old. Like so many other immigrants, I landed at Pier 21 in Halifax Harbour.

I was born in San Paolo, a small town in northern Italy, but I was facing a future with no work potential. My sister and brother had immigrated to Canada five years earlier and were living in Oakville, Ontario, so Canada was the obvious place for me to go.

There was a huge wave of immigration to Canada at that time and most started working in construction. I just followed the lead. I was fascinated by construction at a young age. My father was a carpenter and I loved watching him build things. My first job in Canada was as a labourer with A. J. Morgan Construction, building a bridge on Highway 401 near Napanee, Ontario. A couple of years later, I joined Sanco Construction as a lead hand. They were working on Highway 401 as well, and I stayed with them for the next couple of years.

Is that when you started Covassin Construction?
My brother and I started the company in 1965. We began by building curbs, sidewalks and concrete culverts. Then we were contracted to build bridges in Brampton, Ontario. We expanded and began building many more bridges in Oakville, Burlington, Huttonville and Dundas, Ontario. The company did really well. After seven years, we had over 40 employees. But we decided to go in different directions, and that's when I joined Armbro Construction, which eventually became Aecon.

Were you familiar with Aecon from your previous construction work?
I had built a strong working relationship with the Armstrong brothers, who founded Armbro Construction. Covassin Construction bought concrete and precast beams from ABC Ready Mix, which was a division of Armbro. Ted Armstrong arranged an interview for me with Gord Crandall, the General Manager, and Bob Lowndes, the Vice President. My first job with Armbro was in 1972 as a foreman in Brampton, Ontario. It wasn't long after that Gord Crandell asked me to work on Highway 417 in Ottawa. We were building five structures and doing about 15 kilometres of roadwork. The job was supposed to last 15 months but just before we finished, we were awarded another tender at the same place. Then, six months later, we won another contract. My 15 months turned out to be three

and a half years away from home.

And your family was still in Mississauga?
Yes they were. Most of the time, I came back every week, but sometimes, I would be away for two or three weeks. I had two small children and I missed so much time apart from my family. However, back then it wasn't like today when you can get a job anywhere. If you had a job, you tried your best to keep it. So, for the next 30 years, even though I didn't like being separated from my family, I travelled throughout Ontario, from Windsor to Thunder Bay to Ottawa…and everywhere in between.

Has all your work revolved around building structures?
Bridges have been my life. I have built just about every type of bridge – cable, post tension, concrete, prefabricated, bailey and steel tub bridges. And those bridges have crossed just about every terrain you can think of – water, highways, roads and train tracks.

I've also added a bit of variety by working on tunnels. The elevated rail link isn't my first job at the airport. In 1999, we built a tunnel under two runways so that CARA Foods would be able to reach their service facility from the airport. We had to execute the project in several phases. First, we built a portion of the tunnel using open-cut excavation. Then, when that was completed, we detoured the planes and built the next section. The contract value was about $45 million and took two years to complete.

What was your most challenging project?
The Windsor, Ontario train tunnel we built in 1980 to access the Chrysler plant. It went under the road and into the facility so that they could load the cars onto the trains for delivery. It had very tight quarters and we were working with continual train traffic around the clock. In fact, the tunnel dimensions were so tight there was very little clearance for the rail cars during construction. The second level of the auto carrier was restricted to transporting cars only, but one of the first carriers to leave the plant had vans loaded on top instead, which exceeded the clearance height limit. When the train got to its destination, there were seven vans with their roofs sheared off!

What was your most memorable project?
That would have to be working for CHIC (Canadian Highways International Constructors) on the Highway 407 project due to the vast volume of work. I worked there from 1994 to 1998, and my team was responsible for 82 structures, spanning from Highway 400 across to Highway 403. Many of the guys on the management team at ACML started their careers on that project.

What do you think is the most important ingredient for the success of a project?
Communication. A successful project means not only communication with my Aecon team, but also with the Ministry of Transportation, joint venture teams, suppliers and engineers.

You do whatever it takes to complete a job, and that can mean long hours, late nights and working on weekends. But you can only do that if you have fun with your team. As a superintendent, you always need open communication with your foremen and labourers to have the complete trust of the team.

You've now been working in construction for more than half a century. How have things changed?
Technology has played a large role with computers and GPS, and that's had an impact on the control over a project: specifications are tighter; there are more restrictions; and the schedules are often accelerated.

We also see much more control and reinforcement of environmental issues and protection of nature and wildlife. When we were building the bridges on the Queen Elizabeth Way over Sixteen Mile Creek and Bronte Creek in Oakville, Ontario a few years back, we had to construct a new nesting ground for the snakes. When I first started in construction, we wouldn't have paid the slightest attention to them; we figured they could look after themselves.

Overall, though, I would say it's corporate attitudes toward safety that have changed the most. We always cared about safety – nobody wants to see someone hurt on a job site – but it wasn't the number one priority that it is today. The regulations are much tighter now; the inspections are stricter; and companies are much more aware of their responsibilities. When I wake up in the morning, the first thing I think about is what I have to do today to make sure every worker gets home safely to their families.

A lot of Aecon supervisors got their start working for you and have likely been very influenced by your style and approach…
I have worked with Angelo Cornacchia longer than anyone else…and Delmer Lougheed, who is still with Aecon and started the year before I did. There's also Joaquim Ramos, Dean Smith, Fernando Martins, Norberto Viera, and lots of others. There's definitely a lot of satisfaction in seeing their progress. I'm really grateful for all the great supervisors out there who understand the sacrifices needed to complete the job, and who have given the company – and me – their dedication and loyalty.

Yet it wasn't just supervisors that you worked closely with…
That's true. There have been a lot of other people who contributed to my career; who mentored me. To this day, I respect each one of them. Harold Crumb, who took over Armbro's operations in the early 1980s, is one. We used to sit down together and plan out how we should tackle a project. I learned a lot from Harold and appreciated his confidence in my abilities. Jim Rosien took over around 1990, following Harold's death. Jim worked for me as a field engineer after he graduated, but even when he became my boss we still maintained a good relationship and friendship. He left the company in the early 2000s. John Chow, our current Vice President, also started as a young field engineer when we were working on the Highway 7 bypass near Peterborough, Ontario in 1981. He was a go-getter from the start; first on the job in the morning and the last out at night. With his determination and dedication, his success doesn't come as a surprise to me.

You mentioned that earlier in your career, when you were away from home, you missed the family, but you definitely have family ties through Aecon.
My son, Robert, worked with me part-time at Armbro every summer since he was in Grade 9, and then started full-time at Armbro with the Structures crew after he finished college. When Ross Walters, the Armbro Safety Manager retired, Robert saw the opportunity in the Safety department and has never looked back. He's now an Environmental Health and Safety (EHS) Director with the Transportation group and has been with the company for almost 20 years.

But I think the highlight of my career was a few years ago when my grandson, Lucas, was working at Aecon while he finished his university degree. So, for three years, we had three generations of Covassins working here!

Tell us about your other part-time job that involves helping families enjoy their connection with Aecon.
Many years ago, I organized a family picnic to celebrate Armbro's 75th anniversary. Over the years, that event has developed into the annual Aecon Infrastructure family picnic. I seem to have inherited the job of working with others to pull it all together. Last year, we had almost 400 people at the picnic, so it's become a really big event, and a day when we can get together with our families to have fun.

So, now that you're back at the airport working on another major project, do you ever stop to wonder what keeps you going, long after other people would have happily retired?
Some say that concrete is an official food group for my diet! (laughs) In all honesty, I get a lot of satisfaction from completing a bridge on time, on budget, and safely. I enjoy the challenge of hearing people say, "That's not possible!"…and then proving them wrong. I also love being able to tell my family and friends, "I built that," because it truly is an amazing feeling.

Do you have plans for retirement?
There is nothing set in stone. I would like to spend more time at the cottage and travelling with my wife, but I'd miss the challenges of working every day and teaching the next generation of foremen and superintendents. As it stands, we have a job to finish at the airport. Maybe once that's over I'll think about what to do next. There's always another project!

EMPLOYEE FILE

GIULIANO COVASSIN

CURRENT POSITION:
Senior Superintendent (Structures)
Aecon Construction and Materials Limited (ACML)

EXPERIENCE:

1961–63	A.J. Morgan Construction – Labourer
1963–65	Sanco Construction – Lead hand
1965–72	Covassin Construction – Co-owner
1972–Present	Aecon Group Inc. (including Peel Construction, Armbro & C.H.I.C)

BORN: San Paolo, Italy

HOME: Mississauga, Ontario

FAMILY: Married to Giacomina (46 years) with three children (Catya, Tanya and Robert) and three grandsons (Lucas, Giuliano and Massimo)

Water Works

UPGRADING THE FORT MCMURRAY WATER TREATMENT PLANT

As one of the country's leading mechanical contractors, Lockerbie & Hole has more experience than most with installing pumps and pipes. But installing a 48-inch pipe with a 5.4 tonne valve…that's exceptional, even for Lockerbie & Hole.

The Regional Municipality of Wood Buffalo is a victim of its own success. Home to the booming Athabasca oil sands of northern Alberta, the Region is one of the fastest growing municipalities in Canada. In 2006, the population count hovered around 50,000 people. Today, little more than six years later, it has doubled. At more than 100,000 residents, the Region's influx of people and businesses has put a tremendous strain on the municipality and its services. Fort McMurray, the Region's largest city, is currently facing a number of challenges: it suffers a chronic housing crisis; the airport expansion won't be ready until 2014; the twinning of Highway 63, the Region's main link to the south, won't be finished until 2016; and, perhaps most critical of all, the Region is in real danger of running out of fresh water.

