



THE OFFICIAL PUBLICATION OF THE PUBLIC WORKS ASSOCIATION OF BRITISH COLUMBIA, THE ALBERTA PUBLIC WORKS ASSOCIATION, THE SASKATCHEWAN PUBLIC WORKS ASSOCIATION, THE MANITOBA PUBLIC WORKS ASSOCIATION, AND THE ALBERTA MUNICIPAL SUPERVISORS ASSOCIATION

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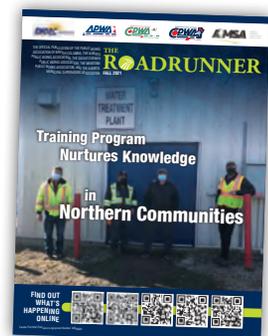
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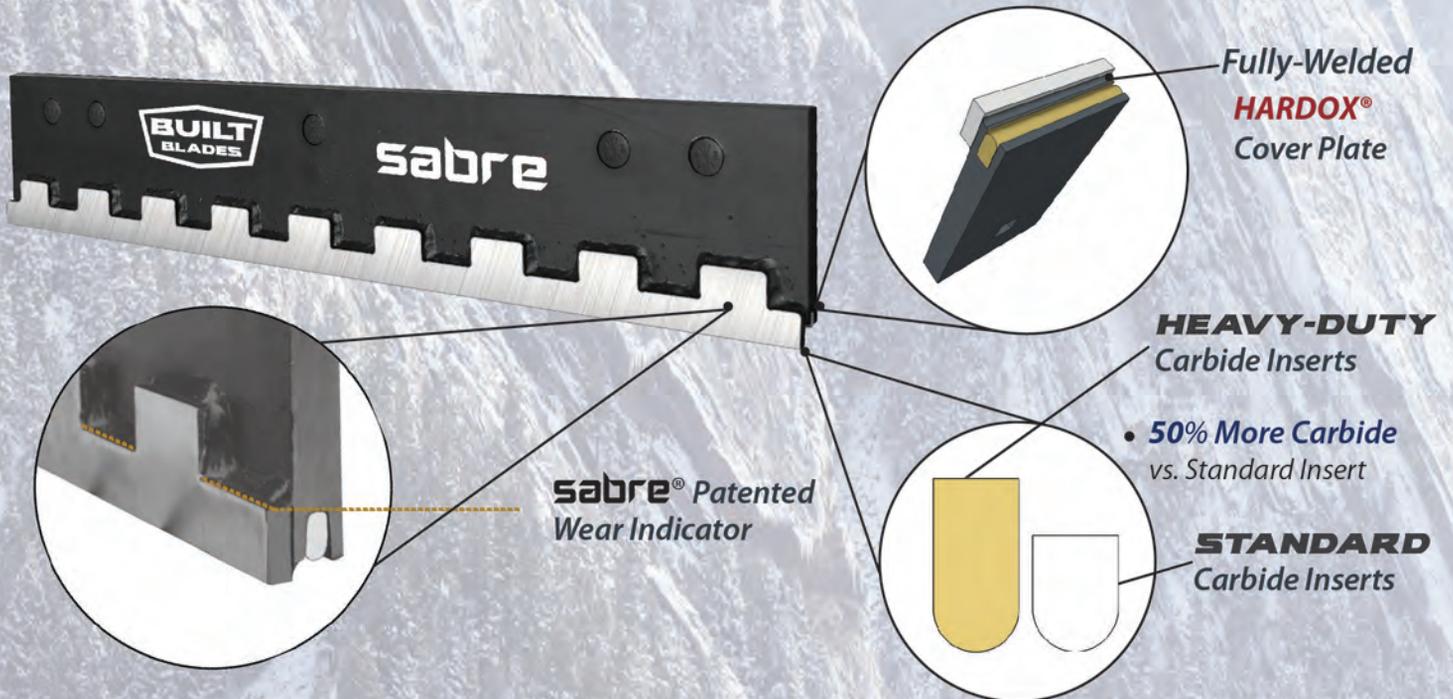


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All members of a CPWA Chapter are members of the American Public Works Association (APWA). As a member, you share common goals, challenges, and solutions with other public works professionals throughout North America. To find out more on member benefits, go to [www.apwa.net](http://www.apwa.net) or [www.cpwa.net](http://www.cpwa.net).

# A Message from the Canadian Public Works Association

**B**efore we start, I want to first recognize that this past summer's construction season certainly was not the "typical" entrance that public works professionals have "playbooks" for. Public works is accustomed to recharging their exhausted minds and tired bodies from one season or disaster to the next, but many of us found ourselves dragging ourselves over "the line" into the construction season this past summer. Let's find time to pause and recognize that it might take some new strategies and some down time for our bodies to catch up to our minds as we prepare for the winter season ahead. Acknowledging that it might take a little longer than normal to convince our bodies that we are not running to the next disaster will be a challenge for many of us. Across Canada, public works professionals have been through so much but have been the silent heroes on the front lines for over a year now. Hold space for yourself and each other by reconnecting and remembering that we are indeed "Stronger Together."

As I step down as president of the Canadian Public Works Association (CPWA), I am thinking about where we have been and what we've accomplished as an organization over the past few years. When I first joined the CPWA board, I had wide eyes and felt more than a bit of intimidation at the thought of serving with the professionals on the board who sat around the table. As I calmed myself and got more involved and more seasoned, the camaraderie increased and I realized what an amazing opportunity I had been given to advocate for all things that matter to public works and decision makers in Ottawa.

What is advocacy? Although I knew the definition when I started on the CPWA board, after my term as president I certainly understand the passion that drives it. How can you help as a member of CPWA? Continue to build and nurture relationships with key decision makers and influencers, at the elected and non-elected levels of government. Participate in discussions, surveys, and requests for input on our public policy issues.

I continue to be amazed at the energy of our board members and their skill at handling the diverse discussions that we engage in. These board members from across Canada are leaders in their

own organizations, and still somehow find time in their busy lives to advocate for the "Power of Public Works" at the federal level. This past year, like so many, the CPWA Board mastered the art of virtual meetings. We divided into three task forces based on our public policy priorities. The Emergency Management and Disaster Mitigation task force was focused on a national strategy to align with the APWA strategic initiative to have public works recognized as part of the "First Responder" team. The Strategic Planning task force ensured that the organization has sustainable and attainable goals through our strategic plan. Finally, our Sustainable and Resilient Infrastructure task force provided comments on documents such as the National Infrastructure Assessment initiative.

I have connected with the community, discovered and honed my skills in leadership, worked collaboratively with an amazing volunteer board, and made friends and connections with other advocacy enthusiasts locally and nationally during my time as president. Though my term has ended, I can step down with confidence and look to our future as I pass the torch to Rylan Wadsworth, Directeur Travaux Publics of the Ville de Montréal-Ouest. Through his leadership and the amazing new CPWA Board, I know CPWA will continue to support this amazing community and further our sector's strategic goals. Rylan and I are really hoping that we will be able to connect in-person at PWX in St. Louis from August 29-September 1, 2021, where I will officially pass the gavel on. If you are unable to make it this year in person, please sign up for the virtual PWX October 12-14, 2021.

Serving as CPWA president has been one of the greatest experiences of my career and I was honoured to represent CPWA in such a capacity. Remember, the key to continued success for CPWA is the participation of our membership. Get involved in the organization and stay engaged. Give us your ideas, time, and expertise! As an organization, CPWA will only be as strong as the talents and contributions of its collective membership. I am stepping down but not away, I look forward to serving as Past President for 2021-2022.

**Patty Podoborzny, C.E.T., CLGM, PWSIII**  
President  
Canadian Public Works Association



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# A Message from the Public Works Association of British Columbia



**H**ello to all of the public works professionals reading this update from the British Columbia Chapter. What a difference a few months can make! COVID-19 is really starting to feel like it's finally in our rear-view mirror thanks to the dedication and commitment of everyone who has been following all local, provincial, and federal COVID-19 guidelines, and for doing your part by getting you and your families vaccinated.

On behalf of the Public Works Association of British Columbia (PWABC) Board and membership, I would like to extend a huge thank you to British Columbia's Provincial Health Officer, Dr. Bonnie Henry, and her entire support team for all their work on a well planned and executed re-opening plan for our province. Further to this, I would also like to thank all the public works professionals across Western Canada who also did their part for our communities that they have the privilege to work and play in. Public works kept many critical COVID-friendly places and spaces opened safely for public enjoyment during very difficult circumstances.

Of course, and as always, thousands of public works professionals kept the water running, roads cleaned, sidewalks opened, parks accessible, and toilets flushing. Your dedication to the industry and the communities we all serve, during what was one of the most challenging times of many of our careers, was truly amazing. Well done!!!

Despite the challenges of COVID-19, the PWABC has been very busy in these last few months. We are so excited for our 3rd Annual (virtual) Joint Conference, October 5-6, 2021, that we will be running with the BC Municipal Safety Association. Our

technical agenda team has put together an amazing combination of technical presentations that you won't want to miss! Head to our website today at [www.pwabc.ca](http://www.pwabc.ca) to get you and your team members registered for this exciting virtual event!

Speaking of events, why not consider participating in or supporting someone in your organization in our upcoming Winter Maintenance Operator or Supervisor's Certificate Program? The PWABC is very proud to be offering these virtual opportunities to both members and non-members alike in September. The Operator's Certificate Program will be a two-day, two-hours per day offering, and the Supervisor's Certificate Program will be a two-day, four-hours per day program. Again, head to our website at [www.pwabc.ca](http://www.pwabc.ca) to register and learn more.

Now is also the time to start thinking about your nominations for the PWABC's annual Public Works Industry Awards. Our Awards Committee is very excited for this year's review process, and we strongly encourage you to consider an application today!

As always, I want to recognize and thank the PWABC's Executive and Board of Directors for their ongoing volunteer commitment to our Chapter! We hope and trust that our membership feels the same way and we also welcome any others who are interested in supporting our volunteer association. Please reach out to us at [executivedirector@pwabc.ca](mailto:executivedirector@pwabc.ca) to find out more about how you can contribute to our amazing Chapter!

**Chris Anderson, ASCT, CPWP-M**  
President  
Public Works Association of British  
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# A Message from the Alberta Public Works Association

I would like to start out by thanking Gary Webster for leading the Alberta Chapter of the American Public Works Association (APWA) through a full year of dealing with the pandemic and serving an extended term as president. Your leadership, friendship, and dedication to the Alberta Chapter and Board is greatly appreciated.

We all know the challenges we had as municipal workers the last 18 months. I am proud of the efforts and work practices that each and every one of you did to keep your city, town, village, hamlet, First Nation's community, and county's infrastructure working. Thank you to our administrative staff who work behind the scenes, taking on the first go around of the "not-so-happy" resident. The self-sacrifice that so many of you give to your communities cannot ever be praised enough.

