

# ELISABETH A. MALSCH, PH.D., P.E.

## Senior Principal



### Summary

Elisabeth Malsch is an expert in structural analysis and design, with specializations in investigative projects. She is proficient in static, dynamic and nonlinear analysis and the evaluation of buildings, temporary structures, and mechanical systems under the effects of typical to extreme loads. In addition to serving as co-leader of our Forensics practice, she is part of the leadership team that oversees the firm's research and development program. As part of this initiative, she was one of the lead developers of Hummingbird Kinetics, a fluid harmonic damper for tall and supertall buildings that was based on NASA technology. Elisabeth is a frequent lecturer, speaking on topics that range from technical innovation to improving diversity in the field of engineering.

### Areas of technical expertise

- Forensic Structural Engineering
- Forensic Engineering Mechanics
- Structural Stabilization

### Education

- Ph.D., M.Phil, M.S., Engineering Mechanics, 2003, 2001, 2000 (respectively), Columbia University
- B.S., Civil Engineering, 1999, Columbia University

### Registrations

- Licensed Professional Engineer in CT, FL, GA, MA, MN, NJ, NY, RI, TN, TX and Nova Scotia, Canada

### Professional activities

- Director, American Friends of the Alexander von Humboldt Foundation
- Secretary, Thornton Tomasetti Foundation
- Treasurer, TTWIIN2
- Member, American Society of Civil Engineers (ASCE)
- Adjunct Assistant Professor, Columbia University, Since 2010
- Fellow, Technische Universität Braunschweig, Germany, 2004-2005
- Post-Doctoral Researcher, Columbia University, 2003-2004

### Honors and awards

- Presidential appointee to the Engineering Mechanics Institute Board, ASCE, 2018-2019
- U.S. Frontiers of Engineering Symposium, National Academy of Engineering, 2016
- Top 20 Under 40, Engineering News Record, 2012

### Select project experience

#### Forensic Structural Engineering

**I-35 West Bridge Collapse**, Minneapolis, MN. Investigation to determine the cause of the steel truss bridge collapse.

**Tropicana Parking Garage Collapse**, Atlantic City, NJ. Investigation to determine the cause of the cast-in-place structure's collapse during construction.

**OWA Aquarium**, New York, NY. Investigation to determine why the interconnected concrete tanks were not water tight and review the repair.

#### Forensic Engineering Mechanics

**Riser System Investigation**, Ontario, CA. Investigation to determine the cause of wall anchor failures including the performance of the riser system and the forces associated with the fluid flow.

**Paper Pulp Mill Digester Failure**, Ontario, CA. Investigation to determine the cause of multiple paper pulp mill digester failures.

**Scattergood 3 Corrosion Investigation**, Los Angeles, CA. Investigation of severity of corrosion, condition of coatings, and the associated impact to mechanical systems and structural performance.

#### Structural Stabilization

**Sherman Minton Bridge**, spans from KY to IN. Retrofit of a fracture critical bridge.

**261 Madison Avenue**, New York, NY. Emergency response and stabilization of building after catastrophic impact. Prescribe and review structural and cladding repairs.

**130 Liberty Street**, New York, NY. Stabilization of a 50-story building during deconstruction activities.

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### Sworn testimony

Deposition, Tappan Zee Constructors, LLC vs. Manitowoc Company, Inc, New York, NY. August 13, 2020.

Arbitration Testimony, Daelim vs. Hankook in Nashville, TN. July 24, 2020.

Arbitration Testimony, George Washington Bridge Bus Station, NY. December 3 & 4, 2018.

Deposition and Trial, Kiewit Power Constructors Co. vs. City of Los Angeles Department of Water and Power, CA. March 14, 2018 and May 31, 2018.

Testimony, ECB Hearing, 44 Trinity vs. New York City Department of Buildings, NY. April 5, 2018.

Testimony, John C. Whitehead and Mark DiStefano vs. The State of New York Court of Claims, NY. September 13, 2017.

Testimony, Grandview at Riverwalk Port Imperial Condominium Association vs. K. Hovnanian at Port Imperial, et al. Hudson County Superior Court, NJ. April 24, 2017.

Deposition, Charles Rifkind vs. O'Neill Condominium Association, NMC Property Management, LLC, Ladies Mile, Inc., and Olympic Funding, LLC, NY. September 21, 2015.

Arbitration Testimony, PREF 34 East 51st Street LLC vs. Sciame Construction LLC, NY. November 18, 2014.

### Select papers, lectures and publications

"Environmental Loading on Temporary Structures Based on the 2014 NYC Building Code," ASCE Forensic Engineering 7th Congress, Miami, FL, November 15-18, 2015 (co-presenter)

"Investigation of Sprayed Fire-Resistive Material and In-Situ Bond Failure," ASCE Forensic Engineering 7th Congress, Miami, FL, November 15-18, 2015 (co-presenter)

"Investigation of Fragment Impact and Blast Shock Wave on Window Breakage," ASCE Forensic Engineering 7th Congress, Miami, FL, November 15-18, 2015 (co-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-presenter)

"Dangers of Lot Line Retrofits and Construction," International Association for Bridge and Structural Engineering (IABSE), Helsinki, Finland, February 11-12, 2015 (co-presenter)

"Learn About 3D Printing," NYCLA Construction Law Committee, New York, NY, April 23, 2014 (presenter)

"Forensic Information Modeling in Bridge Renovation: Sherman Minton Bridge," IABMAS 7th International Conference on Bridge Maintenance, Safety and Management, Shanghai, China, July 7-11, 2014 (presenter)

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

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

"Evaluation of Super-Tall Steel Columns Subjected to Blast Loading Using SDOF and Finite Element Analysis Methods," 11th International Conference on Structural Safety & Reliability, Columbia University, New York, NY, June 2013 (co-author)

"Calculating Collapse: Analytical Approaches for Investigating the Cause of the I-35 West Bridge Failure," Fifth International Conference for Forensic Engineering, London, April 16-17, 2013 (co-author)

"How Computers Lie: The Fact and Fiction of Computer Simulations in Court Cases," Construction Super Conference, San Francisco, CA, December 2012 (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)

"Beyond the Project Scope" ASCE Met Section, June 2010 (presenter, co-author)

"Recent Advances in the Construction of Polygonal Finite Element Interpolants," Archives of Computational Methods in Engineering, 2005, V11, N4 (co-author)

"Smooth Two Dimensional Interpolants: A Recipe for All Polygons," Journal of Graphics Tools (ACM: 2005) V10, N2 pp. 27-39 (co-author)

"Extension of the Cloning Algorithm: Modeling Soil-Structure Interaction in Heterogeneous Foundations," Lecture Series on Computer and Computational Sciences. V1, 2004, pp. 1-3 (presenter).

"Shape Functions for Polygonal Domains with Interior Nodes," International Journal for Numerical Methods in Engineering (Wiley: October 2004). V61, N8 pp.1153-1172 (co-author)

### CONTACT

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