



**COLLISION
AND INJURY
DYNAMICS**

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D. MICHAEL SWEET, MSME, PE
Senior Staff Engineer
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Professional Competence

General vehicular collision analysis and reconstruction, including commercial vehicles, automobiles, motorcycles, bicycles, and pedestrians. Specializing in mechanics and dynamics of vehicular collisions and causative factors of vehicular accidents. Sub-specialties include dynamics of bicycle and rider systems, and bicycle products, including design, analysis, and test.

Education and Certification

Registered Mechanical Engineer in the State of California, License No. M 41879; 2023

League of American Bicyclists, League Cycling Instructor (LCI); 2023

Master of Science Degree in Mechanical Engineering
- Stanford University; 2019

Bachelor of Science in Mechanical Engineering
- Auburn University; 2017

Training

USA Cycling

- USA Cycling Category 4 Race Mechanic; 3/1/2024
- USA Cycling Level III Coach; 1/27/2023

IPTM

- At-Scene Traffic Crash/Traffic Homicide Investigation; 2/25/2022
- Bosch CDR Tool Technician Training; 8/31/2021
- Event Data Recorder Use in Traffic Crash Reconstruction; 8/19/2020

The Center for Cycling Education

- Traffic Smarts USA 1/20/2022

Get EDR Data

- Advanced Troubleshooting and Vehicle Systems for the CDR Technician; 9/22/2021

Engineering Dynamics Corporation

- EDC Reconstruction; 1/24/2020



Effective April 2024

Professional Experience

2022 – Present

Collision and Injury Dynamics, Inc.

Supports analysis, reconstruction, and presentation of results of vehicular accident cases. Assist Senior Consultants in conducting accident vehicle and site inspections and documentation. Analysis of the forensic data from accident vehicles and scene, involving laser total station and 3D scanning operations, and computer simulation.

2020 – 2022

MEA Forensics (Staff Engineer)

Supports momentum, crush-energy methods, static and dynamic analysis pertaining to accident reconstruction. Modify Computer-Aided Drafting, 3D scanning and processing, photogrammetry, and video analysis.

Organizations

Society of Automotive Engineers
American Society for Testing and Materials F08.10-Bicycles

Biographical Sketch

Mr. Sweet was born just outside of Atlanta, Georgia and spent most of his youth focused on education and sports. In his junior year of high school, he began cycling as a form of cross training for swimming. Mr. Sweet began racing bicycles at the collegiate level with the Auburn Flyers. Between his time at Auburn and Stanford, Mr. Sweet worked at Ride on Bikes in Columbus, Georgia, where he further fostered his passion for bicycle maintenance. He then continued racing at Stanford University, upgrading to the collegiate road A category, competing at the Road Nationals on two occasions, and served as President of the Stanford Cycling Team.

Mr. Sweet graduated with a Bachelor of Science degree in Mechanical Engineering with minors in Philosophy, Engineering-and-Business Technology from Auburn University. He went on to complete his Master of Science degree in Mechanical Engineering from Stanford University.

Mr. Sweet continues to compete at the domestic amateur level, in both on- and off-road cycling, and spends most of his free time performing maintenance on bikes for recreational and competitive use in addition to spending time with his family and traveling.

Reports and Publications

Sweet, D., Bretting, G., and Wilhelm, C., "Testing and Analysis of Riding a Road Bicycle over an Artificial Pothole," SAE Technical Paper 2024-01-2755, 2024.

Testing was performed to measure the kinematics and dynamics, including horizontal loads, of a bicycle riding over an artificial pothole at a variety of pothole depths and rider speeds. Additionally, analysis was performed to create a predictive model for front wheel drop, horizontal impulse, and peak horizontal force given the rider geometry and mass properties, which was validated using the measured data.



Presentations

SAE WCX 2024

Present the results of "Testing and Analysis of Riding a Road Bicycle over an Artificial Pothole" at
SAE World Congress Experience

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