

CURRICULUM VITAE

Mark R. Sawa, P. Eng.

ACADEMIC QUALIFICATIONS

- 1996 Master of Science in Mechanical Engineering (Solid Mechanics),
University of Calgary
Thesis Title: *“Load-Deflection Characteristics of Spherical Inflatables”*
- 1992 Bachelor of Science in Mechanical Engineering (with distinction)
University of Calgary

CONFERENCES, MEETINGS, AND TECHNICAL TRAINING

- *Toyota Safety Sense*, NAPARS, Webinar, June 2024
- *Recon-3D Training Course*, Webinar, February 2024
- *Zero to Hero in CloudCompare*, Webinar, October 2023
- *ADAS & Crash Analysis*, NAPARS, Webinar, August 2023
- *Update on Heavy Vehicle Event Data Recorders*, NAPARS, Webinar, July 2023
- *World Reconstruction Exposition (WREX)*, Orlando, Florida, April 2023
- *Bosch CDR Tool Technician Training*, IPTM Webinar, February 2023
- *Vehicle Spin Analysis*, NAPARS, Webinar, November 2022
- *BENDIX Pro*, NAPARS, Webinar, November 2022
- *Motorcycle Collision Reconstruction*, Axiom Forensic, Webinar, June 2021
- *PC Crash (Tips & Tricks)*, MEA Forensic, Webinar, February 2021
- *Occupant Kinematics for the Traffic Crash Reconstructionist*, Institute of Police Technology & Management, Tempe, Arizona, July 2019
- *Tire Forensics and Accident Investigation*, Tennant & Associates, Edmonton, Alberta, April 2018
- *Using Multibodies (PC Crash)*, MEA Forensics, Video Tutorial, April 2018
- *Advanced Event Data Recorder Analysis*, CATAIR, Edmonton, Alberta, March 2017
- *World Reconstruction Exposition (WREX)*, Orlando, Florida, May 2016
- *Event Data Recorder Use in Traffic Reconstruction*, Institute of Police Technology and Management, Jacksonville, Florida, January 2016
- *Crash Data Retrieval (CDR) Summit*, Collision Safety Institute, Houston, Texas, January 2015
- *PC Crash (Scenes and Trajectory)*, MEA Forensic, Webinar, February 2014

- *PC Crash (Rollovers and Rollover Validation)*, MEA Forensic, Webinar, October 2014
- *PC Crash (Collision Model and Staged Collisions)*, MEA Forensic, Webinar, June 2014
- *Accident Reconstruction Seminar*, CATAIR, Calgary, Alberta, August 2013
- *Advanced Pedestrian / Bicycle Crash Investigation*, Institute of Police Technology & Management, Calgary, Alberta, August 2013
- *PC Crash Essentials (Introduction, Vehicle Control, and Looking at the Results)*, MEA Forensic, Webinar, July 2013
- *Spring Skid Testing*, CATAIR, Edmonton, Alberta, June 2013
- *Winter Skid Testing*, CATAIR, Edmonton, Alberta, February 2013
- *Crash Data Retrieval (CDR) Analyst and Applications Update Course*, Crash Data Specialists, Calgary, Alberta, September, 2011
- *Human Factors in Traffic Crashes*, Jeffrey W. Muttart, Edmonton, Alberta, October 2009
- *Crash Data Retrieval Data Analysis Course*, Collision Safety Institute, Edmonton, Alberta, September 2008
- *Crash Data Retrieval Technician Course*, Collision Safety Institute, Edmonton, Alberta, September 2008
- *PC-Crash Custom Training Workshop*, MEA Forensic Engineers & Scientists, Edmonton, Alberta, September 2008
- *Motorcycle Crash Investigation*, Institute of Police Technology & Management, Edmonton, Alberta, September 2007
- *Crash Data Retrieval – Data Analyst Certification Course*, Edmonton, Alberta, October/ November 2006
- *Damage Analysis and Energy Methods in Traffic Crash Reconstruction*, Institute of Police Technology & Management, Calgary, Alberta, August 2005
- *Accident Reconstruction Seminar*, CATAIR, Calgary, Alberta, August 2005
- *Estimating Driver Response Times*, CATAIR, Edmonton, Alberta, November, 2004
- *Low Speed Testing of EDR Equipped Vehicles*, CATAIR, Edmonton, Alberta, April 2004
- *Crash Data Retrieval (CDR) System Operator Course*, CATAIR, Edmonton, Alberta, November 2003
- *Pedestrian / Bicycle Crash Investigation*, Institute of Police Technology and Management, Edmonton, Alberta, August 2002
- *Accident Reconstruction Seminar*, CATAIR, Edmonton, Alberta, August 2002
- *Accident Reconstruction Fall Lecture*, CATAIR – Prairie Region, Penhold, Alberta, October 2001
- *Accident Reconstruction TOPTEC: Special Topics*, Society of Automotive Engineers, Tempe, 2001
- *Tire to Ice Testing*, CATAIR – Prairie Region, Telford Lake, Alberta, February 2001
- *Commercial Vehicle Reconstruction*, CATAIR Conference, Edmonton, Alberta, August 1999

- *Accident Reconstruction Seminar*, CATAIR, Edmonton, Alberta, August 1999
- *Finite Element Analysis For Design Engineers – Hands On FEA Workshop*, Society of Automotive Engineers, Detroit, 1998
- *SAE International Congress*, Society of Automotive Engineers, Detroit, 1998
- *SAE International Congress*, Society of Automotive Engineers, Detroit, 1997
- *Low Speed Collision TopTech*, Society of Automotive Engineers, Vancouver, 1996
- *3D Photogrammetry Workshop*, Society of Automotive Engineers, Vancouver, 1996
- *Underride Crash Test*, Society of Automotive Engineers, Vancouver, 1996
- University of Calgary Graduate Courses in:

