



**CURRICULUM VITAE**  
**DAVID J. DAREN, BSME, PEng**

**SPECIALIZATION**

- Accident Reconstruction
- Computer Simulation and Animation
- Crash Data Recorder
- Rapid Response Team
- Traffic Signal Analysis
- Visibility Studies/ Re-enactments
- Vehicle Dynamics and Loss of Control
- Photogrammetry

**EDUCATION**

- Bachelor of Science in Mechanical Engineering, University of Alberta, Edmonton (1987)
- Graduate-Level Engineering Courses, University of Alberta, Edmonton (1987): Dynamics of Structures, Fracture Mechanics
- Graduate-Level Geomatics Engineering Course, University of Calgary, Alberta (1995): Non-Topographic Photogrammetry

**REGISTRATION**

- Licensed Professional Engineer, Alberta, Canada, Member Number 46031

**ADDITIONAL TRAINING**

- ARC-CSI Crash Conference, Las Vegas, NV, 2015 and 2017
- Reconstruction and Analysis of Rollover Crashes of Light Vehicles, Norwalk, CA, 2016
- Accessing and Interpreting Heavy Vehicle Event Data Recorders, Oxnard, CA, 2016
- Damage Energy Methods, CAARS First Quarter Training, Glendora, CA, 2016
- AARP Smart Driver Course, Online, 2016
- Crash Data Retrieval (CDR) Technician Level One & Two Certification Course, Anaheim, CA, 2015
- Vision, Perception and Attention, CAARS Second Quarter Training, Glendora, CA, 2015
- Low Speed Impact Analysis using IIHS & CDR Data, CAARS First Quarter Training, Glendora, CA, 2015
- SAE International Congress and Exposition, Detroit, MI, 1997, 1998, 2005, 2006, 2010 and 2014
- Vehicle Dynamics Basics for Off-highway Trucks, SAE Professional Development Program, Detroit, MI, 2014
- Alberta Safety Codes Council, Course #100097, Building Envelope, 2013
- SAIT Polytechnic, Calgary, CNST-227 Moisture Control, 2012
- Crashtams National Conference, Las Vegas, NV, 2010
- Winter Highway Maintenance, APEGGA Lunch-and-Learn, Lethbridge, Alberta, 2008
- Canadian Multidisciplinary Road Safety Conference XVIII, Whistler, British Columbia, 2008

### **ADDITIONAL TRAINING (CONT)**

- Advanced National Fire, Arson and Explosion Investigation Training Program, National Association of Fire Investigators (NAFI), Sarasota, FL, 2008
- National Fire and Explosion Investigation Training Program, NAFI, Sarasota, FL, 2006
- Crash Data Retrieval (CDR) Seminar, General Motors of Canada Limited Training Centre, Calgary, Alberta, June 2006
- PC-Crash and PC-Rect Training Workshop, MacInnis Engineering Associates Ltd., Las Vegas, NV, 2002
- Passenger Vehicle Rollover: Causes, Prevention and Injury Prevalence, SAE TOPTEC Scottsdale, AZ, 2002
- Booster Seats for Children: Closing the Gap Between Science and Public Policy, Association for the Advancement of Automotive Medicine (AAAM), Washington, DC, 2001
- Advances in Side Impact Test Methodologies and Occupant Protection, SAE TOPTEC, Novi, MI, 2001
- Accident Reconstruction: Special Topics, SAE TOPTEC, Tempe, AZ, 2001
- Heavy Vehicle Rollover: Prevention, Analysis, and Reconstruction, SAE TOPTEC Richmond, British Columbia, 2000
- Frontal Offset Crash Testing, SAE TOPTEC, New Orleans, LA, 2000
- Accident Reconstruction: State-of-the-Art, SAE TOPTEC, Costa Mesa, CA, 1999
- Passenger Car Rollover: Cause & Prevention, SAE TOPTEC, San Diego, CA, 1999
- Airbag Design and Performance, SAE TOPTEC, Costa Mesa, CA, 1997
- Automotive Seat Design for Safety, SAE TOPTEC, Marina Del Ray, CA, 1995
- Biomechanics of Impact and Current Occupant Restraint Issues, AAAM in cooperation with the International Research Council on the Biomechanics of Impact (IRCOBI), Chicago, IL, 1995
- 39th Stapp Car Crash Conference: Restraint System Performance, Head and Neck Injury and Lower Limb Injury, SAE, Coronado, CA, 1995
- Annual Seminars, Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR), various locations, 1988 through 1992 and 1995
- Low Speed Rear Impact Collision, SAE TOPTEC, Irvine, CA, 1994
- Automobile Vehicle Dynamics, SAE Professional Development Program, Detroit, MI, 1994
- Canadian Multidisciplinary Road Safety Conference VIII, Saskatoon, Saskatchewan, 1993
- High Performance Driving, Pro-Formance Advanced Driving School, Calgary, Alberta, 1992
- Investigation of Pedestrian and Bicycle-Involved Traffic Collisions, Ottawa, Ontario, 1991

