



Russell Brownlee,
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P.ENG.



Expert Summary

Russell is a Transportation Safety Engineer and the CEO of TNS. He has over 28 years of experience in the areas of road user safety, pedestrian and cycling safety, rail and transit safety, transportation engineering, and transportation planning. Russell provides safety consulting services and independent forensic investigations relating to transportation facility design, construction, operations, and maintenance. He has been qualified in the Superior Court of Justice, Ontario as an expert in road safety, transportation engineering, design, winter maintenance, transportation planning, site design and parking. Russell is a licensed professional engineer in the provinces of Ontario, Alberta, and British Columbia, and is certified as a Road Safety Professional Level 1. In 2017, Russell received the Transportation Safety Council Edmund R. Ricker award given in recognition of leadership in the field of traffic safety. In 2023, Russell was the recipient of ITE Canada's most prestigious award—the H. Robert Burton Distinguished Service Award recognizing his decades of work in transportation engineering.

Specialized Professional Competencies

- Transportation Safety
- Roadside Safety
- Forensic Assessments of Roadway Design, Signage and Maintenance
- Winter Maintenance and Minimum Maintenance Standards
- Human Factors and Positive Guidance
- At-Grade Rail Crossings
- Transportation Engineering and Peer Reviews

Professional Experience

- True North Safety Group: 2017-present
- 30 Forensic Engineering: 2008-2017
- IBI Group: 2001 – 2008

- Synectics Transportation Consultants: 1999-2001
- City of Vaughan: 1998 -1999
- Totten Sims Hubicki Associates: 1995 -1998

Academic Background

- Master of Applied Science in Civil Engineering, University of Waterloo, 1996
- Bachelor of Science in Civil Engineering, University of Manitoba, 1993

Additional Courses

- Road Safety Audit Training, 2000, Austroads.
- OGRA Managing Winter Operations Workshop: Don't Let Your Risk Manage You.
- FHWA Anti-Icing/RWIS Practices

- Snow School, 3 Day-Course, Ontario Good Roads Association (OGRA), 2009
- Traffic Signal Operations Specialist, Ontario Good Roads Association and Institute of Transportation Engineers, 2006
- Traffic Protection and Control Planning, Construction Safety Association of Ontario, May 2006
- Roundabout Design Workshop, November 2006

Safety Reviews/Audits

Operational Review for Highway 102, 0.157km West of Dog Lake Road westerly to the junction with Highway 11/17 Performance Review – MTO NWR, ongoing – Retained to complete a operational and safety review of the corridor including illumination and roadside safety.

Safety Workshops for the Eglinton Crosstown LRT Infrastructure, 2021-2022 - Retained to prepare a series of safety workshops to assess the relative risks associated with Eglinton Crosstown LRT infrastructure. The workshops include the identification of potential safety issues, frequency analysis and the identification of countermeasures.

Highway 427 Arbitration, 2022-2023 - Retained to provide an expert opinion regarding the scope and role of road safety audits (RSA) in road design and construction.

Red Hill Valley Road Public Inquiry, 2022-2023 – Retained by the inquiry chair to provide expert opinions regarding road design, traffic control devices, roadside safety, road safety assessments and human factors.

Safety Assessment of Proposed CN Logistics Hub, Milton, Ontario, CN, 2016-2019 - Retained to review the safety effects of the increased traffic and truck volume on the expected travel routes between the CN facility and the major destinations and freeway facilities. The study

area includes approximately 180 intersections and midblock segments.

In-Service Road Safety Review of the 8th Line Road and Parkway Road Intersection, City of Ottawa, 2022 - Retained to conduct an ISRSR at the intersection, following collision history and residents' complaints. The review includes collision analysis, desktop review, field investigation, public consultation and recommendation of countermeasures.

Operational and Safety Review of Rural Skewed Intersections, City of Ottawa, 2020/2021 – retained to develop an innovative approach to capture and rank the relative collision risk and severity of sites with low-volume and collision experience, and to select appropriate remedial actions representative of the risk level. The study area consisted of 22 curved-tangential intersections.

Trillium Passenger Rail System RSA, City of Ottawa 2019-ongoing – SNC-Lavalin was retained by the City of Ottawa for the delivery of engineering services for the planning, design, construction and commissioning of the Ottawa Trillium Passenger Rail System and the associated road, transit, pedestrian, and bicycle facilities. The TNS Team was retained to complete RSAs at nine project locations (i.e., road sections and stations) throughout the system at the 60% design, 99% design, and post-construction stages. The TNS Team delivered the 60% design RSAs within a very short timeline to meet the overall design submission schedule. 60% and 99% design reviews have been completed to date.

Safety of a Proposed Multi-Use Trail (MUT) At-Grade Rail Crossing, City of Toronto, 2023 – Retained to review the design and safety impacts of an MUT at-grade rail crossing of the Eglinton Crosstown LRT right-of-way.

Highway 405 Queue and Stopped Vehicle Advisory System RSA, Ministry of Transportation of Ontario, 2021 - TNS was

retained as a sub-consultant to complete road safety audits of 99% design and post-construction road safety audits.

Collision Investigations for the Eglinton Crosstown LRT Infrastructure, 2021 - Retained to review seven collision locations involving vehicle entry into the rail guideway during the initial months of corridor operations.

Princess Margaret Cancer Centre, 2021-2023 - Retained to review pedestrian-vehicle conflicts at their pick-up/drop-off area and University Avenue frontage and assessment the implementation of remedial actions over a number of years.

Victoria Park Avenue In-Service Safety Review – City of Toronto, 2019 – Retained to complete a safety review of the Victoria Park Avenue corridor in the Eglinton Avenue area. Included multi-modal assessment of a commuter, transit and retail corridor.

Intersection Safety Reviews, Town of Newmarket, 2023 - Retained to conduct a safety review of residential intersections and provide recommendations to improve operations and safety.

Safety Review of Bridge Street and Canal Road Intersection, Town of Bradford West Gwillimbury, 2021 - Retained to conduct a safety review of the intersection and provide recommendations to improve operations and safety at the intersection.

Corridor In-Service Safety Review – City of Calgary, 2017 – Retained to complete a comprehensive safety review of an industrial arterial road corridor including three intersections and a number of private accesses.

Operational and Safety Review of Rural Skewed Intersections, Region of Durham, 2019 – retained to develop an innovative approach to capture and rank the relative collision risk and severity of sites with low-volume and collision

experience, and to select appropriate remedial actions representative of the risk level. The study area consisted of 22 curved-tangential intersections.

Lakeridge Road Operational Safety Review – Region of Durham, 2015 – A review of safety concerns expressed along a Regional road section, which included significant grades, numerous private accesses, school bus stops and a public side road servicing recreational uses.

In-Service Safety Reviews – Region of Halton, 2015 – Comprehensive operational safety reviews of four intersections and two road sections in the Region of Halton.

Plains Road Safety Review, City of Burlington, 2020 – a safety review of collisions occurring through an urban horizontal curve on Plains Road East.

MacLaren and Lyon RSA, City of Ottawa, 2021-ongoing - TNS was retained through Robinson Consultants to conduct Road Safety Audits (RSAs) of the reconstruction projects of MacLaren Street and Lyon Street in Ottawa. As part of the contract between Robinson Consultants and the City, RSAs were required at the functional and preliminary design stages.

Highway 400/Jane Street Rehabilitation, Ministry of Transportation of Ontario, 2018-2020 – TNS was retained as a sub-consultant to complete an active transportation review and a temporary conditions RSA for the rehabilitation of eight bridge structures at the Highway 401/Jane Street interchange in the City of Toronto. The temporary conditions RSA included a comprehensive review of the complex 90% staging plans over multiple years and stages from a road user safety perspective. This review encompassed positive guidance, road user workload, visibility, speed control, conflict recognition, and decision-making activities on the approach, and at key conflict

areas through the temporary conditions on arterial and freeway facilities.

