THOMAS J. MANDER, P.E.

Senior I Engineer

BAKER ENGINEERING AND RISK CONSULTANTS, INC.

San Antonio

Education:

B.E. (Hons), Civil Engineering, University of Canterbury, New Zealand

M.S., Civil Engineering, Texas A&M University

Areas of Practice:

Thomas Mander works in the BakerRisk San Antonio office as part of the Protective Structures Group. His work focuses on the assessment and design of buildings, test enclosures, bridges, and infrastructure subjected to explosion hazards. Mr. Mander has managed and supported numerous government, industry, and internal research projects, mostly pertaining to the blast performance of reinforced concrete, precast/prestressed concrete, and masonry wall systems. Mr. Mander is currently working towards a PhD in Civil Engineering at the University of Texas at San Antonio as a National Science Foundation Graduate Research Fellow. Mr. Mander has been published in numerous peer reviewed journals and conference proceedings and serves on blast committees for reinforced and precast concrete.

Experience:

- Mr. Mander routinely performs analyses of structures subjected to conventional and impulsive loadings from blast overpressures and fragments. He is well versed in blast design guidelines for petrochemical, explosive safety, and anti-terrorism industries, as well as steel and concrete specific blast guidelines. This includes the evaluation of existing structures, where cost-effective retrofits are designed for structurally deficient buildings, and conceptual and final designs for new structures, along with reviewing construction documents. Evaluated and designed structures include high pressure test enclosures, control rooms, historical government buildings, new courthouses, airport traffic control towers, and single and multi-story buildings.
- Mr. Mander is proficient in non-linear dynamic modeling, including single and multi-degree of freedom methods, finite element SAP2000 modeling and DYNA-3D finite element modeling. He has also performed whole building analyses using building damage curves derived from component level analyses and three-dimensional non-linear finite element models to assess global structural performance.
- Mr. Mander has been involved in the dynamic testing of structural components at BakerRisk's shock tube. Key projects include testing unreinforced masonry walls strengthened with polyurea for the U.S. Army Corps of Engineers, developing a blast-resistant façade for airport traffic control towers, and developing blast response criteria for load-bearing precast concrete walls for the Precast/Prestressed Concrete Institute (PCI). Mr. Mander also managed a large joint-industry project to research the validity of blast response criteria of reinforced concrete slabs as part of BakerRisk's Explosion Research Cooperative (ERC). Additionally, Mr. Mander has supported full-scale vapor cloud explosion testing.
- Mr. Mander is involved in facility siting studies (FSS) and quantitative risk assessments (QRAs), to evaluate the effects of an accidental explosion on personnel and infrastructure within petroleum and chemical facilities. As part of these studies, he analyzes the structural response of occupied and critical buildings subject to blast and fragment hazards, from which damage predictions are completed using either consequence or risk principles.
- Mr. Mander completed his Master of Science in Civil Engineering at Texas A&M University. His research at Texas A&M focused on experimental and theoretical evaluation of a new precast concrete bridge deck system to be used in the state of Texas. This included full scale construction and static testing of two bridge deck specimens and deriving slab failure models. Prior to this, he received his Bachelor of Engineering, with First Class Honours, from the Department of Civil Engineering at the University of Canterbury in New Zealand. Mr. Mander is currently working towards a PhD in Civil Engineering at The University of Texas at San Antonio as a National Science Foundation Graduate Research Fellow.

Professional Chronology:

Texas A&M University, Department of Civil Engineering (Graduate Research Assistant, 2008-2009), Baker Engineering and Risk Consultants, Inc. (Consultant: Sept 2009-Dec 2010, Project I Consultant: Dec 2010 – Dec 2012, Project II Engineer: Dec 2012 – Dec 2014, Senior I Engineer: Dec 2014 - present)

Professional Registrations:

Licensed Professional Engineer (Texas #115854), (Tennessee #118810)

Professional Committees:

Voting Member for Precast/Prestressed Concrete Institute (PCI) Blast Resistance and Structural Integrity Committee.

Voting Member of American Concrete Institute (ACI) Committee 370: Blast and Impact Load Effects.