

JIANHAI LIANG, PH.D., P.E.

Associate Principal



Summary

Jianhai Liang joined the firm in 2006 and has extensive experience in structural analysis and design of commercial high-rise buildings, institutional and industrial complexes. Having worked on tall and supertall building projects in earthquake-prone areas as Southwest China, the Western United States and Central America, he specializes in performance-based seismic design. Using advanced analytical tools and techniques, he develops the most appropriate seismic-force-resisting system for a structure. Jianhai is a co-author of Thornton Tomasetti's guidelines for tall building design and performance-based design. He is on the ASCE/SEI committee of performance-based design. Currently, he concentrates on the Forensics practice involving large span and high-rise buildings. He has performed forensic engineering investigations, including damage assessment of existing facilities and cause and origin analysis of building failures.

Areas of Technical Expertise

- Forensic Structural Engineering
- Structural Engineering

Education

- Ph.D., Architectural Engineering, 2006, Pennsylvania State University, State College, PA
- M.S., Civil Engineering, 2001, Tongji University
- B.S., Civil Engineering, 1998, Tongji University

Registrations

- Licensed Professional Engineer in CA and NY

Professional Activities

- Member, Performance Based Design Committee, American Society of Civil Engineers (ASCE)/ Structural Engineering Institute (SEI)
- Member, American Society of Civil Engineers (ASCE)
- Member, American Institute of Steel Construction (AISC)

Select Project Experience

Forensic Engineering

Mixed-Use Project, NJ. Led a team to perform inspection, evaluate results, and prepare a report for the condition inspection of two mixed-use seven-story buildings in downtown Morristown, New Jersey. Evaluated the structural condition of the buildings and proposed repair schemes for observed conditions. The total project area for the two buildings is 370,000 square feet.

Office Building, NY. Inspected and evaluated the existing structural capacity, including the seismic capacity, of a 42-story commercial building constructed in 1990. Proposed repair schemes for damages, including the cracking of masonry walls.

Construction Tolerance Claim, NJ. Evaluate and determine the cause of a unitized window installation tolerance issue with composite metal deck on steel beams.

Mixed-Use Project, NJ. Condition assessment and renovation feasibility study of the existing stone masonry retaining wall that has deteriorated.

Crane Collapse Investigation, FL. Cause and original investigation, and design peer review of a tower crane that collapsed during a hurricane.

Building Renovation

345 Hudson Street, New York, NY. Structural engineering services for the rooftop expansion of a one-story penthouse on top of the existing building. Service and passenger elevator bulkhead extension. The penthouse steel structure is designed for gravity and lateral. Provided reinforcement on the existing concrete structures to support additional loading.

*Denotes work performed with previous employer.

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Structural Engineering

John F. Kennedy International Airport, New Terminal One, Jamaica, NY. Structural design and construction administration service for the 1.85 million square feet airport terminal that contains 15 gates. The three-level Headhouse with folded plate roof is supported on ten 100-foot-tall tree columns. The project includes a three-level Concourse with retail, airline lounges, customs and a subterranean baggage handling system.

Hamilton III, Miami, FL. Structural engineering services for a 43-story, 500,000-square-foot waterfront residential tower on Biscayne Bay.

MM7-Miami Midtown, Miami FL. Structural engineering services for a 31-story residential building.

Nanjing RunMao Center, Nanjing, China. Structural design services for a 500-meter-tall, 84-story mixed-use tower. The tower's lateral system consists of reinforced concrete core, steel reinforced concrete columns and steel outrigger trusses. The tower has a 160-meter-tall crown at the top hosting a glass dome, a sky garden and 360-degree-view restaurant.

Jeddah Tower/Kingdom Tower, Jeddah, Saudi Arabia. Internal peer review of the 1km tall tower. The tower structure has a steel spire at the top with sloping reinforced concrete shear wall below as the main lateral and gravity structure system.

Qiantan Square City, Shanghai, China. Design of three pedestrian bridges and one vehicular bridge that laced the buildings together within the development and connect the site with a park across a river. One of the pedestrian bridges features a 46' tall free-standing spiral monumental stair that has a long-span cantilever observation platform at the top. Vibration analysis is performed for both the long-span pedestrian bridges and the monumental stairs. Tuned mass damper are used for both to reduce vibration due to human excitation.

Shanghai Tower, Shanghai, China. Performance-based seismic design of a 632-meter mixed-use tower development. Design of the curtain wall supporting system for the 14-story-high atrium which includes performance-based fire design of the steel supporting structure.

Torre Curridabat, San Jose, Costa Rica. Structural design of two 25 story buildings in a high seismic zone. The two towers are connected with each other at levels 2, 4, and the rooftop.

Wynn Resorts Macau, Encore Tower, Macau, China. Structural design of a 180-meter, 40-story luxury hotel above five podium floors.

International Finance Centre Seoul, Seoul, Korea. Structural design of a 5.4-million-square-foot mixed-use development featuring three A-grade office towers, a five-star hotel, and seven levels of below-grade parking and retail.

Baha Mar Resort, Nassau, BHS. Structural design of a new 3.3-million-square-foot world-class resort development on a 600-acre beach-front property. The development includes four associated but separately branded hotels, a casino, spa, restaurants, retail and entertainment village, timeshare apartments, a convention center and ballroom.

Qatar National Convention Center, Doha, Qatar. Structural design services of a four-story 200,000-square-meter convention center. The convention center houses a 4,000 conference hall that measures 50m by 85m column-free. Vibration analysis is performed and tuned mass dampers are designed to reduce vibration.

Costanera Center, Santiago, Chile. Peer review of the structural design of a 250-meter by 250-meter complex consisting of four towers and a shopping mall. Review includes performance-based design of the towers in the high seismic zone and design of seismic isolation joints.

Litigation

Confidential High-Rise Building, New York, NY, regarding cracked concrete structure.

Select Papers, Lectures and Publications

"Handbook of Seismic Design for Concrete and Steel Building Structures," Springer 2025 (co-author)

"How to Keep a 1,500-Foot Skyscraper From Falling Over," Wired Magazine, 2015 (co-interviewee)

"Designing a Non-coplanar Exoskeleton Supertall Tower that Transforms the Skyline of Chengdu," Council on Tall Buildings and Urban Habitat, 2015 (co-author)

CONTACT

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