

Curriculum Vitae

Daniel J. Melcher, P.E.



Professional Profile

Mr. Melcher is a Professional Engineer and consultant with experience, education, and training in the fields of mechanical engineering, transportation engineering, and forensic engineering. His practice currently focuses on providing transportation safety consulting services to legal, insurance, governmental, and corporate clients throughout North America.

Specific areas of expertise include vehicle collision reconstruction, commercial vehicle crash investigation and analysis, highway work zone traffic control safety, roadway design and traffic control devices, vehicle system components and dynamics, and driver factors and transportation safety statistics.

Mr. Melcher's ongoing transportation safety research and international safety policy consulting has resulted in many peer-reviewed publications and presentations at technical conferences and professional forums around the world. He has provided expert witness testimony in criminal proceedings and civil litigation at the deposition, mediation, and jury trial levels in 14 states.

Licensure

Professional Engineer, State of Illinois, # 62-057169

Professional Engineer, State of Florida, # 61950

Professional Engineer, State of Alabama, #28402-E

Professional Engineer, State of Colorado, #41896

Professional Engineer, State of Texas, #103212

Professional Engineer, State of Kentucky, #27418

Contact Information

Cell: (813) 909-3418
d.melcher@armstrongforensic.com

Chicago Office

624 Davis Street
2nd Floor
Evanston, IL 60201
Phone: (773) 772-6831
Fax: (773) 772-6840

Tampa Office

104 Myrtle Ridge Road
Lutz, FL 33549
Phone: (813) 948-8010
Fax: (813) 909-8036

Education

Georgia Institute of Technology
Atlanta, Georgia
Master of Science in Transportation Engineering

Virginia Tech
Blacksburg, Virginia
Bachelor of Science in Mechanical Engineering



Professional Certification

Board Certified Diplomate in Forensic Engineering
Council of Engineering and Scientific Specialty Boards through NAFE

Accredited Accident Reconstructionist
Accreditation Commission for Traffic Accident Reconstruction (ACTAR),
#1329

Certified Traffic Control Supervisor
American Traffic Safety Services Association (ATSSA)

Work Zone Traffic Control Supervisor
Florida Department of Transportation

Certified Crash Data Retrieval (CDR) Technician and Analyst
Vetronix

Factory-Certified Engine Control Module (ECM) Data Extractor
Detroit Diesel

U.S. DOT Qualified Motor Carrier Safety Inspector

Professional Affiliations

Institute of Transportation Engineers (ITE), Member (Transportation Safety
Council)

National Academy of Forensic Engineers (NAFE), Member

Society of Automotive Engineers (SAE), Member

SAE Technical Publication Review Committee Member, Accident
Reconstruction Section

American Society of Mechanical Engineers (ASME), Member

American Society of Civil Engineers (ASCE), Member

National Society of Professional Engineers (NSPE), Member

Work Experience

Armstrong Forensic Engineers, Inc.
Vice President: 2006-Present

Rimkus Consulting Group
Project Consultant: 2003-2006

Kimley-Horn and Associates
Forensic Engineering Analyst: 2003

Zook, Moore & Associates
Forensic Engineering Analyst: 2000-2003

Georgia Institute of Technology
Research Assistant: 1999-2000

Toyota Motor Manufacturing Kentucky
Engineering Co-op: 1996-1997

Professional Development

U.S. DOT Transportation Safety Institute

- U.S. DOT Motor Carrier Safety Inspector Qualification (396.19), 2008

Society of Automotive Engineers

- Motor Vehicle Accident Reconstruction, 1999
- Passenger Vehicle Rollover TOPTEC: Causes, Prevention, and Injury, 2002
- Commercial Vehicle Braking Systems, 2008

Northwestern University Center for Public Safety

- Traffic Accident Reconstruction I, 2001
- Traffic Accident Reconstruction 2, 2001
- Heavy Vehicle Crash Reconstruction, 2004

National Academy of Forensic Engineers (NAFE)

- General Topics in Forensic Engineering, 2007
- General Topics in Forensic Engineering, 2008
- General Topics in Forensic Engineering, 2009
- General Topics in Forensic Engineering, 2009
- Advanced Topics in Accident Reconstruction, 2009
- General Topics in Forensic Engineering, 2010
- Advanced Topics in Accident Reconstruction, 2010

Visual Statement

- Advanced Animation and Engineering Analysis Using FX3, 2008

Collision Safety Institute

- Vetronix Crash Data Retrieval (CDR) Certified Analyst Course, 2005
- Annual Crash Conference and Full Scale Crash Testing, 2006
- Annual Crash Conference and Full Scale Crash Testing, 2007
- Annual Crash Conference and Full Scale Crash Testing, 2009

Detroit Diesel Training Center

- Engine Control Module (ECM) Data Extraction Certification Course, 2005

American Traffic Safety Services Association (ATSSA)

- Florida Advanced Work Zone Traffic Control, 2004
- Florida Advanced Work Zone Traffic Control Refresher Course, 2008