> THE SIZE OF THE PUMPS AND PIPES THAT ARE NEEDED TO MOVE 80 MILLION LITRES (OF WATER) A DAY THROUGH THE PLANT ARE ENORMOUS
>
> – BOB SMITH
> PROJECT MANAGER
> LOCKERBIE & HOLE

Originally built in the 1980s, the local water treatment plant carries a capacity of 36 million litres of water per day. That's enough to meet the typical daily needs of 50,000 people, but not nearly enough to sustain the Region's recent population spurt.

In early 2010, the Region of Wood Buffalo awarded a contract to Bird Construction (general contractor) and Lockerbie & Hole Contracting to expand the water treatment plant, more than doubling its capacity to 80 million litres per day. As would be expected with a brand new facility, the plant will boast all the latest technology: the operations building will be built to LEED-certified standards; the plant will feature Actiflo clarification; and the treatment facilities will be expanded and upgraded – all of which makes for an interesting and challenging project.

But there's one added complication that makes this project more formidable than most, notes Bob Smith, Lockerbie & Hole's Project Manager. As the only source of potable water for the Region, the old plant has to keep operating, even during construction.

PROJECT FILE

THE FORT MCMURRAY WATER TREATMENT PLANT

PROJECT: Expand water treatment plant from 36 million litres per day to 80 million litres per day

CLIENT: The Regional Municipality of Wood Buffalo

LOCATION: Fort McMurray, Alberta

AECON GROUP: Lockerbie & Hole Contracting

SCOPE: Mechanical Services

// Upgrades to existing plant processes and chemical systems
// Mechanical upgrades to new operations building
// Installation of pipes, pumps, tanks and vessels; sprinkler system; insulation; controls; heating, ventilation and cooling

Water Treatment Plant:

SIZE: 16,000 square feet

CAPACITY: 80 million litres per day

Processes:
// Water intake chemical treatment
// Actiflo clarification
// Filtration

Operations Building:

SIZE: 30,000 square feet; five storeys

CONTRACT VALUE: $26 million

TIMING: November 2010–November 2013

EMPLOYEES ON SITE:
Lockerbie & Hole Employees – 28
Trades – 25

KEY EMPLOYEES:
Bob Smith – Project Manager
Rob Brown – Superintendent
Donat Ladouceur – Quality Control/ Quality Assurance
Kevin Goldsworthy – Head Foreman
Trent Lipinski – Project Coordinator
Cheryl Ursel – Project Administrator
Bobby Rodgers – Building Foreman

"From time to time, we have to shut down the old water treatment plant so that we can install equipment and hook up some of the systems," explains Smith. "The problem is the reservoir only has enough water to last about 12 hours in the summer months when the usage is at its peak and, obviously, if the taps run dry, there are going to be a lot of unhappy people." The solution, he notes, rests in the precision of extensive planning and coordination. "It's been a bit nerve-racking, but, fortunately, we've developed a great relationship with the plant operators, and so far everything has gone smoothly."

In November 2010, the first Lockerbie & Hole employees arrived on site, and by the beginning of the following year, work was well underway.

Water is something we take for granted, says Smith. We turn on a tap and out gushes as much fresh clean water as we need. Few people realize just how much is involved in making sure that water supply is safe and reliable.

"The Fort McMurray Water Treatment Plant has four distinct treatment areas," he explains. "The water, which comes from the nearby Athabasca River, goes to settling ponds first and then through an intake pipe, where it's treated with chemicals. After that, it passes through a filtration tank and into another pipe, where ultraviolet light disinfects the water and kills the microorganisms." The final stop, he says, is the clear well, which also serves as a reservoir before the water goes into the Region's distribution network.

"It is a sophisticated chemical process on a scale that dwarfs almost anything that you'll find in the private industrial sector. The size of the pipes and pumps that are needed to move 80 million litres a day through the plant are enormous."

Lockerbie & Hole is responsible for installing all the pipes, pumps, tanks, equipment and controls in the new plant, as well as the mechanical systems, sprinklers and heating, ventilation and cooling in the new operations building. Lockerbie & Hole's Vancouver fabrication plant supplied most of the small diameter piping.

By the early months of 2013, the project was two-thirds of the way through, with most of the major installation completed. Lockerbie & Hole had brought on 50 employees, about half of which were local tradespeople.

Progress on the job has been steady and successful. In June 2012, for example, Lockerbie & Hole installed the water intake pipe, a massive 36-inch diameter pipe measuring 13 metres long. The pipe not only brings the water into the plant but also serves as the conduit for the first phase of the water treatment process. Various chemicals (sodium hypochlorite, ammonium fluoride and potassium permanganate, among others) stored in tanks alongside the intake pipe are injected into the water through small PVC pipes drilled into the main header. Since the intake pipe feeds the water treatment plant, Lockerbie & Hole had to design and build a temporary bypass line to take water to the existing treatment plant before it could install the new line. The pipe used for the header weighs about 10 tonnes. Lockerbie & Hole will also install the filtration equipment used in the next stage of the water purification process. The filtration tank, basically a giant concrete pool 30 feet deep, 80 feet long and 50 feet wide, uses anthracite sand to filter out particles as small as five microns (or eight times smaller than any particle visible to the naked eye). B-train tractor-trailers, which are trucks with two 50-foot trailers, are slated to deliver the 122.5 tonnes of sand needed to fill the tank in July 2013.

The Lockerbie & Hole crew's attention is currently focused on what will be the largest task of the entire project – installing the Actiflo clarifier. The Actiflo system uses a high-rate compact water clarification process with microsand and polymers in a draft tube to induce flocculation in the water – a process by which particles too small to filter are brought together into larger clumps or "flocs".

Once the water has gone through the clarifier and has been filtered, it will be pumped by vertical turbines through the existing ultraviolet disinfection system and into the clear wells. From the clear wells, larger vertical turbines will send the water to the Region's distribution network. In total, Lockerbie & Hole will install 13 vertical turbine pumps, each pump measuring about 10 metres high and weighing between five and seven tonnes.

Smith expects all work on the clarification system should wrap by fall 2013.

With only a few months to go until the project is completed, Lockerbie & Hole is well into the final stages of work, installing the piping and equipment in the plant, and finishing construction on the nearby operations building. The last task will be commissioning the new treatment plant, starting up and testing all the equipment, and then tying into the existing facility.

The project is expected to be completed, on schedule, in November 2013.

WATER IS SOMETHING WE TAKE FOR GRANTED. WE TURN ON A TAP AND OUT GUSHES AS MUCH FRESH CLEAN WATER AS WE NEED. FEW PEOPLE REALIZE JUST HOW MUCH IS INVOLVED IN MAKING SURE THAT WATER SUPPLY IS SAFE AND RELIABLE.

PROJECT MATTERS

CHANGING *THE* Channel

AECON NUCLEAR COMPLETES ITS FIRST REACTOR FUEL CHANNEL REPLACEMENT PROJECT WITH BRUCE POWER

After more than a year of planning, practice and rehearsals, Aecon Nuclear successfully completed its first fuel channel replacement at the Bruce Nuclear Power Plant in October 2012. Project Manager Dan Olson called it a daunting assignment and an enormous responsibility, involving more than 150 employees. Now the challenge is to get ready for the next fuel channel replacement in 2015.

At first glance, a fuel channel looks like almost any other length of pipe that you would see in an industrial complex – a slender metal tube about 11 metres long and weighing no more than 500 kilograms. And if this was just any industrial complex, replacing a piece of pipe this size would be routine – a couple of workers and a crane and the job is done. But a nuclear power plant is not just any industrial complex, and a reactor fuel channel is not just any piece of pipe. It takes 60 skilled tradespeople working around the clock, 200 unique custom designed tools, and well over a week to get the job done.

In May 2011, Bruce Power, the operator of Canada's largest nuclear power plant, awarded Aecon Nuclear the job of replacing fuel channels at the Kincardine, Ontario nuclear power plant as part of a Master Service Agreement.

"The fuel channel assembly is designed to last for about 30 years, so replacing a fuel channel is not a routine event," says Aecon Nuclear Project Manager Dan Olson. "In fact, it's a relatively rare occurrence. Typically it is done during a scheduled outage when other maintenance and repair work is underway. We knew Bruce Power was probably going to replace one or two fuel channels in 2012, but that was about as firm a date as we had."

It was an enormous undertaking. Aecon Nuclear had to be prepared for a call at any time.

"This isn't a minor repair job," Olson explains. "It is a massive operation that has to be done with the utmost care and military precision. There's no room for error. With Ontario's heavy reliance on emission-free nuclear-generated electricity, Bruce Power must fit fuel channel replacement into a short maintenance outage window. They are relying on us to get the job done safely, accurately and quickly."

> THE FUEL CHANNEL ASSEMBLY IS DESIGNED TO LAST FOR ABOUT 30 YEARS, SO REPLACING A FUEL CHANNEL IS NOT A ROUTINE EVENT.
>
> – DAN OLSON
> PROJECT MANAGER
> AECON NUCLEAR

PROJECT FILE

FUEL CHANNEL REPLACEMENT

SCOPE: Replace two fuel channels in a nuclear reactor

WHO: Aecon Nuclear

CLIENT: Bruce Power

LOCATION:
Bruce Power A, Unit 4
Kincardine, Ontario

TIMING: June 2012–December 2012

NUMBER OF EMPLOYEES:
Staff – 40
Trades – 110

KEY EMPLOYEES:
Dan Olson – Project Manager
Ken Parker – Project Superintendent
John Brining – Senior Advisor, Construction
Sandor Nagy – Project Coordinator
Dan Rocci – Project Coordinator
Michael Kish – Project Coordinator
Matt Finn – Tech Advisor, Component Prep & Inspection
James Mononen – Tech Advisor, Fuel Channel Installation
John Miller – Tech Advisor, Fuel Channel Removal
Matt Ryan – Tech Advisor, Bellows Welding
Sebastien Benoit – Tech Advisor, Vault Systems
Cory Wilson – Field Quality Control Lead
David Hines – Project Coordinator, FME Lead

A FUEL CHANNEL IS NOT JUST ANY PIECE OF PIPE. IT TAKES

60

SKILLED TRADESPEOPLE WORKING AROUND THE CLOCK,

200

UNIQUE CUSTOM DESIGNED TOOLS, AND ALMOST TWO WEEKS TO GET THE JOB DONE.