I would also like to take this opportunity to thank the Conference Committee Gary Webster, Peter McDowell, Jenna Durkee, Ed Plant, Mike Stasiuk, Chris Dechkoff, and the glue that that keeps us together Jeannette Austin. As well, I must thank Enoch Cree Nation and Chief Billy Morin for being such gracious hosts to the conference command centre. Putting on our virtual *Everyday Heroes Conference and Trade Show* back in June was a new adventure for all of us. Give me a set of joysticks and a grader and I would feel right at home but helping host a virtual conference was definitely not in my wheelhouse. I could not have done it without a great team. I would also like to give a huge shout out to the vendors that continue to support us and also take a moment to welcome the new ones that joined us. Thank you as well to those who attended the conference, we truly appreciate you supporting us while we support you.

Summer brought us record breaking temperatures and the opening of Stage Three of the pandemic plan; everyone was so excited to finally see their loved ones, and have a chance to sit around the campfire with old high school buddies and relive the good old days. As sad as it is to say, now we're getting ready for fall. Along with the onset of autumn, the Alberta Chapter will have some great training workshops coming up – see <http://alberta.cpwa.net> for details.

The APWA board is looking forward to in-person meetings, training, and conferences soon. Social networking is one of the best forms to glean ideas that work and do not work for others. One great way to do that is to connect with your region's Idea Group meeting. Information on this can also be found on APWA's website.

Another event we are looking forward to bringing back is the Equipment Rodeo, along with Snow Show, Conference, Training, and AGM on June 6-9, 2022. We are looking forward to seeing all the operators showing their skills. I encourage all operators new or seasoned from any city, town, village, hamlet, First Nation's community, or county to come out and join us.

I look forward to serving as President for the next year and continuing the legacy of our great past presidents.

On behalf of the Alberta Public Works Association, I would like to THANK YOU all for your commitment to your community and your support for APWA. Thank you to our suppliers and sponsors for your continued support to APWA and to all the communities in Alberta. As Sgt. Phil Esterhaus would say on Hill Street Blues, "Let's Be Safe Out There."

**Mike Haanen**  
President  
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The Alberta Chapter was founded in 1979 to enhance the services of the APWA to the Alberta public works community and to improve the quality of public works products and services to Canadian citizens.

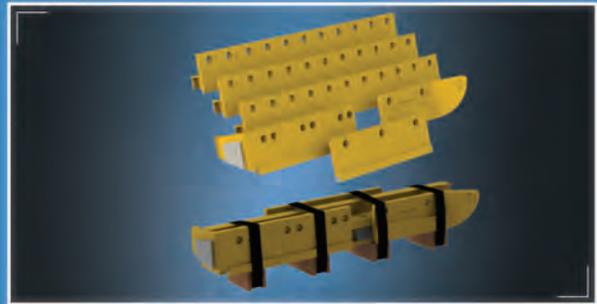
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The Saskatchewan Chapter strives to promote professionalism in the public works field and provide a network through which members can share and receive useful information.

# A Message from the Saskatchewan Public Works Association

**Everyone needs to get out of their house and enjoy being together again too; I hope you took some time this summer to reconnect with others.**

**W**ith provincial restrictions lifted on July 11, 2021, this summer should hopefully feel more normal with family gatherings, social events, and some festivals taking place. Remember, if you still want to wear a mask, please do so and that hand washing and social distancing have always been important. Everyone needs to get out of their house and enjoy being together again too; I hope you took some time this summer to reconnect with others. I would personally like to thank the public works professionals in the province for all the extra time and effort spent to keep our communities safe and operating normally throughout the extremely challenging conditions of the past 18 months.

It was great to see that a number of communities proclaimed National Public Works Week (NPWW) hosted May 16 to 22, 2021, to recognize the importance of public works in our communities, our province, and our country. During NPWW, on May 20, 2021, the SPWA held a virtual water workshop/roundtable titled *Wastewater Collection Systems: The Good, The Bad, & the Very Ugly*, with a focus on flushable wipes. The workshop provided 0.3 CEUs for participants who required them to maintain their certification. Being virtual allowed renowned experts to attend from Washington, Ontario, and New Jersey. Local operation professionals from Saskatoon and North Battleford also provided their experiences as well.

Our Chapter also held a Roadways Roundtable on asphalt patching and recycling on June 20, 2021. Panelists were from

Saskatoon, North Battleford, and Moose Jaw. The event was free and there were a lot of great questions and commentary from participants wondering about material, equipment, and processes. These two roundtable events are the kickoffs to what we are hoping will be a series of virtual and in-person roundtable events planned all throughout the year. Stayed tuned for more information.

We are in the early stages of planning our 63<sup>rd</sup> Annual Conference, which will be held at the Saskatoon Inn February 22 to 24, 2022. Our plan is to hold an in-person conference but, as we have all seen, we need to have plan A, B, and C these days. A virtual conference would be held if restrictions do not allow us to hold it in-person.

Watch your email for more information on these events. (*\*Remember that the discounted rate members receive at our combined yearly events pays for the annual cost of membership with SPWA*)

As you can see, the SPWA is endeavouring to bring our members, and others in the public works profession, greater value in educational and networking opportunities. We will also continue to promote professionalism in the public works field, advocate the essential role that public works plays in the quality of life, and promote it as a career choice for the work force of the future.

Visit our Chapter website at <http://saskatchewan.cpwa.net>, or contact our Chapter Administrator, for more information and details about our upcoming SPWA events or how to become an SPWA member.

**Dale Petrun**

Past President

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# A Message from the Manitoba Public Works Association

**Our Manitoba Chapter did a great job throughout the pandemic – thank you to the entire team. We worked hard, and will continue to work hard, to improve our services.**

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Justin S. Wiebe, P.Eng.

**Did you know** that Manitoba is the longest serving of the Canadian Chapters and has been providing a forum for practitioners since 1955? We actively support our membership, the public, and policy makers to collaborate and maintain healthy communities throughout the province.

It is hard to believe that 2021 is more than half over. The COVID-19 pandemic has certainly brought about many changes in all our lives, both personally and professionally. The vaccinations have brought a light at the end of the tunnel, and everyone is anxious to get back to normal.

Or should we be saying the “New Normal?” What will the New Normal be? No one knows for sure, but there will be a lot of changes in our lives. Public works is usually associated with the feet on the ground people who maintain the infrastructure we all need for a healthy and safe environment. Some in public works may be able to continue working from home with minimal to zero personal contact with fellow employees. Will business meetings lean towards staying on the safe virtual side or will personal contact be a necessity to inspire or motivate us? How will personal contact with family, friends, and co-workers change? Will handshakes become a thing of the past?

The list of musings could go on forever, but whatever happens we should all be prepared for changes in our lives. Being there to support those around you is incredibly important. I recently listened to a podcast by Canadian astronaut Chris Hadfield where he spoke about the pandemic and the changes coming to our lives. One of the highlights I took away

was that leaders and supervisors need to expect changes will happen, and to be positive in how they deal with these changes for those around them.

Our Manitoba Chapter did a great job throughout the pandemic – thank you to the entire team. We worked hard, and will continue to work hard, to improve our services. We have been studying other Chapters’ websites and taking what we can to bring more value to our members. We have been fortunate to have assistance from Jeanette Austin from the Alberta Chapter, and Trina Miller from the Saskatchewan Chapter in this regard, and look forward to collaborating with the other Chapters to continue to evolve our own.

We moved our Annual Golf Tournament to September 16, 2021 – we look forward to getting together as safely as possible following current pandemic protocols. The Mid-Canada Snow Conference committee has also been busy planning the 2022 convention as well – mark your calendar for October 26-28, 2022 – it will take place in Winnipeg! We look forward to meeting and seeing people again in person.

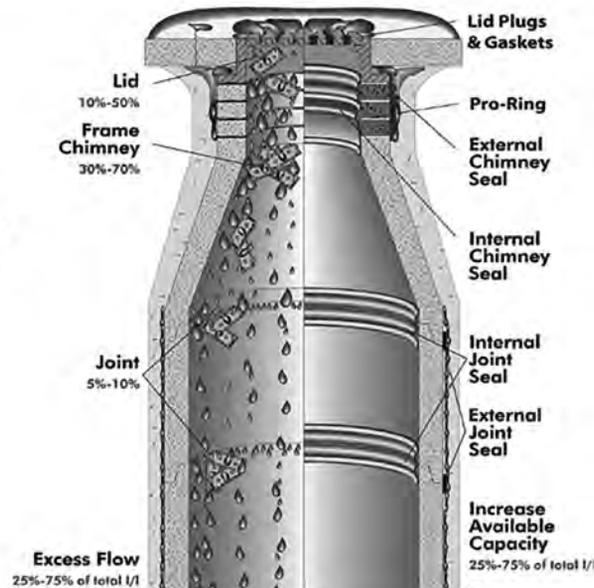
In closing, I hope everyone had a safe and enjoyable summer. Hopefully we’ll be able to catch up soon in person!

**Steve Blayney**  
President  
Manitoba Public Works Association

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**AMSA's mission is to unite our members towards individual development, improved service to their municipality and the public and to improve the members' knowledge related to their role in public works operations. Our association provides a forum for exchange, both online and in person at conventions, and the development of innovative ideas, as well as offers various professional development opportunities.**

# A Message from the Alberta Municipal Supervisors Association

**Although our virtual spring conference was a success, I am eager to meet again in person with my public works colleagues from across Alberta – hopefully as soon as November. Stay tuned at [www.amsapw.ca](http://www.amsapw.ca) for more details regarding the AMSA's fall convention as they become available.**

Looking ahead to fall, I think the landscape of both our municipal work and the work of the Alberta Municipal Supervisors Association (AMSA) will look closer to normal. Although our virtual spring conference was a success, I am eager to meet again in person with my public works colleagues from across Alberta – hopefully as soon as November. Stay tuned at [www.amsapw.ca](http://www.amsapw.ca) for more details regarding the AMSA's fall convention as they become available.

Since 2021 is an election year, change at the municipal governance level will be inevitable come October. However, with change comes opportunity to learn and grow together as an organization. Luckily, AMSA members are engaged in professional development and best practice sharing and are positioned well for providing and receiving support of the broader team of public works professionals.

Sometimes a chat or phone call with a colleague from another jurisdiction is the best way to problem solve. Please remember your colleagues are only a phone call or

web meeting away and be sure to tap into the great minds that make up our AMSA membership of over 150 people. I know of many AMSA members who are great at staying connected which translates to positive outcomes, both for individuals and municipalities. Employees who are invested in collaborating and learning from one another make for successful organizations.

AMSA's executive continues to check boxes on their strategic planning objectives and this fall AMSA will be modernizing its website and hopefully contracting an additional causal convention/support position for the association's future succession planning, to be able to continue to engage AMSA members with meaningful information and learning opportunities.

Lastly, thank you again to AMSA's executive, members, and sponsors for the continued support throughout the pandemic times.

