

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

Managing 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 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.

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, DC, FL, GA, MA, MN, NJ, NY, RI, TN, TX, VA and Nova Scotia, Canada

Professional Activities

- Chair, American Friends of the Alexander von Humboldt Foundation
- Secretary, Thornton Tomasetti Foundation
- Treasurer, TTWIIIN2
- 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

- Fellow, Engineering Mechanics Institute, ASCE, 2025
- Industrial Advisory Board Member, Center for Manufacturing Smart Infrastructure, 2025
- 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
- Columbia Mindlin Prize, 2003

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 watertight 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, Tutor Perini Bldg. Corp. v. Slayton Ventures, LLC, et al, Supreme Court of the State of New York. November 21, 2025.

Deposition, Tutor Perini Corp. v. Commonwealth of Virginia, et al, Tysons, VA. Circuit Court for the City of Norfolk. October 25, 2024.

Deposition, Buzwin Donut Corp. v. Sentinel Ins. Co. Lmtd., New York, NY. October 22, 2024.

Deposition, D-1566, Appeal of Technopref Industries, Washington, DC. September 19, 2024.

Deposition, Worth Constr. Co., Inc. & Liberty Mutual Ins. Co. v. Rutgers & Flad Architects & Engineers, Inc., et al, Superior Court of New Jersey. September 16, 2024.

Testimony, Rose Grp. Park Ave. LLC v. Third Church of Christ, Scientist of New York City, Supreme Court of the State of N.Y., County of N.Y. January 23, 2023.

Deposition, Pizzarotti, LLC v. FPG Maiden Lane, LLC, et al., FPG Maiden Lane, LLC, et al. v. Pizzarotti, LLC, et al. December 14, 2022.

Hearing, Virtual, regarding an OSHA case involving internal wire breaks. February 24, 2022.

Deposition, S.J. Louis Constr. of Texas, Ltd. v. City of Austin v. Liberty Mutual Fire Ins. Co., District Court of Travis County, TX. November 23, 2021.

Deposition, Tappan Zee Constructors, LLC v. Manitowoc Co., Inc, New York, NY. August 13, 2020.

Arbitration Testimony, Daelim v. Hankook, Nashville, TN. July 24, 2020 and November 12, 2020.

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

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

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

Testimony, Whitehead v. State of New York Court of Claims, NY. September 13, 2017.

Testimony, Grandview at Riverwalk Port Imperial Condo. Ass'n v. K. Hovnanian at Port Imperial, et al. Hudson County Superior Court, NJ. April 24, 2017.

Deposition, Rifkind v. O'Neill Condo. Ass'n, NMC Prop. Mgmt., LLC, et al, NY. September 21, 2015.

Arbitration Testimony, PREF 34 E. 51st St. LLC v. Sciamone Constr. LLC, NY. November 18, 2014.

Patents

Title of Invention: Tuned Liquid Damper with a Membrane Liquid-Gas Interface. Attorney Docket No. 029468.00146. Confirmation No. 4832. Filed on February 23, 2018.

Select Papers, Lectures and Publications

"Ethics of Engineers in the Public Discourse When Catastrophes Occur," Proceedings of the 10th Congress on Forensic Engineering, Seattle, WA, November 2024 (co-presenter)

"Adjacent Construction Vibrations: Perception versus Reality," Proceedings of the 10th Congress on Forensic Engineering, Seattle, WA, November 2024 (co-presenter)

"Surfside Collapse Investigation Initial Findings," Proceedings of the 10th Congress on Forensic Engineering, Seattle, WA, November 2024 (co-presenter)

"Using Technology to Speed Up Inspection and Reporting—Panelized Roof Case Study," Proceedings of the 10th Congress on Forensic Engineering, Seattle, WA, November 2024 (co-presenter)

"Forensic Engineering 2024: Finding Answers to the What, Why, Who, and How of Preventing Failures," Proceedings of the 10th Congress on Forensic Engineering, Seattle, WA, November 2024 (co-author)

"Technology in Construction Law," ABA Book Publishing, Ch. 5, 6, & 7. August 11, 2023 (co-author)

"Innovative Liquid Damper for Wind-Induced Vibration of Buildings: Performance After Four Years of Operation and Next Iteration," International Journal of High-Rise Buildings, Vol. 10, CTBUH Korea, 2021 (co-author)

"Vibration Analysis of Footbridges: An Overview of the Current Practice," MATEC Web of Conferences. Vol. 211, EDP Sciences, 2018 (co-author)

"Remediation of Wind-Induced Building Vibrations with Modular Tuned Liquid Damper System," ASCE Forging Forensic Frontiers, 2018 (co-author)

"No-Touch Inspections: Challenges in Non-Destructive Evaluation of Subjects That Are Buried and Underwater," ASCE Forging Forensic Frontiers, 2018 (co-author)

"Rails in Retractable Roofs: Overview of the Design Methodology and a Case Study," ASCE Forging Forensic Frontiers, 2018 (co-author)

"Design and Commissioning of a New Liquid Damper System for Wind-Induced Vibrations of Buildings," IABSE Symposium: Engineering the Future, Vancouver, Canada, September 21-23, 2017 (co-author)

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Select Papers, Lectures and Publications Continued

- “Innovative Tuned Liquid Damper System,” IABSE Congress: Challenges in Design and Construction of an Innovative and Sustainable Built Environment, Stockholm, Sweden, September 21-23, 2016 (co-author)
- “Informed Structure: Forensic Information Modelling,” Proceedings of the Institution of Civil Engineers-Forensic Engineering, Thomas Telford, Ltd., Vol. 168, 2015 (co-author)
- “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)
- “Forensic Information Modeling: A New Forensic Tool,” Civil Engineering Magazine Archive, ASCE, Vol. 83, 2013 (co-author)

“Forensic Investigation Modeling (FIM) Approach: I-35 West Bridge Collapse Case Study,” Forensic Engineering 2012: Gateway to a Safer Tomorrow, 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)

CONTACT

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