This was an assignment that required a tremendous amount of preparation. Every aspect of the operation had to be meticulously planned to complete the job as efficiently as possible without compromising employee safety or the integrity of the client's plant.

"We had to hone our skills and perfect our techniques on our fuel channel mock-up before we could even think about working on a real reactor…and that took tons of training and practice."

With Bruce Power's full support and funding, Aecon Nuclear built an exact replica of a portion of Bruce reactor fuel channels in an 8,000 square foot bay at Aecon's Cambridge, Ontario fabrication facility. They started training a core group of employees. At the same time, the Aecon Nuclear team updated the operating procedures and refurbished some 200 custom built tools that are required to replace the fuel channels. Finally, confident they had covered all the basics, the waiting began.

The call came in June 2012.

THE CURTAIN GOES UP

Bruce Power has eight CANDU nuclear reactors, each one reliably and safely producing about 740 megawatts of electricity. Nuclear reactors require constant maintenance to ensure their safe and continuous operation. So, after shattering its post-refurbishment, long-run record by continuously producing electricity for 570 days, Bruce A's Unit 4 was scheduled to shut down in October 2012 for a planned maintenance outage that would include the replacement of one of its fuel channels.

For Aecon Nuclear, with less than four months to gear up for the project, the clock began ticking.

Aecon Nuclear had its core team of support staff and supervisors in place but it still needed to hire about 60 tradespeople, primarily welders and mechanics from the local Boilermaker and Millwright Unions, to do the work at the reactor face. What's more, all of them had to be trained at the nuclear reactor mock-up in Cambridge.

Since space was limited, the training sessions, led by six trainers and six technical advisors, were set up a month apart, with 20 employees in each session. The workshops, a mix of classroom work and hands-on practice at the mock-up, addressed safety, tool familiarization, and basic standards and procedures.

By early July, with the bulk of the employees trained, Aecon Nuclear was ready for its first full dress rehearsal.

It didn't go quite as expected, recalls Peter Dreker, one of the trainers.

"We met our safety goals but we ran into some component damage issues and didn't meet the schedule," he notes. "We identified a lot of areas for improvement on tool management and communication between the remote control centre and the workers in the vault. It was disappointing but that's why you rehearse. Better to discover the issues in the classroom than to run into problems at the reactor face."

By the time Aecon Nuclear completed two more rehearsals, the issues had been ironed out.

CONSIDERING THIS WAS OUR FIRST FUEL CHANNEL REPLACEMENT, WE WERE VERY PLEASED WITH THE WAY THINGS WENT. BRUCE POWER GAVE US THEIR COMPLETE SUPPORT.

—DAN OLSON
PROJECT MANAGER
AECON NUCLEAR

Meanwhile, the rest of the team was starting to mobilize, setting up crew trailers at the Bruce site and getting the storage areas ready for the equipment.

By October 23, two weeks ahead of the start of the outage, everything was on site and ready to go.

WORKING AT THE FACE

Bruce Power brought Unit 4 down in early October, but ran into a few issues during the shutdown that delayed the start of Aecon Nuclear's work. A month later, all the prerequisite activities were completed and Bruce Power gave Aecon Nuclear access to the vault to start the fuel channel replacement.

Replacing a fuel channel is a painstaking job. Only four employees can work in the vault at the reactor face at any given time. They are dressed in full protective suits, each with its own air supply, to protect them from airborne radioactivity. Their time in the vault is strictly limited to three hours based on radiation exposure and fatigue considerations. The difficulty of the job is compounded by the limited access the workers have to the target fuel channel. There are various interferences created by neighbouring fuel channels and other reactor components.

The radiation hazards in the work area dictate that much of the work be done from a distance using the custom designed tools.

At the end of each shift, the next four workers who have already suited up and completed a pre-job briefing move into action. The cycle goes on around the clock until the work is completed, which explains, in part, why so many tradespeople are required.

In their protective suits, the workers heading into the vault look much like astronauts heading off to their space station, and once the vault closes behind them, many of them feel a sense of isolation probably not much different than how the astronauts feel when they are out in space. In fact, they may be on their own in the vault, but they are never lonely. The workers are in constant contact with mission control, the fuel channel replacement control center, and a communication room about 700 metres away. Aecon Nuclear technical advisors and supervisors monitor the work on

1 For the full story of Aecon Nuclear's fuel channel replacement training facility, see ONE magazine, Spring 2012 issue.

FUEL CHANNELS
THE HEART OF A NUCLEAR POWER PLANT

At the heart of the reactor core in a CANDU nuclear power plant is a vessel known as a calandria – a large metal drum filled with heavy water. Running horizontally through the tank are 480 calandria tubes, each of which has an inner pressure tube containing the uranium fuel bundles. The pressure tube, along with end-fitting assemblies, is known as a fuel channel. The channels, about 11 metres long and 10 centimetres in diameter, are made from a zirconium alloy, a hard-wearing, corrosion-resistant metal.

Heavy water is pumped through the fuel channels, absorbing the heat created by the uranium undergoing fission in the tubes. Once the heavy water has reached a temperature of about 300°C, it is piped to a boiler where ordinary water is converted into high pressure steam. The steam turns the turbines which, in turn, generate the electricity.

With eight reactors at its Kincardine nuclear power plant, Bruce Power has a total of 3,840 fuel channels designed to last about 30 years, but, sporadically, a fuel channel has to be removed and replaced, typically during a scheduled outage.

closed circuit television, conversing with the workers through radios in their helmets. Encouragement is constant; advice freely given; and help just a short distance away.

What's more, just like astronauts, the workers at the face are supported by a huge team ensuring the work goes on uninterrupted and unimpeded. Behind the scenes, trade workers stage the tooling ready to move into the vault for the next operation. They prepare the work platform at the opposite face, and retrieve and repair tools and equipment to ensure the platform workers can carry on with their assigned tasks.

It took five days to remove the channel and a further two days of inspections before the Aecon team could start the installation of the new channel. The job was finally completed five days later.

"Everything went quite smoothly and we would have been more than happy to pack up the tools and go home, but Bruce Power had thrown us a bit of a curve," explains Dan Olson. "A few days after we mobilized, Bruce Power told us we weren't replacing just one channel, we were actually replacing another one as well. Our entire plan, including the maximum radiation dose that any one worker could be exposed to, revolved around replacing one fuel channel. We had to hire another 50 workers and put them through an intensive training session on a very compressed schedule so that they would be ready to go in less than a month's time. Fortunately, our boilermakers and millwrights are of a very high calibre and many of them had worked in nuclear facilities before. This made our job a lot easier."

Aecon Nuclear started replacing the second fuel channel on November 26, and by December 7, the job was done. Two days later, the majority of the workforce was on their way home.

For Aecon Nuclear's team, however, the work wasn't quite over. "Considering that this was our first fuel channel replacement, we were very pleased with the way things went," notes Olson. "Bruce Power gave us their complete support, and if we hadn't had a complete integration of the Aecon execution team and the Bruce Power management team, I doubt this would have been possible."

In retrospect, Olson maintains all the training and preparation definitely paid off, yet no amount of training could fully duplicate the experience gained from actually doing the work.

"We did hit some bumps along the way and encountered some unexpected technical difficulties, and learned a lot of lessons – more than 1,000 by the time we had finished the debriefing. So now we have to get ready for the next fuel channel replacement: updating our procedures, implementing the lessons learned, and refurbishing the tool set."

The next fuel channel replacement is set for sometime in 2015, which, given the amount of work that has to be done to be fully prepared, is really not that far off, says Olson.

STATE OF THE UNION

With 1.4 million customers and a pipeline network more than 60,000 kilometres long, Union Gas helps power Ontario. Founded more than a century ago, it is the second largest natural gas utility in Canada.

GAS PIPELINE INSTALLATION – RURAL ONTARIO

ONE HUNDRED YEARS OF HISTORY

In 1911, three rival natural gas companies, intent on controlling the natural gas supply from the Tilbury Oil Field in southwestern Ontario, decided to join forces. The new company, appropriately enough, became known as Union Natural Gas.

At the turn of the 20th century, southwestern Ontario was one of the largest natural gas producing regions in the world. The first commercial well in Canada opened in Essex County in 1889. Drilling and operations started to boom and the Tilbury Oil Field became a much sought after source of natural gas. In 1913, Union built a $150,000 compressor plant at Port Alma, Ontario on Lake Erie to help distribute the gas to distant markets. Six years later, Union Natural Gas had moved its head office from Niagara Falls to Chatham, Ontario to be closer to its operations. To this day, Chatham remains the head office home of Union Gas.

In 1941, the company built a $900,000 processing plant in Sarnia to purify "still gas" purchased from Imperial Oil. The reformed still gas was stored in Union Gas' gas wells in Dawn Township, signifying the beginnings of the Dawn Hub storage facility that would come to play a major role in the company's future growth.

Fast forward 50 years and by the time Union Gas celebrated its 80th anniversary in 1991 it had amassed $1.9 billion in assets, 20,000 kilometres of southwestern Ontario pipeline, and a customer base of 513,000 people. Its biggest expansion to date, however, would come in 1998 when the company merged with Centra Gas and began servicing more than one million customers. In 2002, all outstanding common shares of Union Gas' parent company, Westcoast Energy, were bought out by Duke Energy's natural gas business headquartered in Charlotte, North Carolina. Five years later, Duke

AT THE TURN OF THE 20TH CENTURY, SOUTH-WESTERN ONTARIO WAS ONE OF THE LARGEST NATURAL GAS PRODUCING REGIONS IN THE WORLD. THE FIRST COMMERCIAL WELL IN CANADA OPENED IN ESSEX COUNTY IN 1889.

