

ALI ASHRAFI, PH.D., P.E., LEED AP

Principal



Summary

Dr. Ashrafi joined Thornton Tomasetti in 2006 and has extensive experience in forensic investigations, emergency response, structural design, fire performance based design, renovation, deconstruction engineering, seismic and performance based design, advanced analytics, and nonlinear and dynamic analysis. He has also acted as an expert witness providing sworn testimony. Dr. Ashrafi is an adjunct professor at Columbia University, having taught Introduction to Structural Fire Engineering as well as Earthquake and Wind Engineering. He is a member of several professional organizations and has served as a vice-chair of ASCE Fire Protection Committee. Dr. Ashrafi is a frequent speaker at industry and technical events and has published widely on his work.

Areas of technical expertise

- Forensic Structural Engineering
- Fire Investigations
- Deconstruction Engineering

Education

- Ph.D., Civil Engineering, 2006, Columbia University
- M.Sc., Civil Engineering, 2003, New Jersey Institute of Technology
- B.Sc., Civil Engineering, 2000, Sharif University of Technology, Tehran, IRN

Registrations

- Licensed Professional Engineer in CA

Professional activities

- Adjunct Assistant Professor, Columbia University, Earthquake and Wind Engineering, 2011-present; Introduction to Structural Fire Engineering, 2020
- Vice-Chair, Fire Protection Committee, American Society of Civil Engineers (ASCE), 2019-2021
- Dynamics Committee, American Society of Civil Engineers (ASCE), 2006-present
- Member, Society of Fire Protection Engineers (SFPE), 2018-present
- Fire Codes Committee, ACEC Metro Region, 2017-present
- Reviewer, Fire Safety Journal, Journal of Engineering Mechanics, Journal of Performance of Constructed Facilities, Journal of Geotechnical and Geoenvironmental Engineering

Awards

- "Rising Star", Civil + Structural Engineer, 2019

Select project experience

Investigations

Sceye, Inc. vs. IF P&C Insurance Company LTD., Roswell, NM. Litigation support services regarding the nature of the airship hangar structure and its cladding.

Wind Turbine Collapse, Bronx, NY. Investigation of the collapse of a wind turbine that was built on top of a 200 ft. tall support mast. The cause of the collapse was investigated and the report was issued to the New York City Department of Buildings.

Concrete Structure Fire, Undisclosed location. Investigation of a large concrete structure that experienced fire during construction and sustained significant damage to beams, columns, girders, retaining walls, and bearing. Specified non-destructive and destructive testing and directed the structural repairs to the damaged building.

Parking Garage Fire, New York, NY. Fire investigation services to assess the conditions of a mixed steel-concrete parking structure after the building was exposed to fire and heat as a consequence of a fire event. Accessibility and safety of the venue was surveyed and reconstruction plans were reviewed to ascertain the safety of the building.

Bike Shop Fire, Undisclosed location. Investigation of the damage by fire in a bike shop to determine the extent of damage to bikes.

Tower Crane Collapse, Undisclosed location. Investigation of the cause of the collapse of two tower cranes in a wind event.

I-35 West Bridge Collapse, Minneapolis, MN. Forensic investigation of 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, and non-linear finite element model to simulate the collapse initiation.

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Sherman Minton Bridge, Spans from Louisville, KY to New Albany, IN. Peer review of a fatigue-critical bridge connecting Kentucky to Indiana over the Ohio River. Thornton Tomasetti recommended shutting down the bridge and also provided peer review of proposed repairs and analysis of the existing structure.

Office Building Façade Investigation, Hauppauge, NY. Investigated the causes of cracking and leaking in the façade of a newly constructed office building.

Target v. Greenberg Farrow Architecture, Riverdale, NY. Litigation regarding damage to parking roof wall panel connections.

Canopy Walkway Collapse, Atlanta, GA. Evidence retention, safe demolition processes, and a forensic investigation following the 2008 collapse of a suspended pedestrian walkway during construction.

Blast Furnace Rupture, Undisclosed location. Forensic investigation of the explosion and rupture of the shell of a 90-year-old blast furnace.

203 West 90th Street, New York, NY. Investigation of the causes of damage to the façade of a 13-story structure, including a six-story light gage steel-framed structure at the top.

CAT-90 Sandy, New York, NY. Damage assessment and repairs related to the inundation of water in multiple facilities in New York, New Jersey and Connecticut; specifically as it relates to structural evaluation, HVAC, electrical, plumbing and fire protection equipment and systems.

Sworn testimony

Deposition, United States District Court for the District of New Mexico, Sceye, Inc. vs. IF P&C Insurance Company, LTD, March 29, 2021.

Publications in the previous 10 years

"Potential Insights from Performance-Based Design of Fire Protection in Tall Buildings," IFireSS 2019, Ottawa, ON, Canada, June 5-7, 2019 (co-author, co-presenter)

"Potential Insights from Performance-Based Design of Fire Protection in Tall Buildings," 2019 IABSE Congress, New York, NY, September 4-6, 2019 (co-author, co-presenter)

"Performance-Based Fire Resilience Evaluation of a Tall Building Structure," Performance Based Codes and Fire Safety Design Methods, Oahu, HI, April 25-27, 2018 (co-author, co-presenter)

"Performance-Based Fire Engineering for Hazard Assessment of Tall Buildings," 40th IABSE Symposium, Nantes, France, September 19-21, 2018 (co-author, co-presenter)

"Application of Performance-based Fire Engineering to Existing Structures and Forensic Investigations," ASCE Forensic

Engineering 8th Congress, Austin, TX, November 29-December 2, 2018 (co-author, co-presenter)

"A modal approach to determine direct shear of beams subjected to impulse," Journal of Engineering Structures, Vol. 156, 2018 (co-author)

"Nonlinear Dynamic Analysis: Case Studies," Proceedings of NAFEMS World Congress 2017, Stockholm, Sweden, June 11-14, 2017 (co-author, co-presenter)

"Adaptive analysis for performance-based fire protection of bridges," IFireSS 2017, Naples, Italy, June 7-9 2017 (co-author, co-presenter)

"Performance-Based Assessment and Mitigation of Fire Hazard for Bridges," 39th IABSE Symposium, Vancouver, BC, Canada, September 21-23, 2017 (co-author, co-presenter)

"Performance Based Fire Engineering: Sensitivity Analysis and Design Parameters," 9th International Conference on Structures in Fire, Princeton, NJ, June 8-10, 2016 (co-author, co-presenter)

"Lifting Columns of Existing Structures under Existing Loads," ASCE Forensic Engineering 7th Congress, Miami, FL, November 15-18, 2015 (co-author, co-presenter)

"Performance Based Seismic Design of Soyak Crystal Tower – Getting an Safer and More Economical Design," Second European Conference on Earthquake Engineering and Seismology, Istanbul, Aug 25-29, 2014 (co-author, co-presenter)

"More Optimal Seismic Design of Highrise Structures Using Nonlinear Analysis Techniques," The Fifth International Conference on Structural Engineering, Mechanics and Computation, Cape Town, South Africa, Sep. 2-4, 2013 (author, presenter)

"Nonlinear Dynamic Analysis as a Tool for More Optimal Seismic Design of Tall Buildings," Structural Engineering International, 23(2), 141-147, 2013 (author)

"Evaluation of super-tall steel columns subjected to blast loading using SDOF and Finite Element Analysis methods," 11th International Conference on Structural Safety and Reliability, New York, NY, 2013 (co-author, co-presenter)

CONTACT

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