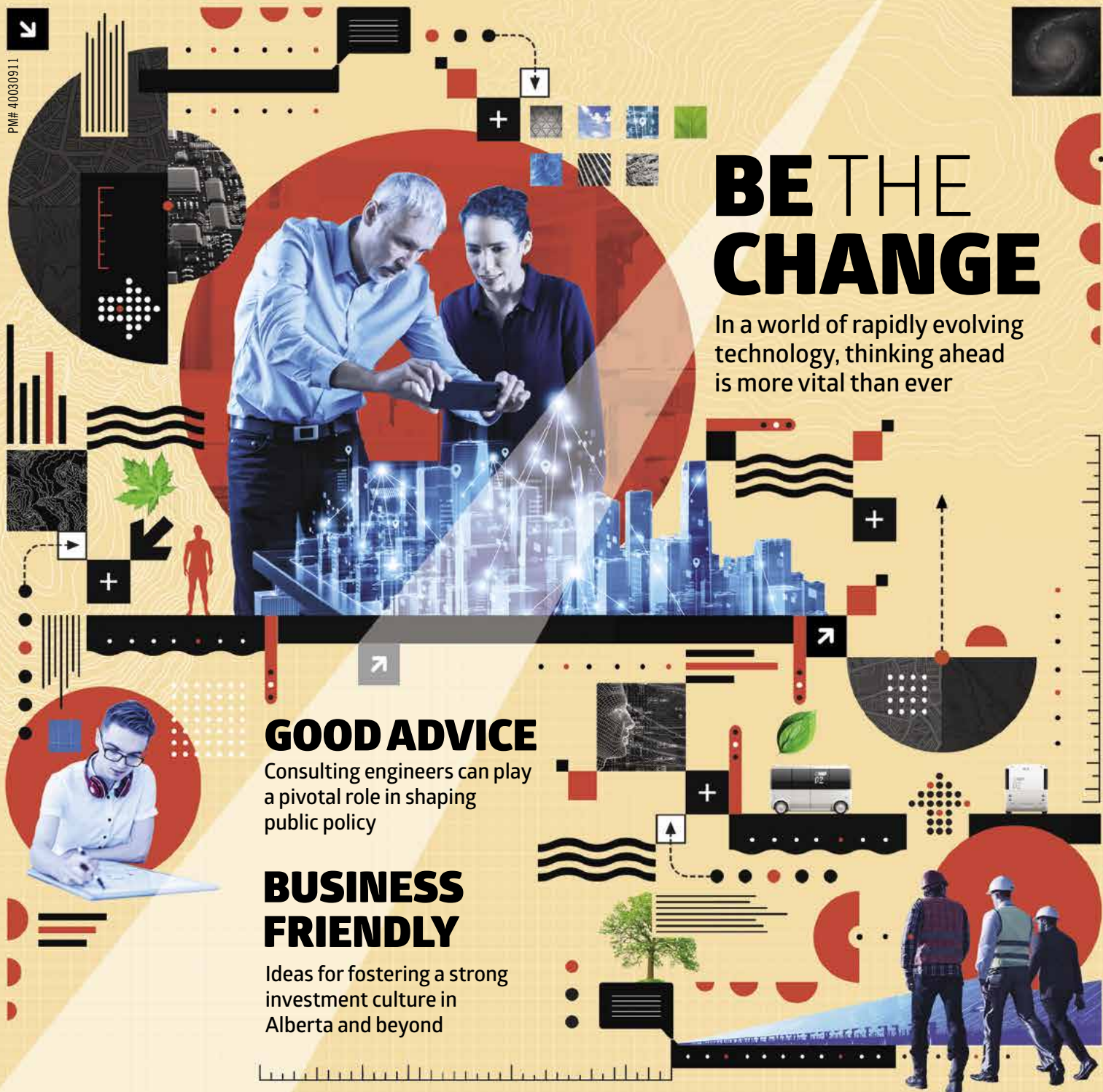


ALBERTA INNOVATORS

THE MAGAZINE OF CONSULTING ENGINEERS OF ALBERTA

SPRING 2019

PM# 40030911



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ALBERTA INNOVATORS

Published for:
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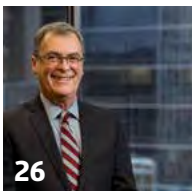
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The Honourable **RACHEL NOTLEY**
Premier of Alberta

ON BEHALF OF THE GOVERNMENT OF ALBERTA, it is my pleasure to send greetings to the readers of the 2019 *Alberta Innovators* magazine.

More than ever, Alberta is looking ahead. As we build a recovery that will last, protecting good jobs and the public services Albertans rely on, we're also building infrastructure, moving to renewable sources of energy, and ensuring our young people can succeed in a diversified economy. We want to make life better, and we're funding the innovation that will get us there.

The future requires broader thinking and fresh perspectives, as well as the people who can help us connect vision to reality. That's where you come in. Alberta's consulting engineers are vital to today's progress and tomorrow's breakthroughs.

Thank you to everyone who has contributed to this issue of *Alberta Innovators*. I know your insights will help Alberta make the most of our assets. Thank you as well to the Consulting Engineers of Alberta for providing this forum for the profession.

Rachel Notley
Spring 2019

A handwritten signature in black ink, appearing to be 'RN', which is a common shorthand for Rachel Notley.



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To Engage and Inspire



DEREK CIEZKI, P.Eng.
CEA President

WE WAKE UP EVERY MORNING, shower, get dressed, head to work, grab a Starbucks – and at the end of the day we wonder what we've accomplished. Who did we inspire? Who did we engage? What did we learn? What project did we win? What project did we lose? How did we give back?

These are just some of the questions that come to mind after a hard day's work – and for most consulting engineers, the questions don't end there.

Maybe as engineers we overanalyze things until we can figure out why something happened, or how we could have done something different, or better. I think it's in our nature to always strive to do and be better, and to find ways to make others' lives easier and more enjoyable.

Engaging and growing our industry through empathetic leadership is something I feel is the magic pill to the future of consulting engineering. Whether we are collaborating with our competitors, or partnering with other associations or institutions, we must always aim to engage, grow, and inspire.

And to do this, we must also encourage and accept change.

Whether it's new technology or new methods of work, change is inevitable. And how we cope and deal with change is where some of us struggle – especially, it seems, as engineers. But it's by facing change that we are able to take on new challenges. Our industry is evolving, and we need to adapt to new and more efficient ways of doing things. From new 3D modeling tools in design, to drone technology, to autonomous vehicles, we are always trying to adapt and stay ahead of the curve. This is also where Qualifications Based Selection (QBS) is the cornerstone of our industry. It enables our clients to have the

confidence in the selection of engineers with the ability to adapt to constant change.

So, as consulting engineers, how do we cultivate an environment that embraces inevitable change? For starters, we need to do the following:

- Have courage to face new challenges and to fail, so we can learn and move on.
- Take calculated risks – ones that explore all possible outcomes, even the potential of a worst-case scenario.
- Trust in what we do and who we work with in order to succeed.
- Take care of ourselves and do more of the things we love – play an instrument, sing like no one is watching, and spend time with our friends and family.
- Give back to our community and aim to provide meaningful guidance to our next generation of leaders.

This industry still isn't as respected as its work deserves, so we should make a concerted effort to get involved, to inspire each other to become the best we can be, and to strive for excellence in all areas of life. Together, we can increase our influence by helping to shape public policy, promoting QBS, establishing best practices in design and construction, and providing mentorship and inspiration to our future leaders.

We need to believe that we, as engineers, are a crucial part of everyday life. We are innovative, we make things work, and what we do improves the lives and health of millions of people around the world.

We, as consulting engineers, are the tide that lifts all boats.



Transformative Solutions

THIS YEAR'S GALA AWARDS theme, "Ignite - Fueling the Next Generation," is based on a message of transformation. Our ability as an industry, as organizations and as individuals to manage change is fundamental for our ability to not only survive, but to thrive and grow.

In a world with exponential opportunities, it is important for us to overcome the chal-



KEN KOZAKEWICH,
MBA, P. Eng., CEO



lenges of organizational inertia within our industry and client groups and to create innovative, meaningful, positive change for future generations.

Our annual awards program allows us to showcase examples of innovation and positive change at the project level. Overall, we recognize that innovation involves creating something new and useful. Whatever form innovation takes, it is important to recognize that significant change is rarely due to solo genius; it is most often a result of the collaborative effort of individuals with varying skills and backgrounds focused on a common objective.

Through our awards program, we also celebrate the successes of our industry as a whole. Our businesses and our Association operate in an information-laden, digital ecosystem that requires everyone to respond to broader issues that are taking place at a provincial, national and global level. We need to be innovative, transformative and collaborative to stay ahead of the "disruptors" that could potentially impact the health of our industry.

Transformative solutions come from people working together, rethinking the future and embracing new ideas from diverse perspectives. At the Board level, we recognize some of the challenges we face in creating more diversity, both within the Association and throughout the industry. Attracting and retaining talent that can provide new perspectives and be catalysts of change remains one of our key priorities. Through our member companies and the Association, we maintain an active Young Professionals' Group (YPG) with this objective. Two Young Professionals sit on our Board, and the YPG holds an annual conference as well as networking activities and educational outreach in Calgary, Edmonton and Red

Deer. The YPG has ignited new enthusiasm into many of our industry events and programs.

Good relationships between businesses, clients and stakeholders are also vital to our industry. Being able to affect change and control our destiny is rooted in trust. Through numerous committees, we continue work on maintaining strong bonds and redefining partnerships with our client groups in the provincial government and major municipalities, ensuring we celebrate successes and seek new solutions to ongoing issues in procurement and infrastructure funding.

In addition, we are pressing forward on promotion of Qualifications Based Selection (QBS) as one of our strategic initiatives regarding procurement, and I am pleased to report that we have received grant money that enables the Association to work with the University of Alberta on a QBS research project. This two-year study will ultimately provide a decision-based model to assist our public sector clients in recognizing the advantage of using QBS in the public's interest. QBS can provide significant change in our ability to be more innovative and provide a more collaborative approach in working with our clients.

As society's demographics change, it's an exciting time to witness the development of our leaders of tomorrow. I have confidence that consulting engineers will continue to be resilient and adaptive in maintaining sustainable businesses in this province, while also delivering creative new solutions, both at the project level and for the broader issues of our communities.

Thank you to the Board of Directors, CEA staff and member firms who continue to make ongoing contributions to improving the industry and making life better for everyone.

Infrastructure: Investing in Prosperity

INFRASTRUCTURE IS A CORE INVESTMENT in our overall quality of life. It connects and enhances communities, enables commerce and trade, and protects the environment. ACEC applauds the commitments by the federal government in this vital area.

BUT THERE'S STILL MORE TO DO.

It is important that the government's commitments are not only long-term, but also timely and consistent. Both the Investing in Canada Plan under the current government and the Building Canada Plan under the previous government are significantly back-end loaded, with most of the investments skewed toward the latter years of the program. This could negate



MICHAEL SNOW, P.Eng., ing., M.A.Sc.
Chair of the Board of Directors, ACEC



JOHN GAMBLE, CET, P.Eng.
President & CEO, ACEC

some of the advantages of making long-term commitments.

Design and construction firms, upon which governments rely to deliver infrastructure, are currently trying to retain their workforce through this early period of relatively modest investment. But, when investment increases drastically and rapidly at the back-end of the program, it will be difficult for industry to meet demand. Labour and materials will be more expensive due to intense competition. Approval and regulatory processes will become overwhelmed. Overruns could occur, and the resultant business uncertainty may discourage private investment. The key economic and societal benefits of infrastructure may be delayed – or unmet.

With less than a year until the next federal election, the Association of Consulting Engineering Companies (ACEC) has been engaging with federal parties and offering solutions that would allow federal infrastructure investments to provide the best possible benefits to Canadians.

INVEST STRATEGICALLY

Infrastructure projects do not exist in isolation. Collectively, our infrastructure is what enhances communities, enables commerce and trade, and protects our environment. To receive the best return on infrastructure investment, a coordinated and strategic approach should be taken to planning and investing.

In cases where municipalities have robust asset management plans in place, we recommend providing funding based on their investment program rather than on a project-by-project basis. This would allow multiple strategically-related projects to be approved under a single application and would serve as an incentive for municipalities to adopt asset management plans to guide strategic investment decisions.

REVIEW THE REGULATORY BURDEN

Every year, all levels of government introduce new regulations impacting everything from labour and licensing to building permits and

accessibility requirements. Individually, each regulation may be sound, but there's rarely consideration of their cumulative impact. Added together, they represent a significant drag on the ability of private sector and other actors to implement the government's infrastructure agenda.

The federal government should conduct a more robust set of cost-benefit analyses for all regulations it enacts, to ensure benefits exceed costs. It should also conduct regular reviews of existing regulations to ensure their objectives are being met at an acceptable cost to the taxpayer.

DEVELOP A NATIONAL INFRASTRUCTURE CORRIDOR

Political and physical barriers between provinces impact our ability to establish supply chains and markets within Canada and beyond. A national corridor would provide a pre-established, pre-approved right-of-way dedicated to accommodating multiple infrastructure assets (e.g. road, rail, pipeline and communication). Not only would it connect Canadian and international markets, it would also connect remote communities, allowing all Canadians to share in the country's prosperity.

A coordinated and collaborative approach to a national corridor could also proactively address social and environmental concerns, making the planning, development and implementation of both public and private infrastructure projects more time- and cost-effective.

TAKING ACTION

Consulting engineers will be directly involved in delivering the federal government's \$126 billion commitment to infrastructure. With the federal election this October, ACEC members across Canada, including members of Consulting Engineers of Alberta, are invited to participate in ACEC's "Bring an MP to Work" program to showcase consulting engineering to sitting Members of Parliament and educate them on issues important to the sector. **Visit www.acec.ca to learn more.**



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Exerting Influence: Building An Industry To Last

AS CONSULTING ENGINEERS, WE know that engineering is more than just the act of designing products in an isolated environment. At its core, engineering is the art of solving complex, open-ended problems. Within the overall field of engineering, consulting commits individuals to a service-oriented industry focused on protecting the public. Our skills are rooted in balancing numerous technical, financial and social constraints to provide pragmatic solutions that support the growth of society and position future generations for success. Given this combination, consulting engineers are uniquely positioned to play a critical role in our communities.

This message has not always reached aspiring engineers. Effectively articulating this differentiating advantage will serve to attract talent to our industry and continue to engage future generations into positions of leadership as consulting engineers. One such opportunity is to engage the digital connectivity of our young professionals to promote and grow the industry. In the age of Twitter and Instagram, attracting future talent relies on catching, and holding, the attention of aspiring engineers. By asking our emerging leaders to share their narrative and highlight the real impact their work has on society, our industry can strike a relatable chord with the next generation of leaders.

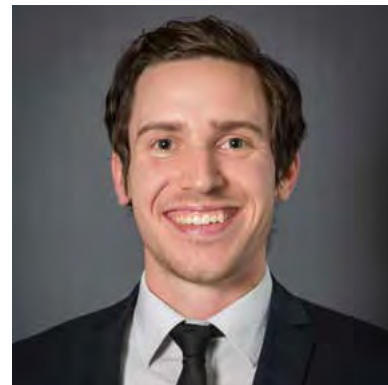
A sound social media approach is best paired with good old-fashioned community outreach to properly engage a broad audience. Beginning as early as elementary school, we should encourage industry participation with students of all ages to

celebrate and explore their experiences and aspirations. Engaging science, technology, engineering and math (STEM) outreach programs and mentoring at our universities also helps connect our industry with future engineers.