Until next time,

**Shaune Kovitch**

President

Alberta Municipal Supervisors Association



# Enable Others to Act: Foster Collaboration

The following article may look familiar to some as it was featured in APWA's July *Reporter*. This article was part of the APWA Leadership and Management Committee's year long series that took a look at Kouzes & Posner's *The Leadership Challenge*. This particular article focused on the ideas that were shared in Chapter Nine, "Foster Collaboration" from the "Enable Others to Act" section of the book.

By Chris Anderson, ASCT, CPWP-M, City of West Kelowna

## Climate of trust

*You can't do it alone.* How many times have you heard this in your career? As public works professionals, these words are incredibly true. As a successful leader, you are only as good as the team that you are leading and you certainly cannot do it alone without the help, support, experience, and feedback of your team. But how does one get this team aligned and moving in the same common direction? We must strive to create and nourish a climate of trust.

That said though, creating this climate of trust is no easy feat! There can be so many barriers that will get put in your way which try to sidetrack your trust building efforts. As noted by Kouzes & Posner, "you have to make a conscious effort to create and sustain trust." So, what are some of the tips and tricks that might help leaders build this climate of trust as a means to fostering collaboration?

## Trusting others

This is really where it all begins. We must trust each other. One of the lines from Kouzes & Posner that really sticks out for me is "be the first to trust." As a leader in your role, there is no bigger first step in creating your climate of trust than by having the courage and confidence in the people who you are supporting. After all, they are the experts in their field, and it is our job as leaders to take that first step to implicitly trust what they are telling us about whatever their role of responsibility is. Sure, they may be looking to you for strategic or financial direction as an example, but it's our team members, the "boots on the ground," who have the real power to get the job done.

I think back to when our public works department was going through a

significant amount of change. We had the ability to promote from within to a few key roles. I'll never forget one particular discussion that I had with one of the newly promoted employees, in fact it's a conversation that I've had with a bunch of our team members over the years, but the gist of that conversation was that, "I'm not the expert, you are, I trust you to tell me what you need or how you want to get there, and I'm going to do everything in my power to support that." After we had that conversation, it was like a light went on for that individual. Our conversations had been frequent, but with the understanding that I trusted this other person with their decision-making process and execution, the growth that I have come to see in these individuals and their co-workers makes for a proud manager.

### Listen, listen, listen

In order to get that trust coming back your way as a leader, you also need to learn to stop talking and listen. It's amazing, after having been the first to trust, how the trust begins to shift and allows you to begin transitioning to listening. Be sure that you are listening actively and try not to get distracted – active listening will help continue you on your path to building the climate of trust and onwards to collaboration. Be sensitive and listen to your team's needs, and ask lots of questions while you are at it, too. Of course, you will come across some requests and suggestions that are completely unreasonable that you won't be able to support, but it's amazing what you'll learn about your people and the jobs that you both will do when you start listening. What you'll likely find here, when actively listening, is a deeper understanding and appreciation for where your team members "are at." The more you listen, the more you'll have to listen to. Listening will bring you an increased level of trust which will, in turn, lead to your team's greater engagement, satisfaction, and ultimately, collaboration.

When you are listening, you are also giving yourself the opportunity to take a deeper dive towards developing your critically important emotional intelligence as a leader. Emotional intelligence could be a topic unto and of itself, but while you are listening to your team, you also begin to

get to know them on a different level as well. And as you get to know your team, you are also setting yourself up for greater success by understanding some of the other factors that may be impacting the success of the individual and your team. There are constantly going to be non-verbal cues that come from your team, and if you've done enough listening, you will be able to react and shift your resources, whatever those might be, in order to keep your entire group successful. Emotional intelligence is not easy, but work towards a greater sense of it by listening.

### Support face-to-face

Supporting face-to-face opportunities is so critical. It is yet another key aspect of building your climate of trust. Face-to-face opportunities allow you to listen and to foster comradery as you link to the human network and is simply the best situation that supports collaboration. As noted by Kouzes & Posner in *The Leadership Challenge*, "People who expect durable and frequent face-to-face interactions in the future are more likely to cooperate in the present."

But, of course there is the COVID-19 pandemic. I would be remiss if I didn't mention the single most challenging thing that many individuals and organizations have ever had to deal with in our careers. In a time where physical distancing and staying apart has been the required focus of the last year or so, many leaders have struggled

with finding creative solutions to support face-to-face opportunities. I will be the first to admit that I have struggled significantly at times as a leader during the pandemic. Our team was split apart, we are all following rules that we didn't necessarily like, and morale took a hit. For a leader who thrives on face-to-face interaction, COVID-19 has come in and made things extremely challenging, but thankfully the light at the end of the tunnel is near, so start thinking about your post-pandemic face-to-faces now! I am sure that we are all looking forward to doing this again as we look to rebuild, where necessary, with the important face to face opportunities.

### Foster collaboration

In summary, creating and nourishing your climate of trust by trusting others, listening, and finding ways to support face-to-face interactions are some of the best things that you can do as a leader to foster collaboration and the success of your team. By focusing on these traits and deliberate actions, you will find that your team's collaboration will increase proportional to your dedicated effort accordingly as the leader. ▀

*Chris Anderson, ASCT, CPWP-M, is the Public Works Manager for the City of West Kelowna, British Columbia. He is also the President of the British Columbia Public Works Chapter, and is an APWA Leadership and Management Committee Member.*

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# Contractual Means to Address Material Price Escalation

By Sonia Sahota and Marcela Ouatu, Civic Legal LLP

**M**ining production disruptions, material supply shortages, increased tariffs, and caps on materials' imports are some of the factors that have contributed to unprecedented material price escalation through the pandemic. Since the cost of materials often represents a significant portion of the total construction cost, unanticipated increases in the price of materials can have serious financial implications for owners and contractors alike.

This article recaps the limited scenarios for which existing standard form provisions offer relief from price escalation as well as acquainting the readers to other types of clauses that may be introduced into contracts to create a more equitable cost-sharing arrangement between the owner and contractor to address material cost escalation/reduction. Such new clauses may provide options to address the risk of material price escalation (or reduction), in the absence of which contractors may simply rely on large contingencies to protect against future cost increases (or pocket the profit from a substantial material price reduction).

Commonly used standard form contracts offer limited relief to the parties for external

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**A fallout from the pandemic has been the price volatility of many building materials, such as steel and lumber.**

**While we may see some easing as factories reopen and goods begin to export, a return to pre-pandemic pricing of such materials will not be immediate.**

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price fluctuations. For example, under the Canadian Construction Documents Committee 2 – Stipulated Price Contract (the **CCDC2**), a *change in law* provision entitles the contractor to claim for cost increases (and the owner to claim for cost savings) where changes made to applicable laws after the time of bid closing increase (or decrease) the cost of the work.<sup>1</sup> Further, changes in *taxes and duties* after the time of bid closing are eligible under the CCDC2 for reimbursement by the affected party.<sup>2</sup> The delay provisions of the CCDC2 do not provide for recovery of external price escalation occurring during a delay, though it entitles the contractor to recover increased costs incurred due to owner-caused delay.<sup>3</sup>

As such, the delay provisions of CCDC2 do not fully address cost increases due to material price escalation.

Our discussion on material price escalation starts with a discussion on the form of contract used for a project, since the impact of material price escalation will vary for the owner and contractor differently depending on this factor. Under a *stipulated price (fixed price)* delivery model, material prices form part of the overall price that is bid by the general contractor inclusive of overhead and profit. Any increase in material prices not otherwise eligible for increases (for example, a change in law) will be at the contractor's risk.

Similarly, *unit price* contracts are priced on the unit rates bid by the contractor for

estimated quantities. Subject to any contractual exceptions that may permit increases/decreases in the unit price for significant changes in quantities, material price escalation in a unit price contract will be at the risk of the contractor. An increase in price between the time of bid and the time of purchase of common materials used for public works projects may cause financial hardship for a contractor. If the risk of material price escalation remains unmanaged through a contract, it may also compel contractors to pursue cost, delay, or other claims against the owner in an effort to recoup their losses or force the contractor to simply walk away from the contract in an effort to cut its losses. For contracts based on a *cost plus* or *time plus materials* pricing model, the actual cost of material at the time of purchase forms the basis for payment. Thus, such types of contracts allocate the risk of material price escalation on the owner.

Choosing an appropriate form of contract for the risk of uncertainty, whether it be design, scope, geotechnical conditions, or other risk, is a good starting point to acquiring accurate base pricing and to minimizing inflated contingencies. Taking an equitable approach to addressing material price uncertainty at the procurement and contract formation stages may deter the contractor from adding contingencies in their bid to mitigate against material price escalation (and limit the owner's expenditure through material price reduction).

A material price escalation clause allows for an equitable adjustment for specific material price fluctuations through a cost-sharing arrangement. Three common material price escalation clauses are:

1. *Any increase escalation clause*: This clause entitles the contractor to seek reimbursement for any increase in the price of materials after the execution of the contract. The clause must necessarily identify the materials that are subject to the clause and determine the price baseline for the specified materials to be effective. With this clause, the risk of material price escalation is placed entirely on the owner, and thus may not be suitable except in the most extreme situations.
2. *Threshold escalation clause*: This clause requires the owner to reimburse the

contractor for any increases beyond a certain threshold, specified as a dollar or percentage amount. A variation of such a clause includes an upper limit on the operative dollar amount or percentage increase, meaning the contractor shares the risk for price escalation at the lower and upper ends of price escalation rise. As such, the risk of price escalation is shared by the owner and the contractor. Such a clause may also provide reciprocal relief to owners where material prices have fallen beyond a specified threshold.

3. *Delay escalation clause*: This clause maintains fixed pricing for materials for a limited period of time but allows the contractor to seek reimbursement for increased costs (or the owner to seek the benefit of reduced costs) if the project is delayed beyond a specified date or number of days. As such, the risk of price fluctuation is shared by the parties. The use of such a clause should always be subject to limitations where the delay is caused by the contractor. Such a clause may also provide reciprocal relief to owners where material prices have fallen during the specified period of delay.