Lancaster Road Reconstruction RSA, Region of Waterloo, 2021 - TNS was retained to complete road safety audits of three functional design alternatives for the reconstruction of Lancaster Road between General Drive to Wellington Street. The alternative designs incorporated bicycle lanes, protected bicycle lanes and boulevard cycle tracks.

Preliminary Risk Assessment Aurora GO Station Metrolinx, 2016 – Retained to complete a preliminary risk assessment of the pedestrian facilities at the Aurora GO Station site assuming future changes to the train frequency.

Dundas Street Bicycle Facility Preliminary Risk Assessment, WalterFedy /Region of Waterloo, 2016 – Retained to complete a preliminary risk assessment comparing the relative risk between on-road bicycle facilities and an off-road share use path on Dundas Street between Hespler Road and Elgin Street in the City of Cambridge. The findings were incorporated into the overall decision-making in the planning and design phases of the project.

DVP Bus By-Pass Lanes Road Safety Audit – GO Transit/ARUP, 2011 – As part of GO Transit’s project to lengthen the bus by-pass lanes southerly on the Don Valley Parkway, the prime consultant ARUP was requested by the City of Toronto to undertake a road safety audit of the planned improvements. Retained to be an independent peer review of the road safety audit process to ensure that the methodology employed was consistent with current industry-practice.

Operational Safety Review – Town of Halton Hills, 2015 – Comprehensive operational safety reviews of the primary highway routes through the downtown core of Acton with the focus on

vulnerable road users, and existing and future commercial trucking operations.

In-Service Safety Review of Four Intersections – City of Brampton, 2013 – Comprehensive operational safety reviews of four City intersections.

Operational Performance Review of Highway 35/115 from Boundary Road to Highway 7A, Ministry of Transportation of Ontario, 2011 – This operational performance review (OPR) was initiated in response to the Eastern Region Traffic Section’s LOSS priority listing. The safety tool generates a list of areas which have been identified as having potential for safety improvements. The subject section of Highway 115 was identified as having a LOSS priority ranking of 1. The safety assessments focused on dominant collision types and area safety concerns associated with single motor vehicles, wrong-way travel, and interchange operations.

Queens Quay In-Service Safety Review – City of Toronto, 2012 – A comprehensive safety review of the two major Bathurst Street intersections located at the access to the Island Airport terminal. In addition to the increasing airport related traffic, the intersections accommodate heavy pedestrian and bicycle movements associated with an adjacent school and non-vehicular commuters.

Highway 410/Highway 10 Valleywood Drive Operational Review, Ministry of Transportation of Ontario, 2010 – Subsequent to the construction of the Highway 410 / 10 interchange, the Ministry began to receive complaints related to traffic infiltration and a high volume of U-turns in an adjacent neighbourhood. Changes to the road network that were implemented as part of a freeway extension and construction of the new interchange were creating positive guidance challenges for motorists. Retained as a road safety sub-consultant to conduct an

operational review to identify means of addressing the operational, safety and human factors issues at the location.

In-Service Road Safety Audits – Region of Peel (2012-2013) – Comprehensive operational safety reviews of three intersections and three road sections in the Region of Peel. The study locations included heavily travelled truck routes and rural high-speed roadways.

Highway 6 Safety Review – Ministry of Transportation of Ontario (2009) – A study to review the safety performance of Highway 6 from Highway 401 to Highway 5. The study included a review of the collision history, higher risk location, speed zone reviews, safety message signing, roadside safety, illumination, and vulnerable road users. Russell was retained to participate in all aspects of the study as the human factors expert.

2010 Traffic Operations Analysis and Countermeasure Development – Ministry of Transportation of Ontario – Through its annual network performance assessments, the Northwest Region of MTO identified a priority list of locations, which appear to be exhibiting a higher-risk of collisions compared to other similar type highways in the region. Retained to undertake comprehensive in-service operational safety reviews of twenty locations of the higher priority road sections, which included a total of approximately 2000 kilometres of roadways and numerous intersections and private accesses.

2007 Traffic Operations Analysis and Countermeasure Development – Ministry of Transportation of Ontario – Through its annual network performance assessments, the Northwest Region of the Ministry of Transportation (MTO) identified a priority list of locations, which appear to be exhibiting a higher-risk of collisions compared to other similar type highways in the region. Retained

to undertake comprehensive in-service operational safety reviews of twenty locations of the higher priority road sections, which included a total of 132 kilometres of roadways and numerous intersections and private accesses.

2007-2008 On-Call In-Service Safety Reviews and Audits – City of Toronto – Retained by the City of Toronto as the Principal Investigator for the on-call safety review team to conduct safety reviews and safety audits for City initiated projects.

Operational Safety Reviews 2008 – Regional Municipality of York – Comprehensive operational safety reviews of four Region intersections and road sections in Richmond Hill and Vaughan.

Highway 27/17th Sideroad Operational Review – Regional Municipality of York – An operational review of the southbound left turn movements at this high-speed rural intersection.

In-Service Intersection Safety Reviews – City of Brampton – Through the City of Brampton’s network screening process the intersections of Clark Boulevard/ West Drive and Conestoga Drive/ Sandalwood Parkway East were identified as a “higher risk” locations with respect to collisions. Retained by the City to undertake in-service safety reviews to identify potential safety improvements to address any physical or operational contributing factors.

Intersection Evaluation and Traffic Operations Analysis: Highway 9 and Peel Regional Road 7 – Ministry of Transportation of Ontario – Through their 2005 network screening process, the Ministry of Transportation of Ontario (MTO) Central Region identified the Highway 9/ Peel Regional Road 7 (Airport Road) intersection as having a high potential for operational improvement. Retained to undertake an operational review of the

Highway 9/ Airport Road intersection, including the access and parking issues related to the private accesses.

Highway 7/ 12 and Regional Road 13 In-Service Safety Review – Ministry of Transportation of Ontario – Retained to conduct a comprehensive safety review of a recently reconstructed signalized intersection in the Region of Durham. Through this review, MTO requested that the team address related technical input received from the Region of Durham, and consider the implications of the temporary traffic control required for the Beaver River bridge rehabilitation located approximately 300 metres north of the subject intersection. The review included an assessment of geometry and sightlines, signage and markings, signal timings, traffic operations, maintenance, and positive guidance.

2006 Traffic Operations Analysis and Countermeasure Development – Ministry of Transportation of Ontario – Through its annual network performance assessments, the Northwest Region of the Ministry of Transportation (MTO) identified a priority list of locations, which appear to be exhibiting a higher-risk of collisions compared to other similar type highways in the region. A total of thirty-seven priority locations were identified along the primary Provincial routes in the Region including Highway 11 / 11B, Highway 17 / 17A, and Highway 61. Retained to undertake comprehensive in-service operational safety reviews of seventeen of the higher priority road sections, which included a total of 46 kilometres of roadways and over 100 intersections and private accesses. The study was completed in short timeframe to incorporate the findings into the 2007 capital works programming and other ministry initiatives. The final report was

delivered two months from the project award date.

Operational Safety Reviews 2006 – Regional Municipality of York – Comprehensive operational safety reviews of the Region's top four high-risk signalized intersections including Highway 7 / Highway 27, Warden Avenue / Denison Road, Major Mackenzie Drive/ Leslie Street and 16th Avenue / Kennedy Road. The reviews included day and night field observations and positive guidance reviews.

Montreal Intersection Safety Reviews – City of Montreal – The City of Montreal completed a detailed review of roadway collisions and developed a ranking system to determine their critical collision intersections. Retained to undertake detailed operational safety reviews at their top fifteen intersections identified in their network screening process. The reviews included collisions analysis, positive guidance reviews, conformance checks, identification of safety issues and potential hazards, development of countermeasures and remedial measures.

Denver Intersection Operational and Safety Study – City and County of Denver – Through the State Farm safety improvement program, the 1st Avenue / University Boulevard and the Hampden Avenue / Colorado Boulevard intersections in the City of Denver were identified as high collision claim intersections. A safety study was initiated to undertake geometric, collision, conflict, capacity and human factor analysis to identify deficiencies and recommend appropriate short and long-term counter measures.