GAS COMPRESSION EQUIPMENT – WOODSTOCK, ON

CUSTOMER FILE

UNION GAS

BUSINESS: Natural gas storage, transportation and distribution

MARKET: Ontario

HEAD OFFICE: Chatham, Ontario

OWNER: Spectra Energy

FOUNDED: 1911

NUMBER OF CUSTOMERS: 1.4 million (residential, industrial and commercial)

NUMBER OF EMPLOYEES: 2,200

ANNUAL REVENUE: $1.8 billion

TOTAL ASSETS: $5.8 billion

PIPELINES:
Main Distribution – 36,700 kilometres
Service Distribution – 26,011 kilometres
Transmission – 4,743 kilometres

DAWN HUB STORAGE FACILITY:
Largest underground natural gas storage facility in Canada

LOCATION:
Dawn Township (southwestern Ontario)

CAPACITY: 1,333 billion cubic feet (enough to heat 1.2 million homes for one year)

This article has been adapted from information Union Gas provided for its centennial year celebration in 2011.

PARKWAY D COMPRESSOR STATION

Energy's natural gas business became known as Spectra Energy.

By 2011, 100 years after the company's founding, Union Gas supported about 1.4 million customers in more than 400 communities and supplied more than 1.3 billion cubic feet of gas per year.

DAWN OF A NEW STORAGE FACILITY

Located just south of Sarnia, Ontario, the Union Gas Dawn Hub storage facility is one of its most remarkable assets. The largest underground natural gas storage facility in Canada, it can store up to 1.3 billion cubic feet of gas in 23 depleted reserves.

The Michigan Basin, where the Dawn facility is located, was once an inland sea. Over time, the coral reefs on the edge of the sea were buried by sediment: the coral was converted into porous limestone and finally encased in rock. The natural gas that collected in the reefs, now lying between 450 and 670 metres below ground, helped fuel the development of the natural gas industry in southwestern Ontario. In 1942, Union Gas started using the now depleted underground reefs to store natural gas imported from Texas.

Today, the Dawn Hub is the heart of Union Gas. With 10 major pipelines interconnecting in the Dawn area, the storage facility can source gas from all major North American supply basins. The reservoirs are all connected to the Dawn central compressor station, which provides an integrated distribution point. Compressors, with a combined power of more than 450,000 horsepower (equivalent to enough energy to power 53,000 homes), push the natural gas through an intricate network of pipelines that feed markets in eastern Canada, as well as the northeastern and midwestern United States. A trading hub for natural gas suppliers, the Dawn facility has the capacity to distribute up to three billion cubic feet of natural gas a day.

THE EVOLUTION OF AECON'S RELATIONSHIP WITH UNION GAS

Aecon and its predecessor companies have been working with Union Gas since the mid-1950s, installing equipment at its processing plants, constructing buildings and installing pipelines. But the two companies have built more than what the eye can see; they have also built a strong partnership. Traditional customer-contractor relationships are oftentimes adversarial in nature due, in part, to contract risk, which is driven to the contractor. Not so for Aecon and Union Gas; their unique relationship has been built on a foundation of trust,

GAS PIPING TO CAPSTONE GAS FIRED CO-GENERATORS

NOTABLE UNION GAS/AECON PARTNERSHIP ACHIEVEMENTS:

// Dawn Plant F Compressor Station
// Lobo A and B Modification Project
// Parkway B Compressor Station
// Bright Compressor Station
// Dawn J Compressor Station
// Burlington Service Facility
// Kingston Service Facility
// Windsor Service Facility
// Hamilton Regional office and Training Facility
// 159,528 service connections (since 2001)
// 1,900 kilometres of main pipe
// 1,598 Maintenance Service Tickets (March/April 2013)

PIPE INSTALLATION, DAWN PLANT F COMPRESSOR STATION

with shared risk and shared reward.

In 2000, the partnership between the two companies entered a new phase when Union Gas requested proposals for a formal alliance agreement for its utility work. Union Gas reduced its number of contractors from eight to two, awarding Aecon Utilities a formal strategic alliance contract and more than 70 percent of their distribution network business. The 2000 strategic alliance contract with Aecon Utilities marked an important first step, setting the foundation for a much more comprehensive alliance to come.

> WHEN YOU COMPARE AECON'S CORE VALUES WITH THOSE OF UNION GAS, THEY BEAR A STRIKING SIMILARITY: A RELENTLESS COMMITMENT TO SAFETY AND ENVIRONMENTAL RESPONSIBILITY; EMBRACING DIVERSITY AND INCLUSION IN THE WORKFORCE; AND, PERHAPS MOST TELLING OF ALL, FOSTERING RELATIONSHIPS THAT FOCUS ON THE CREATION OF VALUE FOR ALL PARTIES.
>
> – PAUL PASTIRIK
> SENIOR VICE PRESIDENT OF FINANCE
> AECON

At the same time as the relationship with Aecon Utilities was developing and expanding, so, too, was the relationship between Union Gas and Aecon Industrial. Working with Union Gas since the early 1980s, Aecon Industrial installed its first Union Gas compressor station by 1987 at Waubano Pool. By 2006, the Industrial group had installed another four stations and completed countless smaller capital projects, several of which were based on a shared risk and reward model. That same year, Aecon Industrial installed a compressor station at the Union Gas Dawn storage facility. Under a firm price contract, which began with a constructability review and continued through to commissioning, Aecon Industrial installed two turbines, fabricated several thousand feet of piping ranging in diameter from 2 to 42 inches, and constructed several buildings. The Dawn F project led to an extension of the formal alliance between Aecon and Union Gas, as well as five subsequent compressor station projects. Operating under what Aecon Industrial calls its Early Contractor Engagement model, Aecon and Union Gas work collaboratively on each project, beginning with preliminary design information, to develop scope and price under a target contract, while adhering to a shared risk and reward formula.

As the relationship with Union Gas continued to develop, Aecon expanded its service offerings. In 2005, the Aecon Utility Engineering (AUE) business unit was formed to provide Union Gas with design management, pipeline design, constructability reviews, directional drill designs, inspection services and pipeline integrity programs. AUE also completed design work for four gathering systems that Aecon Utilities subsequently constructed. Wes Armstrong, Director of Distribution Operations at Union Gas, called AUE "the new frontier in the continued development of our alliance partnership."

In 2007, Union Gas awarded Aecon Buildings a contract to build one of its service centres, a project that ultimately resulted in a Master Service Agreement (MSA) for major capital construction and rehabilitation projects for Union Gas offices, warehouses and maintenance facilities. The agreement also extended to buildings and structures at its processing and production facilities. (All new Union Gas buildings are built to Leadership in Energy and Environmental Design Gold standards).

Right on the heels of the major capital facility projects MSA, Union Gas and Aecon entered into a subsequent MSA to address smaller capital projects, typically valued at less than $1 million. This agreement covers projects such as re-roofing, asbestos abatement and generator replacement.

More recently, on March 1, 2013, Aecon Buildings entered into a formal Facilities Management Contract to manage 68 Union Gas buildings and sites across Ontario. This contract covers all Operations and Maintenance (O&M) activities, including janitorial services; landscaping; snow plowing and snow removal; Heating, Ventilating and Air Conditioning maintenance; and waste management and disposal. As part of the service, Aecon established a 24-hour call centre and emergency response service. In the first two months

GAS-FIRED CO-GENERATORS AT NEW LEED-CERTIFIED SERVICE FACILITY

WATER CIRCULATING PUMPS

UNION GAS SERVICE FACILITY – BURLINGTON, ON

of operation, the call centre issued 1,598 service tickets.

In just over a decade, the Union Gas/Aecon partnership has more than tripled in size. Aecon's Senior Vice President Operational Finance, Paul Pastirik, calls it one of the company's most cooperative, longest-standing client relationships, as well as one of the most comprehensive formal alliances.

"When you compare Aecon's core values with those of Union Gas, they bear a striking similarity: a relentless commitment to safety and environmental responsibility; embracing diversity and inclusion in the workforce; and, perhaps most telling of all, fostering relationships that focus on the creation of value for all parties. Our relationship with Union Gas is a true alliance, not just a transactional relationship."

WORKING TOGETHER

As Aecon CEO John Beck has noted, price is no longer the determining factor when selecting which contractor is best suited for a project. What is important is quality, safety, reliability, ingenuity and, above all, trust.

"The relationship we have developed with Union Gas over the years goes far beyond the typical customer-supplier transactional relationship," says Beck. "We see ourselves as an extension of Union Gas; its customers are our customers and its deadlines are our deadlines. As their supplier and partner, we appreciate this as a mutually beneficial relationship built on openness and trust, because, ultimately, their success is our success."

Paul Rietdyk, Union Gas Vice President of Engineering, Construction and Storage and Transmission Operations, agrees.

"Natural gas helps power our province. It generates electricity, heats homes, fuels transportation and powers our manufacturing plants. More than a million customers rely on Union Gas. They trust us to provide a steady, uninterrupted supply of one of society's most fundamental and important commodities. In turn, we have placed our trust in Aecon to help us meet that responsibility. Our relationship with Aecon is an alliance in every sense of the word."

MEET:

PEOPLE MATTER

KEVIN MCKINNON

PURCHASING MANAGER – AECON INDUSTRIAL WEST

McKinnon says the one thing he has definitely learned over the years is that you get what you pay for. Should he ever need a reminder of that, all he has to do is remember the crew with the blue hair...

If you asked kids in high school what they wanted to be when they graduated, Purchasing Agent would probably not be on their list. But you have been involved with purchasing for your entire career. How did you get into the business in the first place?
It started when I was a student at the Northern Alberta Institute of Technology in Edmonton. I had a summer job driving Lockerbie & Hole delivery trucks to construction sites. I was offered an opportunity to take on the role of Purchasing Agent in the warehouse, so I decided not to return to school for my second year and accepted the full-time job. I've been with the Aecon Group of companies ever since.

