

Curriculum Vitae of Michael S. Brackin, Ph.D., P.E.

Principal Engineer

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EDUCATION

Ph.D. , Civil Engineering, Texas A&M University , College Station, TX	2017
M.S. , Civil Engineering, Texas A&M University , College Station, TX	2010
B.S. , Civil Engineering, Texas A&M University , College Station, TX <i>Cum Laude</i>	2008

SUMMARY OF EXPERTISE

Michael S. Brackin is an Principal Engineer for Beason Brackin & Associates, LLC in Bryan, Texas and an Assistant Lecturer for the Zachry Department of Civil Engineering at Texas A&M University in College Station, Texas. Dr. Brackin is a licensed Professional Engineer with the state of Texas (No. 115516). He holds Doctorate of Philosophy, Master of Science, and Bachelor of Science degrees in Civil Engineering from Texas A&M University. Dr. Brackin is specialized in the field of architectural glass design, roadside safety, physical security, and computational mechanics.

Dr. Brackin previously served as an Assistant Research Engineer for Texas A&M Transportation Institute's (TTI) Roadside Safety and Physical Security Division. Dr. Brackin began his tenure with TTI studying heavy vehicle impacts with bridge piers and abutments through the use of finite element analyses under TTI's Center of Excellence for Transportation Computational Mechanics. Dr. Brackin worked with other TTI researchers to develop guidelines for the design of bridge piers for heavy-vehicle collisions. His research on this topic culminated in revisions included in the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications.

More recently, Dr. Brackin has been actively involved in the design, analysis, development, and evaluation of roadside safety appurtenances and physical security barriers using basic mechanics, statics, dynamics, finite element analyses, and full-scale crash testing. Dr. Brackin has contributed to the design and analysis of several roadside safety appurtenances including concrete median barrier systems, guardrail end treatments, guardrail tension anchors, wire rope median barrier anchors, work-zone barriers, and energy absorbing crash cushions. Additionally, Dr. Brackin has contributed to the design and analysis of several physical security devices including wedge barriers, wire rope perimeter fences, bollards, and anti-ram retaining walls.

Dr. Brackin has witnessed or been involved with in excess of 600 full-scale vehicular crash tests during his career. Dr. Brackin has extensive experience in analyzing crash test data. He has performed dynamic analyses to determine design guidelines for loads imposed on structures during collisions by passenger, medium, and heavy-duty vehicles. Most notably, Dr. Brackin was the lead author for *ASTM F3016* titled "*Standard Test Method for Surrogate Testing of Vehicle Impact Protective Devices at Low Speeds*", a standard designed to help protect pedestrians and storefront patrons from errant vehicle intrusions.

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Areas of expertise for Dr. Brackin are listed below:

- Structural Design, Analysis, and Testing of Architectural Glass
- Finite Element Analyses and Computational Mechanics
- Structural Engineering and Design
- Research and Development of Low-Speed Pedestrian Impact Protective Devices
- Thermal Analyses and Heat Transfer
- Full-scale Crash Testing of Roadside Safety and Physical Security Barriers
- Performance of Wire Rope Barriers and Bollards for the Roadside and Physical Security
- Research and Development for New and Existing Crashworthy Roadside Safety Hardware and Physical Security Products
- Structural Behavior and Dynamic Loading of Passenger, Medium, and Heavy Vehicle Collisions

AFFILIATION

2006 – Present, Phi Eta Sigma, Tarleton State University
National Honor Society

2007 – Present, Chi Epsilon, Texas A&M University
The Civil Engineering Honor Society

2008 – Present, Tau Beta Pi, Texas A&M University
The Engineering Honor Society

2011 – Present, ASTM International (Formerly American Society of Testing and Materials)
Committee Member E06
Committee Co-chair F12

2015 – Present, American Society of Civil Engineers (ASCE)
Associate Member

HONORS AWARDS

1. TTI, New Researcher Award, TTI/Trinity Industries, 2015
2. TTI, Outstanding Master's Program Student Award, TTI/Trinity Industries, 2009