A fallout from the pandemic has been the price volatility of many building materials, such as steel and lumber. While we

may see some easing as factories reopen and goods begin to export, a return to pre-pandemic pricing of such materials will not be immediate. In such conditions, both owners and contractors stand to benefit from using contractual tools, such as material price escalation/reduction clauses, to mitigate their respective risks associated with future rises or falls of building materials. ▀

*This article is intended for the general information of organizations in British Columbia. If your organization has specific issues or concerns relating to the matters discussed in this article, please consult a legal advisor.*

*Sonia Sabota is a solicitor and current managing partner, and Marcela Ouatu is an associate, with Civic Legal LLP, a British Columbia law firm with expertise in municipal law, land development, construction, procurement, and complicated contract matters. Visit [www.civiclegal.ca](http://www.civiclegal.ca) for contact and additional information.*

#### References:

1. See GC 10.2.7.
2. See GC 10.1.2.
3. See GC 6.5.1 and 6.5.2.



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## Upcoming Events

**PWX 2021: Stronger Together**  
August 29-September 1, 2021  
St. Louis, Missouri

**British Columbia Chapter – The 3<sup>rd</sup> PWABC & BCMSA Joint Annual Conference & Tradeshow**  
October 5-6, 2021  
Virtual

**Alberta Chapter – PWS Level 1**  
September 13-16, 2021  
Okotoks, Alberta

**Manitoba Chapter – Golf Tournament**  
September 16, 2021  
Bridges Golf Course

**Saskatchewan Chapter – Water Roundtable**  
September 2021  
Virtual

**Alberta Chapter – Public Works Supervisor, Level 2**  
October 4-7, 2021  
Bruderheim, Alberta

**Saskatchewan Chapter – 63<sup>rd</sup> Annual Conference**  
February 22-24, 2022  
Saskatoon, Saskatchewan

**North American Snow Conference**  
April 10-13, 2022  
Pittsburgh, Pennsylvania

**Alberta Chapter – Equipment Roadeo, Snow Show, Conference, Training, and AGM**  
June 6-9, 2022  
River Cree Resort  
Enoch, Alberta

**Manitoba Chapter – 2022 Mid-Canada Snow Conference**  
October 26-28, 2022  
Winnipeg, Manitoba



### Write for *The ROADRUNNER*

If you have an interesting story to tell that would be of interest to public works professionals in Western Canada, please reach out to [ssavory@matrixgroupinc.net](mailto:ssavory@matrixgroupinc.net).

We are looking for HR Reports, Safety Reports, Investment Reports, Legal Briefs, Community Reports, and Tech Talks for our 2021 editions! *All articles are subject to approval.*



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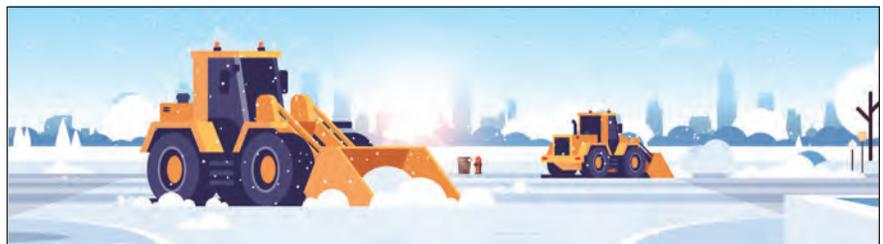
### GOLF TOURNAMENT

The Manitoba Chapter is hosting their annual golf tournament September 16, 2021. Book your spot - \$130 per player! The fun will begin at 11:00 am with a shotgun start.

If you would like to donate a prize or sponsor a hole, please get in touch.

**Kas Zurek**  
204-986-2025 [kzurek@winnipeg.ca](mailto:kzurek@winnipeg.ca)

**Steve Blayney**  
204-509-7385 [sblayney@shaw.ca](mailto:sblayney@shaw.ca)



### 2022 Mid-Canada Snow Conference

October 26-28, 2022

**Operator & Supervisor Training Certification** – October 26, 2022  
**Conference & Trade Show** – October 27 & 28, 2022

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**Contact:** Steve Blaney, Manitoba Chapter President – [sblayney@shaw.ca](mailto:sblayney@shaw.ca)

### Roundtable Success in Saskatchewan

The Saskatchewan Public Works Association (SPWA) proudly kicked off their first free virtual Roadways Roundtable on Wednesday, June 23, 2021, titled *Asphalt Patching and Recycling Roundtable*. Twenty-six registrants participated and discussed:

- Asphalt patching and recycling;
- Planning and strategy;
- Materials and equipment; and
- Work procedures.

There was also an opportunity to provide feedback on the Roundtable and recommend ideas for future sessions.

Some “what did you like” responses included:

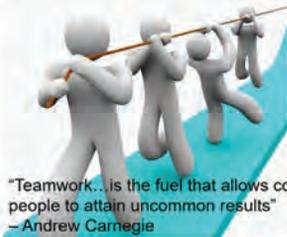
- All the information and knowledge;
- Interaction amongst attendees;
- Great content and experience;
- The varied input from the panelists;
- Lots of very good things to try;
- All around general discussions, helps to hear what everyone else is doing; and
- The ability to do this for free and network with a larger group of people.

The SPWA’s vision is to build a core group of Saskatchewan public works professionals who represent our cities, towns, villages, and hamlets by connecting them with an easily accessible platform to network, share information, exchange ideas, and support each other.

We look forward to our next virtual Roundtable on the topic of water, which will be hosted in September 2021. Keep a look out for more information on our website or contact our Chapter Administrator at [spwa@sasktel.net](mailto:spwa@sasktel.net).

### Lets Have a Great Discussion

- 1) We are all Public Works professionals and deal with many of the same issues and challenges. We are all in this together and here to help each other to makes things better.
- 2) Share openly, you are among friends
  - Ideas (good ones and .....not so good ones)
  - Thoughts
  - Experiences
  - Lessons learned
- 3) After the discussion let’s talk about:
  - How the discussion went?
  - Did it meet your needs?
  - Any Ideas?
  - How do we reach out to others?
  - Next steps?



### Meet the Team

#### Panelists:

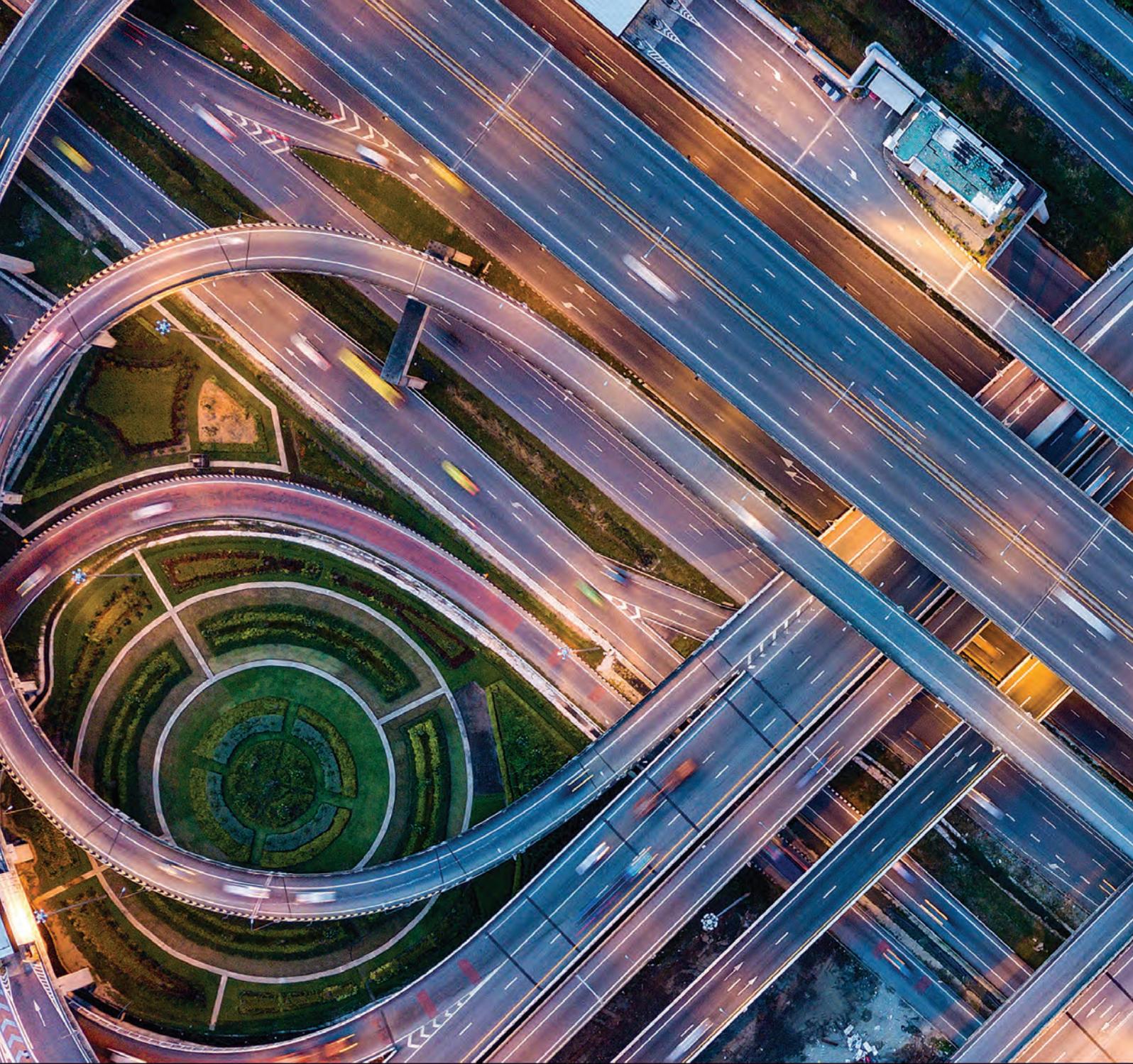
- Colin Carriere (North Battleford)
- Greg Hippe (Saskatoon)
- Jason Trzaskowski (Moose Jaw)

#### Facilitators:

- Eric Quail (Furdale)
- Dale Petrun (Saskatoon)

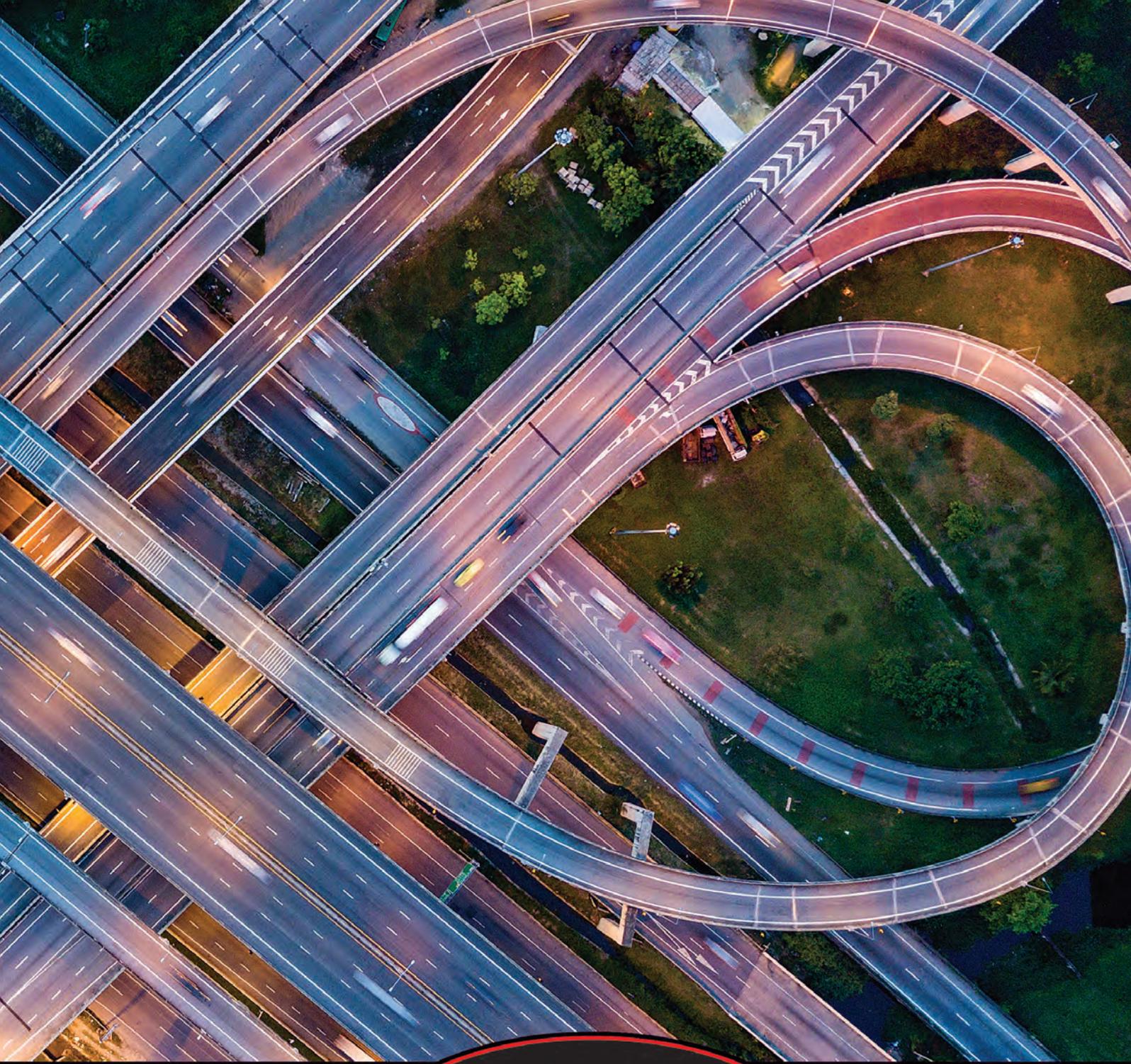
#### Public Works Professionals:

