

FRANCESCA BRANDO, PH.D.

Associate Principal



Summary

Francesca Brando joined Thornton Tomasetti in 2009 and has more than 13 years of experience in structural design, building investigations, advanced analytics, nonlinear analysis and forensic investigations. Her experience includes computer modeling to simulate structural failures and investigation of damages.

Areas of Technical Expertise

- Forensic Engineering
- Structural Engineering
- Investigations and Emergency Response

Education

- Ph.D., Structural Engineering, 2013, Sapienza University of Rome
- M.S., Structural Engineering, 2009, Sapienza University of Rome
- M.S., Structural Engineering, 2009, Columbia University
- B.S., Civil Engineering, 2006, Sapienza University of Rome

Professional Activities & Awards

- Member, American Society of Structural Engineers (ASCE)
- Member, Structural Engineers Association of New York (SEAoNY)
- Humans of Construction, New York Build Expo, New York 2020
- ENR 20 Under 40 New York, Class of 2020
- Emerging Leaders Program, Beverly Willis Architecture Foundations, 2018
- Top 20 under 35 in AEC, Commercial Observers, 2017

Select Project Experience

Forensics & Structural Analysis

Confidential Utility Investigation, Jersey City, NY. Cause and origin investigation into the failure of a buried utility. Investigation included documentation of data during response and repair, metallurgical and geotechnical analysis, and advanced impact modeling. Investigation included evaluation of river pier supported of wooden piles and the standards for pier maintenance and repair. Produced expert report used in litigation.

I-35 West Bridge Collapse, Minneapolis, MN. Forensic investigation of a steel truss vehicular bridge collapse, on behalf of consortium of attorneys representing the victims. Scope included forensic information model to catalog and access 40 years of inspection data, collapse analysis to determine the cause of the collapse and nonlinear finite element model to simulate the collapse initiation.

Indiana State Fair Commission Collapse Incident

Investigation and Report, Indianapolis, IN. Structural engineering services related to an independent cause and origin opinion regarding the failure of a ground-supported temporary entertainment rigging structure on the evening of August 13, 2011.

Confidential Project, Concord, AL. Structural damage assessment services for a steel-braced industrial building that experienced tornado damages on April 27, 2011. Scope included a P-delta analysis and model to determine its strength in the deformed condition and the actual in-place column to beam connections to assess and prescribe reasonable repair schemes.

Building Design After Collapse, Windsor, CT. Engineering consulting services including new design to rebuild approximately 200,000 square feet of collapsed building space.

*Denotes work performed with previous employer.

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World Trade Center Superstorm Sandy, New York, NY.

Investigation to determine the cause and extent of structural, architectural and MEP damage to a complex of buildings following the CAT-90 Sandy event on behalf of the insurer.

Dover Air Force Base Freight Terminal, Dover, DE.

Investigation of damaged columns and beams in a cargo facility.

Reliant Stadium, Fabric Damage Investigation, Houston, TX.

Investigation of hurricane wind load damage to a fabric roof that covers movable and fixed roofing panels.

Hunter College Investigation, New York, NY. Investigation of damage to an existing 4-story brick masonry mixed-use building that allegedly resulted from adjacent construction.

Columbia University, Manhattanville Study, New York, NY.

Condition assessment of a 68-building development. Scope included review of structural as-built conditions and details for compliance to local, state and federal codes; and verification of as-built allowable floor loading for each existing structure based on local, state and federal code review to determine viability for future use.

United States Capitol Dome Rehabilitation Phase II,

Washington, DC. Structural engineering services for the rehabilitation, analysis and design of repaired components of the cast-iron dome. The project included determination of allowable loads for scaffolding the dome, updating an existing finite element analysis model to updated software and verifying the structure's performance under current code required loads.

St. Nicholas Greek Orthodox Church, New York, NY. Structural engineering and blast analysis services for a new 3,600-square-foot church, which replaces the church that was destroyed in 9/11. The new church facility interfaces with construction that is part of the new World Trade Center site.

NYC Hoist Tower Peer Reviews, New York, NY. Peer review of design conformance inspection of hoists.

St. Patrick's Cathedral, Peer Review, New York, NY. Peer review of scaffold design and erection for the stone restoration of the exterior and interior of a landmark cathedral. The interior scaffold was particularly a challenge as the erection of the scaffold needed to take place while keeping the cathedral open for tourists.

Select Papers, Lectures and Publications

"No-Touch Inspections: Challenges in Non-Destructive Evaluation of Subjects That Are Buried and Underwater," Proceedings of the 8th Forensics Engineering Congress, Austin, TX, November 2018 (co-author and presenter)

"Modeling Failure Progression in Structures Informed by Demolition," CFRAC 2015, the Fourth International Conference on Computational Modeling of Fracture and Failure of Materials and Structures, Paris, France, June 3-5, 2015 (co-author and presenter)

"Informed Structures: Forensic Information Modeling Lessons Learned," Forensic Engineering, ICE, September 2014 (co-author)

"Forensic Investigation in the Age of the Internet of Things," 37th IABSE Symposium, Madrid, Spain, September 3-5, 2014 (co-author)

"Consequence-based robustness assessment of a steel truss bridge," Steel and Composite Structures, Vol. 14, No. 4, 379-395, May 2013 (co-author)

"Robustness assessment of a steel truss bridge," ASCE/SEI Structures Congress, Pittsburgh, PA, May 2-4, 2013 (presenter)

"Calculating collapse: analytical approaches for investigating the cause of the I-35 west bridge failure," ICE, the Fifth International Conference on Forensic Engineering, London, UK, April 16-17, 2013 (co-author and presenter)

"Forensic investigation modeling - A new forensic tool," Civil Engineering Magazine, ASCE, January 2013 (co-author)

"Forensic Investigation Modeling (FIM) Approach: I-35 West Bridge Collapse Case Study," Sixth Congress on Forensic Engineering, San Francisco, CA, October 31-November 3, 2012 (co-author and presenter)

CONTACT

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