

ALEXANDER E. MCCULLA
SENIOR STAFF CONSULTANT
MANAGER OF MIAMI OPERATIONS

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Alexander McCulla is a degreed mechanical engineer in ESi's Automotive & Marine practice and brings significant expertise in the design, performance, and failure analysis of specialty purpose vehicles and equipment used in various industry sectors, including motorsport, oil and gas, and industrial-commercial construction. His experience spans the full lifecycle of these vehicles, including research and development, diagnostic and performance analysis, risk assessment, and failure analysis. Mr. McCulla also has significant experience in project management.

Prior to joining ESi, Mr. McCulla gained a wealth of experience in the operation and maintenance of high-performance vehicles, working as a driver, driving instructor, mechanic, and engineering team lead for professional racing competitions. In these roles, he worked directly with clients and groups to help develop, implement, and manage specific projects in the areas of vehicle testing, product research, and vehicle/component tuning.

Areas of Specialization

Automotive Accident Investigation/Reconstruction
Automotive & Mechanical Design
Failure Analysis & Investigation
Design & Performance Review
Vehicle Testing & Dynamics
Risk Analysis

Education

B.S., Mechanical Engineering, University of South Florida (USF), 2013
A.A., Business & Project Management, State College of Florida (SCF), 2009

Professional Affiliations/Honors

Undergraduate Research at USF – Fluid Dynamics.

“Skin Friction Flow of a Surface – The Study of the Change in Shear Stress due to Skin-Friction and Aerodynamic Shape Altered by Surface Roughness”

Engineering Course Work Experiments at USF – Mechanical Lab. II

Created and conducted lab experiments to educate students on efficiencies, process of Internal Combustion Systems.

Society of Automotive Engineers (SAE)

2009-2013 Formula & Baja – Lead and Team Member
2010-Present – Society Member

American Society of Mechanical Engineers (ASME)

2020-Present – Society Member

Positions Held

Engineering Systems Inc., Miami, FL

Senior Staff Consultant, 2023 – Present
Manager of Miami Operations, August 2022 – Present
Staff Consultant, 2020 – 2022

Engineering Systems Inc., Fort Myers, FL

Staff Consultant, 2020 – 2022

International Construction Consultants, Sarasota, FL

Project Management Lead & Engineer, 2015 – 2019
Researcher & Inspector, 2006 – 2013

Hayward Baker, Tampa, FL

Mechanical Engineer, 2014 – 2015

GoFrac LLC, OH, WV & TX

Field & Safety Engineer and Equipment Operator, 2013 – 2014

Kesatie Motorsports/Rev-X-Treme Performance, Bradenton, FL

Test Driver/Mechanic/Technician, 2009 – 2011

University Auto-Spa, Sarasota, FL

Vehicle Technician & Detailer, 2005 – 2009

Continued Education

Pedestrian/Bicycle Crash Investigation – Level 1; Institute of Police Technology and Management
University of North Florida - Miami, FL

Traffic Crash Reconstruction; Center for Public Safety
Northwestern University - Aurora, IL

Event Data Recorder Update & Analysis; Ruth Consulting
Norcross, GA

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



Event Data Recorder (EDR) Use in Traffic Crash Reconstruction – Level 1
University of North Florida - Jacksonville, FL

Bendix Commercial Vehicle Brake Training; Bendix Commercial Vehicle Systems
Ft. Myers, FL

FARO 3D Scanner Certification; FARO
Norcross, GA

Traffic Signal Timing Records Interpretation & Analysis; Traffic Signal Academy,
University of Tennessee - Norcross, GA

Traffic Crash Accident Reconstruction; Institute of Police Technology and Management,
University of North Florida - Las Vegas, NV

Pedestrian 100 Foot Walk & Vehicle Acceleration Study; Nevada Highway Patrol,
Institute of Police Technology and Management,
University of North Florida - Las Vegas, NV

Investigation of Pedestrian Collisions; Institute of Police Technology and Management
University of North Florida - Jacksonville, FL

Forensic Evidence Recovery for Crash Investigators; Institute of Police Technology and
Management, University of North Florida - Ft. Myers, FL

Tire & Wheel Forensics; Institute of Police Technology and Management,
University of North Florida - Ft. Myers, FL

Safety Belt Examinations; Institute of Police Technology and Management,
University of North Florida - Ft. Myers, FL

Introduction to Automotive Ecosystem; Society of Automotive Engineers (SAE) International
Sarasota, FL

Vehicle Lamp Examinations in Traffic Collisions; Institute of Police Technology and
Management, University of North Florida - Ft. Myers, FL

New Mechanical Shifting Devices in Automotive Transmissions; Society of Automotive
Engineers (SAE) International - Sarasota, FL

At-Scene Traffic Crash/Traffic Homicide Investigations; Institute of Police Technology and
Management, University of North Florida - Ft. Myers, FL

Vehicle Acceleration & Friction Factor Study; Institute of Police Technology and
Management, University of North Florida - Jacksonville, FL

Bosch® Crash Data Retrieval (CDR) Technician; Institute of Police Technology and
Management, University of North Florida - Ft. Myers, FL

OSHA 30-Hour Certification; University of South Florida - Tampa, FL



OSHA 10-Hour Certification; University of South Florida - Tampa, FL

Presentations

A.E. McCulla, "Skin Friction Flow of a Surface: The Study of the Change in Shear Stress due to Skin-Friction and Aerodynamic Shape Altered by Surface Roughness" presented to USF Engineering Faculty Department.

Miscellaneous

Certified Forklift Operator

Licensed Motorcycle Operator

Motorcycle Safety Foundation Rider Certification Course

Florida Boater's Safety Certification

Industrial Hydraulics Certification

Heavy Equipment Operator

Accomplished high-performance driver & instructor

Certified in First Aid & CPR/Basic Life Support