Continuum Mechanics	Shell Theory
Theory of Elasticity	Variational Methods
Shell and Plates	Theory of Plasticity

PROFESSIONAL ASSOCIATIONS AND MEMBERSHIPS

- Member, Association of Professional Engineers and Geoscientists of Alberta
- Member, Society of Automotive Engineers
- Member, Canadian Association of Technical Accident Investigators & Reconstructionists
- Director for Prairie Chapter (2001 to 2007) Canadian Association of Technical Accident Investigators & Reconstructionists
- Chair for Prairie Chapter (2008 to 2012) Canadian Association of Technical Accident Investigators & Reconstructionists
- Director for National (2008 to 2012) Canadian Association of Technical Accident Investigators & Reconstructionists
- Treasurer for Prairie Chapter (2013 to present) Canadian Association of Technical Accident Investigators & Reconstructionists
- Member, National Association of Professional Accident Reconstruction Specialists (NAPARS)

EXPERT TESTIMONY

Accepted as an expert witness multiple times as a Mechanical Engineer in the area of Accident Reconstruction. Qualified in the Provincial Court of Alberta, Court of Queen's Bench of Alberta, Supreme Court of British Columbia and Court of Queen's Bench for Saskatchewan. Expert testimony was provided in the area of accident reconstruction including vehicle dynamics, commercial vehicle collisions, identification of point of impact, low speed collisions, impact severity, vehicle positions at impact, potential to avoid impacts, vehicle stopping distances, vehicle speed at impact, motorcycle impacts, mechanical defects, pedestrian impacts, perception response times, interpretation of three phase traffic signal reports, and interpretation of event data recorder reports.

PROFESSIONAL CAREER

1997 - Present

ANDERSON ASSOCIATES CONSULTING ENGINEERS INC. Partner/
Mechanical Engineer

- Motor vehicle accident reconstruction of high and low speed accidents including pedestrian, bicycle, motorcycle, automobiles and commercial vehicles.

- Analysis of accident sites to assess visibility issues, pre- and post-impact vehicle speeds, point of impact, and collision severity.
- Examination of collision vehicles to assess seatbelt usage, seatbelt effectiveness, collision severity and lamp usage.
- Computer simulations of motor vehicle accidents using PC Crash and Engineering Dynamics software.
- Download and analysis of commercial and passenger vehicle event data recorders (EDRs).
- Investigation of slip and falls, and incidents involving building code violations.
- Standard stress analysis and finite element stress analysis of mechanical parts.
- Mechanical design of torque measuring equipment.
- Mechanical design of 24" – 48" pipeline weld backup rings.
- Mechanical design of centrifuges.

1995 - 1997

SAMAC ENGINEERING LIMITED, E.I.T.

- Motor vehicle accident reconstruction of high and low speed accidents including pedestrian, bicycle, motorcycle, automobiles and commercial vehicles.
- Analysis of accident sites to assess visibility issues, pre- and post-impact vehicle speeds, point of impact , and collision severity.
- Examination of collision vehicles to assess seatbelt usage, seatbelt effectiveness, collision severity and lamp usage.
- Computer simulations of motor vehicle accidents using Engineering Dynamics software.

1994 - 1995

WARNER SHELTER SYSTEMS LIMITED

- Conducted finite element analysis of metal trusses, cables and polyvinyl fabric to determine anchorage requirements and structural integrity with respect to relevant building codes.

1992 - 1994

UNIVERSITY OF CALGARY - Faculty of Engineering

- Performed tutorial and laboratory duties in the areas of statics and solid mechanics (part-time).

1991

AMOCO CANADA

- Evaluated reservoir characteristics to assist in the strategic development of a new heavy oil field.
- Performed data collection to aid in a causation study of sanding problems in heavy oil wells.

1990

SUNCOR INCORPORATED

- Carried out various operator, maintenance and technical tasks associated with the operation and production of oil and gas wells and facilities.

PATENTS

Co-Inventor on United States Patent 6,119,916, Internal Backup Ring System, granted September 19, 2000.

Co-Inventor on United States Patent 6,386,421 B1, Actuation System for an Internal Backup Ring Assembly, Granted May 14, 2002

PUBLICATIONS

Sawa MR, MacInnis SA. *Low Speed Collisions - Analysis of Collision Severity*, The Barrister (Journal of the Alberta Civil Trial Lawyers Association), September 1996

Sawa MR, Glockner PG. *On the Ponding Instability of Spherical Inflatables*, American Society of Civil Engineers, Portland 1997

Sawa MR, Glockner PG. *Clarifying Some Behavioural Features of Spherical Pneumatics Subjected to Axisymmetric Hydrostatic Loads*, Fifth Pan-American Congress of Applied Mechanics, San Juan, 1997

PRESENTATIONS

Motor Vehicle/Bicycle Collision, North American Council of Automotive Teachers (NACAT) - Conference, Edmonton, Alberta, 1999

Friction, Measurement & Litigation, The Alberta Public Works Association, The Alberta Roadbuilders & Heavy Construction Association, and Alberta Transportation - Partners in Excellence Conference and Trade Show, Red Deer, Alberta, 2013

Establishing Liability - Benefits of Early Data Collection, Alberta Civil Trial Lawyers Association (ACTLA), Calgary, Alberta, March 2018

Mark R. Sawa, P. Eng.

July 22, 2024
Date