## **PROFESSIONAL EXPERIENCE**

- January 2015            **MOMENTUM ENGINEERING CORP.**  
*Senior Forensic Engineer*  
Accident reconstruction, including heavy trucks, automobiles, motorcycles, bicycles and pedestrian accidents. Engineering services include site and vehicle inspections, 3D laser scanning, photography, video and general documentation. Additional services include photogrammetry, complete collision analysis, computer simulation, traffic signal analysis, vehicle dynamics and rollover reconstruction. Visibility studies, including re-enactment and animation.
- 2009 –2015            **CIMA FORENSIC ENGINEERING**  
*Owner, Senior Forensic Engineer*  
Provided complete accident reconstruction services of automobile, heavy vehicles, bicycles, motorcycles and pedestrian accidents. Additional engineering services including all inspections, computer simulation and impact dynamics. Visibility studies, including look-but-fail-to-see accidents. Study of child pedestrian walking, jogging, running and sprinting speeds.
- 2012 –2013            **OPTIMIZE ENVELOPE ENGINEERING LTD.**  
*Engineer*  
Building envelope leakage and failure investigations.
- 2005 –2009            **A. D. WILLIAMS ENGINEERING INC.**  
*Forensic Engineer*  
Vehicle accident reconstruction. Prisoner transport safety study. Seat heater burn injuries. Fire origin & cause investigations, including speed control deactivation switch (SCDS) fire. Other forensic engineering analyses including valve failures, plumbing failures, floods, refrigeration system failure, equipment fall/damage and an excavation incident.
- 1995 –2005            **DAREN FORENSIC ENGINEERING**  
*Owner, Senior Forensic Engineer*  
Vehicle accident reconstruction. Close range photogrammetric analysis of photographs. Beta testing of Kodak photogrammetry software. Farm tractor rollover investigation, including dynamic testing. Engineering evaluation of air bag non-deployment and seat belt failure. Other forensic engineering analyses, including a ballooning incident.
- 1993 –1995            **SAMAC ENGINEERING LTD.**  
*Forensic Engineer*  
Accident reconstruction. Low speed collision investigations. Other forensic engineering analyses, including a ladder fall.
- 1988 –1993            **ANDERSON ASSOCIATES CONSULTING ENGINEERS INC.**  
*Engineer*  
Accident reconstruction. Other forensic engineering analyses, including slip and fall investigations, a diving incident and playground mishaps. Analysis of toboggan (sledding) speeds and collisions.

## **TECHNICAL BACKGROUND**

### **Accident Reconstruction:**

Analysis of automobile, motorcycle, pedestrian, heavy truck, bus, and bicycle collisions, including momentum and energy considerations. Railway, off-road vehicle, and farm implement accident reconstruction. Prisoner transport safety.

Computer-aided analysis, including SLAM (CRASH), EDSMAC and PC-Crash software. Daytime and night-time visibility and sight-line studies, including perception-reaction issues and look-but-fail-to-see collisions.

Roadway design and maintenance issues, including: design of horizontal curves, positioning of traffic signs, traffic light signal phasing, and winter roadway maintenance. Heavy vehicle interaction with roadside barrier systems, including tripping, rollover and barrier failure considerations.

Microscopic lamp examinations. Mechanical failures including tire failure analysis. Event data recorder analysis (Bosch Crash Data Retrieval system).

Photogrammetric analysis of photographs utilizing EOS Systems 'Photodeler', including problems with unknown cameras. Measuring of incident locations and vehicle crush utilizing 3D laser scanners.

### **Automotive:**

Brakes, steering, engines, cooling systems, clutches, transmissions, drivetrain, suspension, frame and body-structure repair.

### **Computer and Classical Analysis:**

Dynamic stress analysis.

## **ORAL PRESENTATIONS**

Daren DJ, MacInnis SA, "Investigation of a Ladder Fall", Joint Meeting of the Canadian Society of Forensic Science (CSFS) and the Northwest Association of Forensic Scientists (NWAFS) Vancouver, British Columbia, 1994

Anderson CJ, Daren DJ, "Investigation of a Night-time Motor Vehicle Accident", Engineering Section, Annual Meeting Edmonton, Alberta, 1989

## **PROFESSIONAL AFFILIATIONS**

- SAE International (formerly Society of Automotive Engineers)
- California Association of Accident Reconstruction Specialists (CAARS)