Accident Reconstruction & Analysis Crash Consultants

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PO Box 277, Sinton, TX 78387 **Based in Corpus Christi, Texas**

TOBY FRERICH, P.E.

CURRICULUM VITA – October 2023

Mr. Frerich is a licensed Professional Civil Engineer in Texas and New Mexico, and is accredited by A.C.T.A.R., the Accreditation Commission for Traffic Accident Reconstruction. He has over 29 years of experience in forensic engineering, accident crash reconstruction, and graphics and visualization consulting covering an extensive range of assignments. Those include, but not limited to, accident reconstruction, crash data retrieval, accident causation, accident prevention and avoidance, vehicle dynamics, forensic mapping of accident scene and roadway geometry, physical evidence documentation, aerial photographic and satellite analysis, visibility assessments, vehicle damage & crush analysis, delta-v calculations, time and distance evaluations, lamp examinations, video analysis, photogrammetry studies, computer-aided reconstructions, 2-D & 3-D simulations, photographic documentation, evaluation and analysis of traffic signal timing, life-size and reduced scaled physical and graphical models for demonstrative exhibit preparation for depositions and trials. He is qualified to download, interpret, and analyze data from Event Data Recorders for light trucks and cars via the Crash Data Retrieval System and GIT EDR Tools. Additionally, Mr. Frerich has certified training to download, interpret, and analyze data from Heavy Vehicle Event Data Recorders (HVEDR) for heavy trucks and trailers. Mr. Frerich has been involved with the investigation and accident reconstruction process for over 1,000 automobile, truck, tractor-trailer, train, bus, motorcycle, bicycle, and pedestrian collisions.

Mr. Frerich has beta-tested Human, Vehicle, Environment (HVE), an advanced 3rd generation accident reconstruction and simulation program, by working closely with EDC to incorporate real time 3D modeling, precise topographical vehicular interaction, accurate topographical data and high-fidelity vehicle models. He has developed and validated spreadsheets to calculate crash coefficients from vehicle crash tests performed by NHTSA by coding industry standard equations, which were used directly in the simulation programs.

LICENSES AND CERTIFICATIONS

Accredited Accident Reconstructionist, Accreditation Commission for Traffic Accident Reconstruction (ACTAR), #4468

Texas Registered Professional Engineer, No. 94707
New Mexico Registered Professional Engineer, No. 28499

FAA Part 107 Certified UAS Remote Pilot

Crash Data Retrieval (CDR) System Technician and Analyst
Collision Safety Institute, Crash Data Retrieval Specialist

Nikon Total Station Survey Forensic Mapping Training Certification

FORMAL EDUCATION

1991 Bachelor of Science, Agricultural Engineering, Texas A&M University

PROFESSIONAL AFFILIATIONS

Accreditation Commission for Traffic Accident Reconstruction (ACTAR), Member

Texas Association of Accident Reconstruction Specialists, (TAARS), Member

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

Society of Automotive Engineers, SAE International, Member

WORK EXPERIENCE

2023-Current	Accident Reconstructionist, Forensic Engineering Consultant Owner, Accident Reconstruction & Analysis Crash Consultants Based in Corpus Christi, Texas
2005-2023	Accident Reconstructionist, Forensic Engineering Consultant Accident Reconstruction & Analysis, Corpus Christi, Texas
1996-2004	Accident Reconstruction Technician, Forensic Support Engineer Accident Reconstruction & Analysis, Corpus Christi, Texas
1993-1996	Accident Reconstruction Graphics Specialist Automotive Research Corporation, College Station, Texas
Summers of 1987-1989	Roadway Maintenance Technician & Highway Structures Survey Assistant TXDOT, Texas Highway Department, Brackettville, Texas

CONTINUING EDUCATION

1997 ADVANCED ACCIDENT INVESTIGATION

Law Enforcement & Security Training Division, Texas Engineering Extension Service, The Texas A&M University System, Houston, Texas.