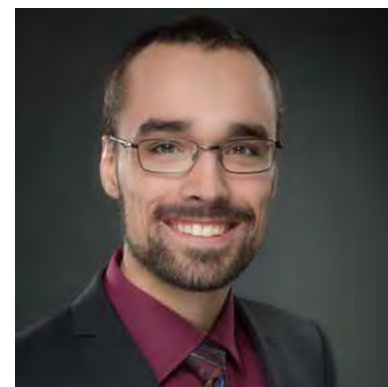
The effectiveness of these two approaches is dependent on tapping the potential of our emerging leaders, who are engaged more than ever in the multiple dimensions of a consulting engineering business. They actively seek out ways to contribute to business development, mentorship, corporate culture and industry organizations, which serve to accelerate their growth and deepen their connection to the industry.

Attracting and developing the next generation of consulting engineers will not only serve to grow our industry; it will also help to enhance our impact on society. At present, our society is facing technological, financial, logistical and ethical challenges at a pace and scale never seen before. Issues ranging from artificial intelligence to climate change, data privacy, and alternative energies are all real challenges this generation will have to confront and solve.

The future of our communities and our industry depends on the expertise of consulting engineers, especially in politics and governance. Historically, engineering and politics have rarely mixed. In the current Alberta Legislative Assembly, there are no engineers registered with APEGA. Federally, seven of the 337 MPs have an engineering background, though only two hold active registrations. Municipal politics and city councils have benefited from the involvement of engineers, but rarely are these consulting engineers.



NATHAN MURDOCH
YP Director

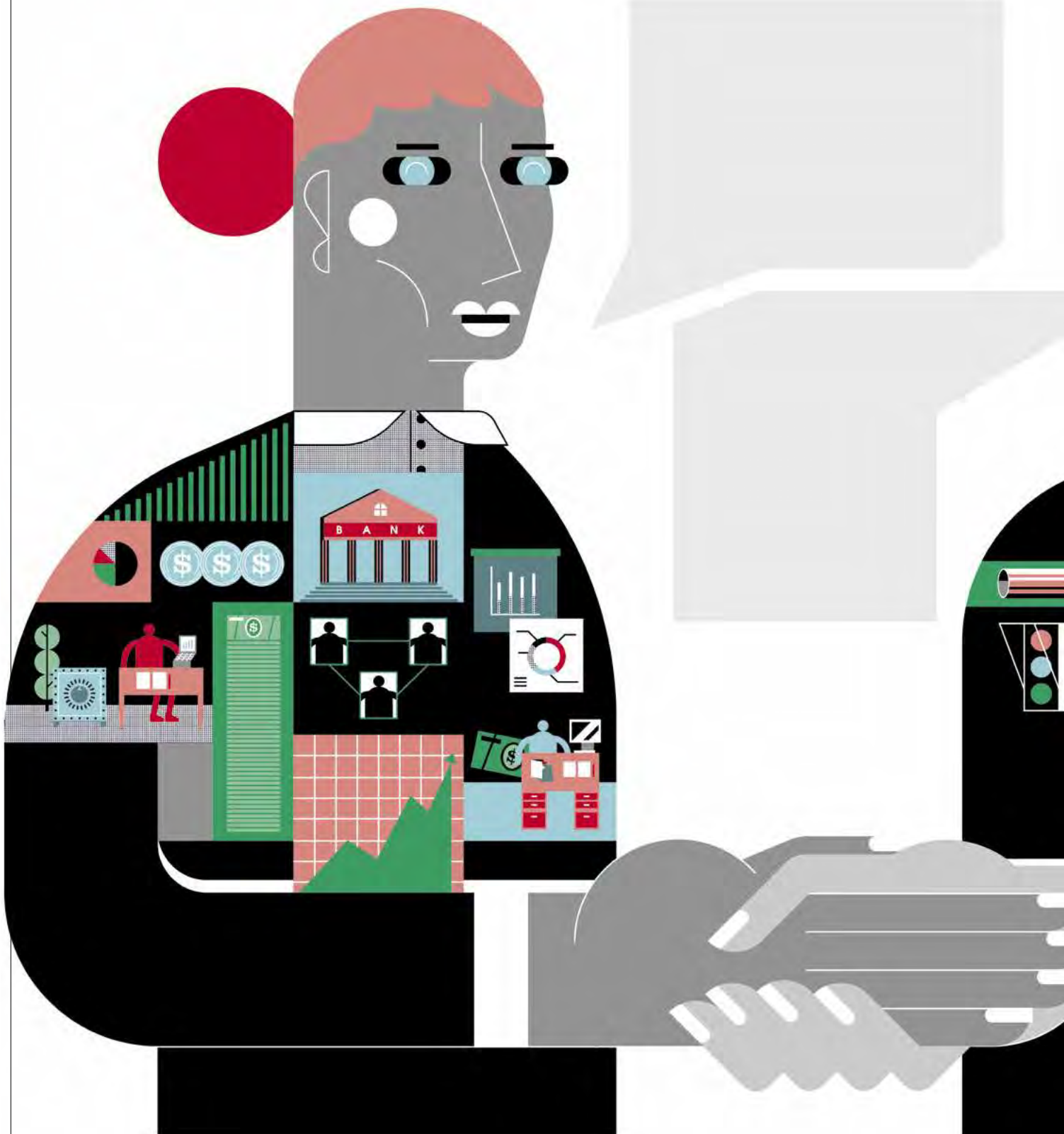


THOMAS ZIEGLER
YP Director

A diversity of backgrounds and approaches is necessary to effectively run any organization, especially government. Politics and governance desperately need the solutions-oriented perspective that consulting engineers exemplify.

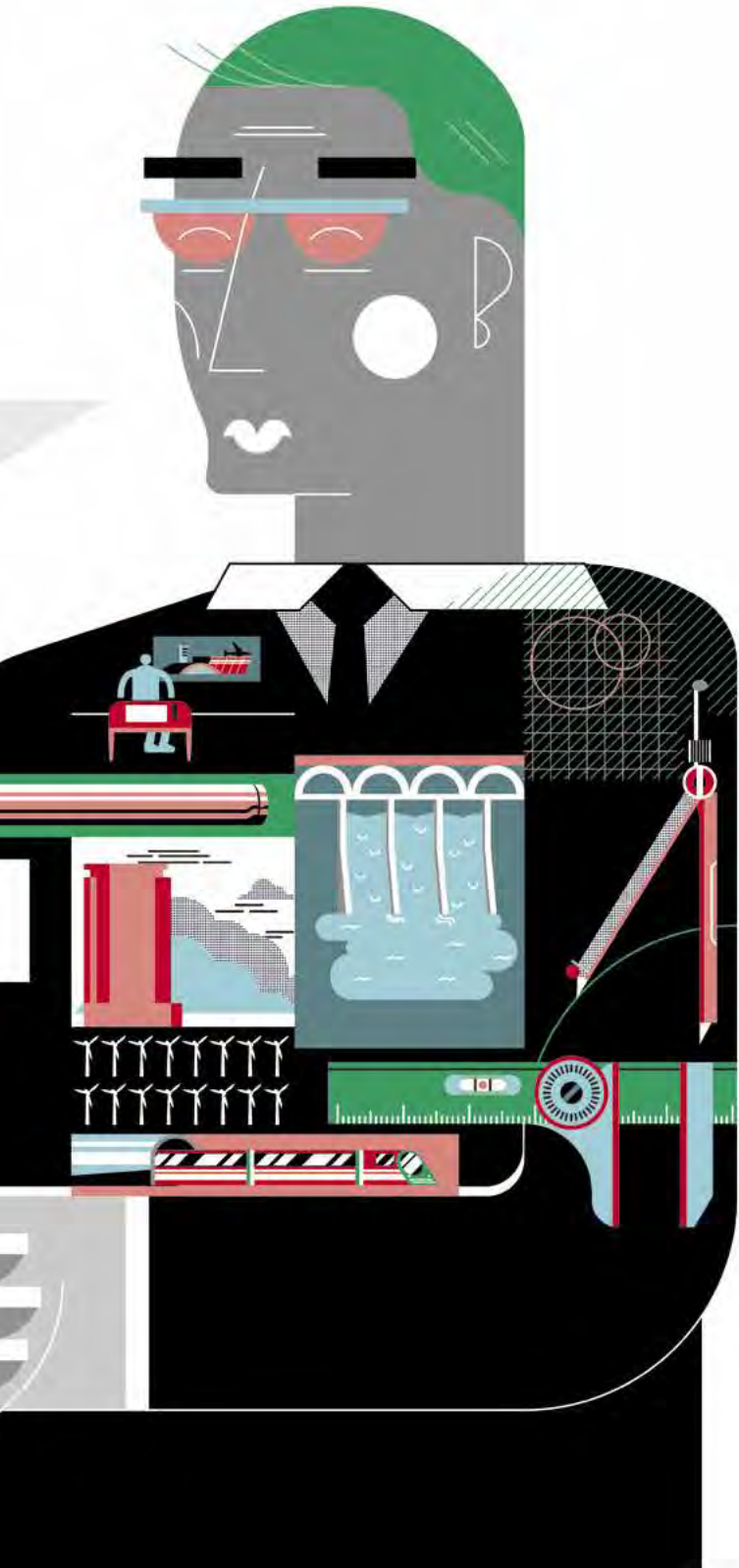
With a provincial election coming in the Spring of 2019 and a federal election projected for Fall 2019, there is a renewed relevance to be involved in all levels of political conversations. Whether this be volunteering in your local riding, or with a political party, running for office, or simply voting, there is an imperative to bring the voice of consulting engineers to our political system and steer society through these complex problems. Mobilize your unique skillset as a consulting engineer. Grow our industry and exert your influence.

You're Welcome



Nurturing a business-friendly culture is critical for consulting engineers

BY GEOFF GEDDES | ILLUSTRATION BY ANDREW WEDMAN



THE INFLUENCE OF CONSULTING ENGINEERS in Alberta is like oxygen: valued most when it's in short supply. These professionals play a vital role in a range of projects and contribute more than \$1.9 billion annually to the Alberta economy, so securing their future is critical for the province.

Of course, fostering a business-friendly environment that encourages investment and helps sustain the consulting engineering industry is no small feat, but it's one that offers excellent returns for both professionals and those they serve.

"A strong investment culture is the foundation of our ability to grow the economy," says Janet Riopel, president & CEO of the Edmonton Chamber of Commerce. "Unfortunately, capital investment in Alberta has slowed tremendously, down 45 per cent from 2014 to 2018. Without that investment, we won't see the big projects that keep engineers engaged."

In Riopel's view, the declining investment stems from many factors, including a heavy regulatory burden on business, onerous labor laws and drastically increased commercial property taxes.

"We are losing the eyes of investors around the world," she says. "They are looking elsewhere, and at the same time, the United States is cutting back on taxes and regulations. Going forward, enhancing competitiveness must be the top line of our agenda."

TALK IS PRICELESS

To help foster investment, the chamber is advocating with all levels of government, talking daily about the detrimental effects of tax and regulatory increases and proposing solutions. That includes looking at where business can deliver a program or service rather than government, taking the risks and absorbing the costs.

"We believe that where things can be done more efficiently by the private sector, government shouldn't be in the business of doing it," says Riopel.

Similarly, the Calgary Chamber of Commerce is also urging better government support of the private sector.

"In 2018 alone, the Calgary Chamber has worked to address a variety of issues impacting business," says Gina Scandrett, communications specialist for that chamber. "Those issues include trade with the United States, Canadian tax competitiveness, regulatory uncertainty, small business tax changes, non-residential property tax relief, and the layered cost impact that government policies have had on the Calgary business community."

If business can speak so that government listens, the potential in Alberta is promising.



“We have a highly skilled workforce and world-class centres of education,” says Riopel. “It’s a prime environment for innovation, something that is a key focus for everyone these days, including the chamber. We’re now trying to find ways of connecting innovators with entrepreneurs and bring ideas to market in our city and our region.”

Though it stands to help a range of businesses and industry, encouraging investment will undoubtedly benefit the consulting engineers.

FROM PROBLEM TO PROFIT

“Consulting engineers are problem solvers and solution providers,” says Edmonton’s Ward 9 City Councillor Tim Cartmell, who is also a professional engineer. “The more investment we have, the more solutions we need, and the larger

the market for those who provide them. A thriving investment culture means a thriving business market for consulting engineers.”

As Edmonton’s city council works on its budget for the next four years, a key

focus is making the city more appealing to business and incentivizing innovation.

“We need to create an environment where start-ups will thrive and make Edmonton their home as they create new technology and foster homegrown talent and intelligence that will help our city grow,” says Cartmell.

While council sees a role for the city in areas like regulations and taxes, there is more they can do.

“One area where we can effect change is making it easier to get permits and approvals,” says Cartmell. “That’s part of enhancing development opportunities to allow for investment in particular fields or markets. We can also look at tax rates, incentives, deferred taxes and other tools to attract business.”

A prime example of business-friendly tools at work is Rogers Place and the arena district in Edmonton, where the city employed a tax deferral scheme to secure the project.

“Council considered that the arena would bring investment to the surrounding neighbourhoods that would increase property taxes, so we decided to invest in the project and defer our tax revenue. These are the sort of approaches we are contemplating in the budget,” says Cartmell. “If we can create an environment that attracts development, consulting engineers will benefit. They are a service industry, and if we generate demand for their services, they can reap the rewards.”

PEOPLE POWER

For many within the consulting engineering industry, a business-friendly environment is not just desirable; it’s essential. In addition to making companies profitable, thereby enabling firms to attract and compensate top talent, a business-friendly province sends the message to aspiring engineers that their chosen career path is a viable one worthy of pursuing.

“A strong investment culture in the province allows us to invest in our assets, which are almost exclusively people,” says Matt Brassard, principal at Urban Systems Ltd. in

“The future of firms and the industry itself is the next generation, and we must put money, time and effort toward new grads to ensure success.”

► Matt Brassard, Urban Systems Ltd.

Edmonton and an honorary Board member with CEA. “The future of firms and the industry itself is the next generation, and we must put money, time and effort toward new grads to ensure success. If we don’t, it creates a generational gap in the industry that has far-reaching implications.”

Absent the ability to transfer knowledge to the next wave of professionals, the experience and expertise in vital areas like project management and design is bound to suffer.

“When you have gaps, the client is hurt because they can’t get the services they need, and the industry is hurt because it can’t provide those services,” says Brassard.

To avoid those gaps, Brassard’s firm stresses long-term succession planning and short-term financial benefits. Investing in its people includes training, compensation and opportunities for staff to grow and develop as practitioners.

“We support our people to attend conferences and tech training, and provide coaching and mentoring,” says Brassard. “In the process, we are preparing them not only to serve our clients, but to become business owners and understand what it takes to operate a consulting business.”

In addition to giving consulting engineers the knowledge and skills needed for success, firms must convey the value of that expertise to their clients.

“We promote a relationship-based approach with clients,” says Brassard. “That includes elements like standing offer agreements to build an understanding of the level of service clients expect. The more we understand their needs, the better we can support them.”

Providing that support at many levels is a common industry theme these days.

A UNITED STANCE

“As president of the CEA, I’m advocating for all consulting engineers across the province to speak with one voice, sharing our ideas and challenges with various industry stakeholders including owners, architects, and contractors,” says Derek Ciezki, partner at SMP Engineering.

One of those challenges is educating clients that taking the lowest bid for a project may not be the best value once you factor in the full life-cycle cost of that project. Instead, Ciezki and many of his colleagues encourage clients to consider Qualifications-Based Selection (QBS) for procuring professional services, a process in which customers assess the credentials of the team’s qualifications

and price is discussed after the qualified firm is chosen. Studies have shown that QBS can promote a team-based relationship due to the lack of adversarial pricing discussions. In that way, QBS can increase innovation and risk mitigation.