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# Eye Opening Advice to Protect Your Vision in the Workplace



By the Canadian Centre for Occupational Health and Safety

**E**very day, thousands of Canadians sustain a work-related eye injury. Add to that the countless more who suffer from eyestrain and fatigue from the widespread use of computers, tablets, and smartphones in the workplace, and the numbers can be daunting. The good news is that with care and protection these injuries are preventable, according to the Canadian National Institute for the Blind (CNIB).

Eye injuries can cause lost time at work, serious vision loss, and, in some cases, permanent blindness. They can also cost your organization by affecting productivity, profitability, competitiveness, and employee morale.

Employers are required to provide a safe work environment. This includes having safe work procedures in place, informing workers of all hazards of the job, and providing training to workers to ensure they can perform their work safely. There are also steps you can take to keep your eyes healthy, prevent them from injury, and protect your vision.

## Eye health

Visit an eye doctor for a comprehensive eye exam to ensure you are seeing your best, that your eyes are healthy, and to check for signs of damage or eye disease. Eat a diet that includes lots of fruits and vegetables, especially foods rich in lutein, zeaxanthin,

and vitamin C – like oranges, peppers, or kiwi – to help keep your eyes healthy. Fish that is high in omega-3 fatty acids, such as salmon, tuna, and halibut, are also good for your eye health. Wash your hands thoroughly before handling your contact lenses and clean your lenses properly to avoid the risk of infection.

## Eye injury protection

Be aware of hazards in your workplace. Before you start to work, clear your workspace of any potential hazards that could cause you harm, such as protruding pipes and wires, or objects hanging from ceilings. When there is a risk of eye injury, use proper eye protection.

Most industrial eye injuries can be prevented by wearing the right protection for the job. Protective eyewear includes non-prescription and prescription safety glasses, goggles, face shields, welding helmets, and full-face respirators and eye guards.

Protective eyewear used in Canada must have the CSA mark on it to show that it meets Canadian Standards Association (CSA) standards. Choose protective eyewear with lenses made from the appropriate materials (such as polycarbonate, CR39, Trivex, etc.) which are impact and scratch resistant.

Inspect visors or protectors for scratches that may limit vision or cracks that can

weaken the structural strength. Wear eyewear that was specifically designed for the task at hand and matches the hazard: goggles that protect you from dust may not protect you from splashes or radiation. Ensure the equipment fits properly; that it is snug but not uncomfortable. Wear your safety glasses under other protection you may use, such as a welding helmet or face shield, to avoid debris that can get under the shield if you lift the visor.

If you wear contact lenses, always wear protective eyewear on the job site to prevent dust and other particles from getting under the lens and causing irritations or infections. Clean your lenses with water or a lens-cleaning solution to float dirt away, rather than scratching it into the lens. Note that for some hazards, wearing contact lenses is generally not recommended.

If you work in the sun or use equipment that exposes you to ultraviolet radiation you should also use appropriate eye protection to protect your eyes. Look for glasses or lenses that block out 99 to 100 per cent of both UV-A and UV-B radiation.

Follow the safety procedures for your workplace and know the location of eyewash stations and first-aid equipment and how to use them.

## Eyestrain and fatigue prevention

Working on your computer, smartphone, or other electronic devices for a long

period of time, as office workers are prone to do, can cause eyestrain and fatigue. When you are focusing on a screen for an extended period you can forget to blink. This lack of blinking can make your eyes dry and result in blurred vision and headaches.

There are things you can do to reduce the strain on your eyes:

- Position your screen directly in front of you, 50 to 65 centimeters (20 to 26 inches) away from your eyes and slightly below eye level;
- Increase the text size so you can read it comfortably;
- Reduce the amount of surrounding light and adjust the brightness of your device screen to reduce glare and harsh reflections;
- Hold your handheld devices a safe distance from your eyes, just below eye level;
- Blink often to refresh and moisten your eyes; and
- Rest your eyes with the 20-20-20 rule: every 20 minutes, look away about 20 feet (6 metres) in front of you for 20 seconds.

Your eyes are among your most important, and most vulnerable, parts of your body. With a little care and diligent protection you can prevent injury to, and strain on, your eyes and preserve your vision for years to come.

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# The Hottest Ticket in the Industry:

## Mutual Funds

VS.

## ETFs

By Charlene Birdsall, CPA, CMA, CIM, CFP, National Bank Financial – Wealth Management

**O**n the cards tonight, introducing the mutual fund. This opponent has been around since 1774, created during the financial crisis by a Dutch merchant who pooled money from subscribers to form an investment fund. This fund lowered and spread the risk by diversifying across European countries and American colonies and was backed from plantation income. The mutual fund's technique was modernized in 1929 by the Vanguard Wellington Fund, which included stocks and bonds. As mutual funds caught the eyes of the promoters, the referees or government regulators came into play with the enactment of the *Securities Exchange Act of 1934*, to safeguard investors from some unscrupulous promoters.

In the opposite corner of the ring is the relatively younger Exchange Traded Fund (ETF). ETFs were introduced in 1989 with the Index Participation based on the S&P 500 Index, but was short

lived with a lawsuit that stopped all sales. In 1990, Toronto Index Participation Shares were born and traded on the Toronto Stock Exchange. Not to be outdone by the Canadians, the Americans launched the Spiders Index on the S&P 500 in 1993, which has become the largest ETF in the world.

### Round one: cost

Mutual funds have higher costs called Management Expense Fees (MER), which are imbedded in the fund. They throw an upper cut which impacts the net performance to the client. These fees pay for administration costs, management fees to the fund managers, and trailers (commissions) paid to the brokers/bank. The fees range from .78 per cent for a fee-based mutual fund (F Class) to over five per cent for funds performing well (some fund managers are paid a percentage of performance based on a scale, the more the fund makes, the greater the MER). Fund managers buy and sell individual

securities, which have trading costs, within the mutual fund and these costs are spread across all investors in that fund.

ETFs have jabbed their way growing assets in recent years as investors like paying lower annual expense ratios. According to Promoter Daniel Straus, from National Bank of Canada Financial Markets, "the average MER for ETFs in Canada is in the neighbourhood of .4 per cent, at least two per cent less than the average mutual fund MER. This two per cent difference can add up to significant savings, especially when considering the impact of compounding over a very long holding period." One point to note with ETFs though is that the investors must "pay their own way" with buy and sell transaction costs.

### Round two: trading

When investors purchase mutual funds, they receive the price or Net Asset Value (NAV) at the end of the day. The mutual fund managers must deploy that cash by purchasing additional securities on the

stock exchanges, which incurs additional costs that are spread amongst all the individual investors. For mutual funds, the more inflows or outflows in the mutual fund the more internal costs there are to be shared with the investors.

ETFs are purchased on the stock market exchanges, and prices vary between the difference of the bid and ask on those markets. Daniel Straus indicates that “ETFs are truly ‘mutual’ investment vehicles that fully democratize the investment process and allow institutional pricing and liquidity to be passed fairly to all participants.” The NAV of the ETF is not impacted for existing unitholders with other investors entering or exiting the ETF, because the transactions costs incurred are external (paid by the investor).

**Round three: popularity**

In Canada, mutual funds have been knocked down for the last three years as ETFs have outsold mutual funds. Since 2018, ETF purchases have only accelerated compared to the previous years. According to Daniel Straus, “ETF assets are only 12 per cent of the \$2 trillion held within Canadian mutual funds, but they outsold mutual funds by \$13 billion as of November 31, 2020. Traditional mutual funds have suffered net redemptions from balanced and equity funds in 2020.” In the United States, ETFs have been outselling mutual funds for the last 10 years!

**And the winner is...**

It’s a draw!  
 Mutual funds possess many great attributes, such as being actively managed by picking and choosing the portfolio within existing mandates. Since May 2016, the Canadian Securities Administrators mandated that advisors must disclose all fees and risk by presenting a Fund Facts prior to purchase, so you know exactly what you are buying.

Investors have been flocking towards ETFs because they have punched a blow to the mutual funds with their many advantages, such as low cost, tax efficient, easy to access, liquid, and highly diversified compared with mutual funds. But when buying index ETFs, you are buying the good stocks with the bad.

With over 1,000 ETFs in Canada, it is now more important for investors to do their due diligence and verify that the ETF is everything it claims to be. Therefore, it is important to work with an advisor who can help you duck and shoeshine through the many mutual funds and ETFs out there. ▶

*Charlene Birdsall, CPA, CMA, CIM, CFP, is an Investment Advisor and Portfolio Manager for National Bank Financial. You can reach*

*her at charlene.birdsall@nbc.ca. National Bank Financial – Wealth Management (NBF-WM) is a division of National Bank Financial Inc. (NBF), as well as a trademark owned by National Bank of Canada (NBC) that is used under license by NBF. NBF is a member of the Investment Industry Regulatory Organization of Canada (IIROC) and the Canadian Investor Protection Fund (CIPF) and is a wholly owned subsidiary of NBC, a public company listed on the Toronto Stock Exchange (TSX: NA).*

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# An Update on the Rotating Water System Trainers (RWST) Pilot Program

This pilot involves six northern communities in Manitoba and stems from an agreement between the Government of Manitoba's Ministry of Indigenous and Municipal Relations (MIMR) and ATAP Infrastructure Management Ltd (ATAP).

