

# transportation

Quarterly Newsletter of the CANADIAN INSTITUTE OF TRANSPORTATION ENGINEERS  
INSTITUT CANADIEN DES INGÉNIEURS EN TRANSPORTS  
(a Canadian Non-Profit Corporation)

# TALK

## The Climate Emergency

### Adaptation, Disasters & Resilience

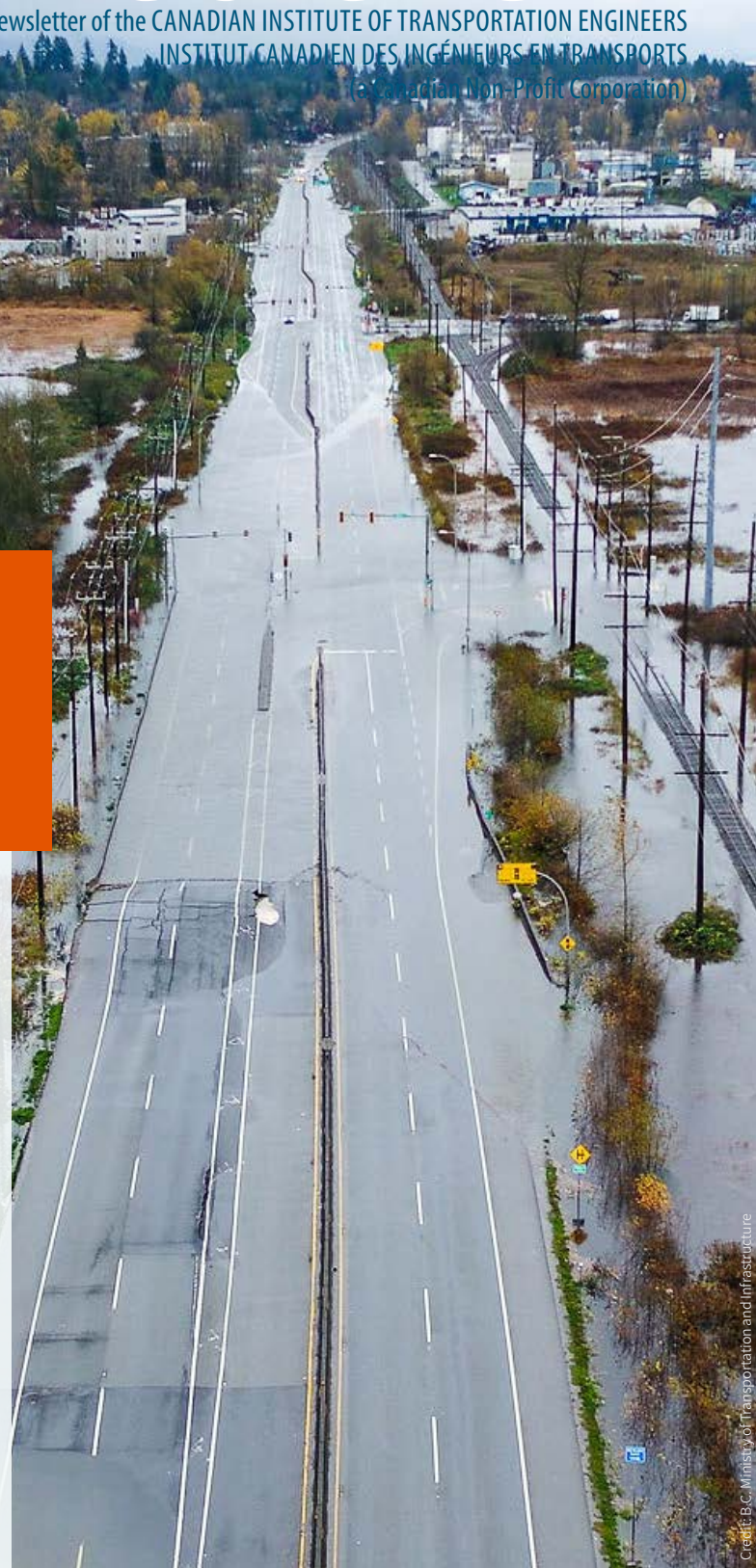
a climate resilience primer & toolkit for transportation

### Flooding in Southwestern BC

the unprecedented impacts, recovery, and rebuild

### Prioritizing active modes in engineering standards

complete streets & raised local intersections in Nanaimo





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CALGARY  
2022



## XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS

FEBRUARY 7 – 11

Time is running out to register for this world-class virtual event!

Join experts and practitioners from across the globe to discuss the management of winter roads and our conference theme, **Adapting to a Changing World**.

Don't miss out, register now. ▶



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**Ryan Vanderputten, P.Eng., FITE**

President, CITE  
[president@cite7.org](mailto:president@cite7.org)

Let me start off by saying that I am extremely excited to be your CITE President for the next two years. It has been an honour serving on the CITE Executive Committee for the past four and a half years and getting to know many of you through the various section and district events that CITE has held. I want to say thank you to my fellow executive members joining on this journey (Edward, Julia, and Pedram) and include a big welcome to Irini Akhnoukh who joins us as Secretary-Treasurer for this term. Furthermore, we bid farewell to Jen Malzer who, after more than 10 years of serving on the CITE Executive, will finally get a chance to take a breath and find other opportunities to serve!

Since winter has settled in for a few months and with travel restrictions still in place, I have taken some time to reflect on the accomplishments of the past few years and consider where we are going as an organization. As you may recall, the CITE Board approved the [2020-2024 Strategic Plan](#) back in early 2020, creating a set of priority focus areas and strategies to guide our growth as an organization. While the pandemic slowed our progress slightly on some of our actions in delivering this plan, the goals we have as an organization are still relevant as we move forward:

**Membership Growth** - We want to continue to grow as a diverse and inclusive organization, representative of a true community of transportation professionals. Regardless of educational background, experience, ethnicity, or gender, I want CITE to be a place where we can come together to connect and grow together. Even with the pandemic, we have seen new student chapters develop, highlighting the desire for growth and connection across our membership base. As an example of our diverse membership base, ITE is undertaking a review of how to engage with the planning community with an engagement and membership drive to attract more planners to the organization in 2023.

**Membership value and retention** - We recognize that each member's experience is different, but strong connections are usually formed at the section or student chapter level. While the pandemic has shifted these interactions primarily to a virtual format, it has given us the opportunity to meet the needs of many professionals who didn't have the opportunity to travel to a local section event. Many of our students have also lost some of their connections, so I look forward to reconnecting our students with our local sections to foster their experience. As a member of the ONE ITE Task Force last year, we identified many opportunities to support our local sections, and I am excited to put some of those recommendations into action this year.

**Value of our products and services** - The 2021 CITE Virtual Conference was a huge success, delivering technical presentations from a variety of speakers to a broad audience across the country while still engaging with our members in real-time. I am optimistic that we will be able to gather in person in Vancouver this May to, once again, provide a solid technical program and celebrate the successes of our members. I also want to continue to leverage our relationships with partner organizations to expand the value of the services we provide and find opportunities to explore new products and services for our members.

**Organizational Strength** - While good governance often goes unnoticed by the membership, I want to assure you that CITE is in good hands. Your [Board of Directors](#), made up of elected representatives from each section as well as the Executive Committee, meets quarterly to review our financial situation, approve policy changes, and discuss other strategic issues facing the organization. This spring, we will embark on a Communications Strategy to truly understand how we can broaden our reach within our industry, engage with each other in meaningful ways, and support our goals as an organization. Stay tuned for opportunities to have your say!

As you may know, one of the exciting opportunities for the President is to connect directly with each one of our Sections over the course of the two-year term. I am excited to say that I have already been able to connect with two of our sections to participate in their webinars and attend their AGMs. My journey started with the Vancouver Island and Southern Alberta Sections in January, including the opportunity to swear in the new section executive in Southern Alberta. I will continue my virtual journey throughout the year, and I look forward to meeting with as many of you as possible! As travel and health restrictions are lifted, I hope to see you in person again as well, either at your local section event or at the [CITE/QUAD Joint 2022 Annual Conference](#) in Vancouver, British Columbia. Until then, stay healthy and keep safe!



**Ryan Vanderputten, P.Eng., FITE**  
President, CITE



**Edward Soldo, P.Eng., FITE**  
Canadian District Director, ITE

[director@cite7.org](mailto:director@cite7.org)

It is the start of a new year and with that change comes new opportunities as I begin my new role as the Canadian District Director on ITE's International Board of Direction (IBOD). For those of you who may be less familiar with this position, there are twelve District Directors who—together with ITE's President, Vice President and Past President—make up the IBOD. IBOD gives direction to all of the Councils and Committees on technical and policy direction.

I want to thank Jen Malzer, our immediate past District Director, for all the work she has done in the role over the past three years. I have big shoes to fill as Jen's passion for our organization and industry is never-ending. It was an honour to serve with Jen on the CITE Executive over the last eight years.

In early January, our new ITE President Beverly Thompson Kuhn, Ph.D., P.E., PMP (F), chaired us through our first IBOD meeting for the year. While I attended both the November and January meetings virtually given the pandemic travel restrictions, I was able to engage and participate with the other directors and the meetings provided me with great insights into the direction of the organization. It also produced my favourite "big head" picture (see facing page) at the swearing-in ceremony for new IBOD members.

"Investing in Our Future" is our ITE theme for 2022. Diversification of the membership at both the student and professional level as well as collaborating and strengthening our relationships with other professional engineering and transportation planning organizations are just a few of the focus areas that will increase our organization's sustainability and enhance its value to our members.

There are many great initiatives and technical products that are available to our members. Starting this year, all stand-alone webinars will be free for ITE members. I would encourage everyone to check out the upcoming webinars in ITE's [Learning Hub](#) calendar as there is a wide range of topics that can help our members to enhance their knowledge base and skill set. A number of new technical briefs, recommended practices, and informational reports such as the *Micromobility Facility Design Guide* are available under the technical resources area of the ITE website. See some of the recent publications on the following page.

I would like to congratulate Jill Juhlke, Federico Puscar, and Farhad Shahla for their selection to the *LeadershipITE* Class of 2022. As a member of the Class of 2018, I know you will enjoy participating in the program and I look forward to interacting with you.



Lastly, after a number of years of online engagements, I look forward to meeting and interacting with many of you at our upcoming CITE Conference in Vancouver and ITE Annual Meeting in New Orleans. Keep well, stay safe and if you have any questions regarding ITE, please contact me at [esoldo@cite7.org](mailto:esoldo@cite7.org).

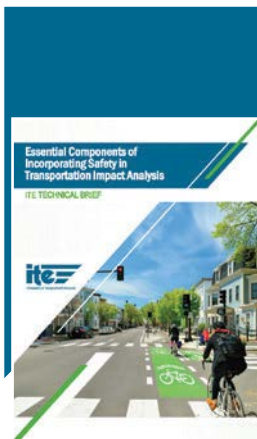
*Edward Soldo*

**Edward Soldo, P.Eng., FITE**  
Canadian District Director



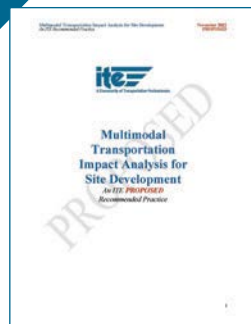
Swearing in ceremony in Washington for this year's new IBOB members. Left to Right: Jeff Young, Beverly Kuhn, Neelam Dorman, Rosana Correa, Jerry Baxter, and Edward Soldo.

## TECHNICAL RESOURCES



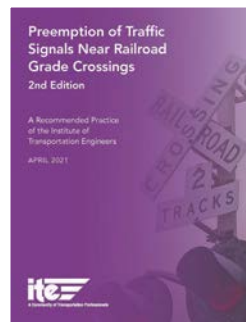
**ITE Technical Brief: Essential Components of Incorporating Safety in Transportation Impact Analysis**

[https://bit.ly/essential\\_TIA](https://bit.ly/essential_TIA)



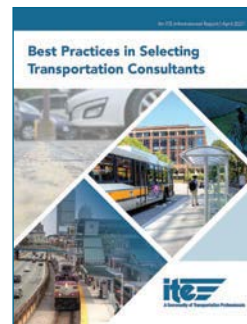
**Transportation Impact Analysis for Site Development - A Proposed Recommended Practice**

[https://bit.ly/ITE\\_MTIA](https://bit.ly/ITE_MTIA)



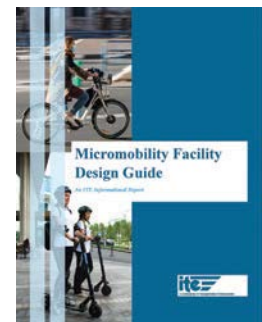
**The Preemption of Traffic Signals Near RR Grade Crossings, 2nd Edition, an ITE Recommended Practice**

[https://bit.ly/ITE\\_RRXings](https://bit.ly/ITE_RRXings)



**Best Practices in Selecting Transportation Consultants**

<https://bit.ly/ConsultantBestPractices>



**Micromobility Facility Design Guide - an ITE Informational Report**

[https://bit.ly/ITE\\_microdesignguide](https://bit.ly/ITE_microdesignguide)



**Obtain your copy by visiting the links above!**

# VANCOUVER 2022 ite

May 29 - Jun 1

conference.cite7.org  
#CITE2022QUAD



## SAVE THE DATE!

# May 29–June 1, 2022

Hello everyone!

Planning for the 2020 (now 2022) Vancouver CITE Conference has been anything but normal these past 4 years, that's for sure! We had a great response to our Call for Abstracts and 90 presentations were selected by our review committee consisting of members from all four QUAD ITE Sections (Oregon, Washington, Vancouver Island, and Greater Vancouver).

We want to let you know that CITE and your Annual Conference Local Arrangements Committee are continuing to closely monitor the latest health news on the pandemic, any restrictions being imposed by the BC Provincial Government on public gatherings and, of course, travel advisories. At this time, we are staying as flexible as we can and we will make a final decision by mid-February on whether the 2022 Conference will proceed as an “in-person” event in Vancouver, BC or switch to a “virtual” event, similar to the 2021 CITE Conference. We encourage you to continue to **save the dates** for the CITE/QUAD Joint 2022 Annual Conference, which will take place **May 29–June 1, 2022** either in-person or virtually. Thank you in advance for your patience!

**Jan Voss**, P.Eng., PTOE

*Chair, CITE/QUAD 2022 Joint Annual Conference Local Arrangements Committee*





Canada's Community of  
Transportation Professionals

**CITE 2022**  
Excellence in  
Transportation  
Awards & Scholarships

**CALL FOR NOMINATIONS**

Visit [cite7.org/awards](https://cite7.org/awards) for full details.