“We’re trying to raise the profile of engineering so we don’t become just another commodity,” says Ciezki. “We’re not selling a product like toilet paper; we’re selling a professional service. People need to fully understand the benefits of the projects we design and build, whether it is a community centre, a waste management centre or a new road that saves commuters 30 minutes each day.

“It’s crucial to have more communication and engagement among owners, engineers and contractors, cultivating long-term relationships rather than one-offs.”

► Larry Staples, COAA

It’s important that we engage stakeholders and show the full effects of our work on the community.”

Of course, for that engagement to bear fruit, firms must attract the best talent to their ranks and set them up for success.

A RESOURCEFUL APPROACH

While consulting engineers figure prominently in a range of projects, their role in regard to natural resources is a prime example of investment dollars at work.

“Alberta is a small province with limited capital that can be raised locally, so we must have external funding to develop our natural resources,” says Larry Staples, advisor with Construction Owners Association of Alberta (COAA) and Alberta Chamber of Resources (ACR). “When you look at the growth curve of investment in Alberta, it’s followed closely by the growth of APEGA [Association of Professional Engineers and Geoscientists] members, and a small but significant portion of those members are consulting engineers. They have been a huge part of developing the capacity to design and supervise projects funded by the hundreds of billions of dollars invested in Alberta over the last 60 to 70 years.”

As part of its mission, the ACR promotes the safe and orderly development of all the province’s natural resources, ranging from oil and gas to diamonds, gypsum and gravel. While much of Staples’ focus has been dealing with contractual relationships and model contractual documents, he sees another area that warrants attention.

“We need to advocate for collaborative contracting, where clients engage engineers at the beginning of a project as partners to define parameters and decide on metrics for gauging progress,” says Staples. “Clients can then gather suggestions from contractors and have engineers assess them.

It’s crucial to have more communication and engagement among owners, engineers and contractors, cultivating long-term relationships rather than one-offs.”

This approach would allow consulting engineers to understand not only the client’s preferences and priorities for a project, but also their values and key business goals in a larger sense. Upon completion, all parties can assess what went right or wrong, what they learned and what takeaways can be applied to future projects.

Nurturing a business-friendly climate for consulting engineers in Alberta and conveying their value can take a variety of forms. What many in the industry agree upon is that it can, and must, be done.

“Our diverse portfolio of natural resources is half of the Alberta advantage; the ingenuity to develop them wisely to meet the needs of the future is the other half,” says Staples. “We must ensure clients grasp that advantage and recognize the critical role that consulting engineers play in a variety of projects, including civil and communications infrastructure, industrial plants and commercial developments. At the same time, we need to continue making the province attractive to those who fund the projects. If we can accomplish all of that, opportunities will abound for consulting engineers in Alberta.” ■



THINKING AHEAD

Today's consulting engineers must embrace technological innovation and risk-taking

BY SEAN P. YOUNG | ILLUSTRATION BY HEFF O'REILLY

CONSULTING ENGINEERS in Alberta have a healthy difference of opinion on many things. Whether it be leadership styles, business-capture strategies, or even a firm's culture, approaches can vary from one company to the next. But there's at least one thing that consulting engineers across the province can agree on without question: the need to innovate.

THE DISRUPTOR: ARTIFICIAL INTELLIGENCE

One of the greatest threats to the human engineer's livelihood is surely artificial intelligence (AI). Advanced engineering design software systems can render dozens, or even hundreds, of generative models from scratch based on a set of design requirements. As the technology rapidly evolves, the AI is fine-tuning its algorithms to deliver designs faster, cheaper and more accurately than human engineers.

But, while AI is replacing the more time-consuming and costly parts of the engineering design process, it is

also helping human engineers design more complex, creative and stronger solutions for their clients.

"AI – and more particularly, the subset of AI called machine learning – is a tool that enhances our ability to solve engineering problems more quickly and take into account more background data," says DiBattista. "I foresee that engineering design will continue to be led by people for many years to come, [but it will be] aided by more and more powerful intelligent machines."

DiBattista's firm, DIALOG, is using machine-learning to increase its knowledge bank of design solutions from past

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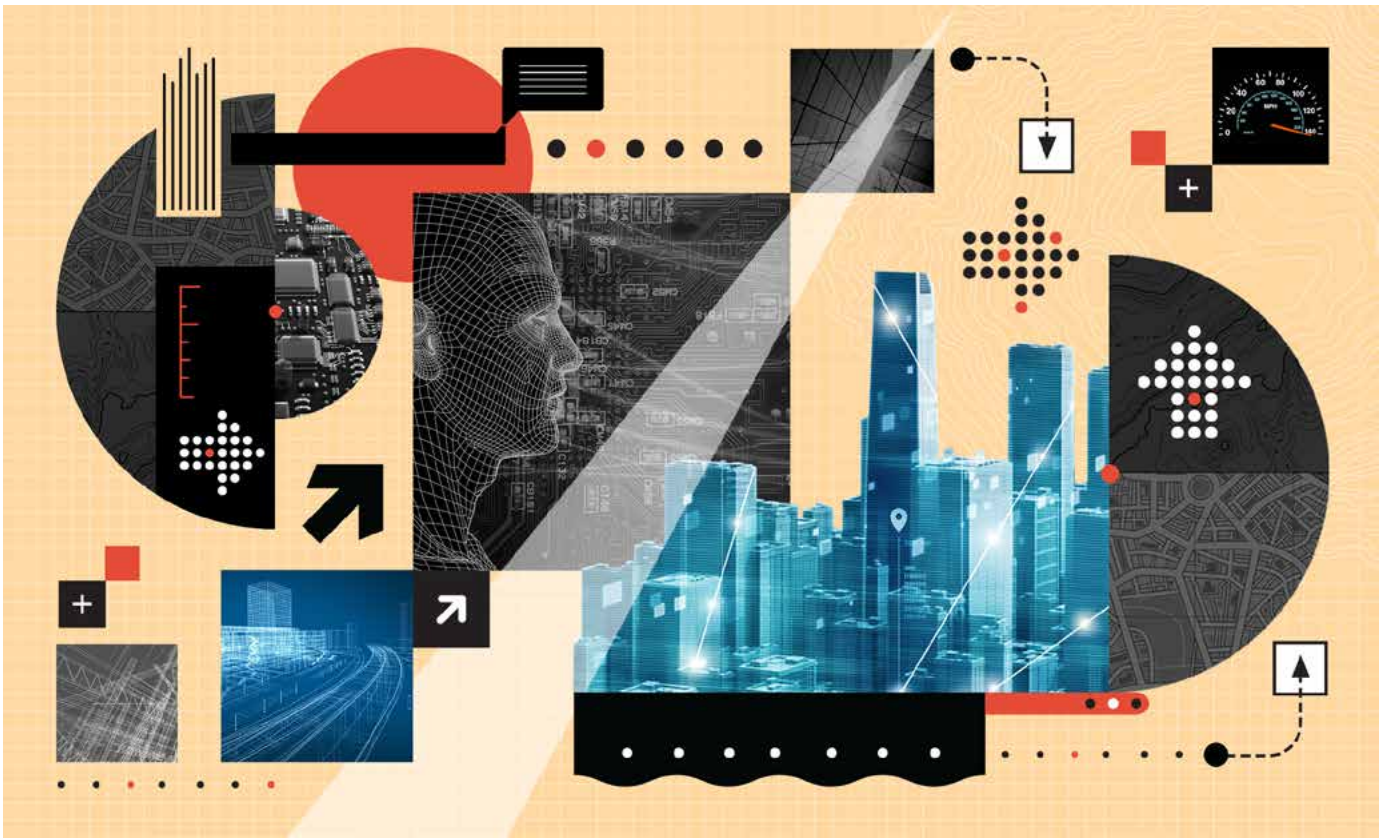
► Jeff DiBattista, DIALOG

Put another way: if you don't stay ahead of potentially disruptive technological advances, it will be impossible to remain successful.

"Innovation isn't optional," says Jeff DiBattista, practice principal at DIALOG in Edmonton. "The world of technology is changing too quickly and it's going to have too big an impact on our businesses. But these tech challenges are actually tech opportunities."

We spoke with several leaders in their respective fields to find out how various disruptive technologies are already changing the way consulting engineers in Alberta are doing business.





projects. “Like most consulting firms, we have terabytes of data from our project files over many decades, and we want to tap into that knowledge that’s hidden and locked away,” he says. “We’ve built [a machine-learning] tool that is currently in proof-of-concept phase, and we are planning to roll it out more widely next year.”

This tool, DiBattista explains, “scrapes” data from all the firm’s drives and categorizes it to allow DIALOG’s engineers to search it in a more efficient way.

But past projects aren’t the only ones being mined for potential solutions. DIALOG is also pairing data from recent designs with machine learning to create a learning feedback loop on its projects – past, present, and future.

“If we can monitor the data that our projects are creating – think of smart buildings – it will allow us to understand how those buildings are actually operating and help us design better ones in the future,” says DiBattista. “We’re really just getting started on these efforts.”

Using the latest wave of AI design tools to produce innovative ideas isn’t just a trendy thing to do; it’s necessary to remain competitive in the global marketplace.

“What we’re expecting to see is an even greater application of artificial intelligence

into the process of engineering,” says Frank Prosperi-Porta, principal, structural engineering at RJC Engineers. “To be competitive, we’ve had to invest money into technology to fit our needs and to fit our drive to ever improve efficiencies. We’ve kind of been forced into that, it’s just the reality of the marketplace.”

For several recent tower projects (50, 80, or even 100 storeys high) in central

“There are jobs that exist for grads in their last year of university that didn’t exist when they started their four-year degree.”

► Kelly Yuzdepski, CIMA+

Canada, Prosperi-Porta’s firm developed in-house AI software (in conjunction with off-the-shelf software) that converts raw data into engineering design and helps produce a “drawing package” for engineering teams to build upon (the customized software is still a work in progress).

“These automated systems basically draw the elevation of the building, the reinforcement details, that sort of stuff, and that’s where we’ve had to go to save time and money,” he says.

THE DISRUPTOR: THE SPEED OF INNOVATION

Famed futurist Ray Kurzweil posits that every 12 to 18 months, computers double their capabilities. For educators, this exponential growth makes preparing future generations of engineers for the digital revolution a challenge.

“There are jobs that exist for grads in their last year of university that didn’t exist when they started their four-year degree,” says Kelly Yuzdepski, regional vice president, Western Canada at CIMA+.

But according to Bill Rosehart, Dean of the University of Calgary’s Schulich School of Engineering, universities are establishing more nimble curricula to allow for the integration of extremely recent tech into the student experience.

“We are not preparing students who are going to be replaced by the digital revolution,” he says. “We are preparing students who are going to drive the adoption of the digital revolution.”

Calgary’s Schulich School already hosts design labs that allow faculty to incorporate high-performance computing experiences into their classes (particularly design tools).



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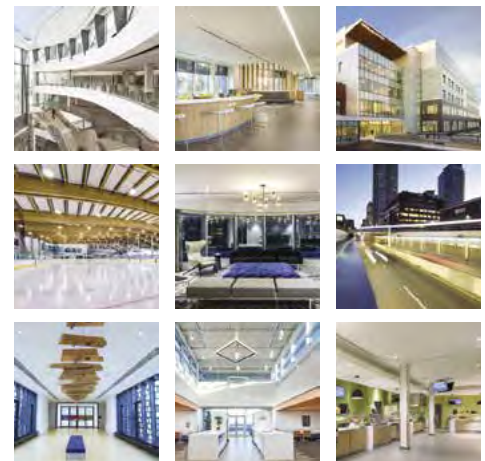
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And the faculty intends to grow these significantly in the future.

“We are in the midst of enhancing and adding to those research spaces, as digital innovation is certainly [a] keen area of focus for the immediate future. Our students are eagerly awaiting these [digital] opportunities, and we’re more than happy to provide them,” he says.

THE DISRUPTOR: DRIVERLESS, GREENER TRANSPORTATION

Tesla, Google, Uber and other tech giants are already producing autonomous vehicles, and when these kinds of vehicles become the standard, it won’t just be consumers and commercial drivers that are disrupted.

“Technology and the pursuit of technologies that we could only dream of 10 years ago are materializing,” says Rod Schebesch, senior vice president transportation at Stantec.

Autonomous vehicles are likely to disrupt the transportation industry very soon, and Schebesch and his Smart Mobility team are already seeing hints of a near-future that sounds like science fiction. Stantec is leveraging these exciting new technologies through their involvement with Connect-Automated Vehicles, Hyperloop,

and even Aerial Autonomous Taxi Services. Possibilities such as these are now a reality and here to stay.

“It’s absolutely critical and necessary to innovate,” Schebesch says. “As a competitive engineering firm, it’s the innovation that’s often the difference between winning and losing.”

Greener transportation technologies also create challenges for infrastructure

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► Rod Schebesch, senior vice president transportation, Stantec

engineers when designing roadways that will be used for generations to come.

“All across Canada, there is a move to LRT and greener technologies,” says Sean Snowden, manager of transportation, urban centres, Northern Alberta, at WSP. “With these technologies comes a big impact on road use patterns, urban development and social habits, and we need to anticipate these when we’re designing roadways and transportation infrastructure in the future,”

New tools are also helping Snowden and

WSP gather the information needed to design the roadways of the future, while keeping WSP’s people out of harm’s way – a welcome technological disruption when considering the way things were done in the past.

WSP now uses innovative mobile laser scanners to collect surveying data. The devices are mounted to a vehicle or set up in a stationary position.

“It’s enabled us to collect topographic data information when unsafe conditions are present, such as [working] adjacent to a busy roadway,” Snowden says. “Now, you don’t need to have a surveyor standing

in the middle of the roadway or going down in trenches to pick up data.”

WSP also uses vehicle tracking software and locator beacons that work off satellites (meaning no cellular connection is required) to account for its people who often work alone or in remote areas.

“When we had the fires in Fort McMurray, there was an exceptional effort to identify the locations of our staff working in the area and making sure they were safe,” Snowden says. “These technologies are very helpful in accounting for everyone.”

Five Tips for Fostering Innovation and Meeting Disruptors Head On

1. > BECOME THE CHANGE

“My belief is we need to *be* the disruptors, we need to disrupt ourselves rather than waiting around for Google or some other very well-funded tech organization to come into our industry and disrupt us.”

— JEFF DIBATTISTA

As practice principal at DIALOG, DiBattista says he emboldens everyone at the firm to become an innovator by encouraging his employees to keep an open mind and allowing them to attempt safe-to-try experiments — a concept he borrowed from a friend at stok, a real estate firm in San Francisco focused on sustainability.

“It’s something that you can do that isn’t going to cause huge risk to the firm or isn’t going to cost hundreds of thousands of dollars,” DiBattista says. “It’s about encouraging all our people to see creativity and innovation as their responsibility; part of their job.”

2. > NEVER BE COMPLACENT

“Any engineer who’s aspiring to be noticed and excel at their profession has to be prepared and willing to question, to investigate, and to always push the envelope.”

— FRANK PROSPERI-PORTA

Engineers by nature want to push the envelope for their clients, and having a culture that rewards innovation is important to yield the best results, Proserpi-Porta says.

“There’s the personal satisfaction of doing something different and challenging, and there’s also the business pressure of finding ways to compete by applying knowledge and technology to our processes,” he says. “Clients want to push the envelope, too, for their own organization in terms of creating more fanciful developments. We have to stay current in being able to deliver on those expectations.”

