



Curriculum Vitae

**Rachel E. Keller, P.E.**



### Professional Profile

Ms. Keller is a Professional Engineer and Managing Engineer 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

MINNEAPOLIS  
ORLANDO  
SALT LAKE CITY  
TALLAHASSEE  
TAMPA  
WEST PALM BEACH

Please Respond to  
Administrative Address:  
133 East 143rd Avenue  
Tampa, FL 33613

### Contact Information

Cell: (813) 528-2080  
Rachel@focusforensics.com

**Tampa Office**  
133 E. 143<sup>rd</sup> Avenue  
Tampa, FL 33613

### 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

### Driver Research Institute/ Crash Safety Solutions

- IDRR/Response User Forum, 2022
- IDRR/Response User Forum, 2025

### 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
- Transportation Engineering and Accident Reconstruction Insights, 2025
  - EDR Extraction and Analysis Methods for Video Radar Decision Units (VRDU)
  - Acquisition and Analysis Methods for Temporary Roadway Conditions
  - LIDAR Scanning and Data Processing
  - Air Brake Testing Standards and Techniques
  - Heavy Vehicle EDR Extraction and Analysis Methods
  - Drone Mapping Techniques and Processing
  - Data Processing and Analysis with Cloud Compare
  - Photogrammetry Software Methods and Techniques
  - Technology for Capturing Photo/ Video Demonstratives of Available Driver Views
  - Telemetry Overlay Software Techniques and Processing
  - VCrash Animations and Simulations for Pedestrian and Bicycle Collisions
  - Monte Carlo Statistical Analysis for Uncertainty Ranges
  - Human Factors Analysis of Road User Detection and Response
  - Transportation Engineering Design and Limitations for Micromobility Vehicles on Sidewalks
  - EDR Vehicle Yaw and Steering Data Simulation, Analysis and Modeling
  - Contextual Evaluation of Slow-Moving Lead Vehicle Scenarios and Looming Calculations
  - Comprehensive Context Points for Collision Reconstructions

### 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



## Professional Development Continued

### 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

## 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
- Driver Distraction from Electronic Devices: Insights and Implications, 2024
- Drones for Mapping Accident Reconstruction Sites, 2024

## 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 Forensic 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*, 22<sup>nd</sup> 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 10<sup>th</sup> ITAI International Conference on Collision Investigation, Interpretation and Reconstruction*, 2011