Submissions **due March 1**

(unless otherwise specified)

# Member & Technical Achievement Awards

Each year, CITE sponsors an awards program to honour outstanding achievement in the transportation profession, technical excellence, and service to CITE. **Nominate by March 1, 2022 at [cite7.org/awards](https://cite7.org/awards).**

## Recognition of Service to CITE



### H. Robert Burton Distinguished Service Award

CITE's most prestigious award honours an individual with a notable career in the field and a record of service with CITE

### Outstanding Voluntary Contribution Award



Celebrates a member who has made exceptional voluntary contributions to CITE or its programs and projects

## Awards for Emerging Professionals



### CITE Rising Star Award

Identifying members under the age of 35 who have made an impact on the profession, demonstrated the ability to lead the next generation & implemented innovative techniques to the transportation practice

### David Tam Memorial Award



Proudly presented by Bunt & Associates, this \$3,000 award recognizes young professionals under 30 who have contributed to transportation solutions to improve network operations

## Jenn and Jan Voss Travel Bursary for Women in Transportation Engineering

\$1,000 bursaries to encourage women early in their careers to participate at CITE conferences

**NOTE: due February 1, 2022**

## Technical Achievement



### Stan Teply Outstanding Technical Project Award

This award showcases high quality projects in Canada that have shown significant and proven technical achievement in transportation planning/engineering

### ITE International Transportation Achievement Awards



CITE will select Canadian nominees for these ITE Awards recognizing excellence in the advancement of transportation to meet human needs

# Section & Chapter Awards

These awards acknowledge the tremendous work done at the local level of CITE. **Submissions must be made by March 1, 2022 at [cite7.org/awards](https://cite7.org/awards).**

**Outstanding Section/Student Chapter Awards** recognize the overall quality of Section/Student Chapter activities, either technical or non-technical in nature

**Section/Student Chapter Momentum Awards** recognize improvement from years past with respect to Section/Student Chapter activities



Canada's Community of  
Transportation Professionals

# Transportation Student Awards & Scholarships

Apply by  
**MARCH 1, 2022**  
at [cite7.org](http://cite7.org)

Scholarships and awards are offered annually by CITE for students at accredited Canadian universities and colleges. Winners receive free registration, travel support, and recognition at the CITE/QUAD Joint 2022 Annual Conference taking place May 29–June 1 in Vancouver, BC.

## ■ Dr. Michel Van Aerde Memorial Scholarship

**\$3,000**

For full time students in a transportation doctorate-level program at a Canadian university.

## ■ CITE WATT Consulting Group “Transportation in a Sustainable World” Student Award **\$1,000**

Awarded based on the quality of writing and demonstrated appreciation of inter-disciplinary collaboration in a 1,000+ word paper.

Sponsored by:



## ■ John Vardon Memorial Scholarship

**\$3,000**

For full time students in a transportation master's-level program at a Canadian university.

## ■ Student Paper Competition

**\$1,000**

For students in accredited transportation programs, awarded based on the quality of a paper addressing a transportation engineering subject.

Sponsored by:



## ■ CITE Undergraduate Scholarship

**\$3,000**

Scholarship for an undergraduate student in planning, geography, or engineering.

## ■ Canadian Capacity Guide Competition

**\$1000 (Second: \$300, Third: \$200)**

An undergraduate student competition based on the Canadian Capacity Guide for Signalized Intersections (CCG) using PTV Vistro 2020.

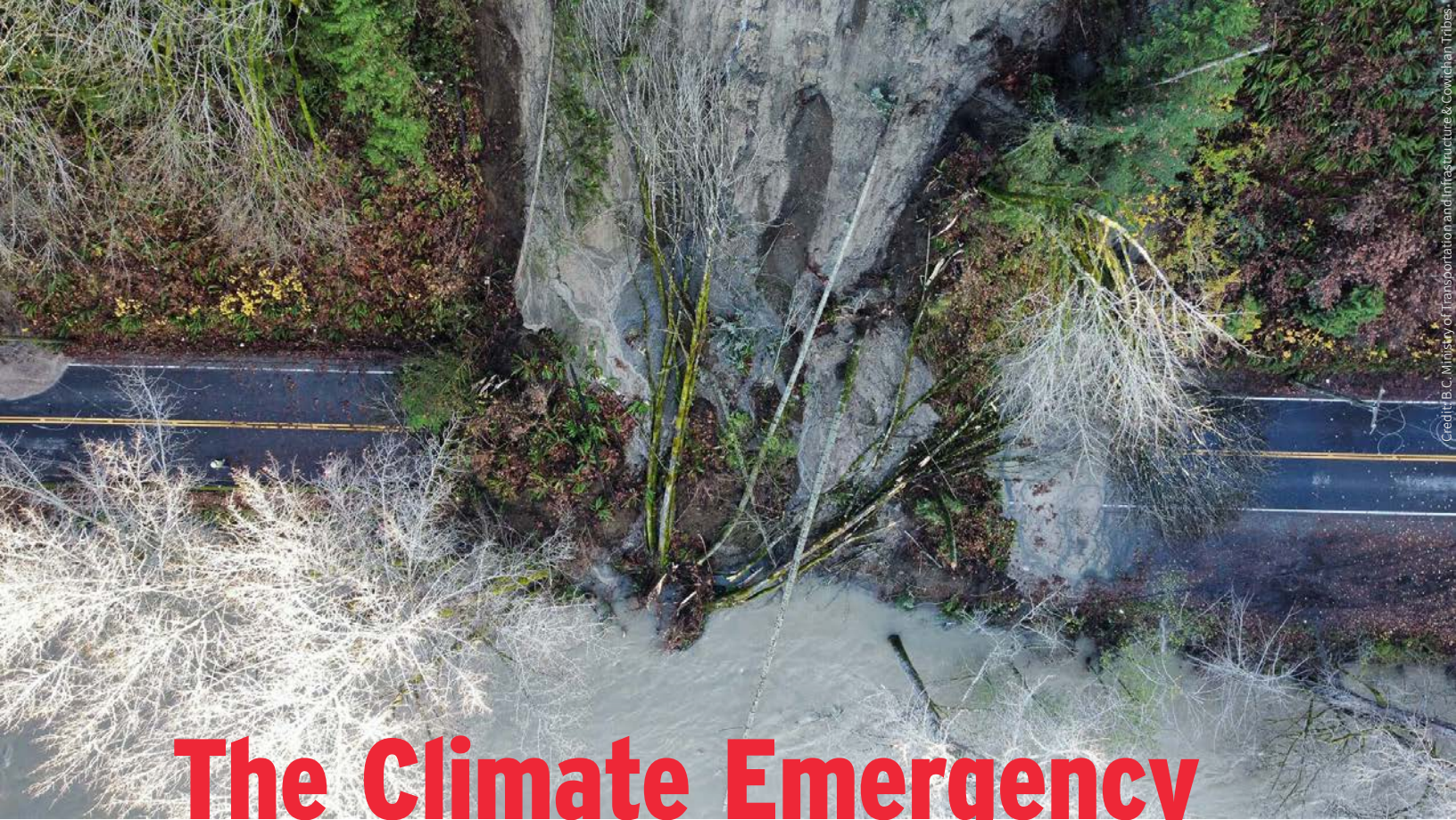
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*Jim Gough*



Apply at [cite7.org/awards](http://cite7.org/awards)





Credit: B.C. Ministry of Transportation and Infrastructure & Cowichan Tribes

# The Climate Emergency

## Adaptation, Disasters & Resilience : a primer

By Clarence Woudsma & Jeff Casello, University of Waterloo

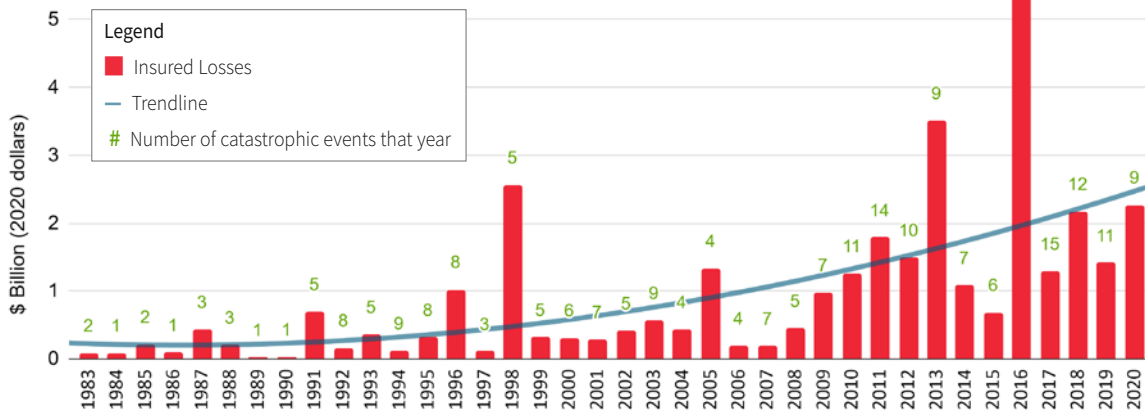
CITE certainly demonstrated prophetic powers in their choice of theme for the upcoming 2022 annual conference – resiliency and planning for an uncertain future. Last year featured many Canadian communities absorbing extreme weather events that no doubt impacted many transportation professionals and tested our resiliency in the face of disasters. Yet, we likely all did a double-take of empathetic wonder in witness to the impact and disruption wrought by the rainfall events in British Columbia late in 2021. It wasn't just the images of washed away bridges, roadbeds, and rail lines but the geographic scope of impact that caught our attention. And while the damages from this latest “natural disaster” are tallied, questions about the attribution of this event to climate change, the state of infrastructure, and our response to the event and its impact emerge. Let's explore these themes further.

### Climate Emergency or “just the weather”?

We know that transportation systems are climate-sensitive, whether it be through acute infrastructure damage or more chronic deterioration, operational disruptions, or contributions to unsafe conditions regardless of modes. Acute stressors are short duration or weather-related while we often associate chronic stressors with the climate. For both types of stresses on transportation systems, we're interested in the same variables - temperature, precipitation, wind, and storm events for example but the *weather* is what we get at a specific time which is contrasted with *climate* which is what we expect for those variables based on a 30 year average (e.g., 1986-2005).

Figure 1. Insured losses (\$ billion, 2020) from catastrophic events in Canada, 1983–2020

Source: Data from Insurance Bureau of Canada, *Facts of the Property and Casualty Insurance Industry in Canada 2021*



Climate change prediction involves the use of Global Circulation Models which incorporate emission scenarios that allow us to explore “what if” or worst case/best case implications of our socio-economic and policy pathways. Why the recent adoption of the “climate emergency” language? The best-case scenario assumes hitting peak CO2 immediately and zero emissions by the end of the century; thus far, our abilities to hit emission reduction targets in Canada have not been great. Even more sobering for transportation, some suggest that for long-lived physical infrastructure like roads, we need to plan, build, operate and maintain to withstand future impacts for climate change associated with the worst-case scenario—the high emission pathway. The magnitude differences in predicted climate change between best and worst-case widen continually and dramatically beyond 2040. This is the climate emergency: we are already witnessing dramatic impacts and, if we don’t act now, the worst case scenario will be our future.

The latest Canadian predictive effort, *Canada’s Changing Climate Report*, offers the following high confidence statements about our future climate:

- Past and future climate warming in Canada is, on average, double the rate of global warming

- The effects of this warming include more extreme heat, less extreme cold, thawing permafrost, and rising sea levels
- Annual and winter precipitation projected to increase over the 21st century (less snow, more rain)
- More frequent and more intense extreme heat
- Daily extreme precipitation is projected to increase

The report offers more detailed thematic and regional explorations of future climate predictions. Beyond this benchmark report, we now have access to an amazing set of tools to bring the power of climate predictions to our local communities via resource portals like [climatedata.ca](http://climatedata.ca). For transportation professionals engaged in climate adaptation and resiliency, you can obtain customized data for your jurisdiction and explore a variety of practical climate data dimensions such as climate change adjusting Intensity Duration Frequency (IDF) curves. See the toolkit on [page 15](#) for more.

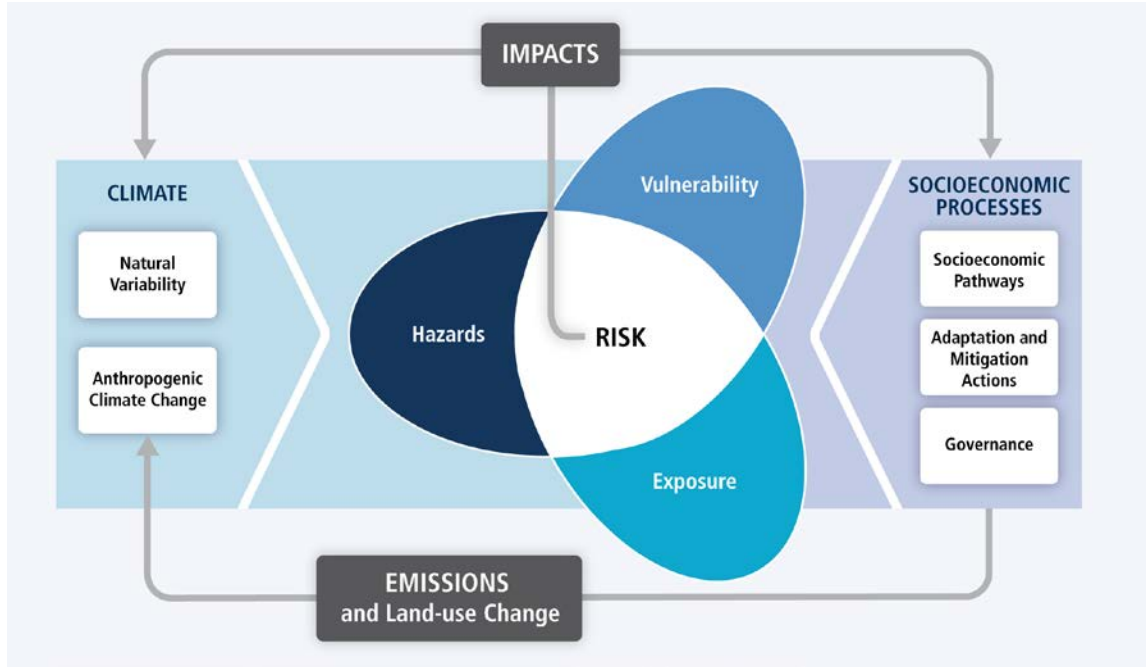
Climate change scientists agree that extreme weather events (rain, hurricanes, tornadoes, and blizzards) are becoming more frequent and more intense around the globe. Consider Figure 1 (above) which presents Insurance Bureau of Canada tabulations on the number of catastrophic events, the dollar value of insured losses, and the increasing trends in both over the last 20 years.

*Continued on page 11...*



Figure 2. Framework to understand the factors influencing risk of disasters

Source: IPCC 5th Assessment Report (AR5) *Climate Change 2014: Impacts, Adaptation, and Vulnerability*



Interestingly, the totals in Figure 1 don't include the costs related to public infrastructure. Our various levels of government invest significantly in the supply of key transportation infrastructure across all modes and the costs to the public for each of these events would be on par if not greater. The economic costs of the recent BC flooding event are estimated to surpass billions of dollars while the insured losses are already the largest in BC history at \$450 million.

### Climate Change Adaptation and Disaster Risk Management

There is a distinction between an event that occurs in nature (e.g., a major rainfall associated with an atmospheric river) and the human dimension which can turn that event into a hazard if occurring in populated areas or, depending on the severity of property and human impacts, a natural disaster. To better understand climate change adaptation and emergency management, we need to focus on risk. Simply: how bad could the outcome be and how likely is it to occur?