3. > BUILD YOUR REAL-WORLD EXPERIENCE

“Fundamentally, engineering is about problem-solving, collaboration, communication, and working in teams to make a positive difference in a local or global community. When I greet our incoming students, I tell them to get involved, go above and beyond what you’re being taught and get involved in the community.”

— BILL ROSEHART

Rosehart says that while tech advances will continually disrupt the way engineers do business, they will never be able to fully replace the value of real-world, hands-on human experiences. And it’s those real-world experiences that equip consulting engineers with the insight and flexibility they require in order to understand human needs and continuously adapt to change.

“All those experiences together are what will allow [engineers] to remain throughout this digital revolution,” Rosehart says.

4. > MAINTAIN STRENGTH IN NUMBERS

“Gather as a larger group when you get a proposal. We like to do multi-discipline and multi-personality gatherings to chew on how we might provide strong value to our clients around innovation.”

— SEAN SNOWDEN

While AI uses algorithms from past, present, and future projects to refine its methods, it can’t pick up the phone and collaborate with human experts via nuanced conversation and formulate ideas — at least, not yet.

To make sure each of its projects is at the forefront of innovation, WSP uses its 43,600-strong employee base for good old-fashioned brainstorming (using the latest in virtual collaboration tools to connect worldwide). In April 2018, WSP also hosted “Future Ready” panel discussions and roundtables in three Canadian cities, where, as Snowden describes it, the firm gathers its own leaders with futurists to talk about “how the future is going to impact us and what we’re going to need to do today to be able to design for our clients in the future.”

5. > BE PROACTIVELY REACTIVE

“A lot of times, [our industry] is in reaction mode, but we can’t be too far behind with our reactions or we’re going to get left behind.”

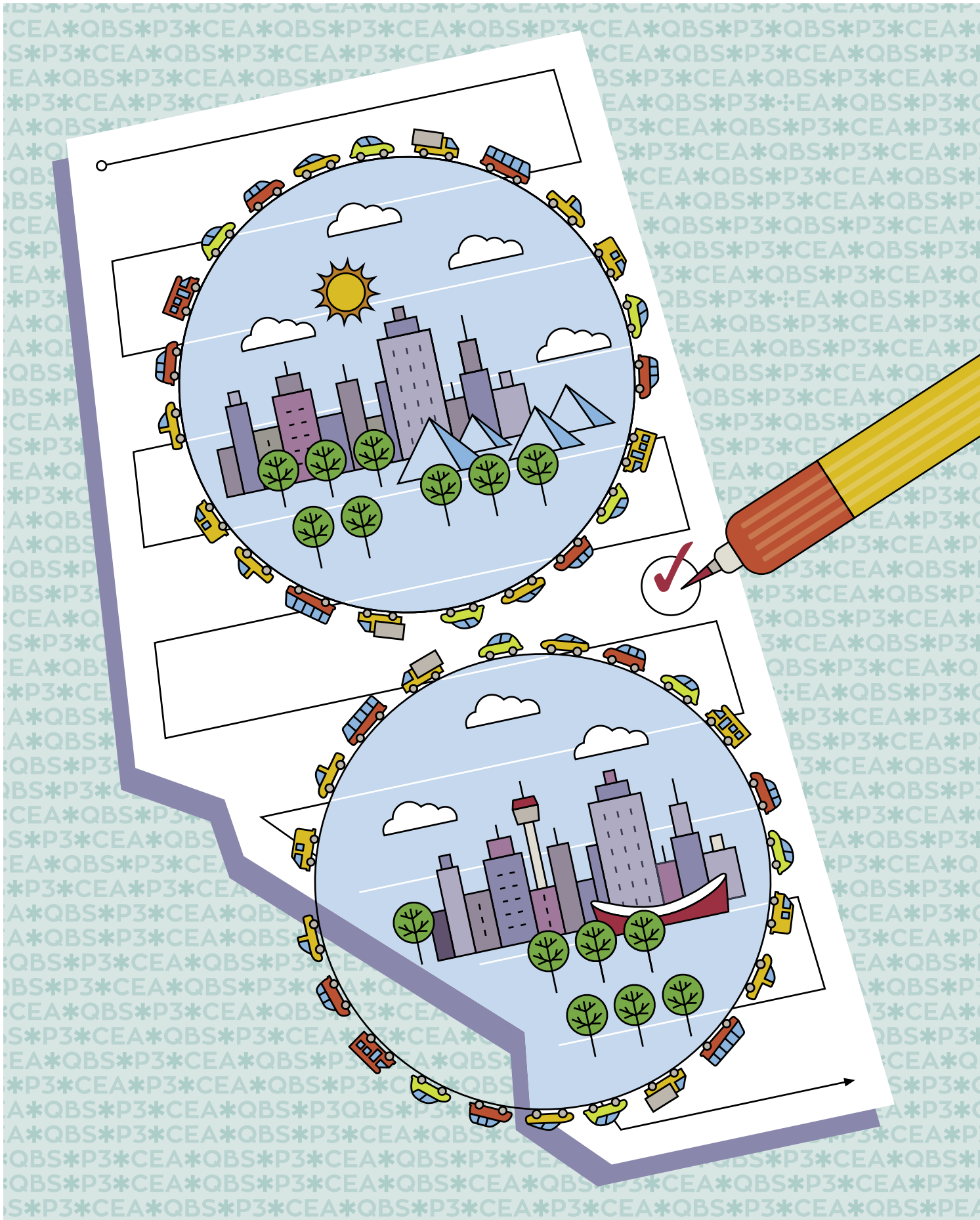
— KELLY YUZDEPSKI

Predicting the future is difficult, but making room for future disruptors in current projects has become necessary, even when the technology isn’t quite there yet, Yuzdepski says.

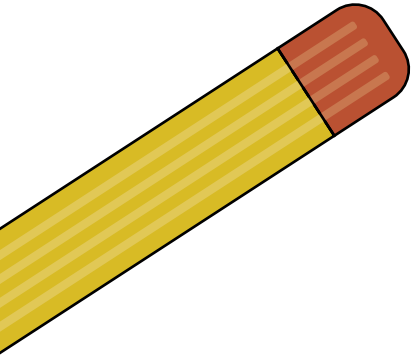
“Your business must be flexible so that it can readily adapt and embrace new technologies,” he says.

As an example, Yuzdepski points to newly developing medical centres, which are often being programmed to accept future tech, such as robotic nurses.

“We’re programming hospitals 10 years out to accept technologies that don’t yet exist,” he says.



CRUCIAL Insights



When it comes to shaping public policy for the good of all Albertans, consulting engineers can play a pivotal role

BY CHRISTOPHER SCHIEMAN | ILLUSTRATION BY RAYMOND REID

I **F YOU ASK FORMER ALBERTA** Premier Ed Stelmach what he's proud of from his time in public office, he won't hesitate to point to Anthony Henday Drive as one example. The Edmonton Ring Road project began in 2001, while Stelmach was still Minister of Infrastructure, and was completed in 2016. According to Stelmach, the size and ambition of this project was beyond anything the provincial government could handle on its own.

"The first time I saw the drawings for the project, I remember having to stand back to try and get a better view of the whole thing," he says. "I remember thinking, 'Wow! Where are you going to put down the first stake?'"

Beyond the asphalt and concrete of the road itself, what Stelmach is particularly proud of is the new public policy that went into place to make the Anthony Henday possible. In partnership with a number of influential stakeholders and with the approval of the Treasury Board, Stelmach helped formulate the Public Private Partnerships policy (or P3 policy), which sees the Province of Alberta and its outsourced organizations from the private sector become equal partners in major infrastructure projects, including financial investment.

"For the size of Edmonton, a city of just around a million people and just over if you count the surrounding areas, the Anthony Henday was really a significant piece of infrastructure," says Stelmach. "By out-

sourcing all the engineering work through the CEA, we had a large number of various skill sets and talents from all different areas of engineering. All of that expertise was utilized for the benefit of all Albertans."

In Stelmach's view, the success of the Anthony Henday project, and many other major infrastructure projects in the province, would not be possible without consulting engineers getting involved in the

"For the size of Edmonton, a city of just around a million people and just over if you count the surrounding areas, the Anthony Henday was really a significant piece of infrastructure."

➤ Ed Stelmach, former Alberta Premier

shaping of public policy and planning. The expertise and experience of CEA members, he says, is invaluable in helping the provincial government decide how to approach new and innovative ways of meeting the infrastructure needs of Albertans.

Of course, getting involved in public policy also provides those within the consulting industry with an opportunity to give voice to their priorities and concerns, helping to ensure engineers can work within defined parameters without sacrificing quality and best-practices.

DEVELOPING PARTNERSHIPS

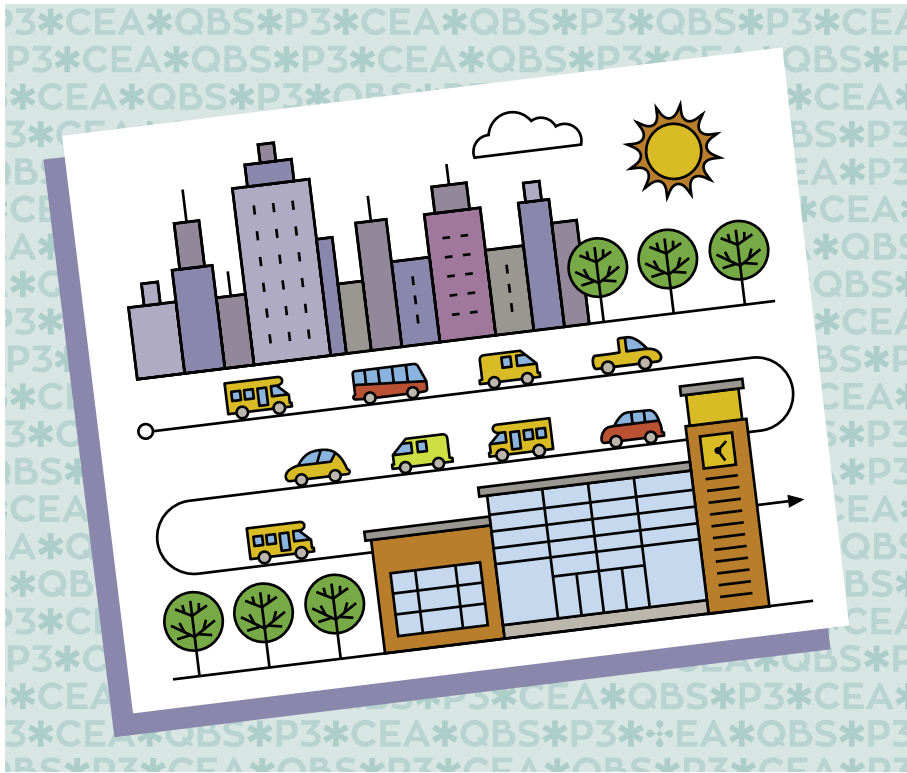
Ron Glen, CEO of the Alberta Roadbuilders & Heavy Construction Association (ARHCA), completed his MBA capstone

project while working for Stelmach on the P3 policy. He remembers back to 1998, when the province's economy started booming again from natural gas royalties and there was a sudden need for improved infrastructure to go along with the population growth. The Alberta government at the time, under the leadership of the late Ralph Klein, was focusing all of its efforts on paying the deficit that grew from the 1980s economic downturn. Glen and his department were tasked with building new major roadways under conditions where budgets couldn't keep up with demand.

"I remember attending a meeting in Calgary where we were told that the province was

increasing grants to the urban municipalities for their roadways and taking on 100 per cent of the financial responsibility for the secondary highways, ring roads, and the Deerfoot Trail," Glen says. "This was billions upon billions of dollars of projects, and we had to find a budget for them."

The idea of a public-private partnership for infrastructure projects was already being practiced in Europe at the time, and Glen could see the benefit of a similar policy to help with Alberta's major roadway projects. The province leaned on the expertise of the CEA to help shape how the policy would work, and to contribute innovative ways of thinking about budgets that the government departments never considered before.



“The CEA brought an integration of engineering expertise with business and financial expertise, which helped with a lot of future planning,” says Glen. “Departments tended to budget on today’s dollars, but public budgets change and are often cut. The agreement on the Anthony Henday, for example, required a certain amount of annual maintenance, meaning that for the next 35 years, maintenance will be a constant for the Anthony Henday. This helped force engineers to make really good choices in terms of how the Anthony Henday was designed and built.”

An initial concern about the P3 policy was that it would favour foreign investment and outsourcing for infrastructure projects. But, thanks in part to the CEA’s involvement in developing the policy, both domestic and international companies are considered and utilized fairly, and the Anthony Henday shines as a major transportation project that brought work to a variety of local suppliers and labour.

BEYOND ROADWAYS

Another area of development that has benefited from positive collaboration between private and public sectors is the building of new schools across the province. In 2012-13, Albertans were once again seeing a major population boom, approximately 100,000 new residents every year, 14,000 of whom

were students. Estimates showed that this influx meant there would need to be roughly 28 new schools built every year to keep class sizes manageable.

“My own kids were attending school in makeshift classrooms set up on the gym stage simply because there was no room anywhere else in the school,” says Sheldon Hudson, vice president and director of Al-Terra Engineering Ltd. and ACEC liaison with the CEA Board.

“When engineering isn’t done the best it can be, taxpayer money isn’t spent wisely. Engineers are the ones down in the trenches making things work, and it’s our knowledge that helps these projects succeed.”

➤ Greg Burghardt, CEO and president, Arrow Engineering

Working with the Ministry of Infrastructure, private companies shared in the development of new schools to meet the growing need. Hudson points out that Al-Terra Engineering Ltd. alone was involved in the construction and design of more than 50 schools across the province, eventually earning the firm an award with the CEA for Small Firm-Big Impact. “It’s not about how many schools we built, and it’s not about getting more work for the industry,” he says. “It’s about getting seats

for the kids in the schools.”

One of Hudson’s fellow CEA directors, Greg Burghardt, is CEO and president of Arrow Engineering, another firm that has been designing new schools across the province since 2009. Burghardt says that, thanks in large part to collaboration with the province, his firm was involved in the design and construction of approximately 90 schools in Alberta.

“It’s a number we’re very proud of,” says Burghardt. “We’ve done our best to contribute positively to so many schools, helping to provide facilities that enhance the lives of students and teachers, and serve society.”

CONTINUING EFFORTS

A firm believer in the value of an engineer’s perspective on public policy, Burghardt continues to advise, on occasion, with the provincial government on infrastructure issues. He has met with Minister of Infrastructure Sandra Jansen on behalf of the Edmonton Construction Association as a director on their board to provide the industry perspective on future projects spearheaded by the province.

“The goal is to help [the province] understand how to achieve better results on their infrastructure projects and be a part of the solution,” says Burghardt. “When engineering isn’t done the best it can be, taxpayer money isn’t spent wisely. Engineers are the ones down in the trenches making things work, and it’s our knowledge that helps these projects succeed.”

Hudson, too, continues to work with the provincial government, focusing on creating a policy for how both private and public clients choose engineering firms. He says that standard practice for a lot of clients is to release requests for proposals where low price

has a significant influence over who is awarded the contract. This means that firms may try to minimize the scope of work to lower the price of their submission and that, consequently, the best qualified firm may not necessarily be selected.

Hudson is actively working through the CEA to encourage the province-wide implementation of a Qualifications Based Selection (QBS) system to ensure engineering firms are being selected based on merit rather than price. This, in turn, would

achieve better outcomes on infrastructure projects, including more cost-effective designs, improved schedules and lower construction claims – all of which are in the public interest.