Regional Municipality of York Operational Safety Reviews – Region of York – The objective of this study was to develop a procedure for which all Region of York operational safety reviews (OSRs) would be completed. Key activities included,

undertaking three full OSRs at rural unsignalized intersections in the region; reviewing the regions existing practices relating to OSRs; peer reviews of three OSRs previously completed by regional staff; and, development of a comprehensive office and “field version” OSR procedure.

In-Service Road Safety Review of Dundas Street from McLaren Avenue/Pollock Avenue to Franklin Boulevard, Region of Waterloo, 2017 – Retained to conduct a safety review of a 850 metres road section of Dundas Street in Cambridge which included the review of two signalized intersection, one stop controlled intersection, one roundabout and several commercial accesses.

City of Toronto Intersection Operational Safety Review – City of Toronto Safety Bureau – In an effort to explicitly address safety issues and concerns at the City’s intersections, the City of Toronto Safety Bureau pursued the development of a set of procedures for review road user safety. The study included a procedure document for the completion of intersection operational safety reviews (IOSR) in the City of Toronto and the conduct of IOSRs at the Markham Road/ Ellesmere Road (Suburban) and Danforth Avenue / Pape Avenue (Urban) intersections. Classroom and field training was conducted for City of Toronto Staff relating to the City’s IOSR procedure.

Peter’s Corners Operational and Safety Review – Ministry of Transportation of Ontario – Peter’s Corners consisted of the three intersections of Highway 5, Highway 8 and Highway 52 that form a triangular configuration in West Flamborough in the Region of Hamilton-Wentworth. The intersection spacing ranges from 90 to 140 metres. The Highway 5 / Highway 8 intersection was under signal control; whereas, the remaining two intersections were under

two-way stop control. The objectives of the study were to outline all short-term physical and operating improvements that could be considered with the existing Ministry/Regional right-of-way, including the installation of a traffic signal at the Highway 5/Highway 52 intersection.

Thickson Road/ Consumers Drive Intersection Operational and Safety Review – Regional Municipality of Durham – The Region of Durham commissioned an operations and safety review of the Thickson Road / Consumers Drive / Champlain Avenue intersection including the private accesses within the functional area of the intersection. The study included an assessment of the existing operations, future traffic operations, safety and a research of the corner clearance requirements in the GTA. The study identified a number of short and long-term recommendations to improve the operations and safety at the intersection and at the private accesses.

Thickson Road/ Victoria Street Intersection Operational and Safety Review – Regional Municipality of Durham – This project included a review of the feasibility of implementing southbound dual left turns at the Thickson Road/ Victoria Street intersection. Thickson Road and Victoria Street are primary arterial roadways in the Region of Durham. The intersection of these two roads, just south of Highway 401, accommodates heavy truck volumes from the GM Assembly Plant and the Wentworth Street industrial subdivision to the south, peak flows from manufacturing uses to the west and significant turning movements associated with the Thickson Ridge Power Centre to the east.

Harwood Avenue Corridor Review – Regional Municipality of Durham – The Harwood Avenue Corridor Review was initiated in response to concerns relating to pedestrian safety and the

operations associated with a fourteen meter median dividing the two directions of travel. The resulting recommendations were formulated to address both operational and safety concerns; in addition to, eliminating access to Highway 401 via Harwood Avenue with the construction of the Carruthers Creek interchange in 2001.

Moyer Road Intersection Safety Review – Regional Municipality of Niagara – During rehabilitation of the Emerson Bridge (Moyer Road) in the City of Welland and Thorold, the Region of Niagara identified potential safety concerns with the replacement of steel handrails, parapet walls and curbs with barrier walls. The Region identified a potential sight distance restriction between motorists stopped on Grassy Brook Road, an intersection along Moyer Road immediately south of the bridge and those travelling along Moyer Road.

Pedestrian and Bicycle Safety

Rural Active Transportation Strategy – City of Burlington, 2019 - Retained to undertake safety reviews of five existing midblock uncontrolled Bruce Trail crossings located in rural areas of Burlington.

AT Preliminary Risk Assessment, 2017 - The City of Ottawa was undertaking improvements to Mitch Owens Road between River Road and Dozois Road and was considering a number of opportunities to improve the connectivity of its active transportation network across this rural 80 km/h roadway. TNS completed a preliminary risk assessment of the alternative designs, which compared the relative risks in the areas of pedestrian/bicycle safety and conflict, operating speeds, traffic operations, sight lines, bicycle access, driveway conflicts, delineation, parking interactions, and roadside safety for vehicles and bicycles.

Trail Crossing Review, Region of Waterloo, 2019 – Retained to complete a general review the nature, location, and traffic control devices at mid-block crossing along two trail corridors in the Region of Waterloo, and to facilitate a discussion with the area municipalities regarding remedial actions.

Highway 400/Jane Street Interchange Rehabilitation, Active Transportation Review, MTO/Stantec, 2019 – Retained to complete an assessment to accommodate pedestrian and bicycle facilities into the rehabilitated structures. Required an evaluation of the operational and safety aspects of a range of facility types based on MTO's Bikeway Design Manual.

Highway 400/Essa Road, Active Transportation Review, MTO/Stantec, 2019 – Retained to complete an assessment to accommodate pedestrian and bicycle facilities into the rehabilitated structure in Barrie. Required an evaluation of the operational and safety aspects of a range of facility types based on MTO's Bikeway Design Manual and City of Barrie standards.

Highway 400/Bradford, Active Transportation Review, MTO/Stantec, 2019 – Retained to complete an assessment to accommodate pedestrian and bicycle facilities at three Highway 400 crossings in Bradford/West Gwillimbury. Required an evaluation of the operational and safety aspects of a range of facility types based on MTO's Bikeway Design Manual and municipal standards.

Pedestrian Operational Safety Review Region of Durham, 2015 – A review of pedestrian safety and operations along Victoria Street in the Town of Whitby. The area included GO Transit station and parking facilities, high density residential and recreational facilities.

Pedestrian Operational Safety Review – City of Kingston, 2015 – A review of pedestrian safety and operations in the vicinity of the Brock Street/Montreal Street intersection, Hotel Dieu

hospital and the Chown parking garage in the City's core area.

Pedestrian Safety Initiatives Scoping Study – City of Toronto – Retained by the City of Toronto to perform a scoping study for potential pedestrian safety technologies (i.e., passive pedestrian detection, tri-coloured/ flashing walk pedestrian heads, count down timers, pavement level delineation light, etc.), to be implemented first as pilot tests, and subsequently as standard traffic control devices. The initial task of this study was to conduct a preliminary assessment of six candidate technologies identified by City staff and make recommendations regarding their effectiveness, availability, legality and applicability. The balance of this project was to prepare of six pilot project designs.

Pedestrian Safety Review, Region of Durham, 2016 – Retained to complete a review of pedestrian safety, conflicts and connectivity at the Region of Durham Headquarters campus in Whitby, Ontario.

Ossington Subway Station Area Safety and Accessibility Review, 2017 – Retained by a private individual to review the road user safety and accessibility of the area road and sidewalk network providing access to the subway station. The review included infrastructure design, operations, traffic control devices and maintenance.

The Canadian Guide to Promoting Sustainable Transportation Through Site Design – Canadian Institute of Transportation Engineers (CITE) – The CITE initiated a project to develop and disseminate a guide to promote alternative mode use through site design. The guide provides municipalities and the development community with site design practices that help to promote sustainable transportation modes such as walking, cycling and transit.

Mitchell Pedestrian Safety Study – CCL Consultants – Retained to review the traffic

and pedestrian operations along Frances Street in the Town of Mitchell. A private residential development was being proposed between two regional school sites. Town Council requested that a safety review of pedestrian operations be undertaken to address existing safety, as well as, the impacts of the proposed development. A thorough review of the pedestrian facilities, traffic and school bus operations, site circulation and school crossing guard operations was completed.