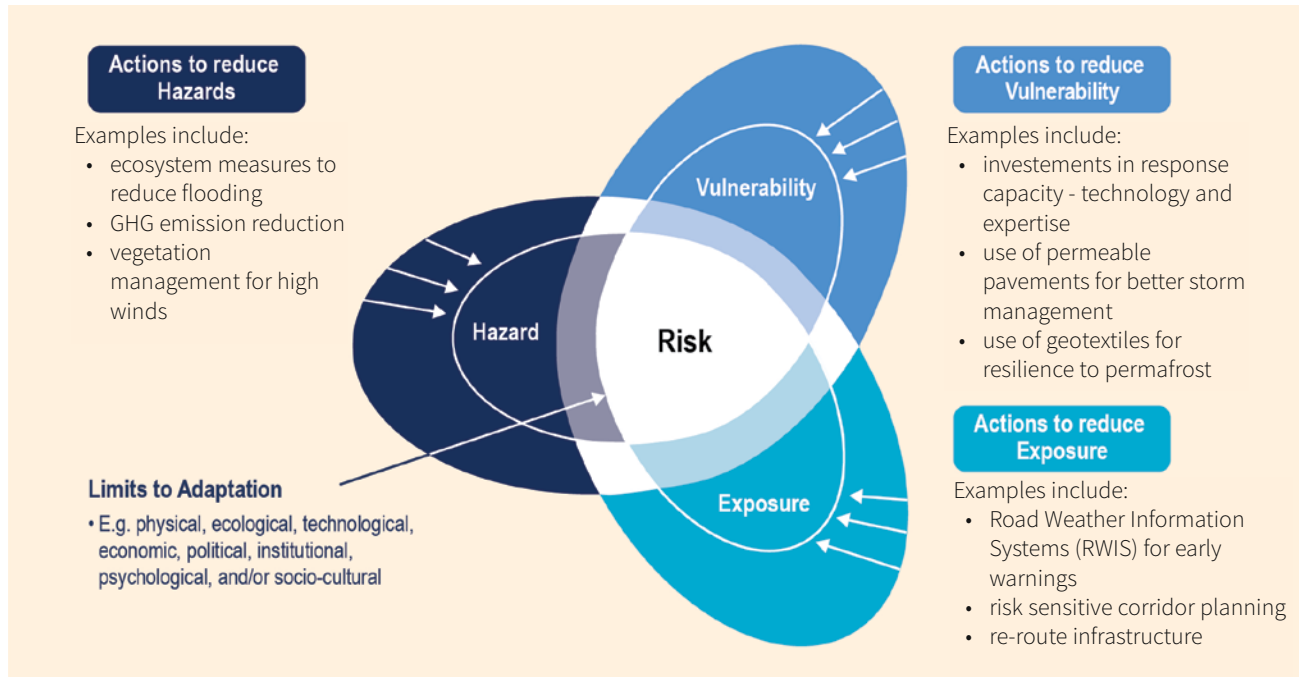
Figure 2 demonstrates how exposure and vulnerability influence the risk of disaster in the face of weather and climate events. On the left, the climate system drives the risk environment while, on the right, our socio-economic systems influence the exposure (which populations, species, ecosystems, infrastructure, etc.) and vulnerability (susceptibility to harm and a lack of capacity to cope and adapt) of human society and natural ecosystems.

There is a web of interconnected complexity on the right, characterized by the choices we make as a society across all sectors—where and how we develop, our lifestyles, and government actions. It also involves the choices we make to enhance our adaptive capacity and thereby increase our resilience. Effective disaster risk management and adaptation to climate change can reduce exposure and vulnerability to weather and climate events and thus reduce disaster risk (and risks from climate change) as well as increase resilience to the risks that cannot be eliminated. See Figure 3 for examples of how this can apply to transportation.



Figure 3. Adaptation actions can be taken to reduce risk and build resilience

Adapted from IPCC (2019) *Special Report on the Ocean and Cryosphere in a Changing Climate*



## Adaptation and Resilience in Practice

At a basic level, **adaptation** is a process of adjusting our systems to minimize the harm (reduce risks) or capitalize on the benefits of climate change. **Resilience** is a condition or a capacity in a system to withstand a hazard or disturbance with a return to previous states—its ability to “bounce back.” We may view adaptation as a longer term and ongoing process whereby resilience is shorter term. A resilience perspective on the recent BC experience would be “how quickly can the highways open and return to normal?” while an adaptation may be “should we adjust the route to avoid future risks with increased storm events predicted?” Whereas adaptation activities have been driven purely in relation to climate change, resilience is often associated with all manner of hazards and threats.

The landmark *Climate Risks & Adaptation Practices for the Canadian Transportation Sector 2016* report provides a comprehensive review of adaptation

activities in transportation, including practical case studies from across Canada and across the modal spectrum. Their typology of adaptation approaches includes:

- Integrating climate considerations into organizational planning, policies and designs (“mainstreaming”)
- Undertaking risk and vulnerability assessments
- Implementing structural and physical (engineering) adaptations
- Integrating smart technologies
- Changing operations and maintenance practices

We encourage you to review this report as it outlines many of the climate change hazards and impacts specific to each region of Canada and presents many potential adaptations for transportation infrastructure and practice.

The City of Windsor has received accolades for their recently adopted *Degrees of Change: Climate Change Adaptation Plan (2020)*, another great example of adaptation and resilience building in action. Working

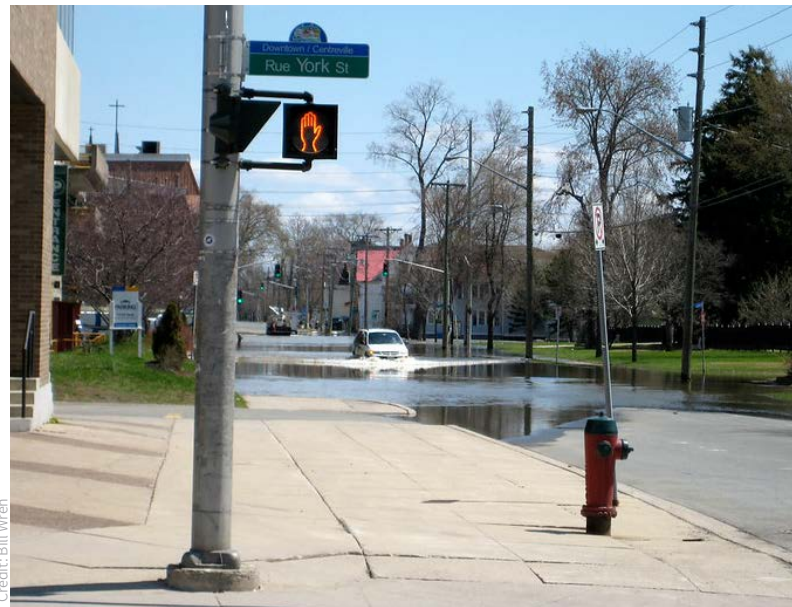
with ICLEI Canada’s Building Adaptive and Resilient Communities (BARC) framework, the City has undertaken the needed comprehensive approach to assessing the interconnected risks facing their community and establishing objectives for adaptations, recommended actions, and the ongoing monitoring and evaluation process to ensure success (a prime example of mainstreaming). Transportation is central in this adaptation plan, as is the effort to integrate this plan with existing transportation planning efforts and priorities (i.e. master plans or thematic plans like “active transportation”). Recommended actions related to reducing vulnerability and exposure in their transportation systems include assessing frequently flooded roads and considering improvements, developing extreme weather contingency plans for transit systems, and reviewing engineering design standards and maintenance practices (for surface pavements, stormwater infrastructure, etc.) to reflect the newest climate projections.

The partnerships in the City of Windsor example represent a common thread in adaptation practices:

you never have to start from scratch or go it alone. There are many examples of existing tools, programs (free or fee based) or best practice guides to turn to. See the ***Climate Change and Resilience toolkit*** on [page 15](#) for a list of some of the options available. One of the first such tools to support climate adaptation and engineering began development in 2005 and is available today at no cost for public infrastructure projects in Canada: the PIEVC (Public Infrastructure Engineering Vulnerability Committee) protocol. Widely utilized across many infrastructure domains, it provides a process to assess the risks and vulnerabilities of individual infrastructures or infrastructure systems to current and future extreme weather events and climatic changes. Many past PIEVC assessments are available to view at [pievc.ca](#) such as the [Saskatchewan Highway 6 and 39 Corridor Improvements - Climate Change Risk and Vulnerability Assessment](#). This example is a classic application of the PIEVC Protocol examining climate risk (employing worst case climate scenario predictions) along a lengthy Provincial corridor and considering both existing and planned infrastructure assets ranging from bridges and rail crossings to drainage and a road



Metrolinx is **mainstreaming climate risk assessment** by using climate data to understand impacts on its core services resulting from shifts in average conditions, not just risks of extreme events. Learn more in this [case study at \*climatedata.ca\*](#).



After several significant floods affecting the the city’s arterial transportation network, Fredericton, NB is **building resilience** with a [Climate Change Adaptation Plan](#) that includes actions such as “Expand the Active Transportation Network to mitigate transportation disruptions.”

prism (representing the road base, shoulders, ditches and natural hillsides and slopes). Among the recommendations are i) include the risk findings in future infrastructure renewal projects and plans and ii) anticipate and plan collaborations for high-risk weather events.

Despite several examples of climate change adaptation applied in Canadian transportation, there are valid criticisms that we haven't come close to doing enough on this front. We are recognizing the importance but slow to enact concrete adaptations, moving from risk assessment to action. Resilience is emerging as perhaps a more pertinent priority. The rise of resiliency is reflected in recent requirements from the federal government of large infrastructure projects. In 2018, Infrastructure Canada developed the *Climate Lens* guidance document to help decision-makers understand the impact and risks associated with the design and operation of their projects. Applicants to federal infrastructure programs have to apply a Climate Change Resilience Assessment to their project to demonstrate how they are addressing climate change impacts and strengthening the resiliency of our transport systems.

Transportation has always been vulnerable to weather and climate and now, more than ever, those conditions are changing quickly and dramatically. The catastrophic flooding in BC is just the latest example of what will happen more often in the future. Critically, we need to recognize that all of those communities in BC impacted in 2021 now have increased vulnerability and reduced resiliency for the next season of storms. Implementing actions around climate change adaptation hold the keys to reducing that vulnerability and needs to be a higher priority in the years ahead.



**Clarence Woudsma, Ph.D., MCIP, RPP** is a faculty member in the University of Waterloo's School of Planning and a Registered Professional Planner. He is a Past President of the Canadian Transportation Research Forum and has published on broad range of subjects including climate change adaptation and transportation, urban freight planning, and last mile logistics.



**Jeffrey M. Casello's, PhD**, is a Professor in the School of Planning and Department of Civil and Environmental Engineering at the University of Waterloo. His interests lie in urban transportation systems and their impacts on healthy and economically viable urban areas. He is the lead author (with Vukan R. Vuchic) of *Transit Planning* for ITE's 3rd edition of the Transportation Planning Handbook. Professionally, Professor Casello has worked with many transit agencies and cities in the US, Canada and abroad.

### Celebrating 75 years of Engineering Excellence




**Associated Engineering** provides customized, strategic transportation planning and traffic engineering services. Complementing our technical expertise, our specialist team brings strong project management, consultation, and facilitation skills. Our approach is to work with the community and stakeholders to develop sustainable and resilient transportation solutions. Our services include:

- Transportation Master Plans
- Safety Reviews & Audits
- Modelling & Model Interpretation
- Intersection & Network Analysis
- Business Case Development
- Traffic Operations Analysis
- Policy Studies & Development
- Traffic Impact Assessments
- Functional Corridor Planning
- Traffic Accommodation Plans
- Intelligent Transportation Systems
- Traffic Signal Design











# Climate Change & Resilience

a climate resilience toolkit for the transportation sector

## 1. Understand Canada's changing climate + changes projected for the future

**Canada's Changing Climate Report** → [changingclimate.ca/CCCR2019](https://changingclimate.ca/CCCR2019) (interactive)

*Bush, E. and Lemmen, D.S., editors (2019). Environment and Climate Change Canada.*

How and why Canada's climate has changed and what changes are projected for the future



## 2. Explore the diverse impacts of climate change across Canada and specifically for transportation

**Canada in a Changing Climate** → [changingclimate.ca](https://changingclimate.ca) (interactive)

**National Issues Report & Regional Perspectives Report**

*Warren, F. and Lulham, N., editors (2021). Natural Resources Canada.*

A national perspective on how climate change is impacting our communities, environment and economy, and how we are adapting with an interactive map of case studies



**Climate risks & adaptation practices for the Canadian transportation sector** → [nrcan.gc.ca](https://nrcan.gc.ca)

*Palko, K.G., & Lemmen, D.S. (2017). Transport Canada and Natural Resources Canada.*

Climate risks to the Canadian transportation sector and existing or potential adaptation practices identified in six regional chapters and one urban chapter

## 3. Explore adaptation/resiliency options for infrastructure

**Advancing the Climate Resilience of Canadian Infrastructure: A review of the literature to inform the way forward** → [iisd.org](https://iisd.org)

*Swanson, D., Murphy, D., Temmer, J., & Scaletta, T. (2021). International Institute for Sustainable Development (IISD).*

Written for infrastructure owners, designers, builders, operators, investors, policy-makers, and stakeholders, it provides a snapshot of the range of action taking place in Canada and internationally to increase the climate resilience of infrastructure.



Get up to speed on climate change impacts on transportation, adaptation options, and tools available for transportation professionals to plan, design, build, and operate with resilience in mind.

#### 4. Establish the future **climate predictions** for your location of interest and learn about how to better **apply climate data**



**Climate Data for a Resilient Canada** → [climatedata.ca](https://climatedata.ca) (*interactive*)

ClimateData.ca provides high-resolution climate data to help decision makers build a more resilient Canada. The **transportation sector module** provides case studies, sector resources, and information about how specific variables will impact climate-related decisions for transportation.

#### 5. Review **frameworks and tools** for assessing risk and resiliency or for applying a broader adaptation approach

**Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol** → [pievc.ca](https://pievc.ca)

Developed by Engineers Canada & Natural Resources Canada to assist engineers in factoring climate change impacts into plans for design, operation, and maintenance of public infrastructure

**Envision: The Blueprint for Sustainable Infrastructure** → [sustainableinfrastructure.org](https://sustainableinfrastructure.org)

Envision provides a consistent, consensus-based framework for assessing sustainability, resiliency, and equity in civil infrastructure.

**The SuRe® Standard for Sustainable and Resilient Infrastructure** → [sure-standard.org](https://sure-standard.org)

A global voluntary standard which integrates key criteria of sustainability and resilience into infrastructure development and upgrade, covering 61 criteria across governance, social and environmental factors.

**Building Adaptive and Resilient Communities (BARC) Program** → [icleicanada.org/barc-program](https://icleicanada.org/barc-program)

A proven and widely-recognized adaptation framework that is tailored to the needs of each community. Tools and resources help support the process, as does collaboration with a network of peers and experts.





# A November to Remember

## Flooding in Southwestern British Columbia

By **Mike Pearson**, B.C. Ministry of Transportation and Infrastructure

### What Happened?

It's not uncommon for southwestern British Columbia (B.C.) to get significant rain and snow in November. In 2021, however, B.C. experienced an unprecedented event that saw a series of atmospheric rivers hit the southwestern portion of the province over a 2-week period from November 14 to December 1. [Atmospheric rivers](#) are streams of water vapour in the sky carrying moisture from the tropics and releasing it as rain or snow at landfall.

This series of events in late 2021 brought more than 540 mm of rain to the Fraser Valley and parts of Vancouver Island, creating flooding conditions that overwhelmed culverts and dike systems, washed away bridge abutments, damaged retaining wall structures, scoured

out rip rap armouring along riverbanks, and caused mudslides and rockfall events in mountain passes.