EXPERIENCE

2017 – Present, Texas A&M University, College Station, TX
Assistant Lecturer

2007 – 2017, Texas A&M Transportation Institute, College Station, TX
Assistant Research Engineer

2007 – Present, W. Lynn Beason, Ph.D., P.E.
Engineering Consultant

2009 – 2017, Safety Quest Inc., Bryan, TX

SELECTED PUBLICATIONS AND PRESENTATIONS

Formal Papers

1. Brackin, M.S., “*Development of a Procedure to Evaluate the Shear Modulus of Laminated Glass Interlayers*”, Master’s Thesis. Texas A&M University, College Station, TX. May 2010.
2. Brackin, M.S., “*Development of a General Procedure to Evaluate the Probability of Breakage for Glass Plates in Insulating Glass Units Due to Thermal Stresses Induced by Solar Irradiance*”, Ph.D. Dissertation. Texas A&M University, College Station, TX. May 2017.

Journal Papers

1. C. Silvestri Dobrovolny, D.R. Arrington, M.S. Brackin, R.P. Bligh, A. Hangul, P.E. *Design and Finite Element Analysis of Single Slope Median Wall for Grade Separation*. Transportation Research Board Annual Meeting. Transportation Research Board, Washington, D.C. 2014.
2. Brackin, M.S., Abu-Odeh, A., Buth, C.E., Williams, W.F., Fry, G., Freeby, G., “*Impact Forces from Heavy-Vehicle Collisions with Bridge Piers*”, Structures 2012, Transportation Research Record 2313. Transportation Research Board, Washington DC. 2013, pp.42-51.

Presentations

1. Brackin, M.S., Beason, W.L., Bligh, R.P., Odell, W., Meza, A., Bostic, M., “*Development and Compliance Testing of a Non-Pinned End Treatment for the Low-Profile Portable Concrete Barrier*”, Transportation Research Board, Washington DC., January 2014.
2. Brackin, M.S., “*Dynamic Impact Forces and Position Involving Heavy Vehicles Colliding with Bridge Piers*”, Transportation Research Board, Washington DC., January 2012.

Technical Reports

1. C. Silvestri Dobrovolny, M.S. Brackin, P. Betancourt. *Best Practices for Barrier Protection of Bridge Ends*. 405160-38. Texas A&M Transportation Institute, College Station, TX. February 2014.
2. W.L. Beason, M.S. Brackin, R.P. Bligh, W.L. Menges. *Development and Testing of a Non-Pinned Low-Profile End Treatment*. 9-1002-12-7. Texas A&M Transportation Institute, College Station, TX. October 2013.
3. C.E. Buth, M.S. Brackin, W.F. Williams, G. Fry. *Collision Loads on Bridge Piers: Phase 2. Report of Guidelines for Designing Bridge Piers and Abutments for Vehicle Collisions*. 9-4973-2. Texas Transportation Institute, College Station, TX. March 2011.
4. C.E. Buth, W.F. Williams, M.S. Brackin, D. Lord, S.R. Geedipally, A. Abu-Odeh. *Analysis of Large Truck Collisions with Bridge Piers: Phase 1. Report of Guidelines for Designing Bridge Piers and Abutments for Vehicle Collisions*. 9-4973-1. Texas Transportation Institute, College Station, TX. May 2010.

PATENTS

1. Michael S. Brackin et al. 2015. Surface Mount Wedge Barrier. U.S. Patent 8956072, filed October 1, 2013, and issued February 17, 2015.
2. Michael S. Brackin et al. 2016. Single Anchor Terminal. U.S. Patent 2016013077, filed October 29, 2015, and issued May 12, 2016.
3. Dean C. Alberson et al. 2016. Methods for the Manufacture of a Module for use in a Crash Barrier and Assembly of the Crash Barrier. U.S. Patent 20160305080, filed June 27, 2016, and issued October 20, 2016.
4. Dean C. Alberson et al. 2016. Module for use in a Crash Barrier and Crash Barrier. U.S. Patent 9404231, filed July 31, 2015, and issued August 2, 2016.