Mystic Point – Brookfield Residential Services Limited – Retained to review the traffic operations, traffic control and pedestrian operations on the Mystic Pointe condominium and townhouse development located on Manitoba Street in the City of Toronto. The review encompassed traffic control, access, parking and pedestrian operations on site. The report including immediately implementable recommendations, as well as, long-term improvement alternatives.

Transportation Safety

Horizontal Curve Assessment, Region of Niagara, 2022-2023 - Retained to assess over 280 horizontal curves and determine the required warning sign modifications to meet Ontario Traffic Manual Book 6 – Warning Sign criteria.

Horizontal Curve Assessment, Region of Halton, 2019 - Retained to assess over 150 horizontal curves and determine the required warning sign modifications to meet Ontario Traffic Manual Book 6 – Warning Sign criteria.

Independent Peer Review of the Proposed Improvements to the Trans-Canada Highway, 2017 – Retained by a private individual to complete a peer review of the safety assessment completed by the British Columbia Ministry of Transportation of Ontario for the planned improvements to the Highway

1 (Malahat Highway) and the relative safety of the access provided to the adjacent properties. The findings of the review were submitted as part of a judicial review in the Supreme Court of British Columbia.

Safety Review of the Impacts of Proposed Quarry/Pit Operations – Retained by the Citizens for Safe Ground Water (CSGW). Protect Mono, Skeleton Lake Cottage Association, and No Place for A Quarry resident groups to review the potential safety impacts associated with haul truck increases at three locations in the Mono, Huntsville, Bancroft and Township of Wilmot communities. Attended OLT hearing in Mono and Wilmot.

Safety Review of the Impacts of Proposed Quarry Operations – Retained by the Township of Ramara to review the potential safety impacts associated with a potential haul route.

Ramp Configuration Safety Assessment – First Gulf, 2015 – A quantitative safety assessment of the “hybrid option” ramp configurations between the Gardiner Expressway, Lakeshore Boulevard and Don Valley Parkway in the City of Toronto.

Road Safety Review for a New Development, 2021 - Retained to conduct a road safety review for roadways and intersections in the vicinity of a proposed new development in the City of Barrie, including a review of sight lines, intersections and roadways, collision analysis and recommendation of countermeasures to improve safety for all modes.

Simcoe Street Review – Region of Durham, 2015 – Operational safety reviews of multi-modal road sections along the frontages of Durham’s UOIT college campus as part of a larger land use planning study.

Transition Zone Safety Assessment – Mason Homes, 2017 – A safety review of the urban/rural transition zone in northern Peterborough.

The review included the safety effects of design speed, speed zone transitions, lighting and traffic control devices.

Fort Erie Operational Safety Review – Town of Fort Erie, 2015 – A safety review appointed through a human right tribunal to address potential issues with intersection / driveway operations, on-street parking, and pedestrian safety.

Highway 69 Access Review, Borden Ladner Gervais – A review of the operations, safety and human factors aspects of maintaining a private driveway at 5494 Highway 69, immediately south of the Gladu Road interchange, which was being constructed as part of the highway widening project. The findings were successfully defended at a Hearing of Necessity associated with the property expropriation.

Mississauga Automated Speed Compliance – City of Mississauga – Retained by the City of Mississauga to develop a Business Case and Marketing Strategy suitable for presentation to the Public and Provincial Government to support the implementation of an Automated Speed Compliance (ASC) safety program in Mississauga. The aim of the assignment is to validate the link between speeding and collisions, and to substantiate the value of automated photo enforcement in achieving speed compliance.

Expert Opinion – City of Windsor – Retained by the City of Windsor to conduct a transportation review of a reconstructed public access and intersection configuration. The purpose of the review was to compare “before” and “after” conditions, and to identify any safety issues or operational constraints that might have resulted from the access reconstruction. The results of the review served as evidence to support the City’s

success case in an Ontario Municipal Board hearing.

Highway 11 Value Engineering Study – Ministry of Transportation of Ontario – Based on MTO network screening, historical collision data, and a list of identified operational / safety concerns, conducted a safety review of the 150-kilometre section of Highway 11 that runs from North Bay to New Liskeard. The review identified problem areas along the highway with notable collision histories that exhibited positive potential for safety improvement. Subsequently, acted as the safety and operations sub-consultant to Marshall Macklin Monaghan for a value engineering study that addressed highway operational and maintenance issues.

Ramp Rollover Study – Ministry of Transportation of Ontario – MTO identified rollover and loss-of-control collisions on freeway ramps as a significant safety issue. As such, four freeway interchange ramps on Highway 401, 427, 406 and QEW exhibiting a history of rollover and / or loss of control collisions were selected for review. Retained by the MTO to examine the state-of-the-practice in mitigating ramp rollover issues, analyze the existing conditions at the four interchange ramps identified by MTO and recommend countermeasures that might improve safety at the four subject ramps.

Work Zone Safety Review Pilot Project – Ministry of Transportation of Ontario – Retained by MTO Central Region to review, improve, and test processes for evaluating work zone safety on MTO controlled-access roadways. The pilot project included a section of the Highway 401 Eastbound Collector from Bathurst Street to Bayview Avenue.

Roundabout Peer Review – Town of Oakville, 2014 – Retained subsequent to a two-vehicle collision to complete a collision reconstruction

of the collision and review the design of a newly constructed neighbourhood roundabout.

Ontario Service Centre Review – Infrastructure Ontario, 2014 – Retained as a road safety subconsultant to complete comprehensive operational, safety and compliance reviews at a number of Ontario's privately design and operated freeway service centers.

Durand Neighbourhood – Safety Review – City of Hamilton – The purpose of the study is to complete an area traffic management plan in response to operational, physical and safety related concerns. As part of the Durand Neighbourhood Transportation Study, a review of high-risk intersections and road sections was undertaken to identify safety concerns. In total, the collision history was reviewed for twenty-two signalized and unsignalized intersections, one road section and pedestrian / bicycle collisions. The development of potential concerns/ hazards and recommended counter measures was assimilated into the overall assessment in the Durand transportation review.

Rail Safety Audits/Research

Pedestrian Facilities Review – City of Ottawa, 2021– Retained to conduct site reviews of the existing pedestrian facilities, recommend remedial actions and provide concept drawings of the proposed modification.

Rail Safety Audits, 2016 and 2017 – Retained to conduct site reviews, anti-whistling studies, and/or regulatory compliance reviews for municipalities in Ontario and Alberta at each of their at-grade railway crossings. The scope of work reflected comprehensive safety reviews consistent and supported by the current regulations, state-of-the-practice in road/rail user safety, transportation engineering and risk management:

Region of Waterloo;

City of Mississauga;
Regional Municipality of Durham;
City of Belleville;
City of Cambridge;
Town of Woodstock;
Town of Augusta;
Town of Whitby;
Town of Woolwich;
Town of Didsbury.

Rail Trespassing Occurrences and Countermeasure Strategies – Transport Canada – The objective of this study was to undertake a detailed causal analysis of trespassing occurrences, then identify and evaluate potential countermeasures (founded on education, engineering and enforcement) and their potential effectiveness in providing safety gains.

Safety at Private Crossings – Transport Canada – Retained to complete a three-phase study to identify and examine the key factors affecting safety at private road-rail grade crossings. The risk of incidents at private crossings was especially elevated because active warning systems were typically not used. These incidents affected numerous stakeholders, such as the vehicle and equipment drivers, railway operating personnel, railway passengers, property owners, municipalities, and federal authorities.

Transport Canada – Second Train Warning Study – A study undertaken to evaluate systems in use or under development for warning pedestrians of a second train approaching at a multi-track, rail-roadway at-grade intersection, and to provide recommendations on an acceptable concept system for potential deployment across Canada. Included in this study was a before and after safety review of pedestrian

behaviour and risk with the installation of the recommended second train warning device.