It's that push for public good that has helped the CEA make strides with the province in improving procurement practices, including working with Alberta Transportation to set up a pilot program to test the QBS selection process on a number of transportation projects. The CEA is also working with the University of Alberta on a QBS study to determine the relationship between procurement methods and project outcomes.

"When it comes to public policy," says Hudson, "it has to be for the good of everyone, and instilling real positive change [toward better-quality and longer-lasting infrastructure projects] that everyone can benefit from."

Also on the provincial front, Ken Gibson, executive director of the Alberta Construction Association (ACA), is working to make the resources from northern Canada more accessible to international markets. The ACA is advocating for the Northern Corridor project, which will create a streamlined and unified transportation route for moving those northern resources – oil and

natural gas – faster and more efficiently. He explains that the ACA is following the CEA's lead on this issue.

"Our industry can't succeed without the active leadership of the consulting engineering community in discussions to improve performance across the entire design and construction value chain involving owners, architects, engineers, contractors, and suppliers," says Gibson. "I've had the pleasure of working along-

"When it comes to public policy, it has to be for the good of everyone, and instilling real positive change [toward better-quality and longer-lasting infrastructure projects] that everyone can benefit from."

► Sheldon Hudson, Vice President AI-Terra Engineering and ACEC Board Liaison.

side the CEA for nearly 17 years. I'm really impressed by the calibre of leaders the CEA contributes, and the thoughtful solutions they offer up."

GETTING INVOLVED

Playing a role in helping to shape public policy isn't reserved solely for long-time, higher-profile consulting engineers and industry leaders. Hudson says that the

easiest way for consulting engineers to start getting involved with policy is by volunteering for committees. The CEA has a variety of different committees that focus on various aspects of the consulting industry – and some of these committees serve as a bridge between CEA, Alberta Transportation, and the ARHCA to address industry specific operational and strategic issues. Engineers working in the field can talk with their firms about volunteering in relevant committees as a way to make an impact.

"By working in CEA committees, it's easier to see the progression with an issue starting from the ground level and moving up through the system to affect change," says Hudson, adding that

getting involved with policy issues during tumultuous political times, like the ones Alberta is currently experiencing, is actually optimal.

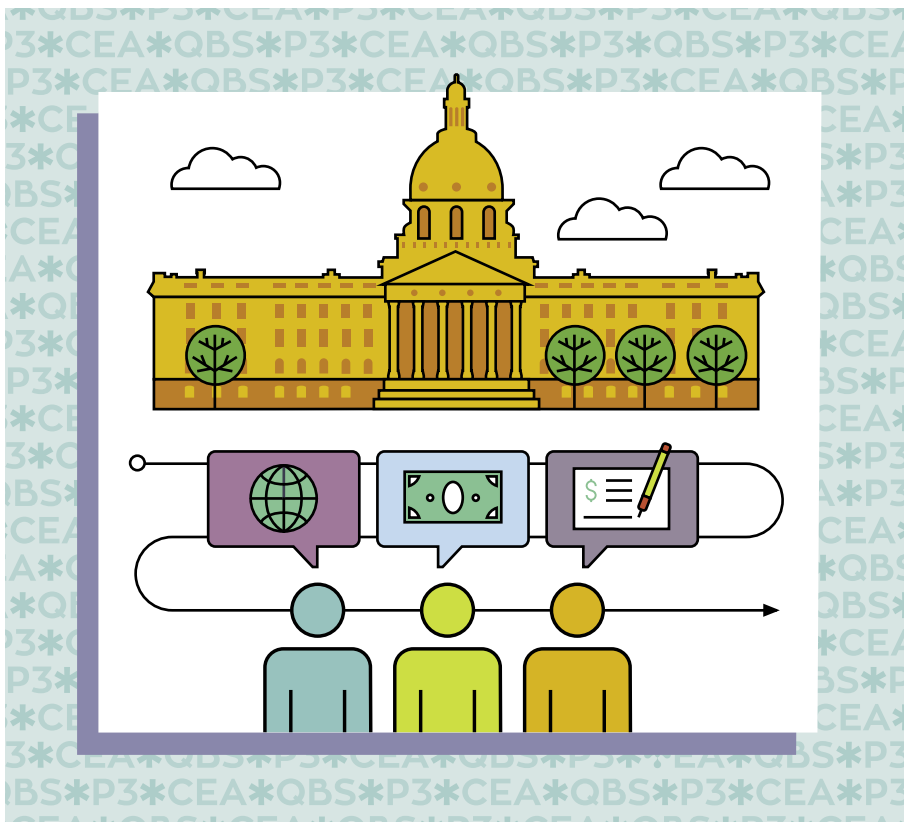
"Best to get policy ideas out there before a major election, so they don't get lost after the election," he says. "This is the best time to start getting involved with policy development and being proactive with our province's future."

Glen echoes Hudson's sentiment, adding that the province's current political uncertainty is vastly different from the uncertainty he faced when he first got involved with the policy issues that eventually shaped the Anthony Henday.

"During the 2000s, the stress was that things were going so good, we wanted to make sure that anything that came through was a positive change," says Glen. "Today's stress is very different. We need to be innovative in our ideas to keep things moving in a positive direction. This is a time that professions like engineering can speak up and be an important wealth of information."

In Stelmach's view, ensuring that consulting engineers remain involved in shaping public policy is crucial as the province's population continues to grow and the need for creative infrastructure solutions mount.

"Engineers are a really amazing and diverse group of people," says Stelmach. "You throw a problem at an engineer and they will find a solution. They always have incredible new ideas that can benefit so many Albertans." ■





CAREER PROFILE

> 2019

Looking Ahead

As the new CEO of the Consulting Engineers of Alberta, Ken Kozakewich is focused on finding ways to support the industry and promote healthy growth into the future

BY GEOFF GEDDES | PHOTOGRAPHY BY BUFFY GOODMAN

KEN KOZAKEWICH MAY LOOK BACK FONDLY ON HIS UNIVERSITY DAYS FROM DECADES past, where he started with a slide rule and eventually moved to a hand-held calculator, but the new CEO of the Consulting Engineers of Alberta has his sights set firmly on the future.

“My high school counsellor said that people who understood technology would be the leaders of tomorrow,” says Kozakewich.

Though that particular piece of advice may have helped chart his career path, Kozakewich’s engineering bent actually revealed itself even earlier, on the family farm in Saskatchewan. Whether it was drilling a well, fixing engines and machinery, or installing plumbing systems, growing up, he had a fascination with how things worked. A summer job as a surveyor further piqued his interest and prompted him to earn a degree in civil engineering at the University of Saskatchewan.

Following a move to Alberta and a stint in construction management with the provincial government, Kozakewich embraced the challenge of consulting, spending more than 27 years with Wood Environment & Infrastructure and legacy companies.

“Since early in my career, I’ve had mentors and supervisors who let me work on different aspects of the business, so I’ve been very fortunate that way,” he says.

His career is marked by numerous highlights, including ring road projects in Calgary and Edmonton, the planning and construction of Highway 63 to Fort McMurray, and a joint venture in India to build a major highway.

DRIVEN TO SUCCEED

“I’ve always enjoyed seeing a project move from planning and design through to construction,” says Kozakewich. “I love the idea of driving down a road that never existed before, and decades later, it’s still there and providing people with something better than what they once had.”

He found the India project especially satisfying, as it offered him a glimpse of how improving infrastructure can dramatically improve society.

Yet, one of his most eye-opening experiences involved a project that never came to fruition.

“When I first started consulting in the 1980s, I was part of planning studies for a road from Fort McMurray to Peace River. It was backed by a private partnership model that just wasn’t accepted at the time by the provincial government, so nothing came of it,” he says. “Now, though, this type of collaboration is commonplace. It opened my eyes to how important the relationships are among owners, engineers and stakeholders, and how trust is fundamental before projects can proceed.”

Kozakewich’s vast experience will serve him well in his new role with the CEA – he officially became CEO on October 1, 2018. Having worked on CEA committees for more than 20 years and served on the board of directors for two separate three-year terms, he brings unique insights on the history of the association and its issues.

STRENGTH IN NUMBERS

“The most important thing for the CEA is maintaining the strength of the engineering business in Alberta. A big component of that is preserving relationships between the CEA and its members, and between industry stakeholders and the public. We need everyone working together to be successful.”

Though it’s early in his tenure, Kozakewich is enthused about the prospects for progress on a number of fronts.

“I know from experience that we have won some battles and lost others, so we need to push forward in many areas. We have the University of Alberta doing research on Qualifications Based Selection (QBS), and we hope to make inroads there, which is exciting. We’re also looking at potential changes in how some clients handle procurement.”

One cause that really resonates with Kozakewich is the CEA’s Young Professional Group, which promotes the participation

and development of new consulting engineers.

“We have a very engaged group of young professionals, and we want them to recognize the career potential of the consulting industry,” he says. “There is a certain satisfaction in knowing you are directly involved in several aspects of a project, and there are a variety of roles you can play in this profession.

When I look at my career, I had the chance to work in planning, design, account management, business development and business management. I’m not sure if other fields in engineering give you that broad spectrum of seeing every facet of how a project develops, how a business operates and how clients and stakeholders work, all while serving in the public interest.”

JOINING IN AND SPEAKING UP

In terms of his day-to-day activities as CEO, Kozakewich’s primary role is providing leadership for the association while reporting to the board of directors and working with them on various initiatives. He’ll also be involved in some committee work and connecting with the other provincial associations and the national Association of Consulting Engineering Companies (ACEC). On a national level, he wants to ensure that members across the country are speaking with one voice when dealing with provincial or federal government issues.

“We want to affect public policy and create the best possible business environment for our members,” he says. “The industry is comprised of professional and technical people in businesses who require predictability and stability in terms of our regulatory framework in the private sector, and infrastructure program funding in the public sector.”

“I’ve been fortunate to have had some great opportunities and worked with a lot of talented and supportive people along the way; it has made for an interesting career, to say the least.”

▶ Ken Kozakewich, CEO, Consulting Engineers of Alberta

Of course, ensuring stability will take a concerted effort on many fronts.

“We will continue to work with all levels of government to promote long-term, predictable infrastructure investments, as well as getting committed infrastructure projects underway as quickly as possible,” he says. “We are also promoting selection of consulting engineers using QBS rather than selecting by lowest price. Employing QBS will help develop a marketplace that creates value for everyone involved throughout the life of the project.”

With all of that on his plate, Kozakewich will still make time for his three adult children and five grandchildren. He’s also an avid traveller and has seen much of the world with his wife.

Perhaps fittingly for an adventurous soul, he says he never had a clear road map for his career.

“I’ve been fortunate to have had some great opportunities and worked with a lot of talented and supportive people along the way; it has made for an interesting career, to say the least.” ■



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CAREER PROFILE

> 2019



Built on Bedrock

Jillian Mitton's environmental interests took root in early childhood

BY JENNIFER DOROZIO | PHOTOGRAPHY BY BOOKSTRUCKER

WHEN SHE WAS A YOUNG GIRL, JILLIAN MITTON WOULD spend hours each summer collecting pebbles at a lakeside cottage outside of Fredericton, New Brunswick. It was those moments scouring for rocks and minerals with a metal can in hand, along with a very early interest in math, that led her to “catch the bug” for environmental engineering.

Today, Mitton is principal, senior environment engineer at Golder Associates in Calgary.

“I was fortunate: I identified my interests early on,” she says. “I have always been a bit of a ‘rock hound.’”

Following high school, she continued to pursue those interests academically, eventually earning a bachelor of applied science in geological engineering at the University of Waterloo in 1991. Mitton then worked for a time with Maritime Groundwater in New Brunswick, where she found herself drawn to various environmental concerns, such as how to lessen soil and groundwater contamination on engineering work sites. This led to her pursuit of a master's degree in environmental engineering – during which time she studied water treatment, solid waste management and risk assessment extensively – at the University of Alberta.

In 1993, after finishing grad school, Mitton landed a job at Golder as a junior environmental engineer. She has been with the company ever since, holding a variety of positions over the years before being promoted to principal in 2007. Consulting, however, has always been a joy for her.

“I [enjoy] working with teams of scientists and engineers to solve problems, and in my consulting role I found we basically did that every day,” she says.

A standout memory for Mitton, with regard to problem-solving as a consultant, took place in 2005, when a large rail transport company whose portfolio she was managing suffered a massive derailment, causing hydrocarbon to spill into a body of water. The situation was critical and high-profile, as multiple environmental protection orders from the government were issued to clean up the spill under very tight deadlines.

Mitton, however, worked calmly and methodically with her team to set up an execution plan, liaise cordially with the governmental regulatory board, deliver on-time reports, and ultimately meet each of the environmental protection orders on time.

“It was almost an impossible task,” Mitton says, looking back on the experience. “But I’m really proud of the team.”

Mitton partially credits her upward trajectory at Golder to her

love of learning, both from new experiences and from literature; she admits to currently having 12 books on the go, and to sometimes reading technical journals in her off-time.

“I like change, I like a new challenge, it gets me up and excited about my day,” she says.

In 2008, she rose to a major challenge by putting together a bid for – and winning – a \$100 million-plus contract on an oil and gas portfolio. Previous similar attempts by Golder to manage large-scale portfolios had proven unsuccessful, due to struggles managing contract requirements and turning a profit.

“I like change, I like a new challenge – it gets me up and excited about my day.” > Jillian Mitton, principal, senior environment engineer, Golder Associates

“I almost got fired,” recalls Mitton, explaining that Golder had about 10 per cent of the resources it needed to manage this massive undertaking at the time. But, tenacious as ever, Mitton and a team worked to put together an entirely new division of about 100 employees, often having to hire for new positions.

“That contract is still ongoing, it’s still a big part of Golder’s business,” says Mitton, who transferred out of her role of technical director with that project three years ago.

Currently, she keeps busy as an expert witness in several legal cases, and still project-directs on large contaminated sites, helping these sites to gain operating approval within environmental boundaries.

She is also in her third year as an active member of the CEA’s Environmental Committee, which provides feedback to the provincial government on environmental policy and guidelines and educates on environmental issues through hosting lunch and learns. Mitton has been part of the CEA Board since 2018, and this term, she is part of the executive as Treasurer.

Mitton does not envision retiring soon; she is still passionate about helping to make Alberta’s extraction of resources an even cleaner process, and applying creative and alternative thinking to industries’ contaminated site challenges.

“I see a lot of innovation and opportunity for Albertans to become leaders, not only in the enhanced recovery of existing resources, but even developing other sustainable resources,” she says. ■



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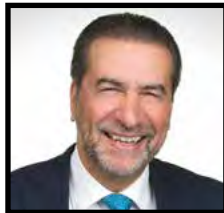
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CONSULTING ENGINEERS OF ALBERTA SHOWCASE AWARDS

2019

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**FUELING THE NEXT GENERATION
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SHOWCASE AWARDS

> 2019

**CEA LIEUTENANT
GOVERNOR'S AWARD**

> For Distinguished Service



Embracing Challenges, Building Partnerships

Art Washuta has had a long and distinguished career as a consulting engineer

BY ELIZABETH CHORNEY-BOOTH | PHOTOGRAPHY BY BUFFY GOODMAN

MOST ALBERTANS MAY NOT BE AWARE OF THE WAYS IN which Art Washuta's work has touched their daily lives – work that includes designing portions of the original Edmonton LRT that opened in 1978, the procurement of the ongoing Valley Line Southeast LRT, and the structural design on the Goldbar Wastewater Treatment Plant and the Oldman River Dam spillway. Over the course of 40 years, Washuta has brought his technical expertise and management skills to many large-scale projects throughout Alberta, as well as Ontario and the Territories. As he begins to wind down a career that has been marked by taking leadership roles on complex, high-profile projects, Washuta is a well-deserving recipient of this year's CEA Lieutenant Governor's Award.

