CURRICULUM VITAE

Brittany Sinclair, B.Sc., P.Eng.

(613) 903-6900 | bsinclair@30fe.com

280 Albert Street, Suite 206Ottawa, ON K1P 5G8

EXPERT SUMMARY

Ms. Brittany Sinclair specializes in injury biomechanics and collision reconstruction. During her time with 30 Forensic Engineering, Brittany has conducted technical investigations involving assessments of motor vehicle collisions, seatbelt and helmet use, and injury causation including pedestrian injuries, workplace injuries, slips, trips and falls, head injuries, and injuries sustained in motor vehicle collisions. Brittany has been qualified in the Ontario Superior Court of Justice and is a member of the Professional Engineers of Ontario (PEO) and the Engineers and Geoscientists of British Columbia (EGBC, Non-Practising).

SPECIALIZED PROFESSIONAL COMPETENCIES

- Injury Biomechanics
- Occupant Motion During Motor Vehicle Collisions
- Seatbelt Use and Effectiveness
- Helmet Effectiveness
- Pedestrian Collisions
- Slips, Trips, and Falls
- Head Injuries
- Collision Reconstruction

ACADEMIC BACKGROUND

Bachelor of Applied Science (Mechanical Engineering — Biomechanics Option), University of Waterloo, 2015

Capstone Design Project: Designed a device that increases ski patrol rescue toboggan safety and efficiency with focus on improved braking and reduced operator burden.

ADDITIONAL COURSES AND TRAINING

- Crash Data Retrieval (CDR) System Operators Class and CDR System Analysis and Applications Course, Crash Data Specialists, January 2024
- World Reconstruction Exposition, WREX, Orlando, Florida, April 2023
- North American Congress on Biomechanics (NACOB), Ottawa, August 2022
- Society of Automotive Engineering (SAE) World Congress, Detroit, MI, April 2019

- Ontario Biomechanics Conference, Alliston, 2015, 2016, and 2018
- "Slips, Trips and Falls International Conference," Toronto, June 2017
- The Advocates' Society's "Advanced Do a Trial," Toronto, September 2017

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Senior Associate, Biomechanics & Personal Injury and Collision Reconstruction
2024 – Present, Ottawa, ON

- Biomechanical Assessments:
  - Evaluating pedestrian walkways.
  - Performing technical investigations involving human movement and environmental factors related to slips, trips, and falls, personal injury, and occupational injury.
  - Conducting technical investigations to determine the mechanics of injury, including pedestrian collisions, head injuries, helmet effectiveness, and injuries sustained in motor vehicle collisions.
  - Assessing the performance of restraint systems and protective devices.
- Collision Reconstruction:
  - Investigating and analysing motor vehicle collisions, including impact speed analysis and collision severity for low- to moderate-speed collisions.
  - Event Data Recorder (EDR) data retrieval and analysis.

Associate, Biomechanics & Personal Injury Assessment
2021 – 2024, Ottawa, ON

BC Transit

Fleet Project Engineer
2021 – 2021, Victoria, BC

- Proactively engaged with vendors, suppliers, and other transit agencies to monitor industry trends and identify opportunities for continuous improvement
- Performed technical evaluation, engineering analysis, and cost/benefit analysis of products and new technologies, advising on the latest technical advancements and related implications through the development of reports, business cases and presentations
- Lead the Fleet Technical Specification Program for fleet procurements; responsible for the management of specification and fleet standards documentation, stakeholder engagement and revision history
- Supported new bus implementations to ensure buses met customer and operational needs, were delivered on-time, and were compliant with federal, provincial and BC Transit specific requirements

BC Transit

Fleet Technology Engineer
2020 – 2021, Victoria, BC

- Developed an enhanced cleaning and sanitization program for BC Transit's fleet, and designed and implemented a protective barrier for operators; implemented on 1,000+ buses across 87 transit systems in BC, enabling BC Transit to provide public transit during the COVID-19 pandemic
- Acted as the technical advisor in the development of the Technical Specifications for BC Transit's first Battery Electric Bus procurement
- Managed, monitored, and reported on major in-service trials comprised of new equipment or technology in collaboration with relevant internal and external stakeholders
- Advised internal stakeholders on changes to industry policy and regulations

