

JOELLE NELSON, P.E.

Associate Principal



Summary

Ms. Nelson joined Thornton Tomasetti in 2004. She has served as a testifying expert and has experience in the investigation of major structural collapses. Her areas of expertise include wind related failures and collapses of cranes and other temporary structures. She has designed and investigated structures with complicated wind conditions including open frame structures, a topic which she has authored papers. Her wind-related investigations consist of collapses due to hurricanes, thunderstorms, and tornadoes. She has experience with construction and crane engineering and has investigated major crane collapses in New York, Florida, and Toronto as well as failures of temporary and seasonal structures. Her design experience is extensive and includes the design and renovations of complex and historic structures. She serves on the ASCE 37 Wind Load Subcommittee and the committee for ASCE 37 Design Loads on Structures During Construction.

Areas of technical expertise

- Forensic Investigation
- Construction Support
- Structural Engineering

Education

- M.S., Civil Engineering, 2005, Columbia University
- B.S., Civil Engineering, 2004, Columbia University

Registrations

- Licensed Professional Engineer in FL and NY

Professional activities

- Associate Member, ASCE 37 Committee
- Associate Member, ASCE 7-22 Wind Load Subcommittee
- Associate Member, ASCE 7-16 Wind Load Subcommittee

Select project experience

Crane investigations

Confidential Crawler Crane Collapse Investigation, NY. Cause and origin investigation of collapse of a crawler crane.

Confidential Tower Crane Collapse Investigation, FL. Cause and origin investigation of two tower cranes that collapsed in a high wind event.

Confidential Crane Rigging Failure Investigation, New York, NY. Cause and origin investigation of failure of rigging during crane pick.

157 W. 57th St. Tower Crane Collapse, New York, NY. Investigation of the cause of a tower crane collapse during Hurricane Sandy.

Forensic investigations

Confidential Stadium, confidential location. Advanced analysis and remediation of newly constructed stadium with structural design and erection issues.

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 Tornado Damage Assessment, confidential location. Structural damage assessment for a steel-braced industrial building that experienced tornado damages including 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.

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Liberty Mutual, Arabi and New Orleans, LA. Structural analysis of two structures damaged in hurricane Katrina to determine the cause of damage, whether wind or flood, for an insurance claim. Scope included on-site investigation, research of actual wind speeds and water levels, and calculations of wind loads and buoyancy effects on the roof.

Construction support

New York University Hospitals Center, Helen L. and Martin S. Kimmel Pavilion, New York, NY. Erection engineering provided for a 22-story healthcare facility including production of rigging diagrams for complex steel members, development of crane pick plans and design of temporary support trusses to enable erection of base building steel within the confines of a challenging and crowded site, deformed condition and the actual in-place column to beam connections to assess and prescribe reasonable repair schemes.

Structural engineering

U.S. Bank Stadium, Minneapolis, MN. Structural design of a 1.7-million-square-foot, 65,000-seat stadium designed to host NFL football, MLS soccer, NCAA basketball and baseball and other events. The facility features a series of operable panels in a glass end-wall that pivot to provide natural ventilation and access to the west plaza. A clear 240,000-square-foot ETFE system on the roof's southern half will promote natural daylighting and produce additional solar gain to warm the stadium.

United States Capitol Dome Rehabilitation Phase II, Washington, DC. Structural engineering services for the rehabilitation of the dome including analysis of the cast-iron dome and design of repaired components. The project included determination of allowable loads for scaffolding the dome during the rehabilitation project.

Roosevelt Island, Aerial Tramways and Stations, New York, NY. Condition assessment, structural design, contract documents and construction project management for the rehabilitation and equipment upgrade of the aerial tramway and stations.

195 Broadway, New York, NY. Structural engineering services for renovation work to a landmarked lobby of an early 20th-century building including analysis of the existing steel structure with a terracotta arch and concrete mesh slabs with no existing structural drawings, probing of the existing framing, and design of reinforcement for new openings and loads imposed by a new 30-foot glass partition wall.

Sworn testimony

Deposition, Ludwig vs. United States, January 9, 2020.

Litigation

Natal vs. Kameo, Brooklyn, NY, case involving a brick fence/wall that collapsed onto and injured a boy.

Barrios vs. Intercounty Paving, Kings Park, NY. Investigation involving the tipping of a dump truck.

Select papers, lectures and publications

"Scaffolding a Landmark: the Restoration of the Dome of the United States Capitol Building," ASCE Structures Congress, Denver, April 8, 2017 (co-author)

"Tight Coverage," Modern Steel Construction, page 36-40, November 2016 (author)

"Wind Loading on Multi-Layer Open Frame Structures: A Comparison of International Code Provisions," Proceedings of the XIII Conference of the Italian Association for Wind Engineering: In-Vento 2014, June 2014 (author)

"The Roosevelt Island Tramway Modernization Project," ASCE 6th Forensic Congress Proceedings, November 2012 (author)

"The Indiana State Fair Collapse Incident: Anatomy of a Failure," ASCE 6th Forensic Congress Proceedings, November 2012 (co-author)

"Aerial Advancement," Roosevelt Island Tramway, CE Magazine, page 66, October 2011 (author)

CONTACT

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