GRAEME BALLANTYNE, S.E., P.E.

Vice President



Summary

Graeme joined Thornton Tomasetti in 2007 and is currently a Vice President in our Chicago office, working with the Forensics team. He recently returned to the firm after spending 10 years at the San Francisco office. Graeme is recognized for his expertise in structural engineering, advanced forensics, and software development for engineering applications. He has diverse experience in both the design and advanced analytics of various structures, including buildings and bridges. Additionally, he possesses a deep understanding of the behavior of steel and reinforced concrete structures, structural stability, structural dynamics, blast analysis, and non-linear analysis.

WEBSITE SAMPLE

Areas of Technical Expertise

- Forensics Engineering
- Structural Engineering
- Standard of Care

Education

- M.S. Civil Engineering, 2007, SUNY at Buffalo, USA
- B.Eng. (Honors), Mechanical Engineering, 2003, University of Strathclyde, UK

Registrations

- Licensed Professional Engineer in California (C75334)
- Licensed Structural Engineer in California (S6187)
- NAFEMS Professional Simulation Engineer (Certificate 306)
- Registered California Emergency Management Agency Safety Assessment Program Evaluator (SAPV67174)

Professional Activities

- Member, American Society of Civil Engineers (ASCE)
- Member, American Institute of Steel Construction (AISC)
- Member, American Water Works Association (AWWA)

Select Project Experience

Forensics Engineering

I-35 West Bridge Collapse, Minneapolis, MN. Forensic investigation of vehicular bridge collapse, on behalf of consortium of attorneys representing the victims. Developed Forensic Information Model (FIM) for the 40 years of inspection data. Performed a collapse analysis and produced a non-linear finite element model to simulate the collapse initiation.

Birmingham International Airport, Flight Board Investigation, Birmingham, AL. Investigation to determine cause of accidental overturning of a large flight information display.

Phoenix Sky Harbor International Airport, Sky Train Expansion Joint Investigation, Phoenix, AZ. Forensic investigation to determine the cause of cast-in-place expansion joint embeds on an automated people mover system. The project scope included performing a series of finite element analyses to examine the complicated stress states due to in-service loading conditions.

Confidential Data Center, WI. Two phase project response including an initial emergency response phase followed by an ongoing structural monitoring program and root cause analysis.

Structural Engineering

New York Times Building, Vibration Monitoring, New York City, NY. Structural engineering for the installation of vibration monitoring equipment in response to occupant complaints regarding floor vibrations.

County of Santa Clara, San Jose Downtown Health Center, San Jose, CA. Structural design of a new three-story, 61,743-square-foot medical office building. The facility includes an urgent care clinic; patient examination rooms; and radiology, pharmacy and blood laboratory functions. The steel-framed building uses moment frames as the lateral system to preserve flexibility in the space layout, and the building exterior has a combination of precast concrete panels and spandrel glazing.

*Denotes work performed with previous employer.

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La Rinconada Stadium, Caracas, VEN. Structural engineering for an 850,000-square-foot baseball park with 35,600 seats and an adjacent plaza. Project materials include ETFE and fabricated metal screen panels on steel structure, steel pate risers and cast-in-place concrete. The project will be completed on a fast-track basis.

San José/Evergreen Community College District, Evergreen Valley College, South Campus Development, San Jose, CA. Structural design of a new 70,000-square-foot, two-story science and mathematics complex and a 7,000-square-foot, single-story fitness center, both with special steel concentrically braced frame lateral systems. The science and mathematics complex contains classrooms, staff offices and laboratories that house sensitive equipment and require special floor vibration criteria.

Sanctuary for Sufism Reoriented, Walnut Creek, CA. Structural design of a new 75,000-square-foot place of worship with a large basement below the water table. The reinforced concrete structure includes several domes up to 80 feet in diameter and an enhanced approach to seismic structure to meet the owner's goal of centuries-long design life.

Sanctuary for Sufism Reoriented, "New Man" Sculpture, Walnut Creek, CA. Structural engineering for a sculpture installation. The project scope included the use of friction pendulum isolators to reduce bronze thicknesses enough to facilitate fabrication of the 38-foot-tall sculpture. The use of base isolation substantially improved the seismic performance of the piece, providing for a long design life.

Transbay Joint Powers Authority, Transbay Transit Center, San Francisco, CA. Structural design and soil-structure interaction analysis of a new terminal hub accommodating buses, trains, and high-speed rail in downtown San Francisco.

Washington Hospital Health Care System, Morris Hyman Critical Care Pavilion, Fremont, CA. Structural design of a three-story, 300,000-square-foot structure housing catheterization laboratories, an intensive care unit, a cardiac care unit and an emergency department. The building consists of a structural steel moment frame supported on a triple-friction pendulum base isolation system.

Standard of Care

Los Alamos National Laboratory, Construction Claim, Los Alamos, NW. Litigation support to determine whether extra monies were due to a mechanical contractor and an electrical contractor for their work associated with the construction of a central utility plant, a research laboratory and an office building. The scope involved the review of thousands of documents and a report that summarized findings and recommendations.

Outokumpu Crane Girder, Fatigue Investigation, Calvert, AL. Forensic investigation of a series of fatigue-related claims on crane girders within a steel mill production facility. The project scope included developing a series of finite element models to evaluate the stresses at various locations due to crane design loads and recommending physical instrumentation or retrofit as necessary on a case-by-case basis.

Fort Bend Levee Flood Protection, Fort Bend, TX. Provided litigation support for a professional liability claim related to design elements of a levee flood control project.

SR-91 Highway Project, Riverside County, CA. Provided expert services to assess the standard of care of the design services. The project was a highway expansion impacting more than 16 miles of the highway and more than 30 bridges.

Select Papers, Lectures and Publications

"Mining in Fremont: A Data Management Case Study," SEAOC Conference, San Diego, September 2013, co-author

"Air-Blast Effects on Structural Shapes of Finite Width", Journal of Structural Engineering, ASCE, February 2010, co-author

"Air-Blast Effects on Structural Shapes", Technical Report MCEER-09-002, MCEER, February 2009, author

"Effect of Beam Tension on Cyclic Performance of WUF-W Steel Moment Connection", ASCE, May 2017, co-author

WEBSITE SAMPLE

CONTACT

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