A two-week course introducing the fundamental mathematical formulas and diagraming skills needed to conduct thorough and competent investigations of motor vehicle accidents. Subject matter included documenting physical evidence, deriving, and calculating accepted accident reconstruction formulas, time and distance studies, kinetic energy, and conservation of momentum equations to calculate vehicle impact speed. Several case studies were analyzed and solved.

1998 ENGINEERING DYNAMICS HVE FORUM

Le Meridien Hotel, New Orleans, Louisiana

One-week course introducing the HVE Engineering 3-D software for vehicle dynamics and crash simulation. Subject matter included study of the HVE environment, databases, history, and validation of 3-D physics models. Selected case studies were reviewed and discussed.

1999 ENGINEERING DYNAMICS SIMULATIONS COURSE
ENGINEERING DYNAMICS CORPORATION
California State University - Northridge, Northridge, California
One-week course in the use of computer simulations programs in accident reconstruction and analysis of vehicle performance, including heavy trucks. Emphasis on the technical aspects of the program, including input data and its effect on results. Vehicle tire and collision models were studied.

1999 ENGINEERING DYNAMICS HVE FORUM
Atlanta Hilton & Towers @ Peachtree Center, Atlanta, Georgia
One-week course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates; case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2000 ENGINEERING DYNAMICS HVE FORUM
Hyatt Islandia/Mission Bay, San Diego, California
One-week course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates, case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2001 THEORETICAL & APPLIED VEHICLE DYNAMICS COURSE
ENGINEERING DYNAMICS CORPORATION
Embassy Suites Hotel, Phoenix, Arizona
Course work included discussion of the equations describing vehicle handling and stability. Discussion of variables that affect vehicle response to driver inputs. Steady state and transient motion analysis of under-steer and over-steer characteristics, application of vehicle dynamic theory using the HVE 3D vehicle model (VSM) to evaluate the effects of cornering stiffness and loading.

2001 ENGINEERING DYNAMICS HVE FORUM
Hotel Loretto, Santa Fe, New Mexico
One-week course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates, case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2005 ENGINEERING DYNAMICS HVE FORUM
Coconut Grove, Florida
One-week advanced course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates, advanced case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2006 CRASH DATA RETRIEVAL TRAINING & CERTIFICATION
Las Vegas, Nevada
Instruction and training by Vetronix Corporation and General Motors Safety Engineering. Topics included history and development of event data

recorders for automobiles relating to the production of air bag safety systems, and computerized diagnostic systems in vehicles and the utilization of that data by researchers and accident reconstructionists.

2007 ENGINEERING DYNAMICS HVE FORUM
San Antonio, Texas
One-week advanced course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates, advanced case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2010 ENGINEERING DYNAMICS HVE FORUM
San Antonio, Texas
One-week advanced course for HVE Engineering users. Subject matter included a review of current research and professional papers, software updates, advanced case studies utilizing the various programs, and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs.

2015 WINTER CONFERENCE: TEXAS ASSOCIATION OF ACCIDENT RECONSTRUCTION SPECIALISTS
December 7-9, 2015. 3 days. Round Rock, Texas
Instruction and training on Evaluation and Analysis of Traffic Signal Timing in Accident Reconstruction, Measurement and Analysis of Crush Damage in Accident Reconstruction, Analysis and Demonstrations of Drones, Scanning, Mapping and aerial photography uses in Accident Reconstruction, and Accident Reconstruction Case Studies workshop.

2017 ENGINEERING DYNAMICS HVE FORUM
March 6-10, 2017. 5 days. New Orleans, Louisiana.
One-week course for HVE Engineering users. Subject matter included a review of current research and professional papers; software updates; case studies utilizing the various software programs; and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs with an emphasis on SIMON. Review and advanced applications of BRAKE DESIGNER©, DYMESH damage model, DAMAGE STUDIO, tire blowout modeling and Rollover modeling and analysis.