School Operations/Safety

Highway 7 Pedestrian Safety Review – Regional Municipality of York (2009) – A study to review the pedestrian operations and safety along the Highway 7 corridor between Islington Avenue and Martin Grove Road. The study was initiated by the Region through discussions with the area residents and the Catholic School Board, who were concerned about student travel through the corridor.

School Operational Safety Review – Regional Municipality of Durham, 2010 – A study to review the vehicle, transit and pedestrian operations along Harwood Avenue and on the site of two collocated high schools with shared facilities. The two school boards expressed concerns for the safety of students at the vehicular entrances, as well as waiting times for vehicles entering and exiting the school during peak times.

Roadside Safety

Guide Rail Assessment and Prioritization Study, Town of Caledon, 2021 - Retained to conduct a roadside safety assessment of existing conditions based on industry standards and to develop a priority list for the recommended remedial measures at over 300 locations.

Norfolk County Roadside Safety Assessments, 2017 – A review of over 200 kilometers of rural roadways to identify roadside safety deficiencies and recommend remedial actions. The review also included assessments of stopping sight distance, approach sight distance and departure sight distance and the intersections and major accesses along the corridors.

Safety Review of Semi-Mountable Curb – Mason Homes, 2017 – A comparative assessment of the relative safety of barrier curb versus semi-mountable curb in an urban residential neighbourhood.

Traffic Control Device Policy Development

Update to the Ontario Traffic Manual – Book 18 Cycling Facilities, 2018-2020 – Involved as the road safety expert in the project team to develop the update to OTM Book 18. Provided guidance on various safety aspects of vulnerable road users. Completed final review of the manual from a road user and risk management perspective.

Ontario Traffic Manual Book 12 – Section 4 – Ministry of Transportation of Ontario – The Ministry of Transportation of Ontario (MTO) originally published OTM Book 12 dealing with all aspects of Traffic Signals in July 2001. Since its publication a number of new practices and technologies have been developed in the transportation community. Section 4 of the manual relates to the justification for traffic signal installation from an operations and safety perspective. This project involved a state-of-the-practice review, guideline development and case study application of the existing and preferred guideline for traffic signal warrants.

Bilingual Sign Design Services – Ministry of Transportation of Ontario – A study to determine the best method to accommodate and implement bilingual messages on the Ministry of Transportation’s variable message signs (VMS), portable variable message signs (PVMS) and static work zones signs. The study includes a detailed review of the hardware, software, human factors, traffic engineering, sign design and public education effects of the various methods to effect bilingual signing in the Province’s Designated Areas.

TAC Guide Signage Study – Transportation Association of Canada – The purpose of the TAC Guide Signage Study was to review state-of-art guide signage practices from Canadian and international sources. The findings of the TAC Guide Signage Study were used to revise the guide signage chapters of the Manual of Uniform Traffic Control Devices (MUTCD) for Canada and to develop the Supplemental Guide for Guide and Information Signage in Canada. The review of guide signage practices included a literature review and a web-based jurisdictional survey completed by 22 Canadian provinces and municipalities and US states.

Alberta Guide Sign Study – Alberta Transportation – A study to review the state-of-the-practice of guide signing along Province of Alberta roadway facilities and within major municipalities. The findings of the study were used to update the Alberta Urban Guide and Information Sign Manual and the guide sign sections of the Alberta Signing Manual. The review of guide signage practices included a literature review, consultations with sixteen Alberta municipalities and field investigation of current signing practices. The scope of the study included all guide and information signs including motorist services, TODs and Logos type signing.

Transportation Planning

Region of Durham School Operations and Access Guidelines – Retained to develop a guideline to assist with the transportation aspects of new school development in the Region of Durham. A set of sixteen guidelines were recommended encompassing school location and connectivity, frontage and access provisions, access design, on-street parking and loading areas, pedestrian and bicycle access, and school area traffic control. This project included consultation with the area municipalities and local school boards.

Oakville Hospital Master Plan – Infrastructure Ontario and Halton Health Care Services Corporation – A multi-modal transportation review of the planned Oakville Hospital to be located at Dundas Street and Third Line in the Region of Halton. The preliminary plans included 1.5 million square feet of institutional uses, 2000 parking spaces and transit facilities.

South Kitchener Transportation Corridor Study – Region of Waterloo – The Region of Waterloo initiated a transportation corridor study between King Street and Manitou Drive in South Kitchener for the purpose of establishing and protecting a corridor to provide of long-term transportation needs through South Kitchener. This corridor is planned to meet the needs of people and goods movement by motorist, public transit, cycling and walking. The study included Highway 8 through Kitchener, an active retail area in and around Fairview Mall and the Hidden Valley Environmentally Sensitive Policy Area (ESPA) 27.

Transportation Master Plan – Town of Lakeshore – The preparation of a Transportation Master Plan to determine the types of transportation services and improvements that will be needed over the next 20 years as the area continues to grow. The Master Plan involved a set of policies, plans and guidelines on subjects ranging from roadway design and subdivision layout, through to traffic management, on and off-street parking, sidewalk development, provision of cycling routes and possible transit service.

Islington Land Use Planning Study – City of Vaughan – A study to review the implications of modifying the land use provisions along a historic York Region corridor through the City of Vaughan. The primary components of the study included land use planning, transportation, environmental, and urban

design. The Islington Avenue corridor experienced a significant growth in traffic due to rapid development in the Woodbridge Expansion Area. The traffic component included the analysis of the vehicular, transit and pedestrian movements for three time horizons and a number of land use scenarios. The resultant study was later defended at the Ontario Municipal Board dealing with three OPA applications in the corridor.

Centre Street Land Use Planning Study – City of Vaughan – A study to review the implications and need to modify the land use provisions within the Centre Street corridor between Bathurst Street and Dufferin Street in the City of Vaughan. The study included a thorough assessment of the planning, market, transportation and urban design issues and opportunities. The study methodology included the development of a preferred land use plan “vision”. The transportation component included a review of the traffic operations, pedestrian facilities and transit service under existing and future conditions.

York Rapid Transit Plan – Class Environmental Assessments – Transportation Assessments – Region of York / York Consortium – A public-private partnership project to facilitate the implementation of Rapid Transit in the Region of York. The YRTP proponents are currently undertaking Class Environmental Assessment of the Rapid Transit requirements along Yonge Street, Highway 7 and a north-south link in the Town of Markham. Transportation Assessments were undertaken as part of the EA process and involved the assessment of existing traffic, transit and pedestrian operations, future effects of the Rapid Transit plan including land access provisions, and determination of mitigating measures.

Hespeler West Community Plan – A study to review a development concept for approximately 1,750 acres of land north of

Highway 401 in the vicinity of Fountain Street and Regional Road 24 in the City of Cambridge and Region of Waterloo. The project followed the integrated approach of the Environmental Assessment Process and the Planning Act. The assessment included a detailed transportation analysis and the preparation of a traffic management plan.

River Ridge Area Transportation Study – Town of Lakeshore – In response to a heightened level of development potential south of County Road 22, west of the Belle River Community, the Town of Lakeshore completed an area wide assessment of transportation requirement for the River Ridge Area. Ultimately, this area will accommodate approximately 5,000 homes, an elementary and a secondary school. The schools will have a capacity of 2,400 students. The comprehensive study included a review of the proposed transportation network including intersection and roadway operations, pedestrian facilities and connectivity, future transit service and bicycle facilities and school site operations.

Hagersville Area Traffic Study – County Haldimand – A project to identify existing and future roadway conditions, needs and alternative improvements in the Hagersville Area. The study reviewed measures to minimize the impacts of traffic through the area, including truck traffic and establish the “need” for short, medium and long term area transportation improvements as required by the provincial Environmental Assessment Act, including the option of a Hagersville bypass.