Accident Dynamics Research Center

- Human Factors: Understanding Driver Response, 2006

Transportation Research Board Human Factors Workshop

- Human Factors in the Courtroom: Accident Analysis in the Real World, 2000
- What Causes Accidents and How to Prevent Them, 2001
- Fatalities Arising from Driving in Rural America: What Can Be Done, 2002

Georgia Institute of Technology Continuing Education Program

- Traffic Signal Operations at Local Intersections, 1999
- Traffic Signal Operations in Coordinated Systems, 1999

Institute of Transportation Engineers (ITE)

- ITE Technical Conference: Making a Difference in Transportation Safety, 2007
- ITE/FHWA Safety Evaluation and Crash Modification Seminar, 2007

Red Vector

- Florida Professional Engineering Laws and Rules, 2005
- Florida Professional Engineering Laws and Rules, 2007
- Bicycle and Pedestrian Design, 2007
- Better Roadway Design – Intersections, 2007

Engineering Dynamics Corporation

- Accident Reconstruction Training Course, 2002

Seminar and Course Presentations

“Forensic Engineering Analysis of Loading Dock Traffic Patterns”
General Topics in Forensic Engineering Seminar, National Academy of Forensic Engineers, 2010

“Forensic Engineering Applications in Commercial Vehicle Safety”
Advanced Topics in Accident Reconstruction, National Academy of Forensic Engineers, 2010

“Forensic Engineering Analysis of Night-Time Pedestrian Collisions”
General Topics in Forensic Engineering Seminar, National Academy of Forensic Engineers, 2010

“Vehicular and Driver Factors in Commercial Vehicle Safety” *1st International Road Safety Conference*, Cape Town, South Africa, 2009

“Roadway Maintenance Factors in Collision Reconstruction” *1st International Road Safety Conference*, Cape Town, South Africa, 2009

“Forensic Engineering Analysis of Commercial Vehicle Dynamics”
General Topics in Forensic Engineering Seminar, National Academy of Forensic Engineers, 2009

“Forensic Engineering Applications in Transportation Safety” *Guest Lecturer, Transportation Safety Graduate Course*, Department of Civil and Environmental Engineering, Fulton School of Engineering, Arizona State University, 2009.

“Commercial Vehicle Dynamics for Collision Reconstruction”
Collision Safety Institute, Annual Crash Conference, 2009

“Night-time Pedestrian Safety Factors in South Africa” *1st Annual Road Safety Conference*, Republic of South Africa Road Traffic Management Agency, 2007

“Night-time Pedestrian Collision Reconstruction Factors” *Collision Safety Institute*, Annual Crash Conference, 2007

“Vehicle Accident Analysis & Reconstruction”,
“Commercial Vehicle Accident Reconstruction”,
“Roadway Design, Safety, and Work Zone Evaluations”,
“Impact and Damage Analysis of Low-Speed Vehicle Collisions”,
“Airbag and Seatbelt Pre-tensioner Technology”, “Damage Analysis for Evaluating Consistency and Fraud” *Rimkus Consulting Group, Inc.*, taught at multiple locations on multiple dates, 2003 – 2006

“Roadway Design and Construction Zone Safety Evaluations”
National Association of Subrogation Professionals, 2004 Annual Conference, 2004

“Forensic Engineering: Answering the Questions What, Why and How” *Florida Chapter of American Society of Civil Engineers (ASCE)*, 2003

“Comprehensive Methodology for Evaluating Sight Distance for Major Road Left Turns” *Institute of Transportation Engineers*, Annual Meeting and Exhibit, 2003

“Driver Oversteer and Directional Control Loss: Physical Fundamentals and Transportation Safety Applications” *Transportation Research Board*, 81st Annual Meeting, 2002

“Sight Distance for Left Turns from the Major Road: Assessment of Gap Acceptance Methodology from a Vehicle/Driver Performance Perspective” *TRANSPRO*, 2002 Conference "Safety under the Sun: Technology for Safe and Secure Transportation," 2002

“Bayesian Analysis Development: Feasibility of “Subjective” Engineering Evaluations for Assessing Road Safety Improvements” *Transportation Research Board*, 80th Annual Meeting, 2001

“Traffic Signal Operations in Coordinated Systems” *Georgia Institute of Technology*, Continuing Education Program, 2000