By Andrew Stevenson, ATAP Infrastructure Management Ltd.

**A**TAP has been working with northern communities in Saskatchewan for the past 18 years, providing training, operational and maintenance guidance, and the implementation of operation and maintenance logs for the continued benefit of 31 communities. The company was selected to provide similar services at six northern Manitoba communities in delivery of a critical pilot program.

The multi-million-dollar investment in municipal infrastructure made in northern Manitoba in the past is best protected by ensuring that system operators are competent in all areas of operation and maintenance. Due to ever-changing technology and regulations in water/wastewater, operators are recognizing that their jobs are becoming more complex and require a higher degree of responsibility. Individual communities, and other levels of government, must take responsibility for ensuring that operators have access to continuous upgrading, training, and support to have the resources to perform their jobs adequately for public health and safety.

Operators must know how to:

- Understand the types, uses, and risks related to treatment chemicals;
- Calculate chemical dosages, feed rates, and solution concentrations;
- Perform and interpret chlorine residuals, pH, turbidity, and a myriad of other tests;
- Read and interpret plans and drawings;
- Use operation and maintenance manuals;
- Maintain pumps, motors, engine drives, generators, heating equipment, filters, controls, hydrants, and many other systems;
- Work safely with electrical, mechanical, and other equipment in accordance with



*A new pilot program in Manitoba, where local operators at several northern communities are being trained on how to keep their systems operational and safe, mirrors a successful program in Saskatchewan.*

Occupational Health & Safety Regulations and Codes;

- Make process adjustments and perform preventative and emergency maintenance; and
- Many more duties and responsibilities.

Knowing the breadth of knowledge that is required, the Manitoba Ministry of Indigenous and Municipal Relations (MIMR) put out a Tender for a "Circuit Rider" Pilot of select northern Manitoba

communities. ATAP was successful by mirroring the technical support and operational guidance program it provides for the Saskatchewan Ministry of Municipal Affairs, on behalf of the Northern Municipal Trust Account (NMTA). Our dedicated team assists operators in performing their duties and meeting their responsibilities by developing the operators' skills. ATAP's familiarity with the northern remote systems, and its strong technical background and rapport with the operators, enhances training, operational assistance, and transfer of information.

The result has been a reduction in the deficiencies in the systems, stronger operator knowledge and experience, and systems that experience fewer emergency breakdowns or events. By providing stability and consistency in service, the interests of safe drinking water, and a protected environment are being achieved.

Our staff have a strong appreciation of northern cultures. ATAP trainers are sensitive to each operator's background and learning capacity, and they are practiced at assessing the operator's technical capabilities. The training is adjusted to meet the individual's skill level. Trainers are experienced, hands-on operators with a wealth of technical knowledge. Each has spent years teaching and excels at passing their expertise on to other operators.

## Workplan and schedule

The initial site visit is three days in each of the communities, followed by bi-monthly site visits of two days. Between each two-month visit, ATAP is in contact with the community via video/teleconference every week and with the regulator monthly, or as needed.

### A. INITIAL SITE VISIT

*During the visit to each community, the trainer:*

- Meets with the community administrator and designated council representative(s)

- Accompanies the operator(s) for a tour of the water facilities and equipment
- Discusses with the operator(s) any:
  - Concerns with operation and maintenance of facilities
  - Needs/requirements to maintain or obtain certification to operate the facility
- Reviews the operating license and operations and maintenance manuals (where available) to ensure regulatory and operational requirements are being understood and met.
- Record keeping review
- Review of existing operation maintenance program
- Building and grounds (maintenance, security, tidiness)
- Water testing equipment condition and calibration requirements
- Condition of facilities/action required
- Operation and maintenance manual review
- Prioritized summary of items requiring attention

**From the information obtained, the trainer:**

- Develops a written work plan for the next site visit, outlining key objectives including:
  - Operator training strategy
  - A general overview of WTP infrastructure
  - Condition assessment
  - Compliance monitoring
  - Short and long-term goals, which will include timelines and key milestones.
- Additional available time is used on process optimization, equipment maintenance, review of Standard Operating Procedures (SOPs) if applicable, review of Emergency Response Plans (ERP) if applicable, and the collection of data/information to form the required documentation to operate.
- ATAP reporting to the Government of Manitoba representatives documents any deficiencies and information collected. Reporting is also sent to the local operator and administrator/clerk and includes:
  - Maintenance performed with operators
  - Operator's experience, certification level, vaccinations, additional training required
  - Existing safety equipment condition and any new equipment required
  - Water quality analysis and regulations comparison

**B. FOLLOW UP SITE VISITS**

During the two-day bi-monthly site visits, the trainer provides hands-on training and further develops written procedures outlining specific sampling and testing protocol, as well as troubleshooting procedures to be used for future reference. Communication with the operator, prior to these site visits is the key to maximizing the time and addressing the pressing needs of the operator and facility during these visits.

Between the two-month onsite visits, ATAP conducts video/teleconference calls with the operations staff to discuss progress of training and any issues that may have come up since the last contact with communities. Trainers are available to local operators on an as-needed basis via telephone to discuss operations of their facility.

**Pilot project success measures**

The communities included in this pilot were identified because of their Public Water System consistently being non-compliant to provincial drinking water requirements and regulations and/or subject to frequent/long term boil water advisories.

As part of our initial site visit, ATAP immediately implemented tasks to address the boil water advisory and certification issues by reviewing the current water system, to determine any obvious deficiencies from an operator perspective, determining equipment issues or maintenance procedures that need to be implemented, and planning to alleviate any deficiencies in the facilities as soon as possible. ATAP assists operators with approved minor equipment purchases or process adjustments, to enable the community to maintain compliance of their drinking water.

Training of operators, working with and getting to know them, solving system problems together on an ongoing basis, is a key component to ensuring the long-term operational success of the facility. This helps instill the confidence needed to pursue operator certification. Once they achieve that confidence, certification (even perceived) challenges are addressed. Trainers provide information and guidance in obtaining the required level of certification, including tutelage on noted areas of need plus an array of educational materials that operators can utilize.

With the noted success over the first two months of the pilot, the MIMR has added an additional community to the program. ▶

*Andrew Stevenson has over 25 years of management and operational experience in the municipal field and oversees the team at ATAP. He is a certified Operator, project manages this Manitoba water pilot, and has a wealth of experience on both the SPWA and CPWA Boards.*



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*Close to 40 centimetres fell over the course of a few days last November. This photo was taken immediately after the snowstorm.*

# Digging Out a City

By Tracy Danielson and Dayna Johnson, City of Saskatoon

**T**he City of Saskatoon, Saskatchewan experienced a record-breaking snow event early in November 2020. The snow event ended on the eve of a Civic election, under pandemic public health orders, and just as the Roadways crews were gearing up for the winter season. While the “perfect storm” of these events is not likely to reoccur, we will discuss planned updates to our Emergency Response Planning going forward.

Saskatoon’s Emergency Management Office (EMO) called it a “Black Swan Event” – a rare combination of three events that has not been seen in the past and is quite unlikely to repeat in the future. The municipal election was set for November 9, 2020. As with municipalities around the world, the City of Saskatoon had been operating its crews and administration under COVID-19 protocols for almost a year. The third rare event, a severe winter storm, started on November 7. The storm raged for two days and while it ended early on Election Day, it left Saskatoon’s streets impassable to many and interrupted many municipal services.

While major simultaneous events like this aren’t likely to happen in tandem again, other calamities could. You should ask yourself: Is your municipality’s Emergency Response Plan ready?

Freezing rain, heavy winds, and close to 40 centimetres of snow fell in a very short amount of time in Saskatoon. There was some advance notice of the storm from Environment Canada that allowed Roadways crews to prepare equipment, internal

personnel, and contractors. Plans weren’t enough and adjustments had to be made to adjust the services provided and hire additional contractor resources.

The morning of election day there were impassable streets, resulting in many not able to make it to the polling stations. Transit services were unable to operate, hospitals were unable to get their key staff to and from work, and many residents were unable to leave their driveways or their neighbourhoods. Waste collection and Canada Post services were impacted across the city.

Everyone involved did the best that they could with the available resources and planning. City employees and contractors worked tirelessly to try and get the city moving again. There were no fatalities attributed to the storm, and within a week, every street and back lane in Saskatoon had been graded or plowed. All of this was done with very little historical information on dealing with a severe winter storm of a similar magnitude.

In order to prevent putting future colleagues in a similar situation, with Council’s support, a Roadways Emergency Response Plan (ERP) is being developed. Some of the main areas that the ERP will focus include identifying triggers for the ERP, communication, sequencing of activities, and plans for snow storage facilities. The ERP will focus on public safety, while also incorporating the mobility needs for hospitals, schools, transit, emergency services, and businesses into the sequencing of the response. The ERP will allow Roadways to initiate the planned response without any delays, restoring

mobility and safety on Saskatoon’s streets as quickly and efficiently as possible.

The Roadways ERP will include an early activation of the Incident Command Centre structure, to quickly implement the planned response. The ERP will develop efficient communications strategies with the EMO. This will allow the EMO to have all pertinent information and work with Roadways to communicate the chosen response in the community and to other parts of the city that provide services to residents, such as waste collection and transit. Improved communication should decrease the confusion and frustration that residents experience after a severe winter storm.

Determining the sequencing of winter maintenance activities will be one of the key elements of the ERP. While Saskatoon employs a Priority Street approach to a regular snow response, it has been recognized that in the case of large amounts of a snow, non-priority streets also require snow grading in order to restore mobility across the entire city.

One consideration in the ERP is a financial plan. A dedicated financial reserve is being contemplated to better plan for the inevitable future severe winter storm.

Saskatoon’s Roadways ERP will be developed prior to the next winter season and will draw on internal and external resources, including best practices in similar municipalities.

The November snowstorm required an unprecedented response and offered several lessons learned that will better prepare the

city for another severe winter storm. Being as prepared as possible for a range of situations will be a key component of planning emergency responses in the future. As the weather becomes less predictable, municipalities should be expecting and planning for this variability to ensure the safety of their communities. ▶

*Tracy Danielson is the Roadways Manager at the City of Saskatoon and a*

*Professional Engineer who has spent her 15-year career designing, building, maintaining, and operating roads in Saskatchewan. Dayna Johnson works as an Operations Engineer with the Municipal Engineering Services group at the City of Saskatoon. She has worked in the public sector for the bulk of her career and feels that sharing information between municipalities is the best way to leverage our knowledge and resources.*



*Crews cleaning up the streets so that the city could get back to business as usual.*

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# Track it! Brazeau County's New Tracking System Keeps the Community in the Know

**B**razeau County residents can now see, almost in real-time, when County roads have been plowed or graded thanks to a new interactive online map. At a glance, users can see when roads were last maintained – the darker the purple line, the more recent the maintenance. Hovering the cursor over a road will show how many days have passed since the road was graded or plowed.

