



Curriculum Vitae

Rachel E. Keller, P.E.



Professional Profile

Ms. Keller is a Professional Engineer and senior consultant with experience, education, and training in the fields of mechanical engineering and forensic engineering. With bachelor's and master's degrees in mechanical engineering, a Commercial Driver's License (CDL), and years of experience in the investigation and analysis of vehicle safety issues, her practice is focused on providing consulting services to legal, insurance, governmental, and corporate clients throughout the southeastern United States.

Specific areas of expertise include passenger vehicle collision reconstruction; commercial vehicle crash investigation and analysis; pedestrian, bicycle, motorcycle, and alternative vehicle incidents; vehicle dynamics modeling; 3-D imaging and animation technology; driver performance and avoidance capabilities; product failures; and vehicle system components. Her ongoing training, education, and certifications maintain her knowledge of the latest developments in the field, qualifying her to render opinions in insurance claims, criminal proceedings, and civil litigation. Ms. Keller has testified as an expert witness at deposition and trial levels.

Licensure and Professional Certification

Professional Engineer, State of Florida, #71452

Accident Reconstruction Certification Program
Society of Automotive Engineers

Bendix Air Brake Specialist

Certified Crash Data Retrieval (CDR) Technician and Analyst
Bosch / Vetronix

Accredited Accident Reconstructionist
Accreditation Commission for Traffic Accident Reconstruction (ACTAR) #2378

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

Professional Affiliations

Florida Engineering Society (FES), Member

American Society of Mechanical Engineers (ASME), Member

National Academy of Forensic Engineers (NAFE), Member #873-M

National Association of Professional Accident Reconstruction Specialists (NAPARS),
Member

National Society of Professional Engineers (NSPE), Member

Society of Automotive Engineers (SAE), Member

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Education

Florida State University
Tallahassee, Florida
Master of Science in Mechanical Engineering

Virginia Tech University
Blacksburg, Virginia
Bachelor of Science in Mechanical Engineering

Work Experience

Focus Forensics, LLC
Managing Engineer: 2014-Present

Armstrong Forensic Engineers, Inc.
Senior Consultant: 2010-2014

Quest Engineering & Failure Analysis, Inc.
Project Engineer: 2006-2010

Florida State University
Graduate Teaching Assistant: 2006
Research Assistant: 2004-2005

Celanese Acetate
Engineering Co-op: 2002-2003



Professional Development

Axiom Forensic

- Motorcycle Collision Reconstruction, 2018

Bendix

- Bendix Air Brake Systems Training, 2008

Collision Safety Institute / ARC

- Vetronix Crash Data Retrieval (CDR) Certified Analyst Course, 2008
- CDR Download Applied Field Training, 2008
- Annual Crash Conference and Full Scale Crash Testing, 2012
- Annual Crash Conference and Full Scale Crash Testing, 2017

Drivers Research Institute

- IDRR Software Course, 2022

Engineering Dynamics Corporation

- HVE Software Training, 2008

FARO

- FARO Reality for Crash Reconstruction, 2016

Florida Institute for Consulting Engineering

- Highway Lighting, Roadway Expo, 2009

Focus Forensics, LLC

- Transportation Engineering and Accident Reconstruction Insights, 2022
- Transportation Engineering and Accident Reconstruction Insights, 2024
 - Human Factors for Driver Response
 - Traffic Signal Design and Operation
 - Transportation Engineering Sight Distance Standards
 - Automotive Mechanical Systems and Data Acquisition
 - Photogrammetric Methods
 - Video Analysis with Telemetry Data
 - LIDAR Scanning and Data Processing
 - Virtual Crash Applications for Simulation and Animation
 - PC Crash Applications for Steering and Yaw Rate
 - Expert Testimony Regulations and Standards
 - Commercial Vehicle EDR Data Extraction and Analysis
 - Vehicle EDR Systems for Toyota and General Motors

Institute of Police Technology and Management (IPTM)

- Methodology and Techniques of Crash Data Retrieval, 2007

Leica Geosystems HDS

- Leica Geosystems Basic Training Course, 2009

Lightpoint Scientific, LLC

- Advanced Photogrammetry for Collision Reconstruction, 2017

McInnis Engineering Associates

- PC Crash: 101 My First Project, 2022
- PC Crash: 102 Vehicle Control, 2022
- PC Crash: 103 Collisions, 2022
- PC Crash: 104 Looking at the Results, 2022

McNeel

- 3D Modeling using Rhinoceros, 2010

Motorcycle Safety Foundation (MSF)

- Motorcycle RiderCourse, 2003

National Academy of Forensic Engineers (NAFE)

- General Topics in Forensic Engineering, 2016

National Society of Professional Engineers

- Engineers as Skilled Communicators, 2010

Northwestern University Center for Public Safety

- Traffic Accident Reconstruction I, 2007
- Traffic Accident Reconstruction 2, 2007
- Heavy Vehicle Crash Reconstruction, 2008
- Advanced Crash Reconstruction Utilizing Human Factors, 2014

Pantropic Power

- CAT Electronic Technician "ET" Operation, 2007

Quest Engineering and Failure Analysis, Inc.