This resulted in the closure of all major highways between the coast and the interior of the province (see Figure 1). Highway 5 (also known as the Coquihalla Highway) was significantly damaged and closed due to the loss of multiple structures between Hope and Merritt. Highway 1 between Hope and Cache creek was closed in multiple locations due to the loss of structures along the highway including railway overpasses. The most impacted corridor was Highway 8 between Merritt and Spences Bridge where along the 45-kilometre highway there were 23 washouts and 7 kilometres of the road were simply gone. Highways 3, 7, and 99, also closed due to flooding and mudslides.



Figure 1. Highway closures in southwestern British Columbia after the initial atmospheric river event in November 2021.



## Immediate Response

The B.C. Ministry of Transportation and Infrastructure was quick to jump into action to undertake assessments of all the damage. The Ministry’s engineers and operational staff from across the province quickly mobilized to conduct rapid assessments of structures, understand the extent of the damages and hazards, and identify the number of sites to be addressed.

Resources—including consulting engineers, our maintenance contractors, and industry contractors—were called upon to bolster the Ministry’s internal resources and assist with all of the ongoing assessments. It truly was an “all hands on deck” approach.

The gathering of information from the field was critical to making informed decisions about priorities and the mobilization of resources.

The Ministry used GIS systems as an asset management tool to collect information about the highway infrastructure inventory. The versatility of this system allowed the Ministry to expand the system to collect monitoring reports of road conditions and maintenance issues. The system had been used in past flooding, freshet, and forest fire events in much the same way earlier in the year.

With this event, rapid assessments of major bridges, structures, mudslides, and flooded areas were inputted into our GIS system using a mobile application that allowed field staff to add site coordinates, photos, and conditions in real-time that could be seen and used by others back at the office.

Emergency operations centers (EOCs) were set up internally and the Ministry worked closely with external EOCs at the local, regional, and provincial levels to provide information and assistance where possible. It’s

*Continued on page 19...*

difficult to describe the overwhelming amount of collaboration between internal and external agencies during this event. Daily briefings at all levels were organized with industry, agriculture, local government, First Nations, and Federal Government agencies to share information, resources, and assistance.

## Response & Recovery

From the initial storm event on November 14, it was clear that Highways 1 (Boston Bar to Lytton), 5 (Coquihalla) and 8, had significant damages and would be closed for an extended period of time.

Immediate efforts were focused on re-establishing a corridor between the lower mainland and the interior. Within three days, Highways 3, 7 and 99, were repaired sufficiently to be reopened to single lane alternating traffic. To ensure that these routes didn't become immediately over-saturated, essential travel orders were put in place to restrict use. As well, Highway 99 was restricted to vehicles under 14,500 GVW to limit the number of large commercial vehicles on this more challenging mountainous highway. Over this time, our traffic engineers organized real-time traffic data collection to closely monitor the speed, delay, and volumes on the corridor.

Highway 1 between Abbotsford and Chilliwack remained closed for ten days until the floodwaters receded. This section was reopened on November 25th; however, another atmospheric river was forecasted to arrive two days later. Some difficult decisions had to be made knowing that there was a real possibility that the highway would be flooded again with the incoming storm. It was decided, in coordination with local EOCs, to pre-emptively close the highway to install a Tiger Dam™ barrier system (photo above) across the highway to prevent further flooding of the Sumas Prairie area.

Credit: B.C. Ministry of Transportation and Infrastructure



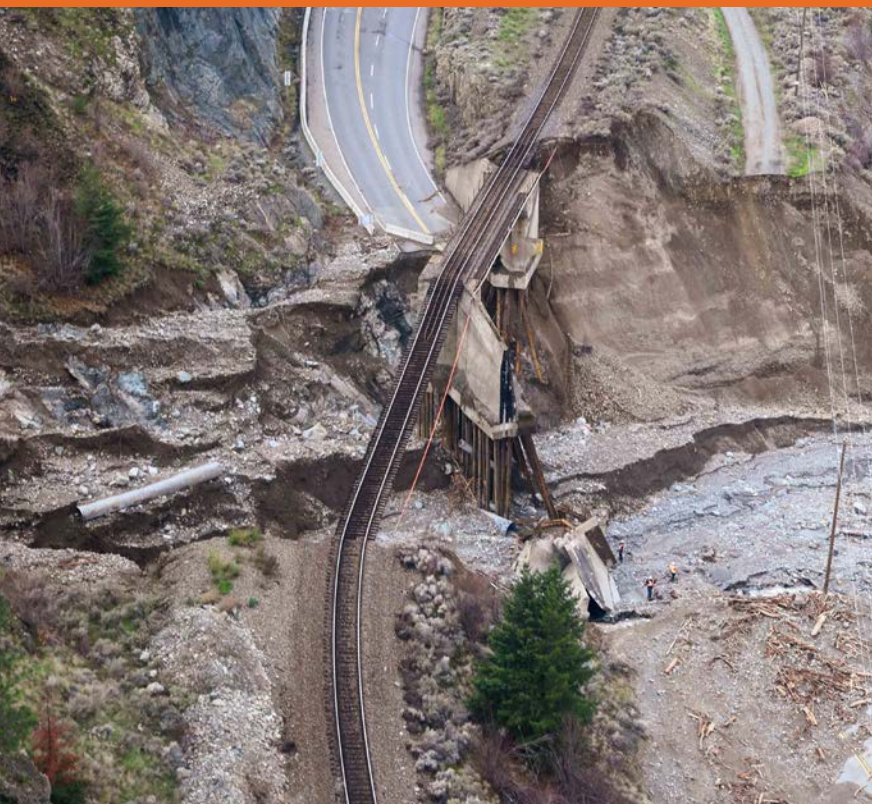
With the combined efforts of provincial crews, Canadian military, Indigenous-owned construction company Shxw'ówhámél Ventures, Abbotsford Police Department, Abbotsford Fire Department and RCMP, **Tiger Dam flood barriers** were set up on Hwy 1 in Abbotsford to hold back Sumas River flood waters.

In addition, Highways 3, 7 and 99, while operational, were susceptible to further mudslides or flooding so they were also pre-emptively closed.

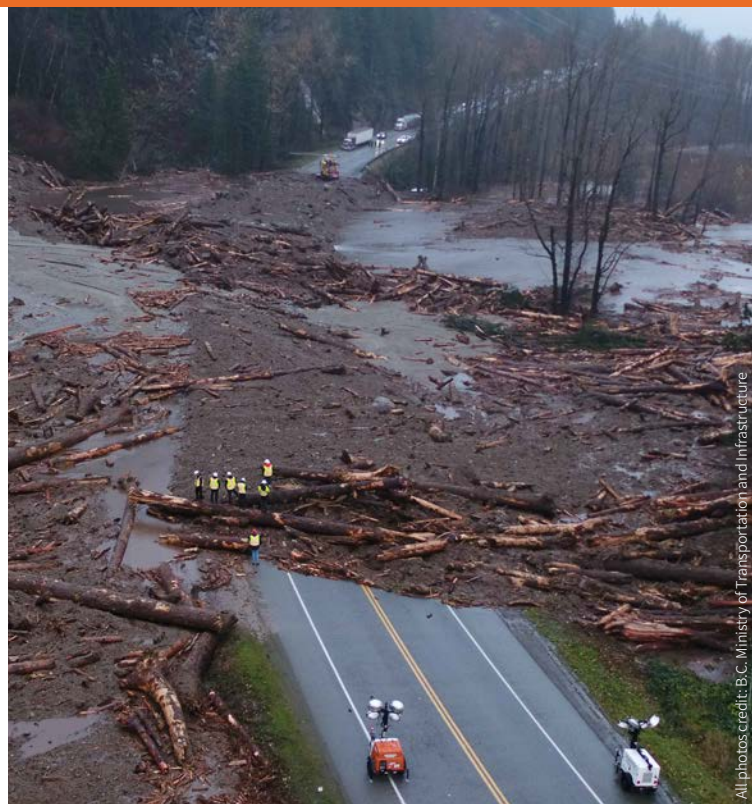
Thankfully, the highways fared well during the final atmospheric river and Highways 1 (Abbotsford to Chilliwack), 3, 7, and 99 were able to be reopened fully by December 1.

Concurrently, project teams consisting of Ministry staff and contractors had been set up to begin work on Highway 1 (Fraser Canyon), Highway 5 (Coquihalla) and Highway 8. Heavy equipment was seconded from other projects in the area and directed to emergency repairs. With crews of more than 300 people working 24/7 on the Coquihalla, utilizing approximately 200 pieces of equipment, the road was reopened on December 20th, just over a month since it initially closed. It was an amazing achievement. Through our partnership with Canadian Pacific Railway, Highway 1 (between Boston Bar and Lytton) is expected to be reopened by February 2022. The most damaged of any roadway, Highway 8, continues to be worked on and significant progress has been made to establish temporary access. With the extent of the damage on this corridor, it is expected to take some time before temporary repairs can be completed.





Bridge washout on Highway 1 at Fraser Canyon (between Hope and Cache Creek)



Crews address a mudslide on Highway 7

All photos credit: B.C. Ministry of Transportation and Infrastructure

## Rebuilding

Transportation infrastructure has traditionally been designed to handle a broad range of impacts over its design life, which is typically 75+ years. However, the consequences of climate change and extreme weather events present significant and growing risks to the long-term reliability of interconnected systems that are already exposed to a range of stressors such as aging and deteriorating infrastructure.

It was in 2010 when the Ministry started working with climate scientists like the Public Infrastructure Engineering Vulnerability Committee (PIEVC), Pacific Climate Impacts Consortium (PCIC) as well as Engineers and Geoscientists B.C. (EGBC) on pilot projects to assess the vulnerability of key corridors like Highway 5 (Coquihalla) and Highway 16. In 2015, the Ministry introduced a policy requiring design criteria for all capital, rehabilitation, and maintenance projects to be adapted for climate change to increase their resiliency.

As we rebuild our critical transportation infrastructure, it will be designed to meet these standards that take into account climate change and extreme weather and improve the resiliency of our infrastructure.

## Looking Ahead

Climate change and its impacts continue to grow as real challenges for our infrastructure, as demonstrated by recent events in B.C. Our Ministry is making it a priority to continue to collaborate with experts in the environmental field to adapt design standards that will improve the reliability and resiliency of our infrastructure for the improved safety of the traveling public in British Columbia.



**Mike Pearson, P. Eng.** is the Acting Chief Engineer of the British Columbia [Ministry of Transportation and Infrastructure](#). He is based out of Nanaimo on Vancouver Island, BC.





# Nanaimo goes Dutch

## Adopting raised local intersections within the City's engineering standards

By **Annalisa Fipke**, City of Nanaimo and **Roy Symons**, ISL Engineering & Land Services

*This project was the Canadian submission and international winner of the **ITE 2021 Transportation Achievement Award (Complete Streets Category)**. Congratulations to the City of Nanaimo, ISL Engineering & Land Services, and project leads Annalisa Fipke and Roy Symons! Submissions for the 2022 CITE Awards are now open at [cite7.org/awards](https://cite7.org/awards).*

### The big picture

Our relationship with transportation, particularly as planners and engineers, has evolved in recent years as we better appreciate the impact that mode choice has on our lives, the built environment, and beyond. While the automobile has undoubtedly brought convenience to many, it has created health, livability, and equity challenges for others, particularly where it has taken priority over accommodation for any other modes.

Enabling more people to make more trips using active modes helps reduce the negative impacts of our transportation choices. For example, reducing

greenhouse gas emissions and improving local air quality, improving individual mental and physical health, and reducing community healthcare costs. From an equity perspective, streets become safer for all modes, including those who continue to drive. When we enable people to make more trips safely by active modes, they become less reliant on the car, reducing their transportation costs and financial stresses. The many benefits of shifting to more sustainable modes should require us to prioritize them in our urban design guidance and engineering standards, but historically that has not been the case.



## Evolving Guidance

Design standards have evolved rapidly in recent years at national, provincial, and local levels—particularly where they concern active modes—with the goal of making our streets safer and more comfortable places to walk and roll for all ages and abilities.

In recent guidance, safety has largely been improved through separating different modes and adding protective barriers between modes. This is a great improvement along the corridor but, at intersections where conflicts are unavoidable, safe design has focused on the protected intersection for larger signalized intersections, drawing on designs developed by the Dutch. On local streets, little has changed in guidance on safely prioritizing active modes beyond, perhaps, opting to include traffic calming on streets designated as neighbourhood bikeways.

## A new standard

In 2020, Nanaimo City Council adopted new [Complete Streets Engineering Standards & Guidelines](#). Through the development of these new transportation standards, the team saw merit in other Dutch design elements that prioritize the safety and movement of active modes over motor vehicles. One of the most significant components of the guideline and new engineering standards, which has sparked the most interest to date, is the inclusion of Dutch-style raised intersections.

A conventional North American local street intersection requires people walking or rolling to drop down to road grade and back up using curb ramps. This design can be difficult for those using mobility devices, and crosswalks

Credit: ISL Engineering and Land Services



Nanaimo's Complete Street Standards - Raised Local Plan View

are not always marked. Our roads often fail to intuitively communicate that pedestrians have priority.

In recent years, raised crosswalks have become more common, but even these continue to present a message that people walking or rolling are crossing the vehicle space instead of the other way around. Through the use of materials, texture, and grades, the City of Nanaimo aims to change this.

The new standard of continuous sidewalks at local street intersections is different by design. Rather than traditional curb returns, the Dutch-style raised intersections feature driveway-style letdowns and continuous raised sidewalks and bike paths (if present). These are featured at local streets where there should be no need for drivers to enter or exit a neighbourhood at speed. The sidewalk and bike path continue through the intersection uninterrupted, clearly communicating that the active modes have priority. For the person driving, they must instead negotiate speedhump-like curb ramps. The design reflects the inherent priorities of a local street intersection. It also slows down turning traffic, reducing the likelihood of a collision occurring, and the severity if it does, whether between vehicles or between vehicles and pedestrians/cyclists.

*Continued on page 23...*





Portions of Metral Drive provided only **gravel shoulders** and wide vehicle lanes prior to the re-design



Metral Drive now showcases **modal separation** and continuous sidewalks and bike lanes

The Dutch continuous sidewalk has not been widely adopted in North America. A few locations have implemented it on specific projects, including Canmore, Alberta and Seattle, Washington but, in our research, we could not find wider adoption as a standard. The approach, while facing some resistance at first, quickly gained the support of the City team and through discussions with emergency services, all fears were allayed. This component specifically has been extremely well received in the planning and design community through social media.

## Metral Drive Complete Street: a showcase project

In parallel with the new standards, the Metral Drive Complete Street Project will provide a finished example of the type of street the guideline is striving to create. Metral Drive will be a showcase project for the guideline and sustainable transportation direction the City of Nanaimo is moving toward, particularly with respect to the Dutch-style raised intersection that is featured frequently along the corridor. The Metral Drive design was developed alongside the new standards, allowing the team to develop the standards iteratively and adapting to project-specific challenges that may

prevent the standard from being implemented exactly as intended when retrofitting corridors.

The Metral Drive project is 3 km in length and fills a missing link in the active transportation network, connecting a popular recreational and commuter multi-use trail with the largest shopping centre in the region. The previous road condition had no cycling facilities along its length, surplus vehicle lanes at the north end, and varying sidewalk provision, sometimes with no provision other than gravel shoulders.