The simple to use map is updated almost in real-time, giving residents an up-to-date look at road maintenance operations in their area.

“We’re proud to offer this additional tool for the public to see what is happening with their roads,” says Director of Public Works and Planning, Lynden Fischer. “Residents can use this information to plan their routes, and to know ahead of time what road conditions may be like. This map will eliminate the need to have to call for updates during office hours. The information is right there on your phone, tablet, or computer, 24/7.”

Users have the option of viewing either a map or satellite view using the menu on the left side of the screen. The closed eye symbol means a feature is invisible.

Each County grader and plow has a device equipped to track it and upload information to the map, which is updated within minutes. Brazeau County’s service delivery standard provides an efficient, cost-effective means of snow and ice control within the County’s transportation system. Snow-clearing equipment is deployed in all six divisions. The following snow removal completion timelines are dependent upon sub-zero temperatures and the type, depth, intensity, and frequency of the snowfall:

- Paved roadways – maintained as close to the bare pavement as possible and cleared within eight hours. Snow plow trucks mobilize to perform snow removal activities when one to three centimetres of snow has accumulated.

- Gravel roadways – cleared and triggered by 10 centimetres of compacted snow within five to seven days of the snowfall event.

“Road safety is our highest priority,” Fischer says. “We are big proponents of transparency and accountability, and this is one more way residents can see their tax

dollars in action keeping our roads maintained and safe.”

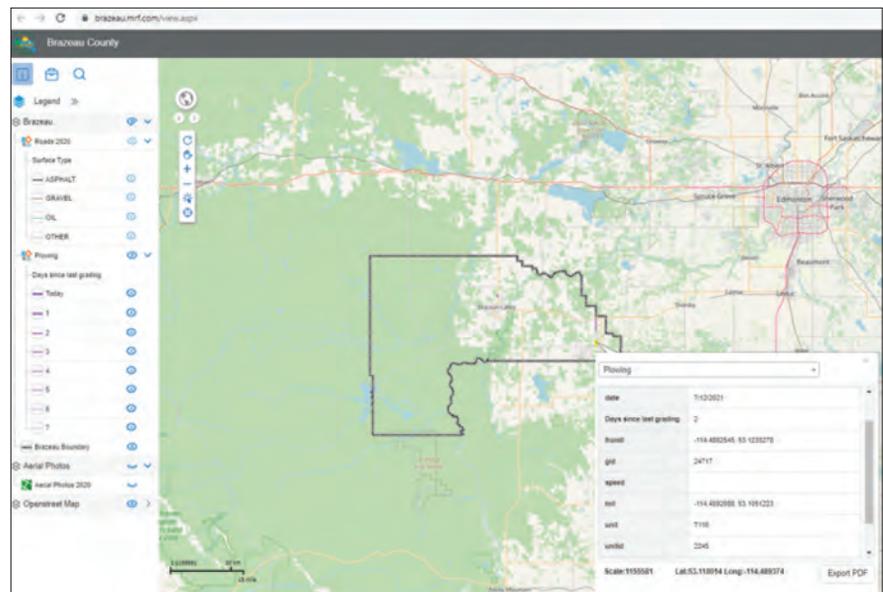
Residents are welcome to call the Public Works Department if they need help with the map, which is accessible from the interactive maps section on the [brazeau.ab.ca](http://brazeau.ab.ca) home page, or at <https://brazeau.mrf.com>. ▸



*The darker the purple line, the more recent the maintenance.*



*Each grader and plow is equipped with a tracking device that uploads details to the map within minutes.*



*The map is accessible by community members on all tablets, smart phones, and computers.*

# Stormwater Solutions for Municipalities

By Camilo Marquez, P.Eng.,  
C.E.T., CAPM, Canadian  
Concrete Pipe Association

**D**uring the design process, it is always challenging to select the proper material, especially when there are multiple constraints attached to a project. Professional engineers are constantly dealing with multiple issues that require in-depth knowledge of the engineering field that relates to the project. Management skills become more important nowadays as the project goes through the following five phases:

1. Initiating;
2. Planning;
3. Executing;
4. Monitoring and controlling; and
5. Closing.

Every project should be analyzed according to the demands and the constraints attached to the project itself. In the stormwater management world, as municipalities continue to grow and expand, engineers are responsible for ensuring that a mechanism is in place to mitigate the excessive runoff that could potentially make its way into the sanitary sewer system that will ultimately increase the inflow/infiltration ratio. This could result in overloading the pipe network in terms of the capacity that was originally designed.

Each site needs to have a system that allows for the stormwater to be retained and slowly delivered to the existing city pipes. Overland surface areas can be a great solution to maintain this volume of water using parking lots for small areas or retention ponds for larger areas such as subdivisions. However, the retention of surface areas is limited to different design elements. In many situations, these surface areas are more valuable since they can be used for construction that will generate more revenue for the developer, rather than the usage of these large areas for retention systems.

*Stranded cars stuck on a flooded street in Calgary, Alberta. June 22, 2013.*

*Stormwater detention in Nose Creek, Calgary. Photo Credit: INLAND*



So, what should we do instead? If we have this problem, is there a way that we can control the runoff from hard surfaces, roofs, and green areas?

Part of the solution would be the installation of a retention system that would go under the ground. This could simplify the issue of having ponding on the surface and can mitigate the problem of reserving massive areas just to store water. The selection of the material that will go under the ground will be the key to the design itself. Engineers design these projects based on the requirements of the municipality/city, and, in most cases, stormwater management calculations are based on a 50-to-100-year storm event. The selection of the material should reflect the design projection, and this is where the project manager/design engineer has the authority to estimate and analyze what system should apply to the project.

The designer often has different options for the retention system that will go under the ground, such as corrugated metal pipes (CMP), plastic arches (HDPE), and precast concrete. However, not all systems behave

the same. Flexible systems are extremely dependent on the soil envelope and installation techniques, which can be an issue considering that installation can sometimes be very tricky. Precast retention systems are not very dependent on the soil envelope, and structurally speaking, they offer a great solution if the site has live loads and dead loads that need to be addressed. The retention precast concrete systems are manufactured in a controlled environment, which can save time in the procurement process of the project since the manufacturer can control production, saving time in terms of the installation, and more importantly, money.

It is imperative to recognize the difference between each material and its behaviour; selecting a product without knowing how the material will perform can be considered as negligence. If proven, this is punishable.

Purchasing a good watch can be expensive, but in the long run, a watch that was bought with meticulousness and patience will be more reliable than a watch that "will do the trick." At some point what costs less in the beginning will be more expensive in the long run.

Like the analogy of the watch, engineers and contractor have options to install something that can be cheap from the get-go, but if the whole system collapses after the installation, what options do we have?

The only solution is to select the right material from the beginning. Precast retention systems can be a powerful solution that can offer the capacity to withstand heavy loads upon the structure (live loads, dead loads, lateral forces, etc.). This material, due to its density, can be more reliable to buoyant forces than its counterpart the flexible materials.

Protect yourself as an engineer and take care of that seal that was given to you. If you do it right the first time, it will cost you less. ▶

*Camilo Marquez, P.Eng., C.E.T., CAPM, is a regional engineer at the Canadian Concrete Pipe & Precast Association.*

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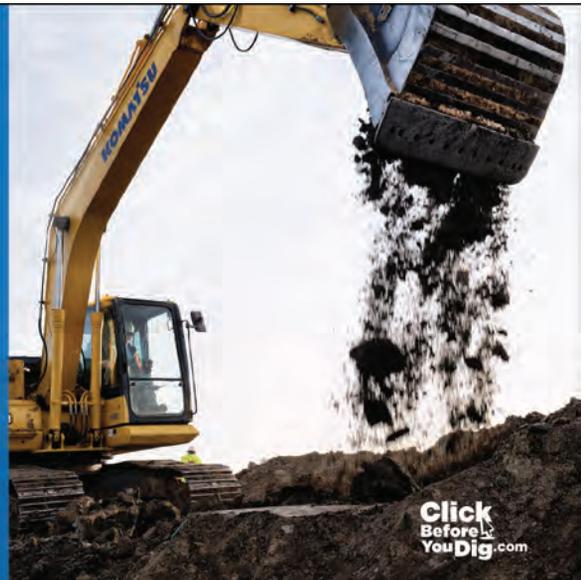
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# The Benefits of Survey Systems

By Darren Wanless, Wanless Geo-Point Solutions Inc.

**A**s a survey consultant, I always thought when purchasing the field gear for my crews to use, bigger is better. While that used to be the case, it is no longer. The size of survey equipment has been shrinking over the years, especially with GPS equipment, and today GPS receivers can fit in the palm of your hand. Also, the accuracy of receivers varies, from approximately five to 10 metres with your smartphone, down to a centimeter with a RTK receiver.

First off, for those who keep hearing these acronyms, here's a quick rundown:

- GPS: Global Positioning System, which is the original worldwide positioning system providing 24/7 signals free of charge by the U.S. military since the late 1970s.
- Glonass: The Russian equivalent of GPS. At times, it suffered funding and technical issues but it is now being maintained with the help of GPS. Why you ask? More satellites gives better results.
- Galileo: Europe's GPS equivalent.
- Beidou: China's GPS equivalent.
- GNSS: Global Navigation Satellite System, which now replaces GPS as the acronym because more GPS receivers today track and integrate signals from GPS, Glonass, Galileo, and Beidou. So, in positioning circles, GPS is now referred to as GNSS.

By themselves, GNSS signals are not accurate enough for most applications. This is because the earth's atmosphere causes signal degradation and refraction, which will provide errors of up to 10 to 20 metres or more, depending on atmosphere conditions. To counter this, a Differential Global Positioning System (DGPS), or differential correction can be applied. This is essentially another GNSS receiver measuring the same GNSS signals in the same atmosphere vicinity and providing the correction, second by second, to your GNSS via two main methods:

1. RTK: Real Time Kinematic is the signal applied via a real time source, such as radio, cellphone, internet connection, and satellite



*The line-up, from left to right: the Trimble 4000ssi – 1991; Trimble 5800 – 2001, Trimble R10 – 2013, Trimble Catalyst – 2019*

signal. This gives the highest accuracy real time in the field for staking and measuring purposes.

2. PPK: Post Process Kinematic is the processing that has to be done later in the office so real time precision for staking is not available.

In most situations, due to our work as surveyors, we need to have all tools at our disposal as no two jobs are the same. But sometimes having to take larger field equipment to perform a basic measuring job is overkill, especially if we have to fly to remote locations. Because of this, we recently purchased three Trimble Catalyst Receivers at a fraction of the cost of traditional RTK.

Trimble Catalyst is a revolutionary GNSS concept, bringing Trimble quality and precise (one to two centimetre) positioning to the location-enabled workforce. With Catalyst, this gives us “professional-grade positioning” as an on-demand, user-based service. Using location-enabled Android field apps, we can measure or stake out basic projects and sites that don't require complex computer programs. Examples of these are Google Earth, LocusGIS, and many more apps from Trimble and third parties.