"It was such a nice surprise when I got the call about the award from the CEA," Washuta says. "I'm quite honoured to be selected."

Born in the Peace River area and raised in Edmonton, Washuta, like many who choose engineering as a career, excelled in math and science as a high school student. Upon graduating with distinction from the University of Alberta in 1973 with a B. Sc in Civil Engineering, he landed a job with Bolter Parish Trimble, where he gained a strong foundation in design and construction of infrastructure projects. He then went on to roles at UMA Engineering Ltd. from 1977 to 2008, starting as a project engineer and ascending to become the company's Edmonton regional vice president. In the years since, Washuta has held senior leadership positions at AECOM and Opus Stewart Weir, eventually becoming president of Opus Canada.

While Washuta is grateful for the opportunity to have worked on a wide variety of projects – such as CF-18 fighter jet facilities in the Arctic and the Southeast Anthony Henday Drive – he takes particular pride in the larger, long-term projects that have required careful planning and the development of complex partnerships. With UMA/AECOM, he managed a multi-discipline, multi-consultant project team for the design and implementation of a \$500 million environmental cleanup of 21 Distant Early Warning (DEW) Line sites across the Canadian Arctic, which spanned from 1992 to 2014.

"Signing a long-term memorandum of understanding with DND/DCC was one of my proudest moments," Washuta says. "I believe that building lasting client relationships is one of the most important aspects of consulting engineering. [This project] was a great example

of what you can do when you become a trusted advisor to a major client. It also provides great mentoring and staff development benefits."

Working successfully on a variety of major initiatives – ones with so many moving parts – has allowed Washuta to serve as a vital leader over the years to many young engineers who want to take on multi-faceted infrastructure projects that involve a number of different disciplines and stakeholders. Washuta's collaborative approach with both clients and colleagues, and his commitment to open communication across disciplines, has demonstrated that consulting engineers can serve as visionaries and community builders.

"I've taken pride in contributing to creating a better community," Washuta says. "People are often not aware of how engineering contributes to society."

Washuta's belief in the importance of business advocacy is what led him to become involved with the CEA. Dating back to the early 2000s, he started serving on the City of Edmonton Liaison Committee, was first elected to the CEA Board of Directors in 2007 and served as president from 2009-2010. He remained active with the Board until 2017 as the liaison with the Association of Consulting Engineering Companies and the Association of Professional Engineers and Geoscientists of Alberta.

His involvement with the CEA has also led Washuta, like many of his colleagues, to become a staunch advocate for a Qualifications Based Selection (QBS) system within the engineering world.

"It's very important to de-commoditize engineering," he says. "You don't go to a doctor or a dentist based on low price. You go to the best available professional, and that's what we're trying to do with engineering."

Washuta left Opus in 2018 and has now taken on what he calls a "part-time" role with CIMA+ as vice president of business development. Even with so many accomplishments on his resume, he continues to contribute through the pursuit of major Alternative Delivery opportunities as well as long-term strategic partnerships with clients, contractors and other consultants.

"Along the way, consultants have had to adjust to the trend toward larger, complex, high-risk projects where clients expect the latest technology and best possible advice," Washuta says. "I feel like I was a bit of a pioneer, informally facilitating partnering processes on major projects." ■

SHOWCASE AWARDS

> 2019

Leaders of Tomorrow

**CEA 2019 Showcase –
Young Professional Nominee Judges:**
Ben Novak, CEA Past President,
Founding Partner of DFS
Don Chambers, CEA Past President
Paul Breeze, CEA Past President

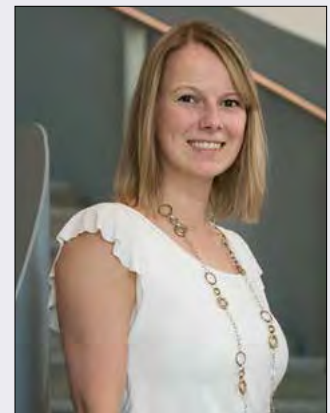


Derek Beattie, P.Eng.
Project Manager/Rural Road Team Lead
Stantec Consulting

HAROLD L. MORRISON AWARD

RISING YOUNG PROFESSIONAL

> Nominees



Diana Smith, P.Eng.
Associate/Mechanical Engineer
DIALOG

DEREK IS A PROFESSIONAL ENGINEER WITH over nine years of experience, specializing in roadway design, contract administration and project management. He has provided preliminary design, detailed design, tender preparation, construction inspection, contract administration and project management services on municipal improvement, highway rehabilitation and private development projects. Derek is the Rural Road Team Lead for Stantec, overseeing a team whose focus is providing engineering services to Rural Municipalities, Alberta Transportation and other rural clients. In his young career, Derek has already overseen the placement of over 875,000 tons of asphalt in Central Alberta. Derek has also worked on numerous urban infrastructure projects as well including the City of Red Deer Taylor Drive and Ross Street Improvements. Derek is an active member of APEGA and has been since his University days. Derek is currently the APEGA Central Alberta Branch Director and VP of Outreach.

More recently, Derek has been promoted to Manager of Stantec's Rural Road group, responsible for project delivery excellence and client management.

DIANA SMITH IS ORIGINALLY FROM GRANDE Prairie, Alberta, where she attended her first year of engineering studies at Grande Prairie Regional College. She then ventured away from home to complete her studies at the University of Alberta, including a semester abroad in Leeds, England. These were experiences that helped shape Diana's independence and character. She completed her Bachelor of Science in Mechanical Engineering in 2010.

Diana began her career with DIALOG as a student and was hired full time in January 2011. Diana developed quickly through her early engineering years and naturally took on more responsibility as she became involved in more projects. She quickly displayed leadership skills and voluntarily took on more responsibility in the project work including construction administration.

One of Diana's major contributions to the consulting profession is showing young women that engineering is a valid career path for them. She has attended multiple conferences and lectures on women in leadership and in STEM careers. She led a discussion at DIALOG about diversity in design which was well attended and explored several topics including gender bias, ageism, and working with different communities.



Simon Armstrong-Bayliss, MConstrLaw, P.Eng.
Project Manager
McElhanney Consulting

SIMON HAS EIGHT YEARS OF experience delivering transportation infrastructure projects. His work spans the construction of brownfield heavy volume motorway and interchange upgrades to combined railway and highway extensions, concrete bridges, complex lighting and power systems, public transit infrastructure, and recently avalanche mitigation. Simon's demonstrated record of leading multi-disciplinary teams to success is founded in a deep appreciation of the need for engineers and professionals to work collaboratively.

Not only is Simon a driving force at McElhanney, but he has been a champion for Young Professionals, both among his working peers and as part of the CEA's Calgary YP Group. Simon joined the group in 2014 where he spearheaded a new initiative in which YPs speak about their careers to students to build interest in the consulting industry; which is still successful today.

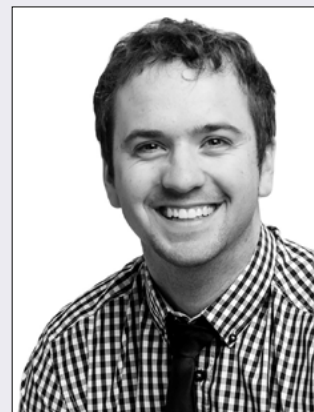
Through his work with the CEA's YP Group, Simon was selected by his peers as one of two YP representatives on the board of directors for the 2016-2017 term. Simon was, and remains, a strong advocate for the voices of young professionals and the next generation of consulting engineers.



Steven Murphy, P.Eng.
Deputy Project Manager
CIMA Canada (CIMA+)

STEVEN MURPHY IS A CIVIL Engineering graduate who is currently gaining experience in transportation design and construction, having recently obtained his Professional Engineer designation. He has engineering design experience in areas including pad foundations, heavy haul road, mine road, utility crossings, and plant site oily water sewer systems. In addition, Steven also has experience in scheduling projects, contract administration, tender preparation and construction supervision and co-ordination. Throughout his work experience with CIMA+, he has been involved in neighborhood renewal projects, road rehabilitation, and most recently, he has been heavily involved in the Pembina Northwest Upgrade Yard project.

In 2016/17, Steven was part of the CEA Young Professional (YP) group. While on the committee, he was involved in the 2017 Young Professionals' Conference Planning Committee, as well as developing connections at NAIT with the goal of increasing the exposure of CEA's YP group to current students of Engineering Technologies. Additionally, he has attended numerous CEA YP UofA Student Mixer nights, and has presented on what life is like as a consulting engineer to students.



Steven Weinbeer, MBA, M.Eng., P.Eng.
Business Center Discipline Leader
Stantec Consulting

STEVEN WEINBEER, THE YOUNGEST ever Business Center Discipline Leader at Stantec Consulting Ltd., is building towers and bulldozing limits. Steven, who grew up on construction sites learning from his father, a civil engineer, began working at Stantec as a mechanical engineering intern in 2006.

Steven has been a member of Consulting Engineers of Alberta since 2012. Throughout his membership, he has participated and attended meetings and events. Steven has also led and contributed to CEA Showcase award submissions and attended the awards gala for several past projects. As a lead engineer for Edmonton Tower and Stantec Tower in ICE District, Canada's largest sports and entertainment hub, Steven has made an iconic contribution to the profession.

Now an industry front-runner, Steven combines technical knowledge and big-picture thinking to unite and lead a team of nearly 100 demographically diverse architectural, structural, mechanical, and electrical experts on high-profile projects that embody business and engineering excellence, pushing creative boundaries, and improving the community.

SHOWCASE AWARDS

> 2019



Edmonton Tower

FIRM: Stantec Consulting Ltd.

CLIENT / OWNER: AIMCO (Alberta Investment Management Corporation) & One Properties

LOCATION: Edmonton, Alberta

SUB CONSULTANTS: Smith + Andersen, RWDI, Thurber Engineering Ltd.

CONTRACTORS: PCL Construction Management Inc.

OTHER KEY PLAYERS: Ice District JV, City of Edmonton

A 618,000-square-foot glass edifice in the heart of the bustling ICE District, Edmonton Tower's curved silhouette ascends 29 floors into the sky. Sturdy engineering systems seamlessly integrated with contemporary architectural assemblies form a union of shape and structure that set a new design benchmark in our community.

The schemes underpinning the Tower's design are the result of a fruitful and interdisciplinary collaboration between ICE District Joint Venture, Stantec's architectural, structural, and electrical consulting groups, Smith and Andersen mechanical consultants, RWDI, and Thurber Engineering. The client's vision and our team's design were brought to life by PCL Construction. As a result, Edmonton Tower, founded on the idea of enhanced connectivity between downtown communities, boasts an inviting grand lobby, elegant floor-to-ceiling perimeter glazing, vast column-free tower floor plates, and advanced technological networks.



AWARD OF EXCELLENCE

> Building Engineering – Commercial



JUDGES' COMMENTS

Elegant in design and efficient in operation, this signature tower brought together all elements of form and function. It will definitely be a signature standout in the ICE District for years to come.



> Building Engineering – Institutional

NAIT Productivity and Innovation Centre

FIRM: Joint Submission: Fast + Epp; KFR Engineering and SMP Engineering

CLIENT / OWNER: Northern Alberta Institute of Technology

LOCATION: Edmonton, Alberta

OTHER KEY PLAYERS: GEC Architecture

The Productivity and Innovation Centre at the Northern Alberta Institute of Technology is a 190,000-square-foot multipurpose building that houses advanced research and testing laboratories, spaces for small and medium-sized businesses, a dedicated hub for applied research activity along with administrative, teaching and service spaces. Designed and constructed through the use of a collaborative and integrated process, this steel and concrete framed building features innovative, sustainable and adaptable structural, mechanical and electrical systems.

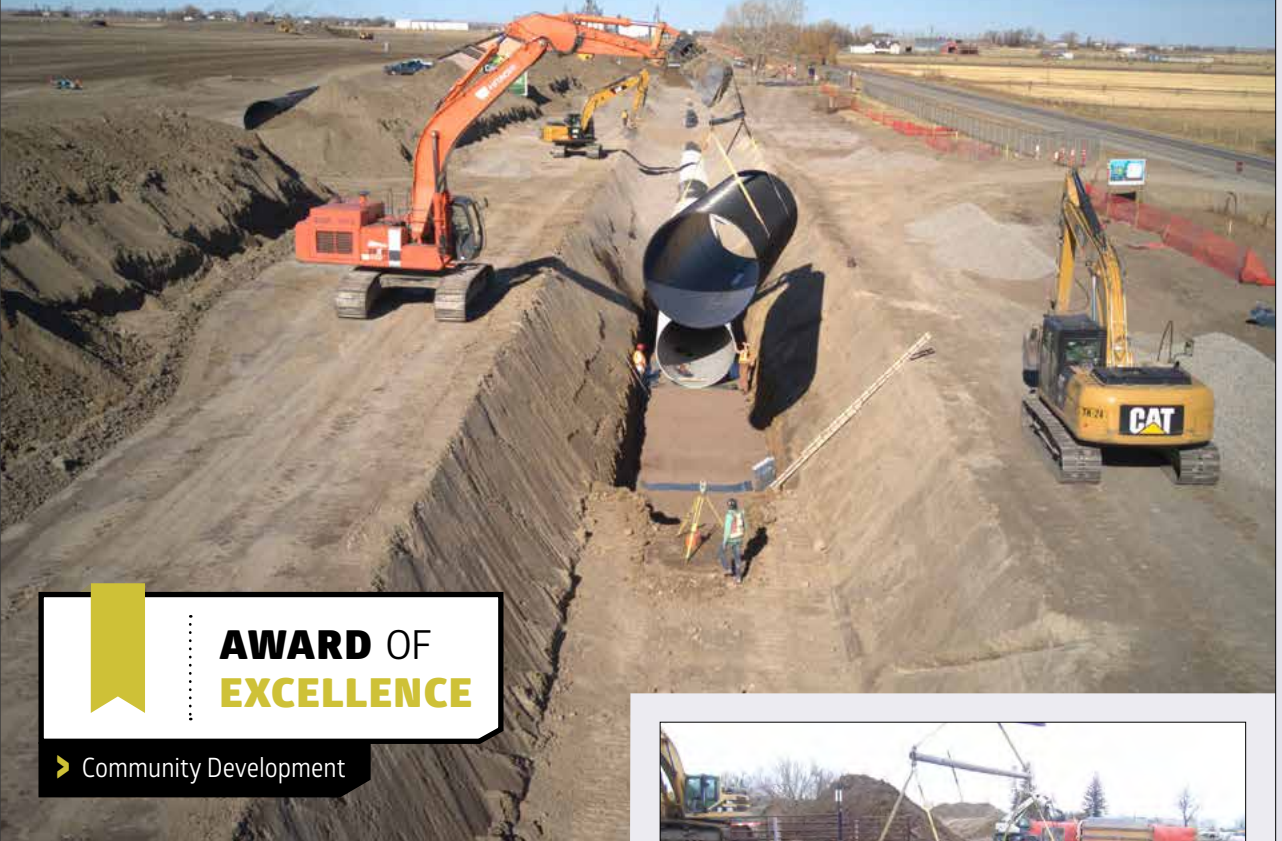


JUDGES' COMMENTS

Undertaking the challenge of complete adaptability for the future under such a short project schedule is to be commended.

SHOWCASE AWARDS

> 2019



**AWARD OF
EXCELLENCE**

> Community Development

North Lateral Realignment Syphon

FIRM: Wood Environment & Infrastructure Solutions

CLIENT / OWNER: City of Lethbridge

LOCATION: Lethbridge, Alberta

CONTRACTORS: deGraaf Excavating Ltd.

