

Exponent®
Engineering & Scientific Consulting

Charlie Crosby, P.E.

Principal Engineer | Vehicle Engineering
Phoenix
+1-623-587-4121 | ccrosby@exponent.com

Professional Profile

Mr. Crosby's areas of expertise include accident reconstruction and vehicle crash analysis, and he has worked in these fields since receiving his B.S. in Mechanical Engineering in 2006. Mr. Crosby has worked on the analysis and reconstruction of a variety of motor vehicles from motorcycles and passenger cars to light and heavy trucks.

Mr. Crosby is experienced in the evaluation of vehicle simulation and accident reconstruction computer software. His research and publications include crash pulse analysis, methods to determine the forces required to produce gouging on roadway surfaces, and steel bollard impact energy.

Mr. Crosby has training and experience in the imaging, evaluation, and use of event data recorder (EDR) data. This includes data retrievable from airbag control modules (ACM), powertrain control modules (PCM), and heavy truck/commercial truck electronic control modules (ECM). Mr. Crosby provides engineering consulting and support to clients through vehicle and site inspections, 3D scanning, and photogrammetric evaluations. Additionally, Mr. Crosby’s testing activities include full scale crash testing, such as barrier impact testing, inverted drop testing, and rollover testing, as well as vehicle component assessments including suspension failure testing, and roof crush evaluations.

Academic Credentials & Professional Honors

M.S., Mechanical Engineering, Brigham Young University, 2010

B.S., Mechanical Engineering, Brigham Young University, 2006

Licenses and Certifications

Professional Engineer Mechanical, Arizona, #55525

Prior Experience

Engineer, Collision Safety Engineering, 2006-2009

Professional Affiliations

Society of Automotive Engineers—SAE

© 2026 Exponent, Inc. All Rights Reserved

Publications

Smyth, B., Crosby, C.L., Bickhaus, R., Smith, J. et al., “Analysis of the Event Data Recorder Vehicle System Data of a GM Vehicle Intelligence Platform Airbag Control Module (SDM50),” SAE Technical Paper 2025-01-8714, 2025

Courtney, A., Crosby, C., Miller, B., Osterhout, A. et al., “Effects of Anthropometry and Passive Restraint Deployment Timing on Occupant Metrics in Moderate-Severity Offset Frontal Collisions,” SAE Technical Paper 2024-01-2749, 2024.

Sharpe, S., Grijalva, S., Allin, L., Courtney, A. et al., "Evaluation of Occupant Kinematics and Kinetics during Moderate Severity Simulated Frontal Impacts with and without Frontal Airbag Deployment," SAE Technical Paper 2023-01-0559, 2023.

Rapp van Roden, E., Crosby, C., Mortensen, J., and Rodowicz, K., "Factors Influencing the Effectiveness of a Center-Mounted Airbag in Reducing Occupant Excursion and Injury Potential in High-Speed Lateral Impacts," SAE Technical Paper 2022-01-0843, 2022.

Crosby, C., Skiera, J., Bare, C., Como, S. et al., "Passenger Vehicle Response and Damage Characteristics of Front and Rear Structures during Low- to Moderate-Speed Impacts," SAE Technical Paper 2019-01-0415, 2019.

Skiera, J., Crosby, C., Bare, C., Paradiso, M. et al., "Passenger Vehicle Dynamic Response and Characterization of Side Structure during Low- to Moderate-Speed Side Impacts," SAE Technical Paper 2019-01-0420, 2019.

Croteau J, Crosby CL, Marine M, Kwasniak A. Bollard energy dissipation in moving barrier and passenger vehicle impacts. SAE 2015-01-1424, SAE 2015 World Congress, Detroit, MI, April 2015.

Crosby CL, Warner MH. Roadway asphalt damage analysis: Dynamic evaluation of gouge forces. SAE 2010-01-0047, SAE 2010 World Congress, Detroit, MI, April 2010.

Crosby CL, Warner CY, Warner MH, Galati R. Derivation of vehicle-to-vehicle frontal crash pulse estimates from barrier crash data. SAE 2008-01-0174, SAE 2008 World Congress, Detroit, MI, April 2008.

Warner MH, Warner CY, Crosby CL. Roadway asphalt damage force analysis for accident reconstruction. SAE 2008-01-0173, SAE 2008 World Congress, Detroit, MI, April 2008.

Warner CY, Warner MH, Crosby CL, Armstrong MJ. Pulse shape and duration in frontal crashes. SAE 2007-01-0724, SAE 2007 World Congress, Detroit, MI, April 2007.

Additional Education & Training

Crash Data Retrieval (CDR) Analyst Course, Collision Safety Institute, 2017

Accessing and Interpreting Heavy Vehicle Event Data Recorders, Society of Automotive Engineers, 2016

Traffic Crash Reconstruction, Northwestern University, 2011

Crash Data Retrieval (CDR) Analyst Course, Collision Safety Institute, 2011

Crash Data Retrieval (CDR) Technician Course, Collision Safety Institute, 2011

PhotoModeler Collision Reconstruction, EOS Systems, 2007