This system is not just centimetre accuracy. There are different accuracy ranges you “pre-pay” for and select based on your needs. This is available on a month-by-month basis and no contracts are required.

The prices lower with the less accuracy you require. One month you may need a higher accuracy, such as centimetre, while the next you may only need a sub-metre. This works worldwide, not just in areas of RTK networks and signals.

The benefits of this are:

- Delivers accuracy on-demand for any location-enabled field task leveraging the computing power and convenience of the Android device that is already in your pocket;
- On-demand subscription service;
- Four levels of accuracy to choose from: one metre, sub-metre, decimetre, and precision;
- Use with Trimble apps, such as Trimble TerraFlex™ or Trimble Penmap® for Android™, or third party apps;
- Supports most modern Android phones and tablets;
- Suitable for small, medium, and large-scale field deployments through flexible and scalable on demand subscription offerings;
- Simple, lightweight, plug-and-play USB antenna delivers professional grade multi-frequency GNSS satellite tracking to the receiver;
- Worldwide and configuration-free access to Trimble correction services through the Trimble Corrections Hub, which bundles access to Trimble VRS Now and Trimble RTX services; and
- Works in connected and offline conditions.

We have integrated the receivers into rough applications, such as mounted with a magnetic mount on a tree feller for bush clearing applications. With the low cost of the catalyst receiver, (under \$1,000) versus a typical high precision receiver (\$6,000 to \$14,000), damaging one or two of these comes with a better level of acceptance. Applications for this type of work are too numerous to name but a quick rundown is:

- GIS data capture of water and sewer infrastructure, such as manholes, valves, and curb stops;
- Test hole locations pickup and stakeout;
- Rural navigation and tracking;
- Fleet management and tracking for payment purposes;
- Utility maintenance;
- Site surveying and layout;
- Roadway/drainage topographic surveys and layout; and
- Low-cost heavy equipment site positioning.

Take it from someone who always thought you needed to have the best receiver to do the work. Now there are scalable options for you to use based on the tasks in your daily operations. ▶

*Darren Wanless is owner of Wanless Geo-Point Solutions Inc. (WGPS), is a former Trimble Salesrep for over 13 years and regularly provides education and training classes for surveying and geomatics classes in Western Canada.*

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# Safer, Simpler, More Sustainable Pothole Repairs

By Ron Arredondo, Bergkamp Inc.



*The Bergkamp SP5E in action.*

Road maintenance can be hazardous work. While government agencies are responsible for providing safe roads for drivers, they also want to handle all necessary maintenance tasks with the utmost safety for their crew members. According to Road Safety at Work ([www.ConeZoneBC.com](http://www.ConeZoneBC.com)), in 2020 in British Columbia alone, 23 roadside workers were injured due to being hit by a motor vehicle. In fact, from 2011 to 2020, 12 roadside workers were killed and 207 were injured from being hit by a motor vehicle within the province.

How do we keep road construction workers safe? While work-zone safety campaigns help and vigilance on the part of the driving public is necessary, agencies should consider equipment that is designed with safety in mind. The SP5E Spray Injection Pothole Patcher from Bergkamp Inc., released earlier this year, is equipped with numerous advanced safety features. With the SP5E, each repair takes just a few minutes and the operator never has to leave the truck cab.

## Safer by design

The SP5E includes these unique safety features:

- One-person operation from inside the truck;
- Repairs are handled from the front of the machine;

- Automatic monitoring of the front boom position (keeping it in the safe operating zone);
- Automatic latching system that secures the boom for safe travel without the operator leaving the cab; and
- Lights, arrow boards, and a 360-degree camera option provide additional safety measures.

## Simple and efficient

The SP5E is simple to use with operators requiring only minimal training to become proficient in producing quality pothole repairs. Helping to simplify operation is Bergkamp's SPECS system, which controls material outputs according to a configurable mix design – improving the quality and repeatability of repairs. A touchscreen provides easy-to-follow steps and joystick controls have been developed for ease of use and efficiency.

## Additional updated features

1. **Choice of single- or dual-chamber aggregate hopper:** As an industry-exclusive option on the SP5E, a dual-chamber aggregate hopper allows the distribution of two different gradations of aggregate for more effective repair of deeper potholes and to better match the characteristics of the existing asphalt pavement. With either single- or dual-chamber, the aggregate hopper total volumetric capacity

is 5yd<sup>3</sup> (3.8m<sup>3</sup>), and in a feature exclusive to the SP5E, aggregate can easily be unloaded from the hopper at the rear.

2. **Self-clearing spray head:** Three emulsion nozzles in the spray head provide a homogeneous coating of aggregate with the asphalt emulsion. The spray head oscillates to deliver precise control and even distribution of patch material in the pothole, reducing the boom movement necessary to make the repair. The emulsion nozzles automatically blow out to self-clean after every patch, preventing nozzle blockages from developing.

## InPave® provides useful data

The SP5E comes equipped with Bergkamp's exclusive InPave® telematics solution, providing agency administrators with an innovative and supported method to manage pothole patching data and costs.

## B-FIT for additional security

Bergkamp offers customers peace of mind with its B-FIT (follow up, inspection, and training) program, which provides a free onsite visit by a Bergkamp technician within the first year. During this visit, the technician will inspect the equipment and handle additional crew training. B-FIT offers extra assurance to agencies that they have made a safe, sound purchase decision. Following the first B-FIT visit, subsequent visits are available for an additional cost.

## Rental reduces capital requirements

Bergkamp's full line of pothole patchers are available for rent, which reduces capital budgeting costs and simplifies budget schedules. Units are available to rent by the week, month, or on a rent-to-own basis. ▶

*For more information, contact Bergkamp Inc. at +1 (785) 825-1375, email [governement-sales@bergkampinc.com](mailto:governement-sales@bergkampinc.com), or visit. <https://www.bergkampinc.com/saferbydesign>. Ron Arredondo is the Marketing Manager for Bergkamp Inc.*

# Remaining Environmentally Conscious:

# Bitumen Removal

By Kristen Strilchuk, Canoe Point Environmental Ltd.

**C**anoe Point Environmental is an Indigenous owned, environmental company that provides many services, such as our commercially designed Bitumen Removal and Processing Plant, our super bonded road base process called HERCBASE, fluid hauling, dry bulk hauling, heavy hauling, over dimensional and oversized hauling, water management equipment, and vac truck services.

Underlying these services are the pillars of our company, which can be broken down into two goals:

1. To increase Indigenous Peoples' inclusion in high-level decision-making positions while also creating more employment opportunities; and
2. To reduce the environmental impacts of both the oil and gas industry and the public works industry.

These goals have shaped our business implicitly and have guided how we have spent five years developing our Bitumen Removal and Processing Plant, which is designed for tailing pond remediation. Our Indigenous focus is primarily on engagement and awareness through being committed to providing employment opportunities and push issues that are important to local Indigenous peoples and communities.

One of the many things of great importance to Indigenous peoples is the environment and their connection to the land itself. As a

company we value this connection and we are passionate and dedicated to working towards creating a healthier environment within Alberta and the rest of Canada. Our environmental focus is very important to us, and it is something we are constantly working on. We are continuously developing new ideas and methods to “greenify” our more traditional services while also continuing to develop and tweak our new and innovate environmental solutions.

Our cutting-edge project regarding the Bitumen Removal and Processing Plant is largely a response to the environmental issues surrounding Tailings Ponds containing bitumen in Northern Alberta. Scientists and the media have uncovered and exposed several environmental concerns over the past few decades – namely, the killing of thousands of migrant birds and many native animals, and the leaching of dangerous chemicals and sediments into nearby water sources and into neighbouring communities' water supplies. Additionally, from being in the industry and keeping our ears to the ground, we began hearing issues that the oil producers themselves are facing with their tailings ponds. These concerns are what led us to develop our new process for the removal of bitumen on or in tailings ponds.

Our commercially designed process for the removal and processing of oxidized floating or sunken bitumen, on or in tailings ponds, was devised to tackle the



*A range of samples through the bitumen removal process.*

environmental issues mentioned above as well as the producer's issues. Our process has four major steps:

1. Remove the bitumen from the tailings ponds, reducing and hopefully eliminating most of the environmental issues associated with bitumen on tailings ponds.
2. Separate and treat the wastewater to the point of it being potable, if desired. Once the water has gone through our process and reaches its desired state, it can then be returned to the tailings ponds for future use. This allows for the reuse of the once deemed “wastewater,” which will drastically decrease the volume of new water being introduced into producer's systems.
3. Our process is able to then separate the solids that are common in wastewater from the oxidized bitumen. The newly separated solids can be used on site to build up dykes and roadways or it can be hauled offsite to a disposal company.
4. What we are left with once the water and solids are separated and cleaned, is

Athabaskan crude oil, that can then be marketed and sold just the same as the oil produced from large Albertan oil producers.

The ability to salvage and market the recovered bitumen plays a large role in this project, as it makes it financially feasible in addition to being environmentally beneficial. Essentially, there is little to no downside to this project. Moreover, we have technology to take this environmentally beneficial process a step further. We developed a process that separates the hydrogen and oxygen from our treated wastewater, which then allows us to use the hydrogen we produced to run our processing plant. This results in a huge decrease in our carbon footprint, to the point of being carbon neutral.

Furthermore, we have developed another environmentally beneficial process that effectively removes the calcium that is present in water. This is advantageous as calcium buildup in pumps and boilers are also a major issue that we face in our industries. The presence

of calcium in these types of machines requires regularly scheduled cleaning and maintenance, which requires burning carbon in order to continue running efficiently. By introducing our calcium free water into these types of equipment, we are able to eliminate the build-up of calcium that commonly occurs in these machines and reduce the amount of high carbon burning maintenance required to keep the calcium buildup at bay.

Additionally, the more calcium the higher risk of a breakdown, resulting in plants having to be shut down and the loss of profits. Like our bitumen removal and processing project, we have also developed this process to be carbon neutral, meaning a huge decrease in the pollution created for stripping the water of calcium.

Overall, we are extremely proud of the research and development our team has done and we are eager to begin this project. I am happy that my educational background, as well as my desire to be a part of creating change

for Indigenous youth, has been utilized so directly and in a way that I believe can make a large impact towards the betterment of our environment, and the involvement of Canada's Indigenous Peoples in these industries.

This project was supposed to be going into a "pilot project" status in summer 2020 with the backing of an Albertan oil company but due to the COVID-19 pandemic, we were unable to move forward. We are hopeful that an environmentally conscious and Indigenous supporting oil and gas company will be on board to begin cleaning their tailings ponds and creating long lasting positive effects on the environment and the peoples of Alberta. ▀

*Kristen Strilchuk attended the University of Alberta to obtain a Political Science and Sociology degree before going into law at Thompson Rivers University to become a lawyer and advocate for Indigenous youth. She is now a chief operating officer at Canoe Point Environmental Ltd.*

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