The project includes underground utilities replacement (which accounts for a significant part of the construction cost) but provided the perfect opportunity to build an example of the City's future vision for its road network.

The design includes ten local street intersections with continuous sidewalks and bike paths. As the street is primarily residential or with little direct frontage commercial activity, pedestrian volumes are not expected to be so high as to justify larger separation between people walking and rolling. Instead, a textured buffer of stamped concrete pavers is provided between the sidewalk and bike path, using the available width to better separate people walking and rolling from motor vehicles with a treed boulevard. This also creates space



for the curb ramp to and from the local street, allowing the sidewalk and bike path to remain at a constant grade as well as featuring the continuous material treatment.

At larger intersections, protected intersection designs improve safety for people walking and cycling along the corridor and enable safer left turns for people rolling actively, where appropriate.

The corridor is a retrofit with many constraints, thus the standards had to be massaged to ensure the overall goals could be achieved despite right-of-way and topographical challenges. While working through these challenges, the City has provided a built example for consultants and developers that addresses concerns and constraints that typically arise on projects and that otherwise could prevent the new standard from being built.

### Benefits in action


Despite there always being push back with change, the benefits are irrefutable when cities prioritize people and community over vehicle volumes and speeds. Raised continuous sidewalks remove barriers for people with mobility devices or physical and visual impairments. They improve safety for all vulnerable users and reduce the likelihood and severity of collisions, if and when they occur. The average person does not differentiate between locals and collectors, so neighbourhood safety increases when horizontal and vertical clues are provided to drivers to reduce vehicle speeds when entering and exiting a neighbourhood.


Even the development community and emergency services are seeing the value in the safety improvements evident through modal separation and the raised local crossings.

*Continued on page 25...*








Google Street View before & after showing the new raised local intersections on Metral Drive





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While it may take some time for drivers to adjust, reclaiming the road right-of-way has led to many early observations pointing to success; from children safely walking to school, toddlers using strider bikes without hovering parents, and groups of elderly cyclists comfortably cycling along the corridor, the community is becoming noticeably more active. Seeing a major road that previously appealed to only the strong and fearless transformed into a facility that pedestrians and cyclists of all ages and abilities are comfortable using makes the long journey to change worth it.

Beyond safety, there are operational benefits as well. Because the road surface has been narrowed significantly in favour of placing cyclists as well as pedestrians behind the curb, the City of Nanaimo hopes to save on maintenance and rehabilitation costs over time.

## Going forward

The designs have been adopted in Nanaimo's Manual of Engineering Standards and Specifications and will be required on all new development projects, one by one, making the streets of Nanaimo safer for everyone. Nanaimo is one of only a few North American cities to implement true Dutch-style raised intersections and the first to adopt it into municipal engineering standards. Many other municipalities have shown interest in the designs, and we look forward to seeing them being adopted more widely.

Making the continuous sidewalk and bike path the predominant design technique for local street intersections across Canada would truly support the mode hierarchy that most municipalities aim to adopt. Only by integrating this mode hierarchy into our engineering standards and designs will we begin to see the benefits of streets built to prioritize active modes.



Go for a **virtual ride** along the redesigned Metral Drive Complete Street in this YouTube video by project lead Roy Symons

## RESOURCES

### B.C. Community Road Safety Toolkit

[gov.bc.ca/gov/content/transportation/driving-and-cycling/road-safety-rules-and-consequences/bc-community-road-safety-toolkit](http://gov.bc.ca/gov/content/transportation/driving-and-cycling/road-safety-rules-and-consequences/bc-community-road-safety-toolkit)

Raised crossings are highlighted in [Module 1 - Protecting People Walking and Cycling](#) (PDF, 13.3 MB), one of several guides summarizing “designs and strategies that local governments can implement to improve road safety outcomes.”

### Canadian Guide to Traffic Calming

[tac-atc.ca/en/publications/ptm-trafcalm18-e](http://tac-atc.ca/en/publications/ptm-trafcalm18-e)

This guide jointly created by TAC and CITE also provides design details for raised crossings.



**Annalisa Fipke, P.Eng.** is a Project Engineer at the City of Nanaimo managing municipal capital projects from concept to construction. As a multi-modal transportation geek focused on sustainable and accessible urban design, she has been focused on updating Nanaimo's engineering road standards and incorporating complete street design principles into the City's upcoming projects.



**Roy Symons, P.Eng.** is a Sustainable Transportation Specialist with ISL Engineering and Land Services where he focuses his time on complete street, active transportation and transit projects to improve safety and equity on our streets, and enable more people to travel by sustainable modes.



CITE has a strong partnership with the Transportation Association of Canada (TAC). One of our key contributions to TAC's technical projects is participation on a number of TAC councils and committees through CITE Appointees. In this edition of TAC Tidbits, our appointees share updates about their committees from the Fall 2021 TAC Technical Meetings held virtually.

## CHIEF ENGINEERS PANEL

### Julia Salvini, P.Eng., FITE

President, Salvini Consulting & Past President, CITE



At its Fall 2021 meeting, the Chief Engineers Panel had some discussion on meetings, vaccines and lowered speed limits, among other things. Highlights include:

- The need to strike a balance between providing access to meetings for those who cannot travel and making it attractive for people to attend in person
- TAC has been engaging with an academic roundtable including educators and students
- Many of the incoming chairs of councils and committees are CITE members; thanks for all you are doing!
- Several jurisdictions are considering and piloting reduced speed limits in residential area with a wide range of feedback

The 2022 TAC Conference and Exhibition has been set for October 2–5 in Edmonton. Its theme will be “Changing Ways for our Changing Climate”.

## TECHNOLOGY COUNCIL

### Bidoura Khondaker, PhD., P.Eng., PTOE

Senior Transportation Engineer, Calgary Transit, City of Calgary



TAC's Technology Council met on November 16 and focused on its commitment to the innovative, efficient, and effective integration of technology across the transportation sector. Key highlights are:

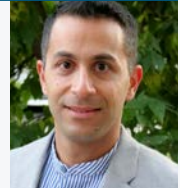
- A new Technology Achievement Award has been created the aim of which is to recognize initiatives that demonstrate excellence in the use of advanced technologies to address road, highway or urban transportation challenges. The Technology Achievement Award review panel volunteers were drawn from ITS Committee, Digital Applications Committee and CAV Task Force.
- With the creation of two new committees; Digital Applications Committee and the Intelligent Transportation Systems (ITS) Committee, associated Chairs of both committees has been appointed.
- In the Fall council meeting, two projects were presented. Dr. Jeannette Montufar presented on “Developing Highly - Qualified Personnel for Road Authorities” where many key insights were presented based on the gap and solution analysis in the era of Connected and Automated Vehicles. The other presentation was from Canadian Centre for Cyber Security on “Cyber Security and Transportation Sector Initiatives.”



## Road Safety Committee

### Farhad Shahla, P.Eng.

Construction Project Manager, City of Mississauga



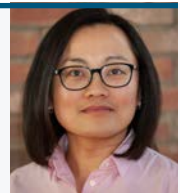
TAC's Road Safety Committee met on Nov 9, 2021 as part of TAC's series of Fall 2021 Technical Meetings. As part of the committee updates, there are a number of opportunities to volunteer in which you may be interested. [Send me a line](#) should you wish to learn more.

- Annual Conference Subcommittee: *Workshop and Panel Session Working Group* and *Paper and Presentation Session Working Group*
- Safety Guide for Canada and Project Idea Subcommittee: *Bicycles at Interchange Ramps* and *Diverging Diamond Interchanges in Canada*

## Geometric Design Committee

### Marcia Eng, P.Eng.

Senior Transportation Engineer, Urban Systems Ltd.



The key discussions during the Geometric Design Committee virtual technical meeting again focused on climate change considerations in designs and accessibility standards guidelines.

- Since the last meeting, a review of roadway crossfall was completed and the study was provided to the committee for consideration. Roundtable on if any updates to the existing guide are needed.
- City of Ottawa recently published a protected intersection guideline and is now reviewing accessibility and wayfinding at intersections.
- MTO recently release the updated Book 18 on bicycle design and is also using a new online platform for informing the public on all MTO projects. A similar concept was used by the environment ministry. The online platform allows access for the public everywhere to provide feedback, and the response has so far been good.

## Connected and Automated Vehicles Task Force

### Steven D. Kemp, P. Eng.

Manager - Traffic Engineering and Operations, Regional Municipality of Durham



The TAC Connected and Automated Vehicles (CAV) Task Force fall meeting was held virtually on November 15, 2021 with good participation from across the Country. It was exciting to here of multiple CAV deployments complete or underway in Calgary, Edmonton, Waterloo, Toronto, Whitby, Ottawa, Montreal and others. Two presentations were made to the committee including Guidelines for Testing Automated Driving Systems in Canada and Advanced Connectivity and Automation in Municipal Fleets generating much discussion with committee members. On an administrative front, the members of the CAV Task Force are looking forward to continuing the great work to date under TACs new council and committee structure.

## WORKFORCE DEVELOPMENT COUNCIL

### Carlos Pérez, PMP, M.Sc., P.Eng

Municipal Transportation Lead, CTQ Consultants Ltd.



The Workforce Development Council had a busy period over the last few months. The three recently formed committees on education, professional development, and human resources appointed their executive and met to discuss topics recent trends in transportation post-secondary education, student awareness of TAC resources, and skills needed in the evolving workplace. The main topic of the Fall meeting discussions was the recent TAC Report on *Development of Highly Qualified Personnel for Road Authorities*. This and other topics will be further discussed to propose a series of sessions for the 2022 TAC Technical Conference.

## Active Transportation Integrated Committee

### Marian Mithani, P.Eng.

Project Manager, Area Transportation Planning, City of Toronto



Since 2019, the Active Transportation Integrated Committee (ATIC) has seen its membership grow to over 75 members from diverse sectors and jurisdictions across Canada. The Fall technical meeting heard updates from its 8 integrated committees as well as:

- Unveiling the review process of the new TAC Active Transportation Achievement Award for 2022
- Presentation and discussion of 2021 updates to Ontario Traffic Manual: Book 18 Bicycle Facilities

ATIC continues to develop key initiatives: the AT Snapshot volunteer project, TAC design guidance update requests related to AT (5 topics pending), and AT sessions for the 2022 TAC conference in Edmonton. As Past Chair, thank you to fellow committee members and the new ATIC executive team: Elizabeth Pugh (Chair), Matt Pinder (Vice Chair), and Samantha Langford (Secretary).

## Mobility Management Committee

### Justin Bak

Senior Project Manager, Vision Zero Projects, City of Toronto



The Mobility Management Committee is a national forum for information exchange and problem solving related to the delivery of multimodal mobility services. The committee has identified the priority focus areas of curbside management, goods movement, mobility data, multimodal service pricing and information, shared mobility services, and transportation demand management. Next steps will involve identifying key issues within the priority focus areas for the committee to advance. The committee will be reviewing the state of practice in Canada regarding many of the priority focus areas.

## Traffic Operations and Management Committee



**Russell Brownlee, M.A.Sc., FITE, RSP1, P. Eng.**

President and Transportation Safety Engineer, True North Safety



**Luis Escobar, P.Eng., PTOE**

Senior Associate & Discipline Lead, Stantec



**Jim Mallett, P.Eng., PTOE**

President & CEO, Paradigm Transportation Solutions Ltd



**Greg O'Brien, P.Eng.**

Atlantic Practice Manager, Traffic Engineering & Transportation Planning, WSP

At its fall meeting, TOMC welcomed a new executive for 2022 including Winston Chou, Chair (City of Vancouver) and Vice-Chair, Ravi Seera (City of Calgary).

A presentation was made regarding the status of the TAC Guide for the Design of Roadway Lighting, which was last published 15 years ago. A draft update was completed in September 2018 by a volunteer committee; however, it was never published. The committee completed a jurisdiction survey regarding the TAC guide use and update needs. The survey results were presented and will be used to develop a 2022 project proposal for a TAC guide update. The committee will outline how the current guide will be informed by or supplement the ANSI/IES RP-8-18 Recommended Practice (RP) For Design And Maintenance Of Roadway And Parking Facility Lighting, which is an RP applied by many US and Canadian jurisdictions.

Scott Wainwright on the 11th edition update to the MUTCD. The deadline for comments on the new guidance closed in May 2021 and over 15,000 comments were received. The extent and quantity of comments were unprecedented and included numerous respondents from structured social media campaigns centred around:

- Guidance to support healthier and safer cities and towns, less focus on cars and more
- Continued reliance on the 85th percentile for setting speed limits, rather than the safe systems approach
- The technical requirements for pedestrian warrants, specifically the number of pedestrians to meet the warrants.
- The “capricious” stance prohibiting celebratory colourful crosswalks.

While a 2022 publication date is planned, 2023 may be more likely. A little touch of what CITE members could expect in future policy development circles.

Alf Guebert tabled a new project related to developing a web-based spreadsheet for the TAC traffic signal warrants. The premise was an online and up-to-date version that could be accessed and applied by TAC members. Discussion ensued about incorporating other TAC guidance such as tools for setting speed limits, lighting, and signal locations in proximity to rail crossings. A project proposal will be prepared for the Spring TOMC meeting.





*CITE representatives are appointed to many ITE Technical Committees and Councils to bring our unique Canadian perspective to the work of ITE. In this feature, our appointees share updates about their committees to help our members connect to ITE's initiatives and the transportation industry more broadly. If you are interested in participating or contributing, please contact CITE's Technical Liaison Committee and we can help you navigate the Councils.*

## Transportation Education Council

### Sean Nix, M.Eng., RPP, FITE

Associate Dean - Mathematics & Statistics, and Building & Construction Sciences, Mohawk College



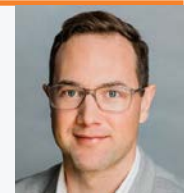
The [Transportation Education Council \(TEC\)](#) continues to actively plan its annual webinar series to promote best practices related to various aspects of transportation education, and critical aspect of running an effective ITE student chapter. The Council targets three webinars per year. If you would like to participate in the TEC webinar series to ensure some Canadian content, either in the capacity of a student chapter sharing best practices, or as a faculty member sharing any innovative learning, teaching styles (pandemic-mode or otherwise) or emerging trends in research and education, please reach out to Dr. Alyssa Ryan at [alyssaryan@email.arizona.edu](mailto:alyssaryan@email.arizona.edu) and [copy me](#) on your email.

The TEC also received a presentation from the ITE Student to Young Member Task Force on its implementation plan. You can read more in the [January edition of the ITE Journal](#). In addition, the TEC contributed to the 2021 Developing Trends report that will be forthcoming shortly from ITE. TEC's submission included a discussion paper on Short- and Long-Term Impacts of COVID-19 on Transportation Education, with contributions from the experiences of various members of TEC.

## Joint Rail Grade Crossing Committee

### Garreth Rempel, Ph.D., P.Eng.

CEO, TRAINFO



The [Joint Rail Grade Crossing Committee](#) met on January 11, 2022. Key items discussed included:

- 10 abstracts were received for the 2022 Annual Conference. Four were selected as podium presentations and one as a poster. Roundabouts at rail crossings continues to be a hot discussion topic.
- Two webinars are planned for 2022 (dates TBD) based on the recently published Recommended Practice for Pre-emption of Traffic Signals. One on pre-emption application examples and another on queue management strategies.
- Three projects are planned for 2022. Anyone interested in volunteering is encouraged to reach out.
- Active project: Active another train coming sign synthesis of state-of-the-art and research problem statement.
- New Project: Bicycle crossings at grade crossings informational report.
- New Project: CAVs and grade crossings informational report.