30 Forensic Engineering

Associate, Biomechanics & Personal Injury
2016 – 2019, Toronto, ON

- Specialized in determining collision severity in low-speed collisions and biomechanical assessment of injury causation, including: pedestrian injuries, workplace injuries, slips, trips and falls, head injuries, and injuries sustained in motor vehicle collisions
- Qualified as an Expert Witness in the Ontario Superior Court of Justice for engineering analysis in trip and fall investigations
- Collaborated with team members on multi-disciplinary projects to provide clients with solutions to complex problems, within budget and in a timely manner
- Managed multiple projects and worked with various clients simultaneously; independently performed examinations, testing and analysis, and communicated findings verbally and in technical reports

University of Waterloo

Sessional Lecturer, School of Kinesiology
2017 – 2019, Waterloo, ON

- KIN 471 – Forensic Biomechanics, Personal Injury: Stairway Falls and Head Injuries

Defense Research and Development Canada (DRDC)

Research Technologist, Human Systems Integration
2015 – 2016, Toronto, ON

- Provided engineering and analytical support to Future Small Arms Research for the Canadian Armed Forces (CAF), including the configuration of a mechanical test fixture intended to simulate human response to weapon recoil
- Coordinated and led data collection at various CAF bases across Canada, independently processed and analyzed data in Excel and Matlab, and published internal and external scientific reports
- Managed comprehensive ergonomics lab – validated equipment, generated Standard Operating Procedures, and initiated development and implementation of lab database and loaning system

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Professional Engineers Ontario (PEO) Professional Engineer
- Engineers and Geoscientists British Columbia (EGBC) Professional Engineer (Non-Practising)
- Member, ASTM Committee F13 on Pedestrian/Walkway Safety and Footwear
- Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR)

PUBLICATIONS AND SPEAKING ENGAGEMENTS

Peer-Reviewed Research Publications

- Paquette, M., and Sinclair, B. (2024). “Naturalistic Evaluation of the Lateral Acceleration Experienced by Snowmobiles with One and Two Occupants.” Canadian Association of Road Safety Professionals (CARSP) Conference, Ottawa.
- Karakolis, T., Sinclair, B.A., Kelly, A., Terhaar, P., and Bossi, L.L.M. (2017). “The Determination of Orientation and Practice Requirements When Using an Obstacle Course for Mobility Performance Assessment.” Human Factors.

Speaking Engagements

- Assessments of Pedestrian and Cyclist Motor Vehicle Collisions. (2024). 30 Forensic Engineering Investigation Forum.
- Understanding Emerging Technologies and Injury Causation – Biomechanics and Concussion. (2023). 30 Forensic Engineering Forensic Investigation Forum.
- Product Testing. (2022). hEr VOLUTION, STEMing UP series.
- Biomechanical Assessment of Injuries Associated with Buses. (2022). 30 Forensic Engineering Seminar Series.
- Courthouse Series: Taking the Surprise out of Trial. (2022). The Advocates Society, Virtual.
- Forensic Biomechanics (2019), Department of Materials Science and Engineering. Guest Lecturer, University of Toronto.
- Sinclair, B., Keefe, A., Karakolis, T. (2016). “Weapon Recoil and Muzzle Movement: Evaluation of Shooter Biomechanics.” 19th Biennial Meeting of the Canadian Society for Biomechanics. Presenter.
- Sinclair, B., Keefe, A., Karakolis, T., Zechelius, A. (2015). “Preliminary evaluation of shooter biomechanics.” Ontario Biomechanics Conference. Alliston, ON. March 2015. Presenter.

Additional Authored Materials

- Sinclair, B. (2024). “How speed impacts pedestrian injuries in school zones.” Canadian Underwriter.
- Sinclair, B, and Paquette, M. (2024). “How Physics Impacts Injuries if Transit Busses Crash.” Canadian Underwriter.
- Sinclair, B. (2023). “How potholes lead to serious brain injuries for e-scooter riders.” Canadian Underwriter.
- Sinclair, B. (2023). “Fall risks associated with e-scooters.” Canadian Underwriter.

- Sinclair, B., and Denbeigh, K. (2018). “The Laws of Traction: Athletic Footwear and Risk of Injury.” The Lawyer’s Daily. https://www.thelawyersdaily.ca/articles/5585/the-laws-of-traction-athletic-footwear-and-risk-of-injury?category=analysis
- Parkinson, R.J., and Sinclair, B. (May 2017) “Escalators Not Always a Walk in the Park.” The Lawyers Daily. https://www.thelawyersdaily.ca/articles/3069/print?section=civillitigation

EXPERT TESTIMONY

- Qualified by the Hamilton Superior Court of Justice in engineering analysis pertaining to trip and falls
- Qualified by the Barrie Superior Court of Justice in occupant motion and forces experienced during motor vehicle collisions