Did you know anything about purchasing when you joined?
I didn't know the difference between a pipe and a fitting but was lucky to have the mentorship of Walter Cowan, a true gentleman who, at the time, had been Purchasing Agent for 40 years. Walter was nearing retirement, so I was able to take advantage of that and the company policy of promoting from within. It was a great opportunity. It was a boom time in Alberta, then, and Lockerbie & Hole was a major player in the building of hospitals, high rises and water treatment plants. The company's mentorship and the thriving environment really gave me the opportunity to succeed.

So you learned on the job?
I was literally thrown in to the deep end. I had to learn about materials, tools and equipment, and also how they related to what the people in the field needed to get the job done, which was just as important. By the mid 1980s, Lockerbie & Hole had moved into the light industrial sector, and then, into the heavy industrial sector in the 1990s, both of which were quite different from what we had been doing before. It was a great learning curve.

By 1990, you were Purchasing Manager. What exactly does a Purchasing Manager do?
Our involvement starts right at the beginning of a project with the bid tender package. We gather the cost data for the estimating department and, obviously, want the costs to be as competitive as possible. Once we've been awarded the project, we move to an operational role. It's about more than just price, although that is very important. Our job is to have the right quantity and quality of materials on site to match the construction schedule.

How big is the department?
We have seven people on staff, and we purchase about $30 to $40 million worth of materials and equipment a year.

A Purchasing Agent has to have a good technical understanding of what he or she is dealing with, so we are organized by discipline: mechanical, electrical, fireproofing and subcontracts. We have one lead person for each discipline. It's a veteran group with a lot of experience; typically around 15 years. We've been together a long time and are a very cohesive team; everyone provides great support.

So purchasing is all centralized?
There's usually an on-site materials coordinator on the project, but the purchasing is all done here in Sherwood Park, just outside of Edmonton, Alberta. We assign a lead buyer to every project, which gives us oversight and accountability, and, most importantly for the people on site, a person at the other end of the line to make things happen.

Do you have a lot of leeway in the type of materials you source?
The clients or their engineering firms supply most of the specifications at the time of the tender. We're given a "manufacturers' approved list" of suppliers deemed acceptable for the project and, in some cases, the "supplier of choice", which means we have to use a specific supplier. We also have our own approved list of suppliers for items outside those specifically identified in the tender. We can't have rogue purchasing of safety equipment, for example, that doesn't meet our standards. A lot of suppliers are local, but we also deal with companies around the world. A lot of steel, for example, comes from China and Korea, and we've sourced specialty

EMPLOYEE FILE

KEVIN MCKINNON

POSITION: Purchasing Manager – Aecon Industrial West

DIVISION: Aecon Energy

EXPERIENCE:

Lockerbie & Hole

1979–84	Purchasing Agent
1984–90	Purchasing Lead
1990–Present	Purchasing Manager

BORN: Glenavon, Saskatchewan

HOME: Edmonton, Alberta

FAMILY: Married to Sharon; two children: Courtney and Derek

HOBBIES AND INTERESTS: Old-timers hockey, coaching hockey, golf, travel

products from Germany, Norway, Sweden and the U.K.

Is there a lot of negotiation involved?
Yes. Our goal is to work with the budget but, in the same breath, we have to be mindful of the schedule.

Is most of what you purchase "just in time" delivery?
We try to do as much planning as we can to keep our inventories to a minimum, but there's always some reactionary purchasing because you don't always know what the site conditions will be until you get there.

You have been working in purchasing now for 34 years and, like all disciplines, things have changed over the years. What are the biggest changes in your area?
The days of lists on the back of a cigarette package are long gone! When I started, everything was done over the phone, and we would be constantly debating as to whether someone said it was a 4-inch or a 6-inch diameter pipe. We used to add up a 100-page estimate by hand and then do double and triple checks. Now, everything is online and it's much cleaner and slicker; it frees us up to spend more time on sourcing and negotiation, which makes us much more valuable for the business.

How did the amalgamation of Lockerbie & Hole with Aecon Industrial change your job?
When Lockerbie & Hole became part of Aecon four years ago, there was a lot of apprehension – as there is with any change – but I've found that both organizations share a culture of doing your best, and you can't ask for better than that. One of the neat things that we are working on now is standardization across Canada. We have had several workshops within the other industrial operations. If we all support each other, buying in volume can give us a lot more leverage. With the amalgamation of the two companies, our workload has almost doubled and I really feel energized. I'm having more fun than I've ever had. I'm proud of the past and excited about the future!

What are some of the more memorable projects that you have worked on?
In the late 1980s and early 1990s, Lockerbie & Hole did about a dozen water treatment plants in China. We sourced the equipment in Europe, did the fabrication in Canada, and then shipped it off to China. That was very interesting work. We've also done a lot of work in the high north, and getting equipment and materials up there is always a challenge. There's only a small window between the beginning of June and mid-August to get on the marine Arctic Sea lift. Miss that and you have to fly everything in at a huge cost!

What would you say is the biggest lesson you've learned over your career?
Cheaper is not always better! Some years ago, we were working on a boiler installation on the Alberta-Saskatchewan border. I managed to get a smokin' deal on baseball caps for the crew from an offshore supplier. A few days later, the superintendent called and asked where I got the hats. Turned out that it had been a really hot day; everyone was sweating and, when they took their caps off, their hair had turned blue! Guess you get what you pay for!

GLOBE TROTTING

IST PROJECT SERVICES

Flak jackets in Israel; underwater helicopter rescue training in Norway; frigid temperatures in northern Alberta; and scorching heat in the Australian outback. When you're part of the global service team at Innovative Steam Technologies (IST), you have to be ready for just about anything.

"We sometimes feel a bit like the Maytag repairmen," notes Larry Guy, IST Project Services Manager, before offering an explanation: "A Once Through Steam Generator (OTSG) is a very reliable piece of equipment. When you don't hear from a client for three or four years…we start to miss them."

TO DO THIS SORT OF WORK, IT TAKES HIGHLY EXPERIENCED PEOPLE WHO CAN DIAGNOSE THE PROBLEMS AND COME UP WITH SOLUTIONS – OFTEN IN SITUATIONS FOR WHICH THEY DON'T HAVE A LOT OF RESOURCES TO FALL BACK ON.

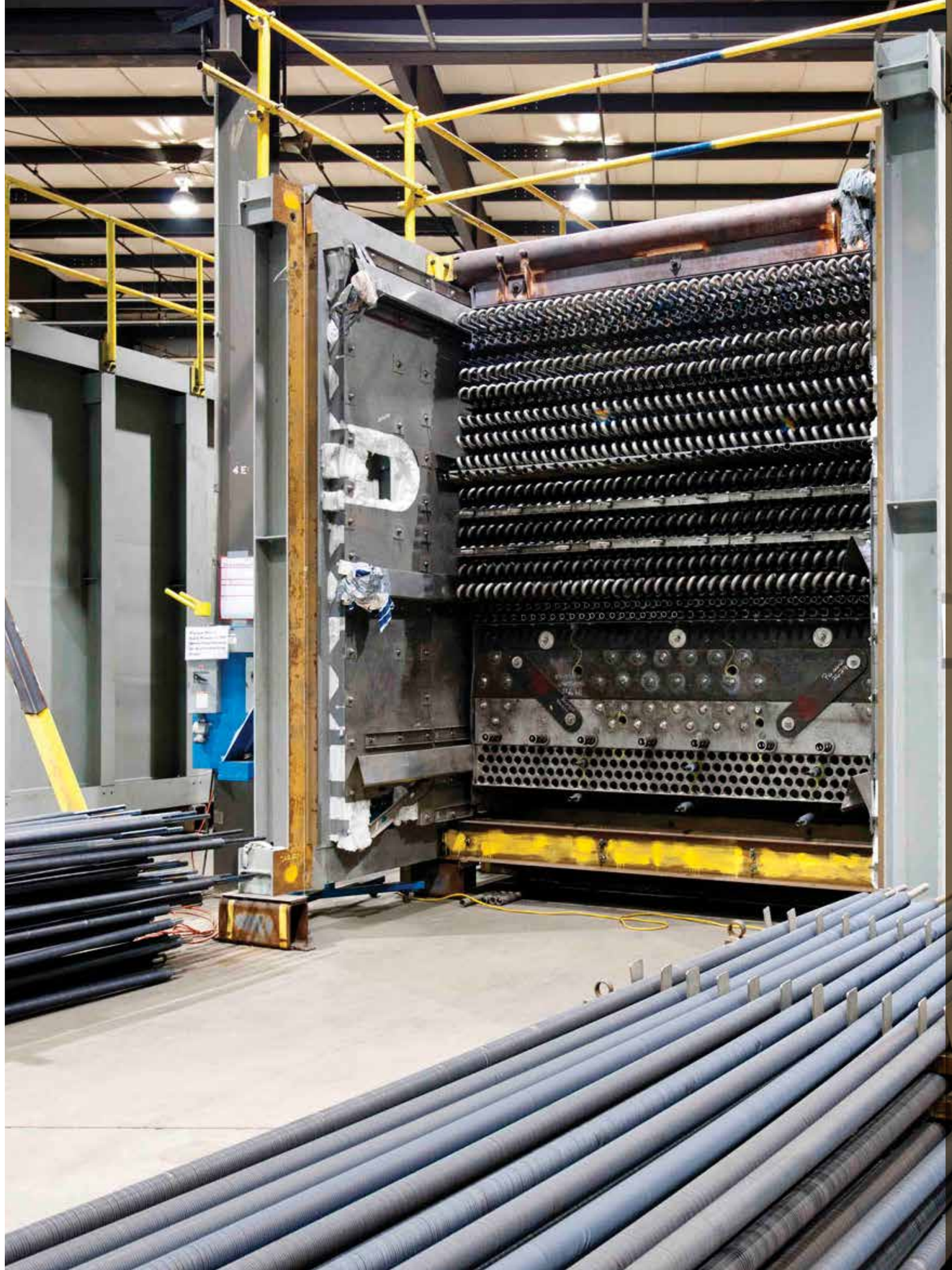
– LARRY GUY
PROJECT SERVICES MANAGER
IST

An OTSG is designed to operate for an estimated 20 to 25 years, but as reliable as it may be, regular maintenance is still required and occasional unexpected operating problems do arise.