## Traffic Engineering Council

### David Thatcher, P.Eng., PE

Vice President, Transportation & North American Roadway Sector Lead, Stantec



- The ITE [Traffic Engineering Council](#) is planning approximately one webinar per month. ITE webinars are now free to members.
- Upcoming webinar on transformative complete streets policy (crosswalk treatments, BMPs, product design for elderly)
- Speed hump recommended practice being sent to ITE council for review - public comment in spring
- ITE is hosting a Virtual Conference March 15-16 called *Innovations That Work* - [itetechconference.org](http://itetechconference.org)
- ITE Awards Portal is open - submissions due March 1
- NCUTCD Update - FHWA is processing thousands of NPA responses received to the proposed changes to the MUTCD
- Presentation was given by VHB on their “INTERSECT” tool - Intersect begins with probe data and follows an innovative, four-step process to deliver detailed 24/7 traffic volumes, travel times, roadway speeds, and congestion hot spots, avoiding the need to conduct these studies in the field and making it ideal for corridor analysis.

## Urban Goods Movement Standing Committee

### Madhuri Seera, PE, P.Eng.,PTOE

Acting Manager, Transportation Strategy, City of Calgary



The ITE [Urban Goods Movement Committee](#) is focused on expanding the reach of the committee and is looking for volunteers. The following positions are available: Vice Chair, Leads to bring in lessons from across the world, USA, Europe and Asia. The following positions have been filled: secretary, academic liaison, Canada lead, Australia-New Zealand lead. The committee is keen to develop partnerships with local sections, Chapters, and Universities to enable opportunities for education on goods movement.

## Transit Standing Committee

### Dan Ross, P.L.Eng., RPP, MCIP

Project Manager - Transportation, GHD



Having fulfilled our 2021 agenda, the [Transit Standing Committee](#) has finalized its 2022 plan and started on individual tasks. We have assigned volunteer roles and set time frames for delivery of all webinars, quick bites, journal entries, engagement, and conference participation. The first quarter’s items are well underway and we look forward to continuous success as the year progresses.

# Connected and Automated Vehicles Standing Committee

## Steven D. Kemp, P. Eng.

Manager - Traffic Engineering and Operations, Regional Municipality of Durham



The ITE [Connected and Automated Vehicles \(CAV\) Standing Committee](#) met in person on January 10th, 2022 as part of the Transportation Research Board meetings held in Washington DC. A virtual option was made available to committee members who could not attend in person. Approximately 45 people attended including 30 members that participated online. The Standing Committee is mostly made up of US representatives but all ITE members are welcome to participate. CITE members interested in Connected and Automated Vehicles have access to a number of documents for review under the [Technical Resources](#) section of the ITE website. CITE members interested in CAVs should also check out the March 15-16 [ITE Virtual Technical Conference - Innovations That Work](#) ([itetechconference.org](http://itetechconference.org)) which will include a number of CAV related sessions. Ongoing topics of discussion at the committee include CAV requirements related to accessibility, work zone traffic management, pavement markings, signs, signal displays, changeable message signs, rural connectivity and workforce development

# Public Agency Council

## Ryan Vanderputten, P.Eng., FITE

Director, Transportation Planning, The City of Calgary



[Public Agency Council](#) executive held a virtual meeting on January 10, 2022. Key highlights include:

- Lots of technical activities planned for 2022
- Many opportunities to get involved and volunteer
- US Infrastructure bill passed: opportunity to provide input on implementation
- Looking at how to engage smaller cities and rural areas
- How public agencies are managing remote work/COVID workforce implications; seeking possible speakers for upcoming town hall session.





## Sam Cass *A Canadian Pioneer in Transportation*

On January 16, 2022, Samuel Cass, beloved husband, loving father and father-in-law, devoted grandfather and great-grandfather, passed away at the age of 99.

### A short history of Sam's education and working life

Sam was a long-time contributor to the transportation profession. He received his Bachelor of Science degree with honours in Electrical Engineering from the University of Toronto and a Master in Civil Engineering with specialization in Transportation Planning from the University of Waterloo. Sam's career in transportation started in 1950 when he joined the staff of the City of Toronto as the Assistant City Traffic Engineer. He retired 39 years later from the Municipality of Metropolitan Toronto as the Commissioner of Roads and Traffic.



S. Cass, P.Eng.  
Traffic Engineer

c. 1956 Sam was Metro Toronto's first Traffic Engineer

During Sam's tenure, Toronto experienced significant growth in travel demand. In 1953, while he was at the helm of the agency employing 300 staff and numerous contractors, the Province of Ontario passed the Municipality of Metropolitan Toronto Act creating a federated system of government made up of the City of Toronto and 12 other municipalities encompassing some 622 km<sup>2</sup>. By the time Sam retired, Metro was responsible for more than 688 km of arterial roads and more than 1,570 traffic signals. In 1963, Metropolitan Toronto implemented the world's first application of digital computers to operate a centralized traffic signal control system. Sam was a visionary who was early to grasp the changing role of transportation in shaping modern cities and the public's changing expectations for transportation infrastructure.



Sam Cass at his retirement party in 1989 with his "Street Name" sign complete with ITE logo

### Sam the writer

Sam did not simply develop a vision for Metro Toronto and work diligently to make it happen. He also presented his ideas at numerous conferences and guest lectures around the world and documented his results in a wide variety of formats. Some examples of his more than 36 publications include:

- July 1956, *Traffic Quarterly, an Independent Journal for Better Traffic*, "Co-ordinated Transportation" by Samuel Cass and Raymond Desjardins
- June 1957, *Application to United States Patent Office*, "Traffic Actuated Traffic Signal Control System" by Samuel Cass and John T Hewton (Patented Oct 13, 1959)
- May 1959 in the *Journal of the Association of Professional Engineers of the Province of Ontario*, "Traffic Problems" by S. Cass P. Eng.
- October 1960 in *Canadian Consulting Engineer*, "Better Driving Control with Electronics" by Sam Cass. (This article gives the history of sensing devices as well as a glimpse into the future of radio-guided cars, in which all normal driving functions are automatically controlled.)
- 1962 in *Highway Research Board Bulletin 338*, "Pilot Study of the Automatic Control of Traffic Signals by a General-Purpose Electronic Computer" by Leonard Casciato and Sam Cass
- August 1963, Sam is featured in a Univac Brochure in French "Système de signalisation automatique de la circulation du Toronto Métropolitain"
- April 1964 in *Seaports and the Transport World*, "Unsnarling Toronto's Traffic" by Sam Cass
- October 1968 in *Canadian Consulting Engineer*, "Concern with Construction Safety is Part of the Social Revolution" by Samuel Cass
- September 1970 in *Road International, an International Road Federation Publication*, "Traffic Management in Metropolitan Toronto" by Sam Cass
- January 1971 in *Traffic Engineering and Control (UK Publication)*, "Toronto's Digital Computer Signal System" by Sam Cass

## Sam and ITE

During Sam's early years in the profession, he saw the value in being a member of the Institute. At the time, Canada was only a Section so did not have direct representation on the International Board. Sam held several positions on the Section Executive including President and ran for International Secretary-Treasurer and Vice President. Although he was unsuccessful at these two latter pursuits, it was through the efforts of Sam and his Canadian colleagues that saw the birth of the Canadian District in 1973. Sam's distinguished career and contributions to ITE were recognized through his appointment to [Honourary Member](#).

## Sam's role in other transportation organizations

Sam was very active in a host of other professional associations such as the Professional Engineers of Ontario, the Ontario Traffic Council, the Transportation Association of Canada, the Transportation Research Board, the American Road and Transportation Builders Association, and the Ontario Good Roads Association. Sam also served on committees of the National Co-operative Highway Research Program.

## Sam the leader

Sam had a low-key but extremely effective leadership style that earned the respect of his staff, peers, professional colleagues, and political masters. His decisions were based on careful analysis, input from his team, and a wonderfully positive attitude. Sam maintained a careful balance between "doing the right things" and "doing things right." His office door was always open, and he took great care to hire and promote the right people to fill key positions in a very large Department which was the amalgamation of two major disciplines: Roads and Traffic.

Sam's ability to adapt to a changing political climate was demonstrated in 1971 when the Spadina Expressway was cancelled. He immediately responded by securing provincial and federal money to initiate a major research effort to examine significant improvements to Metro's Computerized Traffic Control System. This culminated in the development

of ground-breaking software to control traffic more responsively and ultimately led to the complete replacement of the aging UNIVAC hardware with state-of-the-art equipment.

The "Cass Credo" of listening, responding, and following up made him a role model for all who worked with him. His mentorship and positive approach to engineering, management, and life in general set a standard that we should all strive to emulate. Thank you, Sam!

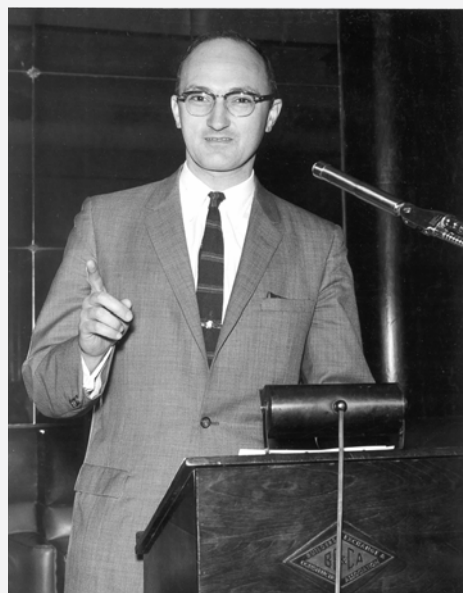
*Contributed by: Dave Richardson & Les Kelman*



Sam Cass and Dr. J. Kates during the Traffic Computer Pilot Project in 1960 (left)



and awaiting the delivery of Toronto's Traffic Computer outside Old City Hall in Toronto in 1963 with Mr Knorr of Remington Rand (right)



Sam speaks at an international conference in Baltimore in 1959 (left) and the Metro Traffic Control Centre reunion in 2011 (right)

# IAN LINDLEY M.A.Sc., EIT



## Current Employment

*C.F. Crozier & Associates, Engineering Intern*

City of Residence: *Oakville, Ontario*

## Education

- *Ryerson University, Bachelor of Engineering, 2017*
- *Ryerson University, Master of Applied Science, 2019*

## First job in transportation

*Field Coordinator with Toronto Zenith Contracting Limited*

## What positions have you taken on as a member of ITE?

- *Student Chapter President, Ryerson Chapter*
- *Traffic Bowl Coordinator*

Family: *Married to Catherine*

## Things I like to do

*Video & board games, engineering models, curling, hockey, baseball*

## CITE INVOLVEMENT

### What was the first ITE event you attended?

My first proper ITE event was the ITE 2017 Annual Conference in Toronto where I competed for the first time in the Traffic Bowl.

### What is your ITE involvement (past and present)?

I was the Ryerson ITE Student Chapter President from September 2017 until April 2019 where I updated our membership activities and brought on a talented team. I recently started a position within the Canadian District as Traffic Bowl Coordinator where I hope to create memorable experiences for both our competitors and audience while maintaining the challenge and integrity of the competition.

### What do you value most about ITE membership?

As an ITE member, I really value the connections I've made through numerous interactions at and outside of ITE events. I've built lasting memories and/or taught significant topics.

## GETTING TO KNOW YOU

### What is the last book that you read or are currently reading?

The last book I read was *Devolution* by Max Brooks which tells the story of a town cut off by natural disaster through the eyes of one of the residents.

### What is your favourite mode of transportation?

My favourite mode of transportation would be rail as it allows either for a relaxing journey for passengers to enjoy the natural beauty of the country or acts as a rapid mass transit system.



What attracted you to the transportation profession?  
Did you have another career in mind?

I was attracted to the transportation profession by the rapid changes to the industry that were occurring both through the implementation of new technology and the shift towards complete streets.

## PROFESSIONAL ACHIEVEMENTS & PERSPECTIVES

How would you describe your job to someone you just met at a party?

As a Transportation Engineering Intern, I would describe my job as predicting the traffic patterns and volumes for an area, how they can be affected by changes, and recommending improvements to keep traffic moving safely and effectively.

What are one or two projects that you're most proud to have worked on?

Some projects I've worked on that I'm proud of are the construction of a new overpass over Highway 400 just south of Barrie, ON and the traffic studies for two massive developments in Milton and Vaughan. The overpass creates a safer environment for vehicles travelling over the 400 while providing space for the highway expansion and providing the backbone for a future possible interchange. The two developments will change the cities by providing career opportunities for many people while also increasing the housing opportunities. We provided accurate estimations and recommended improvements to the road network that help both the traffic and alternative modes of transportation.

What is one aspect of your work that you particularly enjoy?

One aspect of my work that I enjoy is the problem solving and working to accommodate the increased traffic, ultimately providing solutions that better people's lives through tangible improvements.

Who has had the greatest influence on your career?

I would say that my grandfathers had the greatest influence on my career. Both encouraged me tremendously throughout my life, but my grandfather on my dad's side was an engineer by trade who came over from England when my dad was a child. When he heard I was considering engineering, he would send me every engineering magazine he could get his hands on. Unfortunately, he passed away during the Covid-19 pandemic. I miss them both very much, but I hope my work makes them proud. They continue to inspire me.

Projecting yourself into the future, from an end-of-career perspective, what will you hope to have accomplished?

From an end-of-career perspective, I hope to have improved the networks that I worked on and created safe and effective solutions.

What is the greatest opportunity you see for the field?

I think the greatest opportunity for the transportation engineering field is increased implementation of technology in infrastructure and vehicles. As connected vehicles and roads become more prominent, I look forward to increased safety and performance in the network.