2017 CRASH DATA RETRIEVAL TRAINING & CERTIFICATION
October 19-20, 2017. 2 days. San Antonio, Texas.
Instruction and training by Collision Safety Institute. Topics included history and development of event data recorders for automobiles relating to the production of airbag safety systems, and computerized diagnostic systems in vehicles and the utilization of that data by researchers and accident reconstructionists. Hands-on in-vehicle DLC data imaging, module location and identification and direct-to-module data imaging, practical booster and adapter applications and, “back powering” in-vehicle systems to enable DLC data imaging.

2019 SOAR HEAVY TRUCK RECONSTRUCTION CONFERENCE
The Society of Accident Reconstructionists (SOAR)
August 25-28, 2019. 4 days. Denver, Colorado.
Instruction and training to improve understanding and analysis of traffic crashes involving heavy trucks and commercial motor vehicles (CMV), including: Load Shift in Commercial Motor Vehicles, Understanding the Forensic Link Adapter & SSS2, Cyber Security of Heavy Truck Digital Data, CMV Acceleration & Effects of Heat in Dynamic Braking, Dynamic Rollover Thresholds, Techniques in Determining CMV Weight in Crashes, Bendix BDC Data. Interpretation, Speedometer Stepper Motor Analysis, Heavy Truck Collision Mitigation Systems, Digital Forensics of Electronic Logging Devices (ELD), Hexadecimal Data Interpretation of DDEC Reports, and Heavy Truck Operation from a Driver's Perspective.

2021 ENGINEERING DYNAMICS HVE FORUM
February 22-March 3, 2021. 8 days. Online Zoom Format.
One-week course for HVE Engineering users. Subject matter included a review of current research and professional papers; software updates; case studies utilizing the various software programs; and specific training examples in the proper utilization and application of the HVE Vehicle Dynamics Programs with an emphasis on SIMON. Review and advanced applications of BRAKE DESIGNER©, DYMESH damage model, DAMAGE STUDIO, tire blowout modeling and Rollover modeling and analysis.

2022 WINTER CONFERENCE: TEXAS ASSOCIATION OF ACCIDENT RECONSTRUCTION SPECIALISTS
October 19-21, 2022. 3 days. Austin, Texas
Training to improve understanding heavy trucks and commercial motor vehicles electronic download data including Bendix data, Bendix Data Recorder, ADAS Systems Fusion and Wingman, Wabco data, including onLane and onGuard systems. Detroit Assurance Systems, Wabco, Bendix, and Haldex ABS ECUs from Trailers. Eaton and Allison Transmission data.

2023 HEAVY VEHICLE EVENT DATA RECORDER (HVEDR) USE IN TRAFFIC CRASH INVESTIGATION ANALYST TRAINING & CERTIFICATION
Forensic Training Group
June 19-22, 2023. 4 days. Oklahoma City, Oklahoma
Instruction and training into the history, development, and function of heavy vehicle digital forensics uses in Traffic Crash Investigation. Topics included: Accessing, documenting, and interpreting HVEDR Data, Preferred Methods of Data Extraction, Analysis of HVEDR Data Available on Heavy Trucks, Use of OEM software/adapters, as well as the Synercon Forensic Link Adapter, Smart Sensor Simulator #2, and TruckCRYPT software, Validation Testing Case Analysis: Detroit Assurance Heavy Truck Collision Mitigation Systems.

2023 CRASH DATA RETRIEVAL TOOL DATA ANALYST CERTIFICATION
July 31-August 4, 2023. 5 days. San Antonio, Texas.
Instruction and training by Collision Safety Institute. One-week course to provide insight into the function of the automobile Event Data Recorder (EDR) function, interpretation of the recorded data as well as expanded analytical skills enabling the appropriate application of a Bosch Crash Data Retrieval (CDR) Tool generated data translation report to a situationally complete crash reconstruction.