Traffic Study, Golden Mile Employment District – City of Scarborough – This study involved a comprehensive assessment of the transportation needs associated with redevelopment of eleven major parcels of property in the Golden Mile Employment District (GMED). The project required the evaluation of current operating conditions and

projected traffic growth in the study area. Operational deficiencies in the road network were identified and remedial improvements recommended. The primary objective of this study was to assess the current land development applications within the study area and determine the magnitude of new development that could be supported by the improved transportation system.

Development of Policy Papers for Phase Two of the Transportation Master Plan for the City of Hamilton – City of Hamilton – The City of Hamilton City-wide Transportation Master Plan will provide inputs to the Growth Related Integrated Development Strategy (GRIDS) and make recommendations to Council on the adoption of a City-wide Transportation Policy that is cognizant of Vision 2020 and other City of Hamilton long-term planning objectives. The second phase of the initiative included the development of twenty-three policy papers in the areas of Travel Demand, Urban Development, System Performance, Infrastructure Planning and Infrastructure Financing.

County of Peterborough Transportation Planning Study – Policy Development – Through the development of a Transportation Master Plan for the County of Peterborough, the need for a number of roadway operation policies was established. The study included the development of County policies in the areas of mutual driveways, crosswalks, community safety zones, establishing school zones and unsignalized intersections.

Thickson Road/ Highway 401 Employment Area – Region of Durham – The study was initiated to address concerns relating to current and future development related traffic in the Thickson Road/ Highway 401 Employment Area in the Town of Whitby and City of Oshawa. The Study Area is dominated by commercial and industrial uses and has experienced a

considerable amount of development over the past five years including eight “big box” type developments. The new developments dramatically increased the traffic along Thickson Road and have affected the operations at the Thickson Road intersections, particularly the Highway 401 ramp terminals. Regional staff, along with staff from the Ministry of Transportation of Ontario (MTO), expressed concern regarding traffic operations at these intersections should further development occur in the area.

Downsview Lands Redevelopment Transportation Study – The City of North York initiated this study to identify local and system wide operational and physical improvements to facilitate and accommodate the future transportation demands of the proposed Downsview Lands developments on 280 hectares of land. In addition, a strategy was recommended to implement improvements in a rational and cost-effective manner. A key component of the study was to gain consensus between all jurisdictions and stakeholders regarding the study procedures, the recommendations and the implementation plan.

Secondary Plans – Transportation Review – Town of Lakeshore – Completed four area transportation studies for the following areas in the Town of Lakeshore:

- Manning Road/ Amy Croft Drive – Commercial Area;
- Advance Boulevard/ Patillo Road – Industrial Area;
- Puce Secondary Planning Area – Residential Area’ and
- Wallace Woods – Residential/ Commercial Area.

The reviews established the area road network and its classification, required arterial road

and intersection improvements, pedestrian facilities, and intersection control.

North York Centre Review, Traffic Study – City of North York – The City of North York initiated this study to assess various land use scenarios for the downtown area along Yonge Street in the North York City Centre. The City completed an extensive data collection program including an employee and resident survey to establish trip making characteristics in the area.

Wolfe Island Ferry Service Traffic Study – Ministry of Transportation of Ontario – A study for the Ministry of Transportation to quantify the current peak and off-peak ferry traffic demands and to forecast future demands for crossings in the 10, 15 and 20 year time horizons. The study included an analysis of historical ferry traffic data, ferry user origins and destinations, existing user levels of service / satisfaction, and changes in demographics in the Kingston Area and Wolfe Island communities that may affect future ferry usage.

Environmental Assessment and Traffic Analysis of Improvements to the Howe Island County Ferry Service – Ministry of Transportation of Ontario – The Howe Island County Ferry Service vessel required its planned dry-dock inspection and a preliminary review of the vessel indicated that it may require major improvements to remain operational. In response, MTO initiate a Class Environmental Assessment project to:

- Identify the need for the improved County ferry service to Howe Island;
- Identify any related environmental impacts and protection / mitigation measures; and
- Assess the alternative ways the ferry service can be improved.

The transportation analysis component of the study included a review of historical crossing demands, forecasts of future demand levels

and an assessment of transportation related deficiencies with the existing ferry service.

Transportation Management / Traffic Operations

Operational Safety Review – City of Oshawa/Lakeridge Health Corporation – Hospital Court – The objectives of this study were to review the operations and safety of the pedestrian and vehicle movements along Hospital Court associated with the hospital parking, pick-up/drop off area and public emergency access.

University Avenue/New Bedford Avenue Operational Review – Waterloo, Ontario – An operational and safety review of the traffic and pedestrian operations under existing and future conditions to determine future traffic control alternatives.

Roundabout Guidelines – County of Essex – Completed a state-of-the-practice review of roundabout design and operations. A policy document was prepared to guide the use of modern roundabouts within their jurisdiction, including the need for a traffic control review to assess the merits of roundabouts versus other forms of traffic control.

County Road 42 Corridor Protection Plan – County of Essex – Prepared a comprehensive corridor protection and access management plan for County Road 42, a primary east-west corridor in Essex, which parallels Highway 401. The plan included a suite of transportation planning and access management policies, and an implementation strategy to ensure the long-term capacity and operations of this primary roadway link.

Kingston Core Area Study – City of Kingston – A study to review the traffic, parking and transit issues and opportunities in the core area of Kingston, including Kingston General

Hospital, Queen’s University and the planned Large Venue Entertainment Complex.

Pushkin Private School Ontario Municipal Board Hearing – The Pushkin Private School located in the vicinity of the historic area of Thornhill, Ontario, was challenging the City of Vaughan with regards to an area specific by-law, which placed a number of restrictions on the property and its operations. Traffic issues associated with the site were a prime concern of the City and the area residents and included speeding, traffic volumes, pedestrian, safety and school bus operations. A transportation assessment of the existing and potential future operations of the school was undertaken and defended at the Ontario Municipal Board.

Vaughan Civic Centre Access Study – City of Vaughan – The City of Vaughan proposed the construction of a new 300,000 s.f. Civic Centre on their existing site, southeast of the Keele Street / Major Mackenzie Drive intersection in the Region of York. The site assessment included a review of trip generation potential, queuing concerns both on-site and at adjacent intersections, sight line restrictions, driveway conflicts, safety performance along Major Mackenzie Drive and traffic responsive signal control requirements. The study was complete under a rigid and limit schedule to permit the City to continue with later phases of the development plan including an architectural competition.

Deer Park Transportation Management Plan – City of Toronto – A study to undertake a technical review and provide viable options to improve traffic operations in the Deer Park Neighbourhood. The Deer Park Neighbourhood is a mature residential area flanking St. Claire Avenue between Yonge Street and Oriole Parkway. The residential road network has had long standing issues associated with traffic infiltration due to the congestion and constraints of the adjacent arterial road

network. The study was undertaken in accordance with the Class Environmental Assessment process.

Highway 401/ Guelph Line Car Pool Lot Location (MTO) – Retained to review the transportation implications of relocating and/or expanding the existing carpool lot at Highway 401 and Guelph Line in the Town of Milton and Region of Halton. The review included traffic operations, site design, road safety and positive guidance issues.

Highway 401/ Westney Road and Highway 401/ Salem Road (MTO) – Retained to review the traffic operation and safety issues associated with eastbound through vehicles using the two ramp terminal to queue jump congestion on Highway 401 in the PM peak hour. The review included an assessment of traffic operations, collisions, conflicts and transit operations.

Highway 401/ Regional Road 25 W-NS Ramp – Ministry of Transportation of Ontario – A study to review the existing and future transportation requirements at the Highway 401/ Regional Road 25 W-NS ramp terminal and approaches. The transportation assessment was part of a TPM project for the reconstruction and signalization of the ramp terminal. The assessment included a review of the traffic demands, park n’ ride access provisions, pedestrian requirements, peak and off-peak signal timing and phasing, and 10 and 20 future demands.

Durham Right Turn Lane Policy – Region of Durham – The development of a policy for the installation and design of right turn tapers, lanes and channelization. The project included an extensive state-of-the-practice review and an assessment of the policy options.