OTHER KEY PLAYERS: St. Mary River Irrigation District,
Alberta Ministry of Agriculture

Wood Environment & Infrastructure Solutions was the engineering consultant hired by the City of Lethbridge for all phases of the project. An inverted syphon had never been previously used to relocate a portion of a major irrigation supply canal. The completed syphon was 1870m in length with an inside diameter of 3m.

Wood successfully tackled all the project challenges including concept development, material selection, tender approach, detailed design and schedule. The resulting project was a “deciding factor” in the City’s successful bid to have Cavendish Farms build a \$380 million potato processing plant within the City’s Sherring Business Industrial Park.





➤ Environmental

Tundra Mine Remediation

FIRM: AECOM

CLIENT / OWNER: Public Services and Procurement Canada/Crown-Indigenous Relations and Northern Affairs Canada

LOCATION: Located 240 KM northeast of Yellowknife, Northwest Territories

SUB CONSULTANTS: O'Kane Consultants

Following abandonment of Tundra Mine, site ownership was transferred to the federal government. The site was left with multiple environmental liabilities, including extensive waste rock and arsenic impacted tailings materials, petroleum hydrocarbon contaminated soils, contaminated water, and erosion potential across the site. AECOM, along with their sub-consultant O'Kane Consultants, was contracted by PSPC and CIRNAC to complete additional studies, redraft the design drawings and specifications, and provide construction inspection and administration services for the execution of the Phase II remediation design. Remediation was completed in 2018 and the Tundra Mine site has transitioned to a 5-year Adaptive Management Phase.



JUDGES' COMMENTS

This project had several related and complex contaminant issues on a remote site, requiring solutions to suit the additional demands of the isolated location, the climate and the necessary time for construction.

Managing the risks associated with legacy mine projects is integral for maintaining the health of northern peoples and ecosystems. The extreme weather and remoteness add extra layers of complexity, which were well navigated. Kudos!

SHOWCASE AWARDS

> 2019



Calgary Transit Operations Control Centre: Mission Critical Facility

FIRM: Hatch

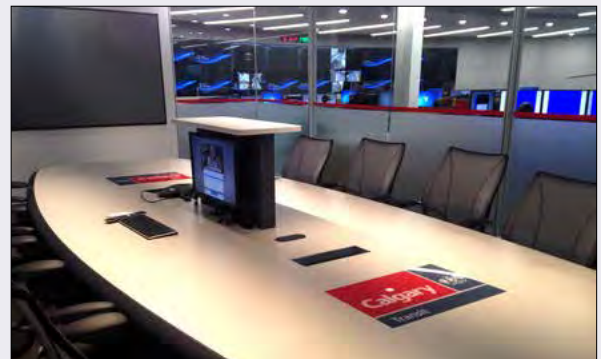
CLIENT / OWNER: City of Calgary

LOCATION: Calgary, Alberta

SUB CONSULTANTS: Macro, a division of Ross & Baruzzini, GEC Architecture, AW Hooker Quantity Surveyors, Mission Green Buildings, Morrison Hershfield Group Inc.

Calgary Transit's continuing success and expansion of their rail and bus networks and Calgary Transit Access services has resulted in their operation control centre (OCC) spaces outgrowing their available footprints. To alleviate the current space congestion and support for the long-term strategic 'Route Ahead' expansion plan, a new mission critical, highly resilient and state-of-the-art OCC facility has been constructed.

Hatch, along with sub-consultants GEC, Macro, Morrison Hershfield, Mission Green Buildings and AW Hooker has served as part of an integrated project team with Calgary Transit to design, construct and seamlessly transition to the new OCC.



JUDGES' COMMENTS

Great to see leading edge technology applied here in Alberta. It shows that we can compete with anyone in the world.



AWARD OF EXCELLENCE

- > Transportation Infrastructure - Roads, Interchanges, Airports, Mass Transit
- > Project Management

Trans-Canada Highway/Bowfort Road Interchange

FIRM: Stantec Consulting Ltd.

CLIENT / OWNER: City of Calgary

LOCATION: Calgary, Alberta

CONTRACTORS: PCL Construction Management Inc.

The Trans-Canada Highway/Bowfort Road interchange project is a successful demonstration of how designing with constructability in mind can aid in the delivery of a project and provide long-term benefits for our community. Despite detouring, utility conflicts, poor soil conditions, environmental approvals, and land purchase challenges, Stantec's team of professionals — of all levels of expertise and years of experience — resolved the issues and provided constructible solutions. Today, traffic is free-flowing on the Trans-Canada Highway, Bowfort Road and 83 Street, which are benefiting from significant upgrades, and the community is more accessible for all types of commuters.



JUDGES' COMMENTS

Excellent PM approach in construction staging, stakeholder consultation and approval, and management of risks.

SHOWCASE AWARDS

> 2019



AWARD OF EXCELLENCE

> Small Firm – Big Impact

Horse Lake First Nation Water Treatment Plant Upgrades

FIRM: M2 Engineering

CLIENT / OWNER: Horse Lake First Nation

LOCATION: Horse Lake, Alberta

SUB CONSULTANTS: Hydrogeological Consultants Ltd., Riddell Kurczaba Architecture Interior Design Engineering Ltd., Ptarmigan Engineering Ltd., Wave Engineering Consultants Inc., J.Davis Engineering Ltd., Thurber Engineering Ltd.

CONTRACTORS: Alpha Construction Inc.

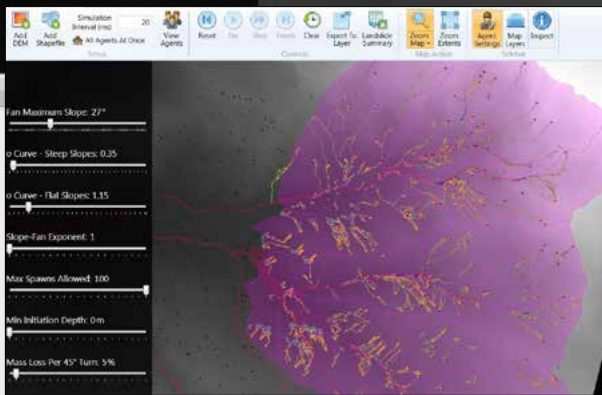
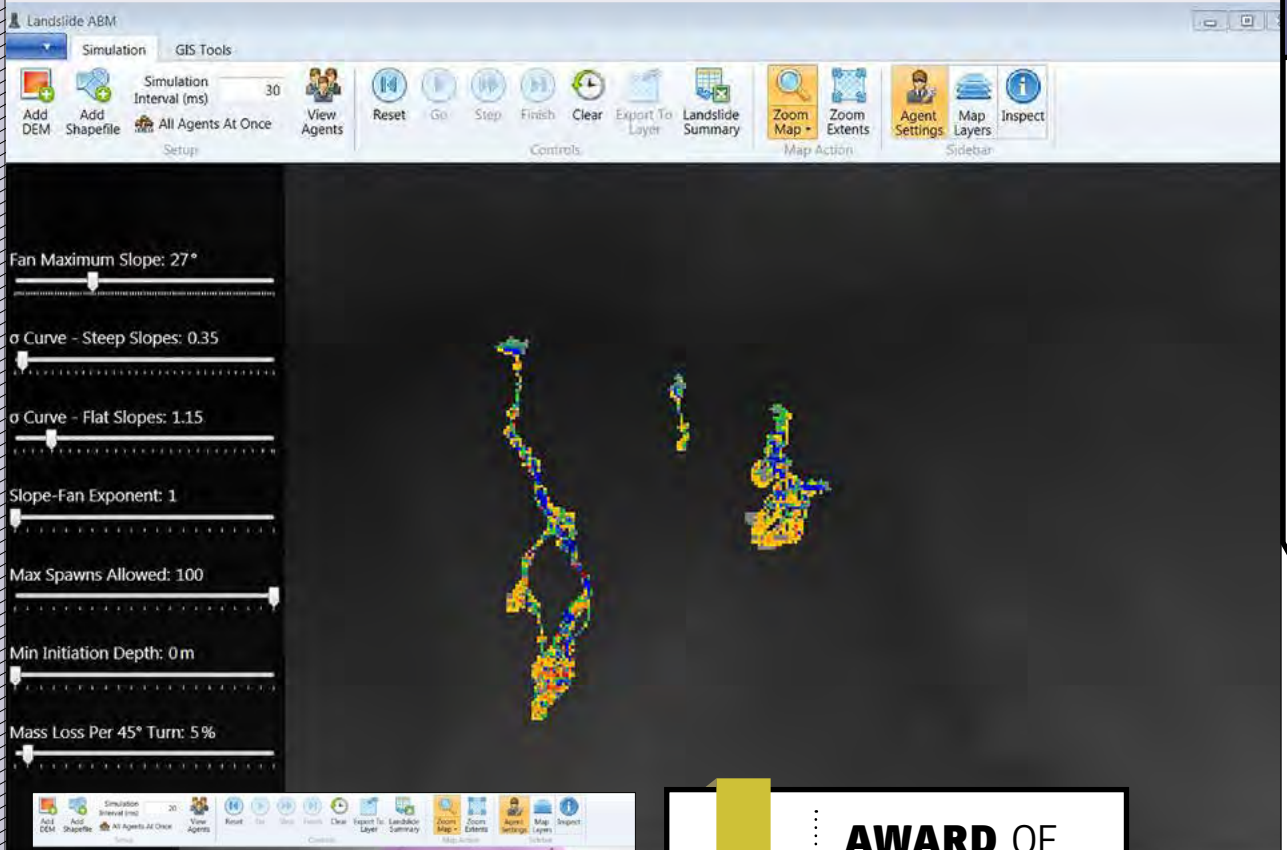
Horse Lake First Nation is a rapidly growing community that had an insecure, unpalatable and potentially unsafe water supply. HLFN selected M2 Engineering, a team of two water treatment consulting engineers, to help provide a safe, secure water supply. M2 led the project from the feasibility study stage to construction completion with the assistance of their supporting team of HCL, Ptarmigan Engineering, Wave Engineering, J.Davis Engineering, Riddell-Kurczaba-Architecture, & Thurber Engineering.

The project was completed within a relatively short schedule, under budget and most importantly, as Nathan Horseman, band councillor said: "Our families can finally draw a bath with clean water."



JUDGES' COMMENTS

The care and efforts of the consultant rebuilt trust in the drinking water in the community.



AWARD OF EXCELLENCE



JUDGES' COMMENTS
 A very interesting project that will benefit less developed communities in the future with potential to minimize impact to people and infrastructure.

Landslides: an Agent-Based Simulation (LABS)

FIRM: Stantec Consulting Ltd.

CLIENT / OWNER: Stantec Consulting Ltd.

LOCATION: Calgary, Alberta

LABS, a landslide simulation software application developed by Stantec, provides high-accuracy predictions to help mitigate risk to buildings, infrastructure, and human life. Using readily available digital elevation models and aggregate landslide data accumulated over 20 years, LABS predicts and displays travel paths, distance, and volumes of landslides without requiring specific data on geology, soils, or precipitation. A standalone program, it generates rapid and cost-efficient simulations; and exports files for advanced hazard and risk assessments. LABS is intended to reduce the overall impact to human safety and the built world.

SHOWCASE AWARDS

> 2019



AWARD OF EXCELLENCE

> Transportation Infrastructure -
Transportation Structures

Walterdale Bridge

FIRM: Joint Submission: DIALOG & ISL Engineering and Land Services Ltd.

CLIENT / OWNER: City of Edmonton

LOCATION: Edmonton, Alberta

SUB CONSULTANTS: COWI North America Ltd., Al-Terra Engineering Ltd., Thurber Engineering Ltd., Spencer Environmental Services, Turtle Island Cultural Resource Management, Northwest Hydraulic Consultants Ltd., HLB Lighting Design, SMA Consulting Ltd.

CONTRACTORS: Acciona Pacer Joint Venture

OTHER KEY PLAYERS: Acuren

The new Walterdale Bridge is a gracious, single span arch – a functional, signature structure that blends with its natural setting and creates a landmark gateway to the City's downtown. The bridge creates a public space on the river, where the duality of the City and nature are experienced and celebrated. The approaches to the bridge reinforce the signature quality of the bridge through evocative land form and planting. Pedestrians and cyclists feel like they can "Touch the Water" when using the new bridge. There are places on the bridge to linger and watch the river go by.



JUDGES' COMMENTS

This bridge will become an iconic feature of Edmonton. Good balance between engineering, architecture and city transportation needs. Well done, design and construction team, on your great achievement.



**AWARD OF
EXCELLENCE**

> Water Resources



**AWARD OF
MERIT**

> Project Management

Calgary Zoo Flood Mitigation

FIRM: Joint Submission: Associated Engineering & ISL Engineering and Land Services Ltd.

CLIENT / OWNER: City of Calgary

LOCATION: Calgary, Alberta

SUB CONSULTANTS: Associated Engineering, Thurber Engineering Ltd., Tetra Tech Canada Inc., Matrix Solutions Inc., ADP Engineering Ltd.

CONTRACTORS: PCL Construction Management Inc., Keller Foundations Ltd.

OTHER KEY PLAYERS: The Calgary Zoological Society

The 2013 flood caused \$50 million in damage to the Calgary Zoo. Protecting the Zoo's future on St. George's Island was a significant challenge, with the ISL / Associated Engineering team working to understand both the overland and underground mitigation needs in a 1:100 year flood. An unconventional mitigation system was chosen, using a sheet pile cofferdam wall, watertight barrier and pumping system. The project was completed in parallel with many others in the tight confines of the island, with the team working to mitigate impacts to communities and Zoo operations, while finishing in time for the pandas to arrive.



JUDGES' COMMENTS

The unique technical and construction solutions developed and implemented for a complex, constrained work site under tight time and budget constraints was handled very well by the consultant team, particularly considering the seemingly ever-changing demands for additional related upgrades.

There were so many components of this project that were a challenge and necessitated an inordinate amount of coordination and collaboration. Well done to this joint submission by AE and ISL consulting firms.

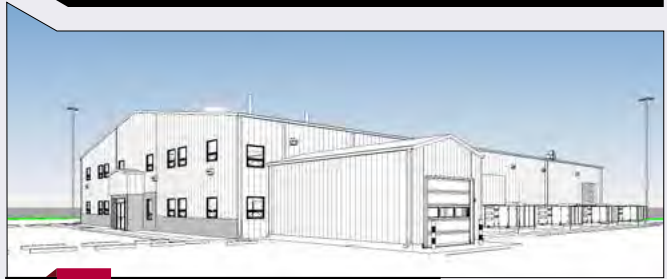
SHOWCASE AWARDS

> 2019

FIRM: MCW Hemisphere Ltd.
CLIENT / OWNER: RMMI
LOCATION: Newell County, Alberta
SUB CONSULTANTS: Riddell Kurczaba
Architecture Engineering Interior Design Ltd.,
Heath Engineering Limited
CONTRACTORS: Westcor

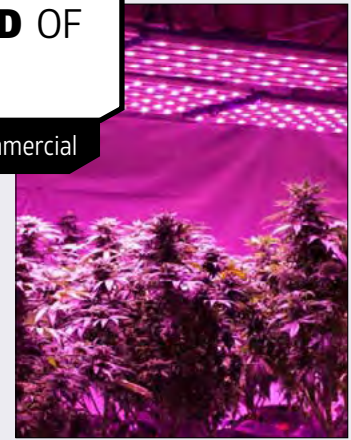
RMMI Corp entrusted MCW, Riddell Kurczaba Architecture Engineering Interior Design Ltd., Heath Engineering, and Westcor Construction with repurposing an existing oil and gas servicing building into an industry-leading facility for the production of medical cannabis. Using Lean and pull-planning methodologies to focus on collaboration and customer value, the project includes a number of engineering innovations that minimized capital costs, significantly reduce energy and water consumption, and will enable RMMI to quickly scale up their operation while consistently and safely producing a high quality product.