Ilan with his wife and grandparents

## CITE extends a warm welcome to these new Canadian ITE members!

**Nouraldin M. Aboutaleb**, University of Manitoba, Winnipeg, MB

**Rich Adam**, City of Victoria, Victoria, BC

**Muhammad Sajjad Ansar**, Ryerson University, Toronto, ON

**Nick Armstrong**, City of Victoria, Victoria, BC

**Amandeep Singh Baidwan**, University of Alberta, Edmonton, AB

**Erkin Bayram**, Lakehead University, Toronto, ON

**Annie Beauvillier, P.Eng., PTOE**, PBX Engineering Ltd., Victoria, BC

**Fred Billingham**, City of Victoria, Victoria, BC

**Giovani Bottesini, P.Eng., M.Eng., RSP1**, City of Richmond Hill, Burlington, ON

**Lori Brake**, Ministry of Transportation of Ontario, St. Catharines, ON

**Domenic Bruno**, University of Calgary, Calgary, AB

**Sean Buchko**, CIMA+, Saskatoon, SK

**Brad Campbell**, Lakehead University, Moose Jaw, SK

**Sean Carrick, C.E.T.**, Region Of Peel, Brampton, ON

**Joung-Gill Choi, C.E.T.**, Town of Newmarket, Barrie, ON

**Bronwyn Crowder**, City of Victoria, Victoria, BC

**Charles Davie**, City of Victoria, Victoria, BC

**Carly Davis**, Nova Scotia Dept. Of Transp. & Infrastructure Renewal, Halifax, NS

**Jeanne-Marie Deletsu, P.Eng.**, Ministry of Transportation of Ontario, St. Catharines, ON

**Aditya Deshmukh**, University of Regina, Regina, SK

**Gurnoor Dhiman**, Mohawk College, Hamilton, ON

**Eric Ebarb**, City of Victoria, Victoria, BC

**Lauren Ebata**, University of Victoria, Victoria, BC

**Ellen Lou Faustino**, Seneca College, North York, ON

**Clara Oland Filipetti**, University of Waterloo, Waterloo, ON

**Eric Hakomaki, P.Eng.**, Ministry of Transportation of Ontario, St. Catharines, ON

**Erin Harms**, Stantec Consulting Ltd., Saskatoon, SK

**Maryam Hedayati**, Transport Canada, Nepean, ON

**Tim Hewett**, City of Victoria, BC, Victoria, BC

**Samuel Graham Hinton**, Lakehead University, Thunder Bay, ON

**Alaina Anne Houston**, University of Saskatchewan, Saskatoon, SK

**Kevin Huynh**, City of Regina, Regina, SK

**Muhammad Imran, M.Eng., P.Eng.**, Town of Oakville, Oakville, ON

**John Infante**, Sedulous Engineering Inc., Calgary, AB

**Edouard Derrick Jarbeau**, WSP, Saskatoon, SK

**Mitch Jernslet**, City of Victoria, Victoria, BC

**Chloe Johnson**, Ministry of Transportation of Ontario, St. Catharines, ON

**Saveena Kahlon**, BC Ministry of Transportation, Victoria, BC

**Navsift Kaur**, UBC-Okanagan, Kelowna, BC

**Geoffrey Keyworth**, City of Port Moody, Port Moody, BC

**Soo Jin Kim**, Burnaby, BC

**Zlatko Krstulic**, City of Ottawa, Ottawa, ON

**John Erasmus Telan Lagat**, Lakehead University, North York, ON

**James Lee**, BC Ministry of Transportation, Victoria, BC

**Shawn Lin**, City of Regina, Regina, SK

**Pam Lloyd**, City of Victoria, Victoria, BC

**Spencer Lum**, University of British Columbia, Vancouver, BC

**Jacob MacDonald, C.E.T.**, Town of Oakville, Oakville, ON

**Romaine Edward Hugh Morrison**, North Vancouver, BC

**Darlene Myrie, OALA, CSLA, ASLA**, City of Richmond Hill, Toronto, ON

**Jason Nixon**, Lakehead University, Brampton, ON

**Denton Danole Panoringan**, Lakehead University, Toronto, ON

**Harshil Patel**, Windsor University, Windsor, ON

**Crystal Phillips**, City of Regina, Regina, SK

**Daniel Prest**, Halifax Regional Municipality, Halifax, NS

**Michelle Proiettei, P.Eng.**, Ministry of Transportation of Ontario, St. Catharines, ON

**Amanda Natalie Reale**, BA Consulting Group, Toronto, ON

**Dylan Ridsdale**, City of Victoria, Victoria, BC

**Navoda Yasanthi Rillagodage**, University of Manitoba, Winnipeg, MB

**Tara Saeidi**, University of Manitoba, Winnipeg, MB

**Derrick Scott**, City of Regina, Regina, SK

**Tim McCann Shah**, WATT Consulting Group, Victoria, BC

**Jason Small**, WSP Canada Inc, Toronto, ON

**Justin Tanner**, Nova Scotia Dept. Of Transp. & Infrastructure Renewal, Halifax, NS

**Quinn Taylor**, University of Regina, Regina, SK

**Kyle Volney**, Lakehead University, Thunder Bay, ON

**Josh Ward, B.Sc. (Env). M.E.B.**, City of Richmond Hill, Oshawa, ON

**Sarah Webb**, City of Victoria, Victoria, BC

**Alex Wilcox**, Lakehead University, North Bay, ON

**Mark Wilson**, GEMS, New Liskeard, ON

**Kaleab Woldeyohannes Yirgu**, University of British Columbia, Vancouver, BC

**Inthuja Yogarajah**, Lakehead University, Toronto, ON

**Abdullah Al Zahid**, University of Alberta, Edmonton, AB

## Greater Vancouver Section

The Greater Vancouver Section (GVITE) hosted their annual AGM and Awards Ceremony virtually in December 2021. The GVITE executive and members are pleased to present the following awards to the outstanding recipients:

### Bill Curtis Award (Project of the Year)

**Project:** Agnes Greenway Project

**Recipients:** Urban Systems and City of New Westminster

### Young Professional Award

Niraj Sunuwar, P.Eng., PTOE

### Mavis Johnson Award

#### (Road Safety Project of the Year)

**Project:** The King George Blvd Corridor Safety Review

**Recipients:** City of Surrey, TranSafe Consulting Ltd., Allnorth Consultants Limited, Align Engineering Ltd. and Mavis Johnson–Road Safety Consultant

Congratulations to the recipients! For more information on GVITE events, visit our website at [citevancouver.carrd.co](http://citevancouver.carrd.co).



The CITE Training Committee would like to thank Tyler Golly, Ryan Martinson, and Ryan Batty of Toole Design for developing and delivering the “Intersections for Everyone” virtual workshops in 2021. The workshops were informative and well received by those attending.

**TOOLE**  
DESIGN

**MISSED THE LATEST WORKSHOP?**

**KEEP AN EYE OUT FOR MORE PROFESSIONAL TRAINING OPPORTUNITIES IN 2022**



## Northern Alberta Section

Between October and December in 2021, due to the impact of COVID-19, the CITE Northern Alberta Section held three interesting webinars in place of our traditional in-person luncheons.

In October, Claire MacDonald, MA, MAS, with Prairie Sky Gondola, and Georg Josi, P.Eng., Ph.D., ENV SP, and Victoria Buffam, MSc., with Dialog Design presented on the topic of The Prairie Sky Gondola project - Alberta's urban ropeway as a solution to municipal infrastructure challenges. The presentation included an overview of gondola applications in urban settings and the concept being prepared for Edmonton, Alberta.

The November webinar was a joint presentation presented by Olivia Ryan, E.I.T., with ISL Engineering and James Rogers, P.Eng., with the City of Lloydminster on Dangerous Goods Routes and Truck Routes Establishment Project in Lloydminster, Alberta. The presentation provided an overview of the process of developing the evaluation frameworks, lessons learned, and final recommendations for truck routes and dangerous goods routes within the City of Lloydminster, following the comprehensive city-wide truck routes and dangerous goods routes review.

The final webinar for the year occurred in December and was presented by Dr. Steven Wong, Assistant

Professor in the Department of Civil and Environmental at the University of Alberta. The presentation was on Resilience and Sustainability: Critical Elements of a Mobility-for-All Future, and included an overview of transportation resilience, specifically leveraging transportation to protect people from disasters through evacuations. Other Dr. Wong's ongoing research projects on sustainability to shared mobility, public transit, and automated vehicles were also discussed. Before each presentation session, we held a 15-min social for attendees to facilitate networking among all attendees.

NACITE's events concluded in December with the 2021 NACITE awards presentation and year-end social night. This event included the 2021 NACITE AGM with an overview of the finances and events conducted throughout the year, as well as a series of trivia questions for attendees. One Section Award was handed out for Project of the Year to the City of Edmonton for the Bus Network Redesign and On-Demand Transit.

Though it was a challenging year, NACITE was able to maintain consistent webinars and provide opportunities for members to network. We look forward to the new year and continue to find creative ways to engage our members.

## Southern Alberta Section

The Southern Alberta Section (ITE SA) held an interesting webinar in October called “the Devil in the Details”, ITE SA invited a panel of speakers including Crystal Scheit from City of Lethbridge, Amber Osadan-Ullman from CMLC, and Joyce Tang from City of Calgary. The panelists explored the interdisciplinary perspectives on the importance of customization and non-standard treatments in street design and construction to achieve unique project objectives in an urban context. ITE SA also held a joint virtual speed mentoring event with CSCE Calgary Section in October. During this event, professionals working in the transportation and civil engineering field interacted and shared their knowledge with our young professionals. It provided a chance for our young professionals, from students, recent graduates, to developing professions, to ask questions that can help guide their decisions in the future. The event strived to develop meaningful connections that will benefit both parties and the industry. We wrapped up the webinars in November with Jerry Lau from Alberta Transportation who presented on example projects in and around Calgary where Alberta Transportation have shown a willingness to consider or implement improvements that are outside of their usual practice.

In December, ITE SA held a virtual 2021 Year-End Gala through the Gather Town platform. This included a year end summary presented by ITE SA President, Anne Cataford and followed by fun trivia games. We also held a project poster competition where Stantec was awarded the Best 2021 Project

Poster for their 3 Avenue South Walking and Wheeling Upgrades project.

We conducted our annual elections and are happy to announce that all incumbent nominees moved on to their new roles with Madhuri Seera taking over the role of President from Anne Cataford, who transitions to Past President. Josh Workman is the new Vice President while Annie Wang becomes the new Treasurer. Lou Mak maintains his role as Secretary for another year and Kayla Royce (pictured) joins the executive as the new Publicity Coordinator.



We kicked off 2022 with our AGM and a presentation from Gayathri Shukla on the topic of Inclusive Leadership. Gayathri Shukla is the Founder of Campfire Kinship, a company building inclusive cultures through story-based solutions. Gayathri holds an electrical engineering degree from the University of Calgary, and an Executive MBA from Queen’s University. She is certified in an innovative method of storytelling called guided autobiography. As a coach and facilitator of this method, she empowers individuals to discover their authentic strengths while building empathy with others.



## Saskatchewan Section

In November 2021, the Saskatchewan Section hosted their virtual Annual General Meeting and Fall Session. The event had 63 registrants with a mix of government, consultant, and student representatives who joined us from across the province. The session included informative presentations and was followed by a general networking session. The Fall Session featured several presenters showcasing highlights of some recent projects. We would like to thank all the presenters for making the session a success.

- Chelsea Lanning and Sheliza Kelts, City of Saskatoon - Saskatoon Transportation Master Plan
- Andrea Landell and Christine Hay, Ministry of Highways - Highway 4 in Town of Battleford Human Factors Review
- Bruce Belmore and Destiny Piper, KGS Group - Draft ITE Recommended Practice for Multimodal TIAs
- Carly Grassing, City of Saskatoon and Brian Patterson, Urban Systems - Saskatoon Neighbourhood Bikeways Project

The Annual General Meeting included a summary of our 2021 activities, a budget update, and the results of the vote on the 2022 - 2025 Strategic Plan, which received support and approval from the membership. The new board was sworn in at the AGM and welcomed Sean Buchko, a Transportation Engineer with CIMA+, as the new Student Chapter Coordinator.

The Saskatchewan Section board presented their three goals for the 2022 term:

- Host a STEM event to engage our youth.
- Explore recognition awards to promote the outstanding projects and people of our community.

- Build partnerships with other industry organizations through a joint provincial event.

We are in the midst of planning activities for the 2022 season. We plan to continue hosting virtual events in the first half of 2022 and look forward to when we can meet in person once again.



Destiny Piper, President



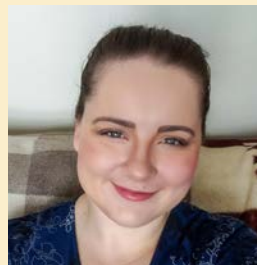
Sheila Kelts, Vice President



Iyonia Rabayaa,  
Secretary Treasurer



Ellen McLaughlin,  
Programs Director



Rebekah Vasylyeva,  
Membership/Communications  
Coordinator



Sean Buchko,  
Student Chapter  
Coordinator



Nathalie Baudais,  
Past President



## Manitoba Section

ITE Manitoba met for some virtual networking and to hear two presentations during an October webinar. The first presentation was by Susanne Dewey Povoledo and Morgan Glasgow, both with City of Winnipeg, who presented the ‘why’ and ‘how’ of accessibility in construction zones. Susanne provided an overview of why accessibility in construction zones matters from a legal, policy, and Equity Diversity and Inclusion (EDI) perspective. She also reviewed the seven principles of universal design and highlighted key attributes that must be maintained during everchanging site conditions to ensure continuous and safe access for all through and around construction sites. Morgan discussed recent updates to the City’s Manual of Temporary Traffic Control which have been made to improve the accommodation of vulnerable road users in work zones in Winnipeg.

The second presentation was on the Wolseley to Downtown Walk Bike Project by Brian Patterson of Urban Systems and Chris Baker of the City of Winnipeg. This project was identified as an important part of the network in the Pedestrian and Cycling Strategies and when completed, will provide important cycling connections in the area. Brian and Chris discussed the design process, engagement process, and the construction of the first phase, which was completed in Fall 2021.

We held our Annual Business Meeting in December, where we recapped our 2021 events, approved our 2022 budget, and were joined by Julia Salvini to share some updates on behalf of CITE. We also had Shawn Doyle and Auja Ominski from Dillon Consulting Ltd. present on multi-modal level of service. Transportation performance measures for vehicles are well-established and understood, but methods for assessing performance for people walking, cycling, and taking transit are less well-developed. Shawn and Auja introduced Dillon’s Multi-Modal Level of Service (MMLOS) framework, which is an integrated system for understanding how well a street or road serves all modes of travel, and how changes to the street or road may impact performance for each mode.

We held our first meeting with the CITE/CARSP 2023 conference local arrangements committee (LAC) at the end of December to kick things off. We’re working on developing the conference theme, confirming facilities, and framing up the technical program outline. We look forward to hosting everyone in Winnipeg in 2023!

## Toronto Section

Despite the ongoing pandemic, the Toronto ITE Section continued to partner with complementary organizations and agencies to provide opportunities for professionals and students in our sectional area. In the 2021 fall/winter season, the Section organized the following events:

On September 23rd we hosted a virtual tour of Metrolinx’s new Union Station Bus Terminal at CIBC Square in Toronto. The participants were able to virtually explore the brand-new transit facility with two guest speakers from Metrolinx: **Anthony Pezzetti**, Senior Manager, Bus Operations Delivery and **Lesley Bland**, Project Manager, Union Station Rail Corridor.

In November 2021, we announced the first ITE Toronto Innovation of the Year Award Competition. Participants were required to submit an abstract describing the innovation in their project and why it was considered innovative. Selected presenters were asked to present during the Annual General Meeting (AGM) meeting. The winner of the award was also decided during the AGM event, via a poll of the attendees.

On December 3rd we hosted our virtual 2021 Christmas Luncheon and Annual General Meeting. Similar to the previous pandemic year, the team used a creative approach to start the event with a

### INTUITIVE DESIGN RESPONDING TO AN ENHANCED CUSTOMER EXPERIENCE



Virtual Tour of Metrolinx’s New Bus Terminal

virtual social hour gathering. Our keynote speakers were **Melissa and Chris Bruntlett**, Delft-based authors and urban mobility advocates who strive to communicate the benefits of sustainable transport and inspire happier, healthier, more human-scale cities. Melissa works with Mobycon—a bicontinental mobility consultancy—supporting the promotion of Dutch transport knowledge, policy, and design principles in countries across Europe and North America. As communications manager for the Dutch Cycling Embassy, Chris uses his knowledge and passion to share practical lessons for global cities wishing to learn from the Netherlands’ extraordinary success.