- Motor Vehicle Accident Reconstruction, Crash Analysis and Crash Testing, 2006
- Commercial Motor Vehicle Electronic Data Retrieval, 2007
- Air Brake Seminar, 2008
- Practical Vehicle Dynamics and Tire Mark Interpretation, 2008
- Crash Analysis and Crash Testing, 2009



Professional Development Continued

Society of Automotive Engineers (SAE)

- SAE Applied Vehicle Dynamics, 2008
- Applying Automotive EDR Data to Traffic Crash Reconstruction, 2013
- Accessing and Interpreting Heavy Vehicle Event Data Recorders, 2015
- Introduction to Highly Automated Vehicles, 2018
- Vehicle Crash Reconstruction: Principles and Technology, 2019
- Accident Reconstruction, The Autonomous Vehicle and ADAS, 2020
- Fundamentals of Vehicle Dynamics, 2021
- Fundamentals of Automotive All-Wheel Drive Systems, 2021
- Advanced Applications of Heavy Vehicle EDR Data, 2023

Virtual Crash

- Collision Simulation and Reconstruction, 2021

World Reconstruction Exposition (WREX)

- World Reconstruction Exposition (WREX), 2016
 - Commercial Vehicle Air Brakes
 - Driver Response
 - Electronic Data Recorder Update
 - Full Scale Crash Testing
 - Motorcycle Collision Reconstruction
 - Pedestrian Collision Reconstruction
 - Rollover Crash Reconstruction
 - Speedometers and Collision Reconstruction
 - Video Collision Analysis
- World Reconstruction Exposition (WREX), 2023
 - Bicycle and Electric Bicycle Reconstruction
 - Full Scale Crash Testing
 - Heavy Vehicle Side and Rear Underride Speed Analysis
 - Late Model EDR Accuracy
 - Next Generation GM ACM EDRs/ASCM/Front Camera Module EDRs
 - Nighttime Recognition and Visibility
 - Sideswipe Collision Dynamics
 - The Use of Mobile Device LiDAR in Collision Reconstruction

Seminar and Course Presentations

“Maintenance of Traffic and Roadway Design Analysis”, World Reconstruction Exposition, 2016

“Forensic Engineering Technology Solution for Highway Work Zone Temporary Traffic Control Investigations”, National Academy of Forensic Engineers, 2016

“Forensic Engineering Analysis of Video-Captured Pedestrian Collision”
National Academy of Forensic Engineers, 2016

“The Mechanics of the Collision”
National Business Institute (NBI), 2012

“Event Data Recorders”
“Human Factors in Vehicle Accident Reconstruction”
GEICO, 2011

“Advanced Interstate Trucking Litigation”
North Carolina Advocates for Justice (NCAJ), 2011

“Applied Scanning Techniques”
Armstrong Forensic Engineers, Inc., 2011

“Commercial Motor Vehicle Electronic Data Retrieval Seminar and Demonstrations”
Quest Engineering & Failure Analysis, Inc., 2010

“Class A CDL License”
Quest Engineering & Failure Analysis, Inc., 2009

“The Basics of Accident Reconstruction”
Inns of Court, 2009

“Accident Reconstruction and Seat Belt Analysis”
Quest Engineering & Failure Analysis, Inc., 2008

“Applied Vehicle Dynamics and Tire Mark Analysis for Passenger Cars and Commercial Motor Vehicles”
Quest Engineering & Failure Analysis, Inc., 2008



Technical Reports and Publications

Melcher, D., Keller, R., "Forensic Engineering Technology Solutions for Highway Work Zone Temporary Traffic Control Investigations." National Academy of Forensics Engineers, 2016

Montalbano, P., Melcher, D., Keller, R., Rush, T., Przybyla, J., "Testing Methodology to Evaluate Reliability of a "Frozen" Speedometer Reading in Motorcycle/ Scooter Impacts with Pre-Impact Braking." SAE Technical Paper 2016-01-1482, 2016

Melcher, D., Rush, T., Przybyla, J., Keller, R., Montalbano, P., "Photogrammetric Reconstruction Methodology and Engineering Validation for Video-Captured Pedestrian Collisions", Proceedings of the 24th Annual Congress of the European Association for Accident Research and Analysis (EVU), 2015

Przybyla J., Jupe J., Rush T., Keller R., "Glass Debris Field Longevity for Rollover Accident Reconstruction." SAE Technical Paper 2015-01-1427, 2015

"Bicycle Tire Friction Coefficient Variance in Wet and Dry Conditions Across Multiple Surface Pavement Types" *European Association for Accident Research and Analysis*, 22nd Annual Congress, Florence, Italy, 2013

"Applications of GPS Data in Collision Reconstruction" *Collision Magazine*, 2011

"Applications of GPS Data in Collision Reconstruction" *Proceedings of the 10th ITAI International Conference on Collision Investigation, Interpretation and Reconstruction*, 2011