"OTSGs capture waste heat and generate steam in power generation stations," explains Guy. "Most of our service calls are for routine maintenance, but if anything goes wrong while the OTSG is in service, it can have some dire consequences for a local power authority or an offshore oilrig. That's why we have to be ready to pack up and head out just about anywhere in the world, and at a moment's notice."

Unlike the Maytag repairman, responding to an OTSG service call is a tad more involved than just dispatching a repairman and a toolbox. Last year found IST technical advisors in such far-off locations as Cuba, Italy, Norway, Israel, Turkey and Ghana. Many worked under trying conditions and, for the most part, had to rely on their own resources. Guy says it can take up to two weeks to organize a service call and ensure the technical advisors have everything needed to complete the work.

"We usually send out a technical advisor with two to four skilled trades, and fill out the rest of the crew with local labour," says Guy, adding the importance of ensuring all team members have their updated documentation and immunization, as a service call can come at any time.



DEPARTMENT FILE

IST PROJECT SERVICES

BUSINESS: Innovative Steam Technologies (IST)

DEPARTMENT: Project Services

LOCATION: Cambridge, Ontario

PRODUCT: Once Through Steam Generators (OTSGs)

MANDATE:
//Commissioning and installation
//Maintenance and repairs

NUMBER OF OTSGs WORLDWIDE: 173

AFTER-SERVICE CLIENTS PER YEAR: 30

ANNUAL NUMBER OF SITE TRIPS: 75

EMPLOYEES:
Larry Guy – Project Services Manager

Technical Advisors (5)
Skilled Trades (6)
Office Administration (1)

ONE OF THE MOST CRITICAL ITEMS TO SHIP, GUY NOTES, IS THE SAFETY GEAR. THE OTSGs BUILT BY IST ARE INSTALLED AROUND THE WORLD BUT NOT ALL CLIENTS HAVE THE NECESSARY PROTOCOLS AND EQUIPMENT IN PLACE TO MEET AECON'S HIGH SAFETY STANDARDS.

IN LIGHT OF THIS, GUY SAYS THE GROUP PACKS TWO EQUIPMENT CRATES CHOCK FULL OF REQUISITE SAFETY GEAR, INCLUDING RESCUE BREATHING EQUIPMENT AND SKED PACKS, GIVEN THE AMOUNT OF WORK COMPLETED IN CONFINED SPACES.

"We can typically get the crew to the site within a couple of days, but shipping the spare parts with a couple of hundred thousand dollars worth of tools and equipment takes a bit longer!"

One of the most critical items to ship, Guy notes, is the safety gear. The OTSGs built by IST are installed around the world but not all clients have the necessary protocols and equipment in place to meet Aecon's high safety standards. In light of this, Guy says the group packs two equipment crates chock full of requisite safety gear, including rescue breathing equipment and Sked packs, given the amount of work completed in confined spaces.

Preparations aside, sometimes not even Aecon's world-class safety standards cover all contingencies. In Israel, the team was issued flak jackets because of the danger of Kassam rockets being fired from nearby Gaza. In Norway, they were given special training in how to successfully escape from a submerged helicopter, practicing in a full-scale mock-up in a specially designed pool before being given the green light to fly to the offshore oilrig where the OTSG was installed.

Once on site, the service team can face an extremely challenging work environment, says Guy.

"A service call typically lasts about three weeks," he notes. "Much of it revolves around working in tight confines, often trying to weld while lying on your back. It can be 40 below zero in the wilds of northern Alberta and 50 above zero in the Nevada desert. What's more, the pressure to get the job done quickly is enormous. To do this sort of work, it takes highly experienced people who can diagnose the problems and come up with solutions – often in situations for which they don't have a lot of resources to fall back on."

Guy is quick to point out his IST team has that experience. He cites Brian Ashcroft, for example, who has 30 years of steam boiler experience standing behind him, and Peter Finlin, who has been with IST for 20 years.

"Even so, we have to rely on our clients a lot. Their help is invaluable in helping us negotiate our way through customs and immigration, dealing with the local authorities, and finding skilled labour. They also give us some much-needed guidance about local etiquette and traditions. Not everybody works the same way as we do here in Canada."

Perhaps most importantly of all, he notes, the IST client connection helps his service team locate reliable accommodations. "When you're working long hours under difficult conditions, having a good bed to sleep in is half the battle."

The IST Project Services team has already been dispatched to Bolivia and the Australian outback this year. Where next is yet to be decided, but Larry Guy and his team stand ready. All it takes is a phone call.

ON THE ISLE OF MAN

If you have to go overseas on a service call, there are worse places to visit than the Isle of Man. A small, independent island of just 80,000 people nestled in the Irish Sea between Ireland and England, the Isle of Man has a rich Celtic history, breathtaking scenery and more than 100 miles of unspoiled beaches. But Peter Finlin, of Innovative Steam Technologies (IST), didn't have much time for sightseeing. The Manx Electrical Authority had discovered a problem in one of its Once Through Steam Generators (OTSGs), and Peter and his team were working around the clock to get it back in service.

In 2003, the Manx Electrical Authority opened a new 88 megawatt power plant in Pulrose on the Isle of Man, a suburb of its capital city, Douglas. The power station, powered by a GE gas turbine, uses two OTSGs supplied by Aecon's IST group to capture the waste heat from the turbines exhaust. The OTSGs use the heat to generate steam, which is, in turn, used to generate electricity, making a marked improvement in the efficiency of the plant and reducing emissions.

WE KNEW THIS WAS NOT GOING TO BE AN EASY JOB.

– PETER FINLIN
PROJECT SERVICES TECHNICAL ADVISOR, IST

It is a project that IST Project Services Technical Advisor Peter Finlin remembers well. When IST shipped the two OTSGs from its manufacturing plant in Cambridge, Ontario in 2002, Finlin had travelled to the Isle of Man to oversee installation.

The Pulrose Power Plant was up and operational by July 2003 and, with routine maintenance, the IST generators continued to perform flawlessly for a number of years. By November 2011, however, engineers with the power authority noticed one of the generators was losing pressure and needed additional water make-up.

At the heart of all OTSGs is a closed loop of thin tubes that carry water through the unit, similar to a hot water radiator. Waste heat passes over the tubes turning the water in the tubes into superheated steam. A typical IST generator has about 2,500 one-inch diameter tubes, each one roughly 40 feet long and each one connected to the other with a U-bend to create a continuous length of tubing about 25 kilometres long. The water flows through the unit in a single pass, which is why it is called a "Once Through Steam Generator". The Pulrose plant is a 'peaking' plant or a cycling power plant. As it turned out, standing water from offline lay-up procedures – that have since been rectified – was corroding the tubes inside. This, in turn, led to fatigue cracking. IST has more than 170 OTSGs in operation around the world, yet this was the first time in IST's history, says Finlin, that this sort of issue had occurred.

With the help of the engineers at the power station, IST mapped the compromised tube locations and discovered the issue rested in the bottom

PROJECT FILE

ISLE OF MAN POWER STATION

AECON GROUP:
Innovative Steam Technologies (IST)

CLIENT: Manx Electrical Authority

LOCATION: Isle of Man

SCOPE: Replace 1,025 tubes in a Once Through Steam Generator (OTSG) at the Pulrose Power Plant

TIMING: August 2012

NUMBER OF EMPLOYEES ON SITE:
// 5 IST technicians
// 6 to 10 local trades

KEY EMPLOYEES:
Peter Finlin – Project Services Technical Advisor (Execution)
Brian Ashcroft – Project Services Technical Advisor (Planning and Coordination)
Virinder Sindhu – Lead Technician
Travis Robinson, Chris Gardiner, Tim Goodridge – Welding Technicians

IT TOOK FOUR DAYS TO GET ALL THE TUBES IN POSITION AND ANOTHER TWO WEEKS, WITH TWO SHIFTS OF FOUR WELDERS WORKING AROUND THE CLOCK, TO WELD THE BENDS ONTO THE ENDS OF THE FIN TUBES TO COMPLETE THE CURCUIT.

25 rows of the lower module. More than 1,000 tubes needed to be replaced. In July 2012, IST shipped three containers of replacement tubes to the Isle of Man, ensuring all the tubes were colour coded to facilitate unloading in sequence. Peter Finlin and four other IST technicians flew over the next month to help with the installation.

"We knew this was not going to be an easy job," Finlin recalls. "The tubes are so long, thin and very flexible, so they're difficult to handle." They also have to be threaded into the tube sheets, which are perforated plates inside the generator that support the tubes once they are in place. Installing the tubes in the factory under carefully controlled conditions and with plenty of room to manoeuvre is one thing: replacing them in a power plant, where the space is limited, is quite another. Figuring out how they were going to execute the job took a lot of planning.

Despite the six-hour time difference between Cambridge, Ontario and the Isle of Man, Peter Finlin, along with Graham Andrews and Brian Ashcroft, worked closely with local mechanical contractor J W Welding, and Manx Electrical Authority representatives to develop the plans for the tube installation project. By the time Finlin and his crew had arrived on-site in August 2012, J W Welding had erected the scaffolding, removed obstructions, and installed a hoist and monorail system for lifting and lowering the tube racks. Two custom-designed, hand-operated trolley carts to carry the tubes from the staging area into the plant had also been fabricated.