Region of Halton Signal Review – Regional Municipality of Halton – The City of Burlington and Town of Oakville operate and maintain 105 signalized intersections on behalf of the Region

of Halton. Retained to create and calibrate AM, PM and off-peak intersection analysis files for the Region’s signalized intersections and a major Town of Oakville corridor. Synchro 5.0 was used as a basis for this analysis. In addition to building the base network, we were requested to:

- Document the City of Burlington and Town of Oakville operating policies and practices currently employed at the Region’s signals;
- Recommend short-term cost-effective remedial measures to address identified operational concerns;
- Provide general recommendations relating to the operating practices at the Region’s signals.

Central/ Albert Neighbourhood Traffic Management Plan – The City of Waterloo commissioned the development of a traffic management plan for a mature and historic area adjacent to Wilfred Laurier University and Waterloo Park. The study included an assessment of traffic operations, multi-modal safety considerations, parking and public consultation.

St. Catharines Arterial Road Review – City of St. Catharines – Ministry of Transportation of Ontario – The Ministry of Transportation of Ontario (MTO) in consultation with the City of St. Catharines and the Regional Municipality of Niagara initiated the St. Catharines Arterial Road Review. The MTO was undertaking an Environmental Assessment for the widening of the Queen Elizabeth Way (QEW) in the City of St. Catharines and required a review of the transportation impacts on the arterial road network of the various design alternatives. Phase 1 of the study included a feasibility review of the proposed ramp terminal configurations. Phase 2 of the study included a review of the impacts of the preferred QEW access configurations on the operations of 22

signalized and unsignalized intersections in the surrounding arterial road network.

Traffic Operations Study – Regional Municipality of Halton – The Region of Halton
Traffic Operations Study was initiated to complete an operational and geometric assessment of seventy one signalized and unsignalized intersections and six road sections within the Region. The Study was to recommend measures to ensure safe and efficient traffic flow and to prepare a cost-effective five year strategic implementation plan for the recommended improvements. A sub-component of this Study was to provide transportation related recommendations to address/ mitigate public concerns regarding safety, high speed traffic flow and trucking movements on Maple Avenue in Georgetown, Ontario.

City of Vaughan Traffic Calming Guidelines – City of Vaughan – A project which reviewed various traffic calming measures and addressed the following:

- Roadway function and suitability of traffic calming installations;
- Eliminating the need for traffic calming;
- A description of the recommended traffic calming devices for City of Vaughan roadways;
- Traffic management measures not recommended for City of Vaughan roadways;
- Design criteria for traffic calming devices including preferred materials, where applicable;
- Use of temporary/ trial traffic calming measures;
- Other considerations to be addressed when reviewing the feasibility of traffic calming installations.

Park Road Reconstruction – Region of Durham
– The construction work along Park Road was

separated into two components consisting of road widening and a CN overpass reconstruction. It was outlined in the Environmental Study Report (ESR), a minimum of three traffic lanes were to be provided on Park Road throughout the construction limits. Park Road traffic peaked four times daily coinciding with the shift changes at the General Motors Assembly plant. The primary objective was to complete a traffic operations review to implement remedial measures to ensure minimum impact on the GM operations, transit operations and local road users throughout all construction stages.

Transportation Analysis, Pickering Southwest Quadrant – Town of Pickering – The purpose of this project was to examine traffic operation and infiltration issues affecting the West Shore Neighbourhood, and to determine measures to mitigate the related traffic impacts and safety concerns.

Intersection Review, King Street/ Union Street/ Mowat Avenue – City of Kingston – The assignment involved a comprehensive study to assess the current and future operating conditions of an unsignalized five-leg intersection scheduled for signalization. Included in this project was the assessment of interim and future traffic conditions through analysis of the historical traffic volume and current land development applications with the City of Kingston and surrounding areas.

Highway 69/ Bowes Street Intersection – Parry Sound, Intersection Review, MTO – This study involved the review of the traffic operations at an unsignalized “T” intersection along Highway 69 located in Parry Sound. Both traditional and innovative remedial measures were considered for this intersection to address the safety, truck operation and capacity concerns associated with its operation.

Transportation Impact Studies

Uptown Mississauga Transportation Impact Assessment – Pinnacle – Retained to review the transportation impacts of the development of approximately 5,000 medium and high-density residential uses in the vicinity of the Hurontario Avenue / Eglinton Avenue intersection in the City of Mississauga. This multimodal review included adjacent development properties comprising over 4,000 residential and ancillary commercial uses.

Proposed Shell Refinery – Transportation Impact Assessment – Shell Canada – Retained to review the traffic, rail and marine effects of the construction and operations of a proposed Shell refinery in the County of Lambton, south of Sarnia, Ontario. The assessment included road closures and workforce impacts during the construction period.

Chedoke Hospital Lands Redevelopment - Deanlee Management Inc., Chedoke Health Corporation, and Hamilton Health Sciences – A transportation study to review the redevelopment potential of the Chedoke Hospital campus included high density residential on the “browlands”.

Large Venue Entertainment Complex (LVEC) Transportation Impact Study – City of Kingston – A transportation and parking assessment of the proposed LVEC complex. The complex was planned to hold an ultimate capacity in excess of 6,000 person and will host a wide variety of trade shows, concerts and sporting events, including OHL games.

Transportation Impacts of Land Development Workshop – Ontario Traffic Conference (OTC) – The project included the preparation and presentation of a one-day workshop being offered by the OTC in 2003. The workshop provided a detailed review of transportation impact assessment components including

traffic impacts, consideration of vulnerable road users, site planning and access, TDM strategies, safety impacts, mitigating measures and approvals.

Cooke’s Church Transportation Impact Study – Duration Investments Limited – A transportation impact study in the Queen/ Church area of Toronto for a planned 926-unit condominium development.

Hotel and Water Fun Park – City of Niagara Falls – Casco Corporation – A 400 room hotel and water fun park was proposed on the tent / trailer park lands on Victoria Avenue south of the Niagara Parkway. The TIS included a review of the traffic operations, pedestrian needs, parking requirements and overall road user safety.

Centreville Quarry, Camden East, Traffic Impact Study – Lafarge Construction Materials – The study was initiated to assess the impact of the traffic associated with an open pit quarry operation located on County Road 4, north of Highway 401, in the County of Lennox and Addington. The study involved the assessment of alternative haul routes and the selection of a preferred haul route based on impacts on traffic operations, adjacent land uses and safety.

Queenston Urban Expansion – Ontario Municipal Board Hearing – Study involved a traffic impact assessment of four residential developments proposed in Queenston, Niagara-on-the-Lake. Direct access to the development was being sought to the Niagara Parkway, one of Niagara’s scenic corridors and a Niagara Parks Commission roadway.