Several awards were distributed at the AGM: The first winner of the first annual Innovation of the Year Award Competition was the Metrolinx GTFS Tool Development project, presented by **Dan Lu**, HDR Inc and **Anthony Smith**, Metrolinx. The 2021 Project of the Year Award went to the **City of Toronto** for the “CafeTO – Café Guidelines 2021” project. The 2021 Most Events Attended Award to **MD Tanvir**

**Chowdhury** and the Lifetime Membership Awards to Christopher F. K. Bee (Ministry of Transportation of Ontario), Norman Q. L. Chung (Poulos & Chung Limited), Albert K. Law (Parsons Inc), J. Derek Sims (IBI Group), Victoria A. Witkowski and Anthony B. Yates (BA Consulting Group Ltd).

We also held our annual executive election, where **Jocelyn Lee** (LEA Consulting Ltd) was elected as Activities Coordinator. We appreciate everyone who stepped up and offered to serve in these roles.

As part of the new year, ITE Toronto Section will continue to engage, support, and collaborate with our student chapters. Additionally, we will be

providing funding to the student chapters to help facilitate student-organized educational events.

Thank you to all our attendees and sponsors. We would also like to thank **Kelsey Waugh** (LEA Consulting Ltd) who has finished her six-year term on the Toronto Section executive team. We look forward to engaging with our community of transportation professionals over the next year and hope to see many new faces at our events. If you haven't already, please visit our [website](#) for the up to date information on all things ITE Toronto, and check out our social media pages on [Facebook](#), [LinkedIn](#), and [Twitter](#) to be the first to find out about our upcoming events.



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## National Capital Section

This past year was a resounding success for the National Capital Section, building on the substantial momentum we had coming out of the previous. With 2021 at an end, the Section saw the completion of the first year of a three-year strategic plan, and, evaluating our performance against our goals, we achieved nearly all that we had set out to accomplish.

In the midst of wrapping up our year and preparing for our AGM, the Section was able to hold one final virtual networking event of the year in November in the form of another drop-in session via the platform Wonder.

The Section then held our AGM in December where the new Executive was announced. An unsuccessful nominee for The Executive graciously agreed to volunteer with the section to assist in a support role entitled Technical Events Coordinator,

which was created last year, aiding the Technical Program Coordinator in their substantial role. We were additionally encouraged to see our last year's Technical Events Coordinator volunteer be elected to the role of Communications Coordinator on this year's Executive.

The Section is currently in the midst of kicking off our 2022 programming and is excited to hold the events that we were unable to execute in the past year and to realize the exciting possibilities that come with a new year. In the first month of 2022, the Executive held a review of our pandemic trials and errors (and successes), with a view to capitalizing on every bit of our hard-earned experience in virtual engagement. With this exercise, we hope to generate the National Capital Section's best practices in this realm to keep as a tool after it is no longer strictly mandatory.



## Atlantic Provinces Section

Happy 2022 from the East Coast to all our fellow CITE members!

When thinking about what to write for this edition of *Transportation Talk*, we were quite tempted to simply “copy and paste” our submission from last January. After an uncharacteristically quiet year in which Covid limited us to a couple of scaled-down (albeit successful) virtual events, we were all very much looking forward to the return of traditional in-person social gatherings in 2021. Unfortunately, this never materialized, and we now find ourselves in a similarly optimistic mindset to start 2022!

For the second consecutive year, our AGM was held in front of a virtual audience in late November. During this meeting, Courtney Pyne (Senior Transportation Engineer – WSP) was officially sworn in as our new Secretary/Treasurer. She immediately reduces the average age and heightens the overall level of maturity on an Atlantic Provinces Section Executive that also includes Adam Lanigan (Vice President), Mark Gunter (President), Tanya Davis (Past-President), and Greg O’Brien (Director).

Sadly, the AGM also marked the end of an era as Mike Connors officially concluded his illustrious

6-year run serving in the various capacities of the Atlantic Provinces Section Executive. Mike is undoubtedly regarded as a 1st ballot CITE Hall-of-Famer whose efforts have been instrumental in shaping the success of our local Section and strengthening ties with the national membership. In recognition of his outstanding contributions, Mike was presented with a *picture* of a commemorative plaque. Don’t worry, we’ll make sure he gets the *real* plaque as soon as we can meet again in person!

Finally, we were able to squeeze in one final Virtual Lunch and Learn before the end of 2021 that focused on Rapid Transit. Approximately 40 of our members tuned in to hear David Espeseth (Halifax Transit) and Stephan Kellner (EXP) present on *HRM’s Rapid Transit Strategy* and the *Design of a Centre-Running BRT in a Busy Commercial District*, respectively. Both presentations were very interesting and informative.

Well, that’s all the news we have to share for now. However, if all goes according to plan, the next edition of *Transportation Talk* will hopefully include details for the return of our annual Spring Technical Session in Halifax in early May. Fingers crossed and stayed tuned!

## University of Manitoba

The U of M ITE student chapter is excited to provide an update on what we were up to this fall. While some of our activities were limited by COVID-19 and remote learning, we were still able to host six successful events.

### Virtual Guest Speakers

In September, Jeannette Montufar, P.Eng, PTOE, RSP1, from MORR Transportation Consulting discussed the new Transportation Association of Canada (TAC) publication on bike infrastructure safety. She described the characteristics of different facility types for cyclists, listed key factors affecting observed and perceived safety, and described ways in which cyclists can be safely accommodated in the transportation system.

In October, Dr. Orly Linovski from the Department of City Planning at the University of Manitoba presented about equity and transit systems. She explained the meaning of transportation equity, its importance in transportation planning, what inequity looks like, and the importance of data in measuring and assessing equity.

In December, Professor Ed Manley from the School of Geography at the University of Leeds in the United Kingdom presented three interesting case studies about using movement data to analyse behaviour during the COVID-19 pandemic. The U of M ITE student chapter was happy to invite ITE Manitoba members to attend this excellent presentation.

Thank you to each of our speakers for volunteering their time and sharing their insights with us.



Middle school students attend a virtual presentation by members of the U of M Student Chapter

### Social Event

To celebrate the end of midterms, we went to Across the Board Cafe to play some board games. We briefly played the game “What Do You Meme?”, but ended up spending most of the time catching up as this was our first in-person event since the onset of the pandemic. It was great to interact with our fellow students in person again.

### Community Events

U of M ITE Student chapter members gave virtual presentations about transportation engineering to three grade 7 classes. We explained what our student chapter does, taught students about the different types of transportation engineering, stepped through how to ride public transit, explained how train wheels work, and discussed applications of transportation engineering in Winnipeg. It was a lot of fun! Thank you to the staff and students at Ness Middle School for having us.

For our annual Christmas Cheer Board fundraiser, we hosted a bowling night at Uptown Alley. Students, friends, and family enjoyed games of 5-pin bowling and recharged with refreshments. We donated all of our proceeds from the event to the Winnipeg Christmas Cheer Board.



## McMaster University

The ITE McMaster Chapter finished the Fall 2021 semester on a high note, wrapping up the year with many exciting virtual events!

On November 17, 2021, ITE McMaster hosted Parinaz Bazeghi, Digital Project Manager at UIC (International Union of Railways) in Paris, France. The event was titled “Transportation Talk: Global Perspectives on Rail”, where Parinaz spoke to attendees about her experiences working at an international rail transport industry body. She discussed some of the exciting, international projects she is currently working on, such as the DIGIM II digital platform for level crossing safety best practices and the Translate4Rail Project for rail freight cross border exchanges. Parinaz also gave advice to the student attendees regarding entering the international railway industry and the importance of making connections and expanding your professional network as a student.



On November 24, 2021, ITE McMaster hosted an advanced Transportation Spatial data software tutorial. This event was a continuation of the student chapter’s two-part QGIS tutorial series. This tutorial was led by Anastasia Soukhov and Rachael

Rajendram, two student members with extensive spatial analysis experience in both industry and academia. The theme of the tutorial was how spatial analysis could be used to drive policy planning decisions. Attendees were walked through analyzing Hamilton’s bike infrastructure and transit options using QGIS and Open Hamilton data. From here, they learned how to create and print maps that highlight key trends and data points. The tutorial ended with a discussion about the conclusions that could be discerned from the maps created, and their potential related impacts. This two-part series tutorial style proved to be a great success and ITE McMaster hopes to continue these types of events for other transportation-related software this 2022 winter season.

On December 1, 2021, ITE McMaster hosted Matthieu Goudreau, Zero Emissions Mobility Consultant at Wood PLC. The event was titled “Transportation Talk: Zero Emission Mobility”, where Matthieu spoke to attendees about his work modelling the adoption and implementation of Zero-Emission Vehicles. Matthieu has a Master’s degree in Transportation Engineering and drew from extensive experiences leading the analysis to support evidence-based decision-making for projects involving road, rail, maritime and air transportation modes. Matthieu’s presentation to attendees went over Wood’s ZeroEmissionSim (ZES) software, which works to baseline emissions, understand all factors and costs impacting operations and develop and test various options. Wood’s ZES is a key tool used by Matthieu and his team in their zero emissions mobility consulting work.

## Ryerson University

Ryerson ITE (RITE) hosted several events and workshops RITE in Fall 2021.

### Monthly Seminar: On-Demand Ride-sharing transit

In the first seminar from the monthly seminar series held on October 28, Paul Pentikainen, the Senior Policy Planner for the Town of Innisfil Ontario, was invited to give an overview of the evolution of Innisfil Transit. The discussion revolved around the town’s 4-year partnership with Uber that provides an on-demand ridesharing transit service, making it the first community in the world to partner with Uber for their entire public transit system.

### Transportation Talk

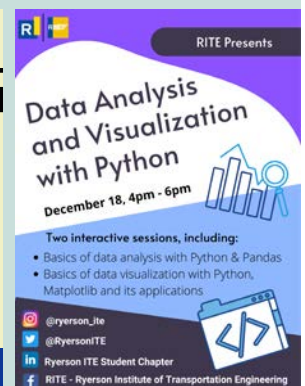
RITE hosted a “Transportation Talk” workshop on November 12th with a panel of 3 alumni (Dr. Lama Alfaseeh, Farah Samouh and Raima Hussain), an industry leader (Julia Silvani), and a faculty member (Dr. Bilal Farooq). The panellists provided useful insights on their path to the transportation industry and the resources needed to be successful in the field. The students had the opportunity to engage in meaningful dialogue and network with the panel.

### ATSPM Seminar

On November 30th, guest speaker Olivia Babcock, a Traffic Engineering Specialist at Miovision, presented Miovision’s tools to manage traffic signal networks. The seminar included the basics of Automated Traffic Signal Performance Measures (ATSPM) and the benefits of these measures in comparison to traditional traffic engineering methods. A demo using Miovision’s Traffop was also presented, which automatically flags issues and opportunities within the traffic signal network.

### Data Analysis and Visualization with Python

On December 18th, RITE offered a Data Analysis and Visualization with Python workshop. It was presented by Saba Sabet, a PhD candidate in the transportation engineering program at Ryerson University. The workshop was a great opportunity for students to gain and develop their programming skills in the Python language. The two interactive sessions included the “Basics of data analysis with Python & Pandas” and “Basics of data visualization with Python, Matplotlib and its applications”.



## York University

The ITE York University Student Chapter has been active throughout the Fall academic term of 2021, hosting seminars and events on our online platforms and in person. We hope everyone had a safe and enjoyable holiday and wish everyone a happy 2022!

### ***Paved Roads Seminar***

The first of our monthly seminars series was hosted on October 29th. Guest speakers gave a presentation on the roots of our profession, specifically from the perspective of roads. Speakers included Dr. Sina Varamini (McAsphalt Industries), Dr. Mohammad Shaffei (adjunct professor and research officer at the National Research Council), and Dr. Benjamin Colucci (professor at the University of Puerto-Rico-Mayaguez). Keeping in line with the transportation history theme of this year, members got a chance to learn about the early practices of road construction that paved the way to today's design standards.

### ***Football GameDay***

On Saturday, October 23rd, 2021, ITE YorkU and the Civil Engineering Graduate Student Association joined forces to support the YorkU Lions Football Team. ITE YorkU members had the opportunity to network and interact with club executives and York University Graduate students. The event was an excellent chance for students to mingle and create meaningful relationships.



### ***Halton County Radial Railway Excursion***

The first road trip of the school year occurred on October 24th when ITE YorkU members got a chance to visit the Halton County Radial Railway Museum in Milton, Ontario. (See photo above.) The event, which consisted of a tour through the museum, provided ITE YorkU members with the ability to get information about vehicles used in the Greater Toronto Area over the past decades. This included streetcars, locomotives and buses. The students also heard great stories from vehicle operators.

### ***GIS DAY***

The fourth event was GIS DAY which was hosted in conjunction with the Geomatics Club at York University. This event consisted of 8 guest speakers, five industry partners and three students. Speakers included Farah Hoque (Living Atlas, ESRI), Chris Livett (Metrolinx), Xuyang Han (Mapsted), Mike Leahy (ESRI Canada), Younis Elguindy (AOLS), Hamid Kiavaz Moghadam (Ph.D. Candidate), Bria Hamilton (Masters Candidate), and Philip Lynch (Ph.D. Candidate). Throughout the event, \$20 gift cards and ArcGIS Personal use licenses were given away to attendees.

### ***World Day of Remembrance for Road Traffic Victims***

On Sunday, November 21st, 2021, we paid tribute to those who lost their lives in car accidents by



commemorating World Day of Remembrance for Road Traffic Victims. We hosted an in-person event that allowed members to pay tribute to those relatives and friends we have lost in car accidents. The students who attended had an opportunity to light a candle during the event.



### ***Bikes in Toronto Seminar***

For the last seminar of 2021, we invited two guest speakers, Albert Koehl (Toronto Community Bikeway Coalition) and Ersan Ozon (Cycle York), to give a presentation on one of the most amazing and old modes of transportation, bikes. The guest speakers talked about the history of bikes and the critical role that bicycles will play in the coming years in large urban areas. The speakers described how bikes could ease traffic congestion and improve urban air quality and public health in densely populated cities.

### ***Special Thanks***

We extend a special thanks to all of our guest speakers for taking the time to participate in these events.

### ***Upcoming Events***

For the second half of the 2021-2022 school year, ITE YorkU has multiple events planned. First, our AGM

Luncheon will be held in the first weeks of February as we review our club's achievement in the year 2021.

Everyone will have the chance to develop their networking skills around industry professionals and presentations of projects from different streams of civil engineering. We will be hosting our annual Industry Night, where students get to interact and foster a relationship with industry professionals. If you and your company would like to participate in the event and network with current and graduating students, do not hesitate to reach out via our contact information below.

The successful seminar events that we have run in the first half of the school year have motivated us to continue to provide learning and networking opportunities to our community. Upcoming monthly seminars will cover the topics of Autonomous Vehicles, ITS, Urban Planning, and Road Safety.

### ***Call for Collaboration***

ITE Student Chapters! Please reach out to us if you would like to collaborate on various events, especially a hackathon! We want to build strong and lasting relationships with other chapters for many years to come.

### ***More Information***

For information about our student chapter or to view our latest annual report, visit our website at [ite.club.yorku.ca](http://ite.club.yorku.ca). Please let us know if you are interested in speaking at one of our seminars/events or sponsoring us. You can email us at [iteyorku@gmail.com](mailto:iteyorku@gmail.com) or visit us on one of our social media pages. We also encourage you to watch our latest informational video on [YouTube](#).



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