Blending Engineering & Science with Nature: Rocky Mountain Marijuana Inc.



AWARD OF
MERIT

> Building Engineering - Commercial



Bethany Riverview

FIRM: SMP Engineering
CLIENT / OWNER: Bethany Care Society
LOCATION: Calgary, Alberta
SUB CONSULTANTS: MMP Structural Engineering,
Reinbold Engineering
CONTRACTORS: Stuart Olson
OTHER KEY PLAYERS: IBI Group

Bethany Riverview is a \$67 million long term and specialized dementia care facility committed to improving the quality of life for residents and their families throughout all stages of dementia. The facility consists of 210 beds (120 dedicated to complex dementia care), a 3,000-square-foot solarium, amenity spaces, three courtyards, and Bethany Calgary's new corporate offices.

Seven neighborhoods make up these 210 resident rooms, creating the feeling of a home-like environment with focus on expert dementia care. Each neighborhood shares a dining room and amenity spaces, portraying a tight-knit community, while ensuring resident safety and well-being.



AWARD OF
MERIT

> Building Engineering - Institutional

JUDGES' COMMENTS

Very innovative design that will become evermore necessary as our population ages.

Very interesting lighting solutions to suit the needs of very specific client/users. Management of design choices to allow more client control of budget is nice to see for optimal results in different areas.

Mechanized River Valley Access

FIRM: DIALOG
CLIENT / OWNER: City of Edmonton
LOCATION: Edmonton, Alberta
SUB CONSULTANTS: Thurber Engineering Ltd., Hatch
CONTRACTORS: Graham Infrastructure LP

The City of Edmonton had long sought to better connect the public between downtown and the North Saskatchewan River Valley. The top of the river bank is cut off from the river and trail systems below by an unfortunate network of roadways, a steep slope, and an elevation change of 50 m. The Mechanized River Valley Access project was born to address this challenge.

The project includes a funicular, stairs, promenade, pedestrian bridge, cantilever lookout, and glass elevator. Not only a major infrastructure and accessibility project, this is defined by its emphasis on placemaking and improvement of the public realm.

AWARD OF MERIT

> Community Development



JUDGES' COMMENTS

Unique design without altering the view of surrounding River Valley. Girders spaced/ designed to allow elevator shaft. Stairs constructed using local products.

CASA Child, Adolescent and Family Mental Health Facility

AWARD OF MERIT

> Small Firm – Big Impact

FIRM: Arrow Engineering Inc.
CLIENT / OWNER: Government of Alberta
LOCATION: Edmonton, Alberta
SUB CONSULTANTS: IBI Group, Action Electrical Ltd.
CONTRACTORS: Clark Builders

CASA Child, Adolescent and Family Mental Health provides mental health services for infants, children, adolescents, and their families in the Edmonton, Alberta area. Arrow was brought in for support with the design and construction management of this new facility in Edmonton. When designing the new layout, both the mechanical and electrical engineering departments considered the needs of the CASA Foundation, but also those of the children and families who would spend time in the building.



JUDGES' COMMENTS

An outstanding project that has shown where a small firm made a huge impact.

SHOWCASE AWARDS

> 2019

FIRM: Associated Engineering
CLIENT / OWNER: Alberta Transportation
LOCATION: Edmonton, Alberta
OTHER KEY PLAYERS: Virginia Durksen from Visible Ink Incorporated

The NU Girder Bridge Design and Detailing Manual is a much-needed resource for Alberta Transportation and Consultants across the Province. It encourages consistency in designs and detailing, increasing competitiveness and reliability in NU Girder bridge designs. It also acts as a training tool for Consultants by providing a comprehensive design resource, including tools for preliminary and detailed design, as well as new Typical Details drawings. Embraced by fabricators, the manual provides value to the bridge industry, not only helping Consultants complete safe, consistent and efficient designs; but also creating NU Girder bridge designs that will be more economical to fabricate.

JUDGES' COMMENTS

A technically excellent design resource.

NU Girder Bridge Design and Detailing Manual

AWARD OF MERIT

> Studies, Software and Special Services

NU GIRDER
Bridge Design and
Detailing Manual

Volume I
Manual

Version 1.0
August 2018



12 Street SE Bridge Replacement

FIRM: Jacobs
CLIENT / OWNER: City of Calgary
LOCATION: Calgary, Alberta
SUB CONSULTANTS: Thurber Engineering Ltd., Matrix Solutions Inc., AECOM, Parsons Inc., ADP Engineering Ltd., International Quality Consultants Ltd., Carson McCulloch Associates Ltd., Goal Engineering Ltd.
CONTRACTORS: Westpro Infrastructure Ltd., Rapid-Span Structures Ltd., RJ Watson, Inc., DAKOTA Reclamators Ltd., Lafarge Canada Inc.

The City of Calgary replaced the aging St. George's Island Bridge over the environmentally sensitive Bow River. As Prime Consultant, Jacobs' innovative design reduced potential environmental impacts during construction using full-depth, full-width precast concrete deck panels and ultra high-performance concrete connections instead of a cast-in-place deck. The structure's arched and haunched profile improved local flood resiliency while widened vehicle lanes and a multi-use pathway upgraded safety for all modes. Jacobs was supported by Thurber (Geotechnical), Matrix Solutions (Hydrotechnical, Environmental), Carson McCulloch (Landscape), MTa (Architectural), ADP Engineering (Streetlighting), AECOM (Accent Lighting), Parsons (Design Review), IQC (Steel Inspections) and Goal Engineering (Instrumentation).

AWARD OF MERIT

> Transportation Infrastructure -
Transportation Structures

> Sustainable Design

JUDGES' COMMENTS

Very good use of an emerging technology and pushing it even farther. A good technical feat, with some sustainable outcomes.



Gary W. Harris Canada Games Centre

FIRM: Stantec Consulting Ltd.
CLIENT / OWNER: Red Deer College
LOCATION: Red Deer, Alberta
SUB CONSULTANTS: Clark Builders, Scott Builders Inc.

The 2019 Canada Games needed a competition-ready venue, and Red Deer College recognized the opportunity to meet their needs while building a legacy for the community. The result, Gary W. Harris Canada Games Centre, is a testament to Red Deer College's vision and Stantec's integrated design philosophy — a remarkable accomplishment of engineering and architectural teamwork. In February, over 3,600 aspiring athletes and 20,000 visitors will flock to Red Deer for the Games. As one of the main venues, the Gary W. Harris Canada Games Centre will stand tall — a quintessential centre for sport and wellness in central Alberta.



AWARD OF MERIT

> Sustainable Design

JUDGES' COMMENTS
 Stantec's Gary W. Harris Canada Games Centre is an excellent example of an engaged design process resulting in a creative, technically excellent and innovative project - which balances value, risk management, environmental and societal value.

Highway 762 - Landslide and Road Remediation Using Innovative Technologies

FIRM: Tetra Tech Canada Inc.
CLIENT / OWNER: Alberta Transportation
LOCATION: Rural Alberta - SW of Calgary, Alberta

In 2016, Alberta Transportation requested design and analysis to implement permanent remediation measures at four sites within active landslide areas along Highway 762. Tetra Tech remediated two sites using typical landslide mitigation measures: a toe berm and shear piles. The two remaining sites had terrain and space constraints that required innovative designs using alternative fill materials. Two lightweight fills — expanded polystyrene blocks and cellular concrete — were used to reduce loading and reconstruct the highway. The client will be able to compare the long-term performance of each material since the locations are expected to have similar annual traffic loading.



JUDGES' COMMENTS
 Innovative solution to the long-standing slide problems. Use of cellular concrete, EPS geofoam and excellent geotechnical design made this project successful.

AWARD OF MERIT

> Transportation Infrastructure - Roads, Interchanges, Airports, Mass Transit

SHOWCASE AWARDS

> 2019

Kaliti Wastewater Treatment Plant and Sanitary Sewer Trunk Mains

FIRM: Morrison Hershfield Limited
CLIENT / OWNER: Addis Ababa Water and Sewerage Authority (AAWSA)
LOCATION: Addis ababa, Ethiopia
SUB CONSULTANTS: ARMA Consulting PLC
CONTRACTORS: AKTOR S.A./ AKTOR Technical Societe Anonyme (Greece), DENYS NV (Belgium)
OTHER KEY PLAYERS: Brian Fanson, Doug McRae, Abdul Khan

Addis Ababa has been growing steadily. World Bank and the Government of Ethiopia entered a loan agreement to construct a Wastewater Treatment Plant (WWTP) at Kaliti and twin the existing trunk main to help with the growth.

The existing Kaliti WWTP was a lagoon treatment system built in the 1970s. The completed WWTP is now sized for a maximum flow rate of 100,000 m³/d. It consists of USAB (upflow anaerobic sludge blanket) front end, trickling filters, secondary clarifiers, and chlorination/dechlorination for disinfection before disposal in the river.

The additional trunk mains included 18 km of 1000 to 1500mm GRP pipe.

AWARD OF MERIT

> Water Resources



JUDGES' COMMENTS

The attention to detail and meeting the needs of the client made this project shine in a very competitive field.

SHOWCASE AWARDS

> 2019 > JUDGES

Adam Laughlin, P.Eng.
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Director, Corporate Analytics & Innovation, City of Calgary

Cathy Maniego, P.Eng.
Executive Director, Municipal Capacity and Sustainability, Alberta Municipal Affairs

Douglas Wright, CD, PSC
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Fred Otto, P.Eng.
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Graeme E. Langford, P.Eng.
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Jennifer Enns, P.Eng.
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Lisa White, PhD., P.Eng.
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Manon Plante, P.Eng.
Assistant Deputy Minister, FOIP Review and Transformation Division Service Alberta, Government of Alberta

Mike Koziol, P.Eng., M.Eng.
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Ranjit Tharmalingam, P.Eng.
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Shawna Cochrane, Architect, AAA
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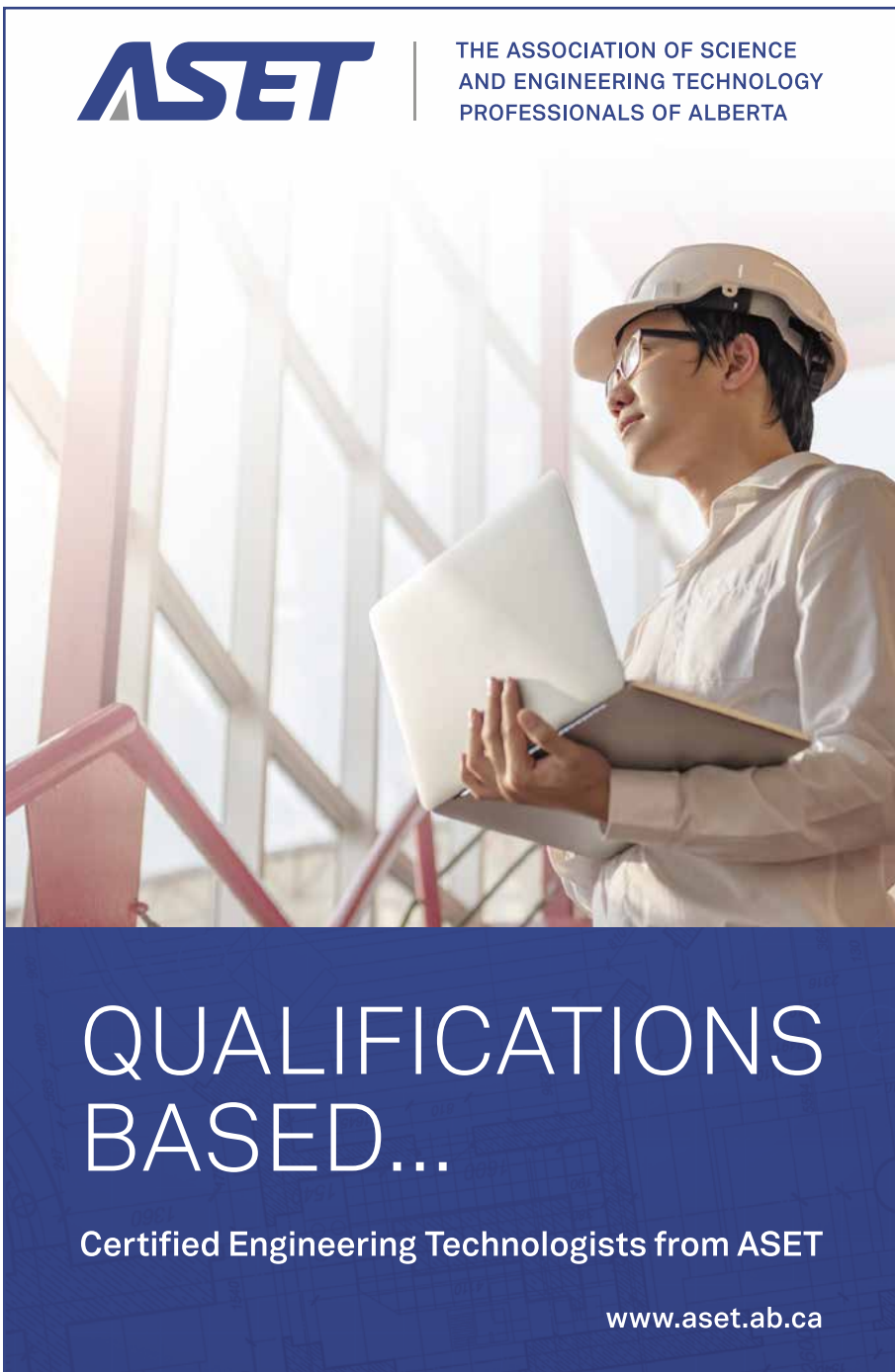


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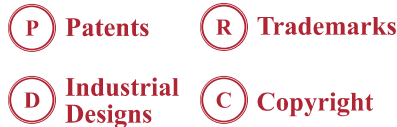
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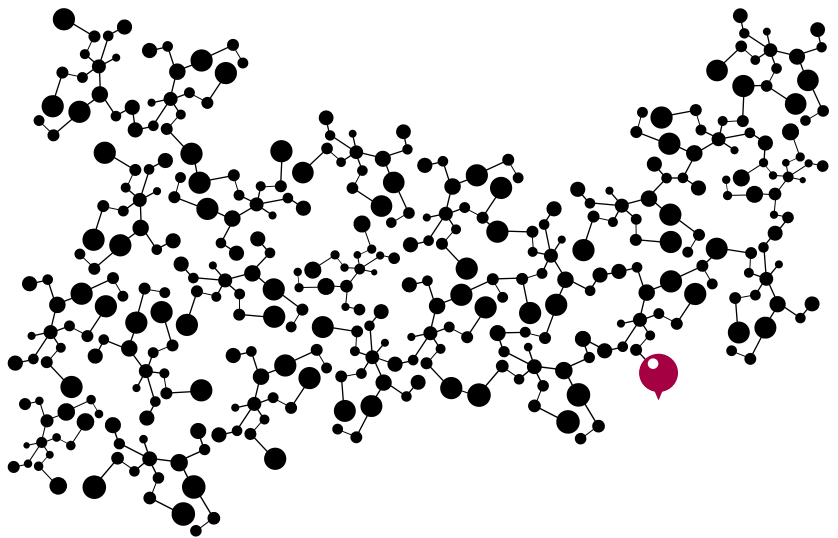
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