It took about one week to remove all the tubes before the painstaking job of installing the new tubes began. It was a labour intensive operation, to say the least. Seven people helped offload the tubes and wheel them by trolley from the staging area in D-station to the main power plant. Three people on the floor of the plant hoisted the tubes up to three other people on a main staging deck, who then, in turn, passed the tubes to the four people inserting the tubes through the tube sheets. It took four days to get all the tubes in position and another two weeks, with two shifts of four welders working around the clock, to weld the bends onto the ends of the fin tubes to complete the circuit. The assembly was pneumatically pressure tested to check the welds, after which the entire system was filled with water for hydrostatic testing.

"The OTSG is a very reliable piece of equipment," concludes Peter Finlin. "It's very rare that something like this happens, but IST stands behind its products. If our clients need help, we're ready to travel anywhere in the world at a moment's notice to ensure that they are operating reliably."

All in all, Finlin and his crew spent six weeks on the Isle of Man, albeit working six days a week didn't leave much time for sightseeing. It's a place, he says, he wouldn't mind going back to someday. In the meantime, however, he knows there will be other ports of call higher on the list.

ABOVE AND BEYOND

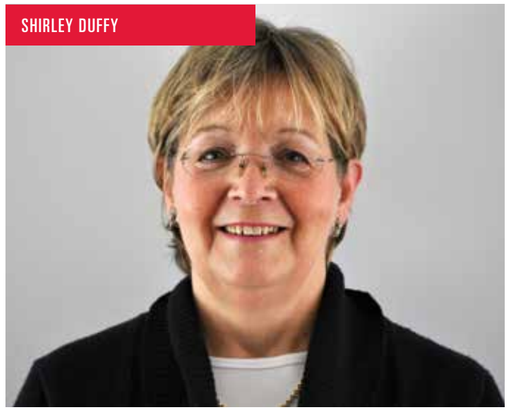
THE DIAMOND JUBILEE MEDAL

The Queen Elizabeth II Diamond Jubilee Medal marks the 60th anniversary of Queen Elizabeth II's accession to the Throne as Queen of Canada. Over the course of the last year, it has been awarded to 60,000 Canadians who have made a significant contribution to a province, territory, region or community within Canada, or an achievement abroad that brings credit to Canada.

The Canadian Construction Association, which was allocated 38 medals to distribute, selected four Aecon employees for their work in "helping to build the Canada of today and the Canada of the future."

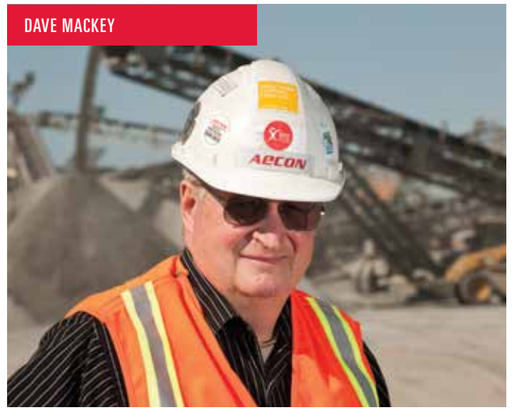
Shirley Duffy, Dave Mackey, Keith McGrath and Everett McIntyre now proudly wear this once-in-a-lifetime distinction.

SHIRLEY DUFFY



Aecon Information Manager **Shirley Duffy** is a devoted community activist in Canada and Africa. A former President of Women in Construction Toronto and past Aecon Board Director, Duffy has been an Aecon employee for more than 34 years and is a recipient of the J. D. Hole Humanitarian Award in recognition of her dedicated volunteer service. In particular, Duffy is devoted to ensuring safe practices for children in the manufacturing of cloth diapers and crib sheets, having taken a leave of absence from Aecon to work toward this in Tanzania.

DAVE MACKEY



For more than a half a century, **Dave Mackey** led Aecon paving crews across the Province of Ontario, laying asphalt from Gananoque to Exeter to Sudbury. The awarding of the Queen Elizabeth Diamond Jubilee Award is a fitting tribute for Mackey, who dedicated his entire career to building the province's transportation network, retiring from Aecon's ACML (Brampton, Ontario) in 2009.

I WOULD LIKE TO EXPRESS OUR APPRECIATION FOR YOUR DEDICATION TO THE COMMUNITY AND THE OUTSTANDING SERVICE YOU HAVE PROVIDED TO CANADA. THE IMPORTANCE OF YOUR CONTRIBUTIONS TRULY EXEMPLIFIES OUR CANADIAN VALUES.

–JOHN BECK
CHAIRMAN AND CEO

KEITH MCGRATH

Every vital community relies on its members for change, growth and improvement. For 28 years, **Keith McGrath** has been a passionate advocate for the community of Fort McMurray, Alberta. A Director of Business Development for Aecon Mining, McGrath invested eight years as a Trustee of the Fort McMurray Catholic School Board and has worked tirelessly with all levels of government to ensure children in the Regional Municipality of Wood Buffalo are provided every opportunity for the best education.

EVERETT MCINTYRE

Over an impressive 50-year career building roads and highways, **Everett McIntyre** has put down tractor treads on virtually every 400-series highway in Ontario, including the 407 ETR where he served as Project Manager on what he calls the project highlight of his career. McIntyre first joined Aecon in 1959 and currently serves as Senior Advisor, Special Projects for the Transportation group.

LIQUID ASSETS

AECON OPENS NEW ASPHALT CEMENT TERMINAL

A first for Aecon, Yellowline Asphalt Products opened this spring in Hamilton, Ontario with a razor sharp focus on product quality control...and the bottom line.

When the first truck pulled up to Yellowline Asphalt Products this spring carrying its inaugural load of asphalt cement, it marked the start of a new era in how Aecon conducts its road construction and paving business.

"For the first time, we are controlling all the materials that go into asphalt pavement," notes Yellowline's new General Manager, Donn Bernal. "Aecon has lots of pits and quarries in Ontario and Alberta. Much of what we produce is for our own use in our paving contracts, but we've always had to buy the asphalt cement, which is a key component in hot mix, on the open market." The introduction of Yellowline, explains Bernal, allows Aecon to bring asphalt cement "in-house" for the first time, representing an anticipated boost to quality control of the product and overall cost effectiveness.

> WITH THE SIZE OF OUR ASPHALT PAVING OPERATION, WE USE MORE THAN ENOUGH TO JUSTIFY THE INVESTMENT IN OUR OWN TANK FARM.
>
> — MARK RIVETT
> EXECUTIVE VICE PRESIDENT
> AECON INFRASTRUCTURE

The genesis of the new terminal dates back to 2010, shortly after the arrival of Mark Rivett, then Senior Vice President, ACML. Rivett knew the asphalt cement business better than most, and he knew the market was changing.

"Asphalt cement has become a much more sophisticated material in recent years," explains Rivett, now Executive Vice President, Aecon Infrastructure. "There are numerous formulations and each one is designed to meet stringent specifications, so quality becomes a big factor. It's also a much more valuable commodity now."

At one time, refineries were happy to get rid of the asphalt cement; it was just a by-product. But with the jump in the price of oil, the refineries can use the heavy bitumen to produce higher value added products. Asphalt cement is now in high demand and the price has more than doubled in the last 10 years.

Given this context, Rivett says taking control of the supply and management of asphalt cement makes sense, not just from a quality and engineering perspective, but economically, as well.

FACILITY FILE

YELLOWLINE ASPHALT PRODUCTS LIMITED

JOINT VENTURE: Aecon Construction and Materials Limited (ACML) and Dufferin Construction, a division of Holcim (Canada) Inc.

LOCATION: Hamilton Harbour, Pier 22, Hamilton, Ontario

SITE: 10.3 acres

BUILDING: Office and Laboratory (4,500 square feet)

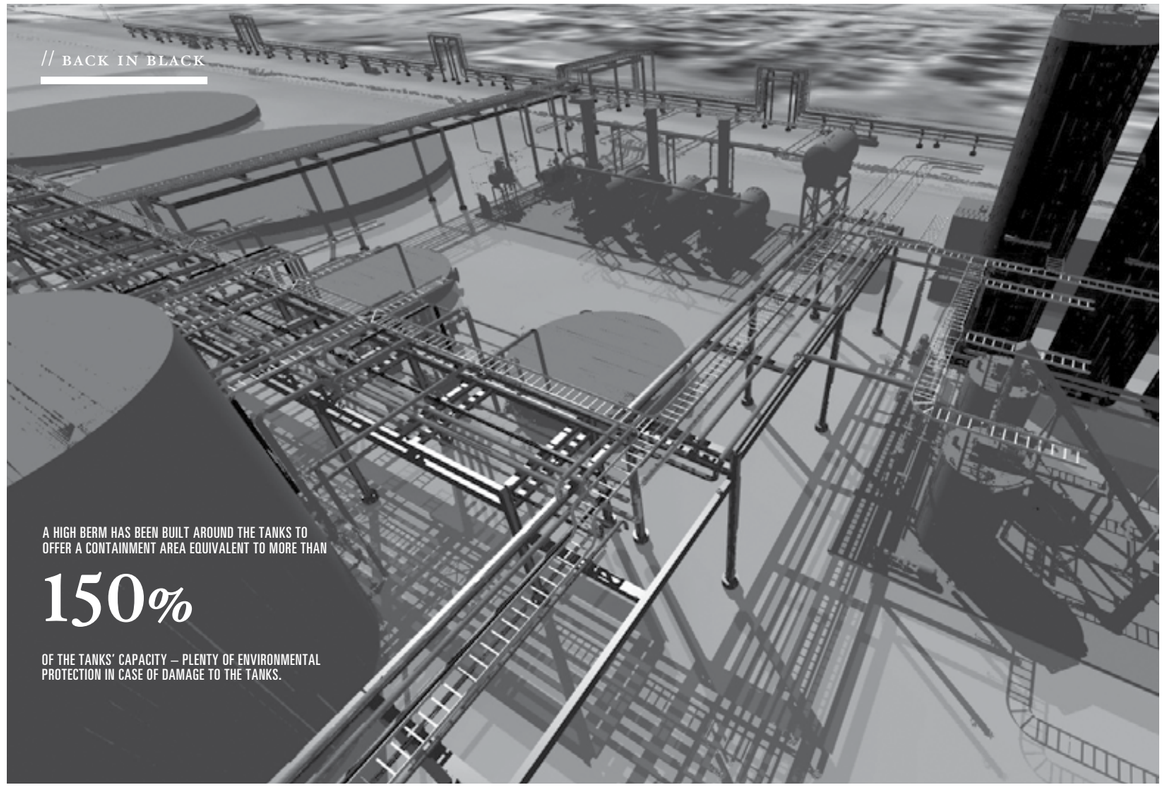
Tank Farm
3 Reserve Tanks (@10,000 tonnes each)
4 Day Tanks (@1,000 tonnes each)
1 Polymer Storage Tank (140 tonnes)
1 Mixing Tank (16 tonnes)
2 Hot Oil Heaters

