



ROBERT E. BAILEY, III, M.S., P.E.
SENIOR CONSULTANT
MANAGER OF COLORADO OPERATIONS

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Mr. Bailey is a Mechanical Engineer and Senior Staff Consultant for Engineering Systems Inc. (ESi), where he assists the Automotive Research and Accident Reconstruction team. He has over 10 years of technical experience serving as a Mechanical Engineer and engineering manager for the U.S. Air Force. Prior to joining ESi, Mr. Bailey was the Director of Operations for a \$35-million applied mechanics research laboratory focused on providing sustainment solutions for aging aircraft, as well as engineering education for undergraduate students. As a professor of Mechanical Engineering at the United States Air Force Academy, Mr. Bailey taught courses in machine design, manufacturing, product design, automotive engineering, drafting, computer-aided design and engineering; statics; dynamics; strength of materials; and experimentation. His additional skills as an amateur racecar driver and high-performance driving instructor facilitated his leadership of numerous automotive research projects, and supervision of vehicle-related engineering teams. Mr. Bailey's expertise encompasses machine design, manufacturing technologies, and automotive systems analysis.

Areas of Specialization

Motor Vehicle Accident Investigation, Reconstruction, and Simulation
Machine Component Design, Manufacturing Technologies
Vehicle System/Component Design, Vehicle Dynamics, Racecar Performance
Automotive Suspension/Steering Design and Optimization
2D/3D Computer-Aided Design (CAD), Computer-Aided Engineering (CAE)
Data Acquisition and Analysis/Instrumentation, Experimental Testing

Education

M.S., Mechanical Engineering, University of Dayton, 2007, Emphasis in manufacturing and engineering design
B.S., Mechanical Engineering, United States Air Force Academy, 2003, Minors in mathematics and Japanese

Licensed Professional Engineer (P.E.)

State of Colorado License No. 48269

Professional Affiliations/Honors

Society of Automotive Engineers (SAE)

Collegiate Design Series, Formula SAE
Lead Engineering Design Judge, 2014 – present
Engineering Design Judge, 2013
Advisor, United States Air Force Academy, 2009 – 2013
Data Collection and Archiving Standards Committee
Task Force Leader, J2505 “Measurement of Vehicle-Roadway Frictional Drag”
Task Force Member, J2969 “Use of the Critical Speed Formula”

American Society of Mechanical Engineers (ASME)

Member

Positions Held

Engineering Systems Inc., Colorado Springs, Colorado

Senior Consultant and Manager of Colorado Operations, 2019 – present
Senior Staff Consultant, 2016 – present
Staff Consultant, 2013 – 2015

U.S. Air Force Academy, Colorado Springs, Colorado

Assistant Professor; Operations Director of Applied Mechanics Research Laboratory
2010 – 2013

U.S. Air Force Academy, Colorado Springs, Colorado

Instructor of Engineering Mechanics, 2007 – 2010

USAF Aeronautical Systems Center, Wright-Patterson AFB, Ohio

Engineering Directorate Executive Officer, 2005 – 2006

USAF F-15 System Program Office, Wright-Patterson AFB, Ohio

Project Manager and Engineer, Radar Modernization Program, 2004 - 2005
Integration Engineer, 2003 – 2004

Continued Education

Event Data Recorder Update and Analysis, Ruth Consulting, 2023

Traffic Signal Timing Records Interpretation and Analysis, Traffic Signal Academy, University of Tennessee



Advanced techniques in data acquisition and applied testing, DeweSoft advanced training course, Whitehouse, OH

Applied Vehicle Dynamics Course, Precision Auto Research & PowerTrain Technology at Autobahn Country Club, Joliet, IL

Data Driven Performance Engineering, OptimumG Vehicle Dynamics Solutions, Colorado

Human Factors in Traffic Crash Reconstruction, Institute of Police Technology and Management, University of North Florida

Investigation of Commercial Vehicle Crashes, Institute of Police Technology and Management, University of North Florida

Crash Data Retrieval (CDR) Technician Level 1, Collision Safety Institute

Traffic Crash Reconstruction, Northwestern University

Accident Investigation, Northwestern University

Human, Vehicle, Environment (HVE) advanced simulation software training, Engineering Dynamics Corporation

Articulated Coordinate Measuring Machine (CMM) Applications, Hexagon Metrology

Utilizing CT X-Ray Technology for Non-Destructive Evaluation, Nikon Metrology

WaterJet Manufacturing Techniques, Flow International Corporation

Fused Deposition Modeling, Stratasys Ltd.

Servo-hydraulic and Electromechanical Load Frame Testing, MTS Systems Corporation

SolidWorks Advanced Modeling and Simulations, MCAD Technologies, Colorado

Advanced Chassis and Engine Dynamometer Testing, Superflow Corp

Applied Vehicle Dynamics, OptimumG Vehicle Dynamics Solutions, Colorado

Defense Acquisition University certified in Program Management, and Systems Planning, Research, Development, and Engineering (SPRDE)

Publications

Blake, L., Charles, E., Bailey, Robert, Guth, M., Kevin, "Aircraft Brake Dust Dispersion (Airwash) Testing", Occupational Disease and Environmental Medicine 2022, 10, 255-261, October, 2022

Brach, M., Manuel, E., **Bailey, R.**, Rogers, J., Capser, S., "Sensitivity Analysis of Various Vehicle Dynamic Simulation Software Packages Using Design of Experiments (DOE)," SAE International 2020-01-0639, April, 2020

Presentations/Courses Taught

Bailey, R.E., Advanced automotive vehicle dynamic testing, June 2018

Bailey, R.E., Modeling and Simulation for Component Design in High Performance Vehicles, Michigan, May 2017

Bailey, R.E., Case Studies in Forensic Engineering, EM445 Failure Analysis, United States Air Force Academy, Colorado, March 2014 and November 2016

Bailey, R.E., Applied Vehicle Dynamics and Racecar Design, SAE design competition students, United States Air Force Academy, Colorado, 2013, 2015 and 2016

Bailey, R.E., Autocross Fundamentals, SAE course for students, Michigan International Speedway, Michigan, May 2014 and 2016

Bailey, R.E., Data-Driven Design for Racecar Development, SAE students and race team engineers, Lincoln Airpark, Nebraska, June 2014 and 2015

Bailey, R.E., High Performance Driving, SAE course, Waterford Hills racetrack, Michigan, May 2014

Bailey, R.E., Dynamometer Testing and Engineering Application, EM490 Automotive Engineering, United States Air Force Academy, Colorado, March 2014