Technical Reports and Publications

- “Vehicular and Driver Factors in Commercial Vehicle Safety”
Proceedings of the 1st International Road Safety Conference, Cape Town, South Africa, 2009
- “Roadway Maintenance Factors in Collision Reconstruction”
Proceedings of the 1st International Road Safety Conference, Cape Town, South Africa, 2009
- “Risk Evaluation for Highway Transportation of “Toxic Gas” Hazardous Materials” Co-authored with Liu Hao-Xue of the School of Automobile Engineering, Chang’an University, China. *Transportation & Development Institute 9th International Conference of Chinese Transportation Professionals*, 2009
- “Commercial Vehicle Dynamics for Collision Reconstruction”
Proceedings of the Republic of South Africa Road Traffic Management Agency 2nd Annual Crash Conference, 2008
- “Statistical Cause Analysis and Potential Countermeasures for Commercial Motor Vehicle Collisions in China” Co-authored with Yiyi Wang of the Beijing University of Technology, Beijing China. *Transportation & Development Institute Symposium on Transportation and Development Innovative Best Practices*, 2008
- “Understanding Heavy Truck Engine Data Recorders” Co-author of informational website, www.heavytruckedr.org, 2007
- “Night-time Pedestrian Safety Factors in South Africa” *Proceedings of the Republic of South Africa Road Traffic Management Agency 1st Annual Crash Conference*, 2007
- “Night-time Pedestrian Collision Reconstruction Factors” *Collision Magazine*, 2007
- “Comprehensive Methodology for Evaluating Sight Distance for Major Road Left Turns.” *ITE Compendium of Technical Papers*, 2003
- “Sight Distance for Left Turns from the Major Road: Assessment of Gap Acceptance Methodology from a Vehicle/Driver Performance Perspective” *Proceedings of the TRANSPORT 2002 Conference - "Safety under the Sun: Technology for Safe and Secure Transportation,"* 2002
- “Driver Oversteer and Directional Control Loss: Physical Fundamentals and Transportation Safety Applications” *Proceedings of the 81st Transportation Research Board Annual Meeting*, 2002
- “Feasibility of ‘Subjective’ Engineering Assessments of Road Safety Improvements: Bayesian Analysis Development” *Transportation Research Record 1758*, “Highway Safety Design, Features, and Evaluation,” 2001
- “Bayesian Analysis Development: Feasibility of “Subjective” Engineering Evaluations for Assessing Road Safety Improvements”

Proceedings of the 80th Transportation Research Board Annual Meeting, 2001

“Scientific Approaches for Transportation Research” Co-author.
National Cooperative Highway Research Program Project 20-45, 2000

Academic Research Programs

“Investigation and Identification of Principal Factors Contributing to Fatal Crashes in the Southeastern United States” Georgia Tech and Federal Highway Administration, 1999-2000

“Investigation of Countermeasures for Reducing Fatal Crashes in Georgia: A Causal Chain Analysis” Georgia Tech and Georgia Department of Transportation, 1999-2000

Select Project Experience

Vehicular Accident Investigation and Reconstruction

Mr. Melcher began conducting accident reconstructions in 1999 as part of a safety research program conducted for the Federal Highway Administration and the Georgia Department of Transportation. To date Mr. Melcher has consulted on over 1000 cases in over 30 states and Canada, covering a wide variety of vehicle types and collision scenarios.

- Automobiles
- Tractor-Trailers / Commercial Vehicles
- Buses
- Motorcycles
- Pedestrians and Rollerbladers
- Bicycles
- Trains and Light Rail Transit
- ATV's, Golf Carts, and Unusual Vehicles
- Vehicle Components (Braking, Steering, Suspension, and Throttle Systems)
- Tire analysis
- Immediate Response Site and Vehicle Inspections
- Data Collection
- Scene Mapping
- Sequence Determination
- Speed, Delta-V, and Principal Direction of Force (PDOF) Calculations
- Vehicle Rollovers
- Occupant Restraint Systems
- Headlamp Analyses
- Avoidance Analysis
- Distance-Time Evaluations
- Airbag Module Downloads and Data Analysis
- Driver Perception, Response, and Visibility Studies
- Diagrams, Graphics, Demonstrative Evidence, and Written Reports
- Expert Testimony

Commercial Vehicle Collision Investigation and Reconstruction

Mr. Melcher is an expert in the field of commercial vehicle collisions with hundreds of vehicle inspections, scene inspections, and analyses. He is qualified by the U.S. DOT as a Motor Carrier Safety Inspector and has been trained extensively in heavy vehicle air brake systems and engine control module data retrieval. He is considered an international expert on commercial vehicle safety issues, speaking at technical forums, providing policy consulting to government agencies, and authoring peer-reviewed journal articles from South Africa to China and on the worldwide web.

- Federal Motor Carrier Safety Regulations
- Mechanical System Inspections and Out-of-Service Determinations
- Driver Hours-of-Service Logs and Rules
- Air Brake System Design, Function, and Safety
- Tractor-Trailer Dynamics and Articulated Vehicles
- Engine Control Module (ECM) Data Retrieval and Analysis
- Reconstruction of Collisions Involving Single or Multiple Heavy Vehicles

Transportation Safety Engineering

Due to his expertise in the fundamentals of transportation and traffic safety, Mr. Melcher has been retained by clients nationwide to evaluate the safety characteristics of transportation facilities, including roadways, intersections, parking lots, driveways, transit stations, and pedestrian paths.

- Highway Work Zone Safety and Temporary Traffic Control
- Intersection Sight Distance
- Traffic Signals and Pedestrian Signals
- Signs, Pavement Markings, and Traffic Control Devices
- Roadside Hazards and Barriers
- Geometric Design of Curves, Hills, Lanes, Medians, and Shoulders
- Advanced Warning and Positive Guidance for Motorists
- Federal, State, and Local Standards and Guidelines
- Parking Lot and Pedestrian Facility Design
- Highway-Rail Grade Crossings