Loading and Unloading
Truck Scale
Barge Line (25 centimetre diameter x 1 kilometre long)
Rail Spur Line – for 10 cars
Steam Generator – to unload asphalt cement from rail cars

COST: $15 Million

CONSTRUCTION: June 2012 to Spring 2013

EMPLOYEES:
Donn Bernal – General Manager
Suresh Daljeet – Operations Manager
Pouya Nourshoae – QC Product Development Coordinator



"With the size of our asphalt paving operation, we use more than enough to justify the investment in our own tank farm."

In early 2011, Dufferin Construction, a division of Holcim (Canada) Inc. and also a major Ontario paving contractor, made a similar decision to have improved control over its asphalt cement supply. Aecon and Dufferin agreed to join forces and the joint venture, Yellowline Asphalt Products Limited, was formed.

In Ontario, with only one refinery to produce it, most of the asphalt cement is imported. Some comes from Alberta, some from the United States, and some from as far away as South America, which meant the joint venture needed to source a location that could receive shipments by truck, rail, and barge. The ideal location, it turned out, was a 10-acre site owned by the Hamilton Port Authority. Situated in Hamilton Harbour, the site not only has access to all three modes of transportation, it also provides a convenient central supply point for the hot mix plants it will be serving.

Aecon hired two consulting engineering firms, Stantec and AMEC, to design the terminal. Construction got underway in the summer of 2012.

"The design calls for three reserve tanks, each of which is 12.2 metres high and 30.5 metres in diameter," explains Donn Bernal, who came to Yellowline from his role as General Manager of ACML Materials. "That gives us about 30,000 tonnes of capacity for the joint venture, which is about half a year's supply. We also have a mixing tank to produce the various grades of asphalt cement, as well as four 1,000-tonne day tanks to hold the asphalt cement prior to shipping."

Bernal adds that all tanks are heated and insulated – the asphalt cement is maintained at 120°C in the reserve tanks and 160°C in the day tanks. A high berm has been built around the tanks to offer a containment area equivalent to more than 150 percent of the tanks' capacity – plenty of environmental protection in case of damage to the tanks.

The Yellowline terminal also features designated buildings for office staff, electrical, and hot oil and steam generators, all constructed by Aecon's Buildings group. Another feature of the new terminal is a fully equipped laboratory for quality control and formulations. The on-site lab is reflective of the industry's changing environment. "The number of different grades and formulations of asphalt cement has expanded enormously in the last few years," notes Bernal, "and we have to be able to produce them all." He says the Yellowline lab will develop the formulations and produce them on site in mixing tanks. "Everything will be tested before it leaves and, if necessary, we'll be available here to make sure the asphalt cement is performing to its full potential in the field."

THE NUMBER OF DIFFERENT GRADES AND FORMULATIONS OF ASPHALT CEMENT HAS EXPANDED ENORMOUSLY IN THE LAST FEW YEARS, AND WE HAVE TO BE ABLE TO PRODUCE THEM ALL.

– DONN BERNAL
GENERAL MANAGER
YELLOWLINE ASPHALT PRODUCTS LTD.

ALL YOU NEED TO KNOW (AND MORE) ABOUT ASPHALT CEMENT

THE 5% SOLUTION

The term "asphalt" may be synonymous with pavement, but asphalt cement actually represents a very small component of an asphalt pavement. Just like the Roman roads of 2,000 years ago, our roads are built of rock. An asphalt pavement consists of 95 percent aggregate and 5 percent asphalt cement. The asphalt cement works to bind the aggregate together. That said, it doesn't come cheaply. At 30 times the cost of aggregate, asphalt cement constitutes an estimated two-thirds of the overall raw material cost for building a road.

HOT MIX

The public calls it "asphalt". The industry calls it "hot mix", because that is how it is produced. Asphalt is produced in a hot mix plant by heating the aggregate to about 200°C and then coating it with a thin layer of hot asphalt cement, typically kept at about 155°C. The hot mix (still hot) is then transported to the construction site where it is laid, compacted and allowed to cool. Applying a variety of techniques, hot mix plants can now produce "warm mix" at temperatures as low as 120°C. Warm mix reduces energy consumption, lowers emissions and improves the compaction and longitudinal joints of the pavement.

SCRAPING THE BOTTOM OF THE BARREL

Asphalt cement is the perfect example of turning one industry's waste into another industry's raw material. For years, refineries considered the heavy bitumen at the bottom of the refinery barrel to be nothing more than a waste product, and were quite happy to sell it as asphalt cement to get rid of it. With the increase in the price of oil and the reduction in refinery capacity across North America, all that has changed. Refineries can either sell the heavy bitumen as fuel oil or use cokers to upgrade heavy bitumen into more valuable lighter refined products, which means asphalt cement suppliers have to compete for their share of the barrel. In the last 10 years, the price of asphalt cement has increased from about $300 a tonne to more than $700 a tonne. That is not, however, altogether bad news. With higher prices, transportation costs play less of a factor, so asphalt cement suppliers can look farther afield for other supply sources.

MAKING THE GRADE

The science of asphalt cement has come a long way in the last 20 years. Asphalt cement was first used in the late 1800s and, until recently, as long as it was hot and sticky and met certain basic requirements, everyone was happy. That attitude started to change when scientists discovered they could actually modify asphalt cement properties by adding polymers. Since asphalt cement contributes up to one-third of a pavement's rutting resistance, more than half of its fatigue crack resistance, and almost 90 percent of its low temperature cracking performance, the ability to identify – and specify – the correct type of asphalt cement to use became increasingly important. In 1998, the Province of Ontario adopted the use of Performance Graded Asphalt Cement (PGAC). Each PGAC is designated two numbers: the first number specifies the maximum design pavement temperature; the second specifies the minimum design pavement temperature. A PG 58–28, for example, meets a maximum pavement design temperature of 58°C and a minimum temperature of -28°C. Designations move up and down in 6°C increments. The PGAC specification also takes into account traffic conditions. For heavy, slow-moving traffic, which puts more stress on the pavement, the asphalt cement grade would be "bumped up" from PG 58–28 to PG 64–28 or PG 70–28. The use of PGAC has helped create a whole new range of asphalt cements with far greater emphasis on laboratory formulation and scientific quality control/quality assurance.

AIMS, OBJECTIVES AND RESULTS INCIDENT MANAGEMENT

By Mike Archambault
Vice President, Safety and Insurance

What's our AIM here at Aecon? It's an incident management system that does more than just cut down on paperwork. We want a system that provides us with the information to act in the most efficient way possible, and with the appropriate close-out action to prevent any possibility of a reoccurrence.

Our objective is to collect as much information as possible, analyse it and report on it. Accurate reporting of incidents is critical in the understanding and development of processes and procedures that can be used to prevent an occurrence. As we grow as an organization, it's critical to have systems that allow us this capability.

For example, how do you deal with people who may have been injured? How do you notify all the appropriate parties? How do you handle the subsequent investigation and meet all your legal and regulatory responsibilities? How do you resolve near miss reports and equipment and material loss? Perhaps most important of all, how do you learn from an incident to make sure it doesn't ever happen again?

It is an extremely complex and time-consuming process and, typically, the larger the company, the more complex the process becomes.

In the past, Aecon's incident reporting and tracking has entailed filling out a series of forms and reports, most of which were on paper – a cumbersome system that was hard to manage, difficult to track, and limited in scope. The new incident management system, called the Aecon Incident Management System (AIMS) helps correct many of those deficiencies, allowing many of the incident management processes to take place automatically and transparently.

Under the new system, when an incident occurs, a report is sent to the Aecon Claims group central email and entered into the incident reporting system. AIMS then generates automatic notifications and reports to be used by Aecon managers and EHS representatives to manage the incident. The system is also used to generate the reports needed by various government and regulatory bodies. AIMS helps simplify the process and ensure the right parties are notified and corrective actions identified and implemented.

But AIMS is more than just a reporting system. It also provides a live view of current incidents and their status across the entire Aecon organization, which we can be used to prevent further incidents from occurring.

AIMS gives Aecon the ability to collect and analyze the root causes and trends associated with incidents, which are required to support a safety program dedicated to performance excellence.

The right kind of information and timely access to it has become more important in this business than ever before. It's important to ensure the systems are flexible, scalable and manageable for potential growth and operational excellence. The ultimate goal: live, immediate and accurate information that helps to provide preventative safety measures more efficiently and effectively than ever before.

AIMS OVERVIEW

THE AIMS PROCESS:

1. An incident is reported to the Claims group central email.
2. The incident is entered into AIMS.
3. AIMS distributes automatic notifications to management and Environmental Health and Safety (EHS) representatives.
4. AIMS generates workers compensation reports.
5. The EHS representative reviews the report for accuracy and appropriate corrective actions, and verifies the actions have been taken.
6. If the incident involves a worker's compensation claim, the Claims Advisor monitors and updates the claim.
7. When all actions have been taken, the event is closed.

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