Professional Societies and Associations

- Member, Professional Engineers of Ontario, 1996

- Member, Association of Professional Engineers and Geoscientists, British Columbia, 2009
- Member, Association of Professional Engineers and Geoscientists, Alberta, 2016
- Transportation Association of Canada (TAC) Traffic Operations and Management Committee (TOMC), CITE appointee, 2021 - present
- Canadian Institute of Transportation Engineers (CITE), District Director and ITE Board of Direction 2010 to 2012
- Ontario Provincial Standards (OPS) Traffic Safety Committee - CEO Representative, 2011 to 2019
- Fellow, Institute of Transportation Engineers
- Vice-Chair of ITE Coordinating Council (2014 to 2016). Chair (2017-2018)
- Chair, Transportation Safety Council Executive Committee, ITE, 2008 to 2010
- Chair (2013 and 2014) and Vice-Chair (2010 to 2012), Expert Witness Council Executive Committee, ITE
- Past Member, Transportation Safety Council Executive Committee, ITE, 2007 to 2013
- Member, Road Safety Committee of Ontario (ROSCO)
- Member, Canadian Association of Road Safety Professionals (CARSP)
- Past Member, Technical Liaison Committee of CITE
- Past President, ITE Toronto Section Executive
- Systemic Safety for Rural Roads and Small Communities, ITE Canada Conference, 2022
- Vision Zero and Road Safety Audits, ROSCO, 2022
- Bicycle Facility Workshop, City of Toronto, 2022
- Fundamentals and Practical Applications of the Highway Safety Manual, ITE, 2020
- An Innovative Approach to Assessing the Relative Risk at Rural Curved-Tangential Intersections, Ontario Traffic Council and Transportation Association of Canada, 2020
- Pedestrian Facility Safety One-Day Workshop, ITE Toronto (Thunder Bay), 2020
- Pedestrian, Bicycles and Road Authority Exposure, Ontario Trial Lawyers, 2019
- Practical Applications of the Highway Safety Manual, ITE Toronto Section and ITE Greater Vancouver Section, 2019
- Locating and Designing Transit Stop Locations for Safety for Canadian Urban Transportation Association (CUTA) - 2019
- Pedestrian Safety and Risk Management One-Day Workshop, Ontario Traffic Council, 2017, 2018, 2019, 2023
- Bicycle Safety and Risk Management One-Day Workshop, Ontario Traffic Conference, 2017, 2018, 2019, and 2023
- Intersection Safety Workshop, City of Toronto, 2019
- Building Safe Active School Communities, Ontario Active School Travel, Toronto, 2018
- Distracted Driving – The Burden of Proof, Motor Vehicle Litigation Summit, 2018
- Participated in an Expert Panel to discuss working with experts at the 2017 Colloquium in Sudbury, Ontario
- Road Authority Risk Management: Maintenance, Ontario Good Roads Association, 2012 through 2021

Publications and Speaking Engagements

- Approach Sight Distance, TAC TOMC, RSC, and Geometric Design Manual Errors and Omissions Committee, 2023
- Vision Zero: It's a Journey Not a Statistical Goal Post, ITE Canada Conference, 2022

- Canada's New At-Grade Rail Crossing Regulations, Municipal World Magazine, 2016
- School Site Planning and Designing for Safety, Children's Health and Environment Workshop & Symposium, London, June 2017
- Active Transportation Safety and Risk Management presentation – Ontario Traffic Council Annual Meeting, 2016
- Use of the Highway Safety Manual in Legal Liability Cases, Transportation Research Board, Washington, D.C., 2014 and 2016
- Tort Liability and Risk Management, Crash Testing Symposium, Lecol sponsored event in Markham, 2015.
- Canada's New Grade Crossing Regulations, Ontario Traffic Conference, Traffic Engineering Workshop, 2015.
- Road Design and Operations in Tort Liability, OTLA Webinar, March 2015.
- Top 10 Road Authority Liability Considerations, OTLA Spring Conference, May 2015.
- Transportation Engineering for Personal Injury Lawyers, Oatley McLeish Guide to Motor Vehicle Litigation, March 2015.
- Rural Road Safety: One Day Workshop, Canadian Institute of Transportation Engineers, presented in Toronto, Halifax, Winnipeg and Calgary, 2014
- Dedicated Bicycle Facilities: Liability and Risk Management Perspective, ITE Annual Meeting, Miami, Florida, 2014
- Assessing Liability: Defending Auto Tort Claims in Ontario, Canadian Defence Lawyers, 2014.
- Active Transportation: Is your municipality adequately responding to this revival?, Municipal World Magazine, 2014.
- Expert Evidence in Personal Injury Cases, Osgood Hall Law School, 2013
- Nominal and Substantive Road Safety ... Understanding Their Implications in Liability, Litigator Magazine, 2013
- Transportation Professional: Ontario Municipal Board: Ethics and Liability, ITE Toronto Section, 2013
- Safe Route to School Planning: A Transportation Engineering Perspective, WIMBA, 2012
- Road Authority Risk Management: What You Need to Know, ITE Hamilton Section, 2012
- "School Siting and School Site Design for a Healthy Community Forum", Key Note Speaker and Facilitator, City of Hamilton, Metrolinx and the Heart & Stroke Foundation, 2012
- "Transportation Law Seminar & Mock Trial", McCague Borlack, 2012
- "Plenary Session: Transportation Mock Trial", Ontario Risk and Insurance Management Society, 2013
- Highway Safety Manual One-Day Workshop, Russell Brownlee, Jeff Shaw, Brian Malone and Geni Bahar, ITE Toronto Section, 2011
- Intersection Safety Course, Ontario Traffic Council, Two-Day Course, 2010 through 2016
- Road Authority Risk Management Half Day Workshop, London Kingston, Durham, Waterloo, Hamilton, Peel and Halton
- Vulnerable Road Users Workshop, Ontario Good Roads Association, 2011
- Road Authority Risk Management Webinar, OMEX 2011
- Applying the Highway Safety Manual, OTC Traffic Engineering Workshop, 2011
- Road User Safety and Forensic Engineering, ITE Toronto Section Bootcamp, 2011
- Highway Interchange Human Factors Review, Matt Colwill, Branko Zivkovic and Russell Brownlee Institute of Transportation Engineers, Canadian District 2011 Annual Meeting
- Practical Urban Maintenance: Case Studies in Road Maintenance and Forensic

- Investigations, Ontario Good Roads Association, 2011
- Canadian Road Safety Initiatives Roundtable, Institute of Transportation Engineers, Canadian District 2011 Annual Meeting
 - Municipal Liability Forum, Institute of Transportation Engineers, Canadian District 2011 Annual Meeting
 - Highway Safety Manual: Will you use your new safety powers for good or evil?, Institute of Transportation Engineers Conferences in Florida and Halifax, 2011
 - Working with Experts, The Advocates' Society, Toronto 2010, 2011 and 2015; Alberta 2015
 - York Region Fatal Investigation Process Review Workshop, Regional Municipality of York, 2009
 - In-Service Pedestrian Safety Review Workshop, Institute of Transportation Engineers, San Antonio Annual Conference, 2009
 - Work Zone Safety Reviews on Freeway Facilities, Institute of Transportation Engineers, San Antonio Annual Conference, 2009
 - A Series of Safety Case Studies: Safe or Unsafe? What Should Have Been Done, Institute of Transportation Engineers, San Antonio Annual Conference, 2009
 - Low Cost Treatments for Horizontal Curve Safety Institute of Transportation Engineers, 2009
 - The New Reality of Forensic Engineering, Ontario Insurance Adjuster Association (OIAA), 2009
 - In-Service Safety Review Training, Ministry of Transportation of Ontario, 2009
 - In-Service Safety Review One Day Workshop. Regional Municipality of Durham, 2008
 - Only Assessing Nominal Safety ... Are You Missing the 'Safety Boat', Ontario Traffic Conference Magazine, 2009
 - "Introduction to the Road Environment: Safety 101", Webinar, 2008, 2009 and 2017, ITE
 - "Improving Safety Through Highway Design and Operations", ITE Journal, July 2008
 - "Work Zone Safety Reviews: Developing an Implementable Process, Russell Brownlee and Bert Tarini, CITE 2007, Toronto
 - Traffic Signal Operations Specialist (TSOS) Refresher Course, Instructor, March 2007
 - Explicit Safety Considerations in Transportation Planning - 2005 CITE Annual Conference, Saskatoon, Saskatchewan.
 - Second Train Warning at Grade Crossings: The Canadian Experience. ITE Annual Conference, Lake Buena Vista, Florida, August 2004.
 - Operational Safety Reviews for Your Rural Road Networks, CITE Annual Meeting, 2008.
 - Traffic Control Devices & Warrants. Ontario Good Roads Association, half-day workshop, February 2006 and March 2007
 - School Site Planning, Design and Transportation, Russell Brownlee and Mike Cynecki, ITE Journal Article, September 2007
 - School Site Planning, Design and Transportation, Russell Brownlee and Mike Cynecki, Conference Paper, Pittsburgh, 2007