GABRIEL E. POLO, PH.D., P.E.

Senior Associate

Summary

Gabriel joined Thornton Tomasetti in 2022 with over 10 years of experience focused on forensics, investigation and restoration of structures, and structural engineering research. He has experience investigating building failures and structural damage caused by weather disasters, construction defects, design deficiencies, and material deterioration. Gabriel works with clients providing litigation support and insurance consulting in relation to structural, infrastructure, and building enclosure projects. Additionally, he works with building owners and property managers to repair, restore and rehabilitate deteriorated buildings and structural components.

Areas of Technical Expertise

- Forensic Engineering
- Structural Engineering
- Building Envelope
- Failure Root Cause Analysis

Education

- Ph.D., Civil Engineering, 2018, The University of Texas at Austin
- M.S. Structural Engineering, 2014, Universidad Tecnológica de Panamá
- B.S. Civil Engineering, 2011, Universidad Tecnológica de Panamá

Registrations

- Licensed Professional Engineer in AZ, FL, LA, TX
- Licensed Professional Civil Engineer in Panama

Professional Activities

- Associate Member, ACI Committee 360: Design of Slabs-on-Ground, American Concrete Institute
- Voting Member, ACI Committee 445-C: Shear & Torsion-Punching Shear, American Concrete Institute

CONTACT

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Select Project Experience

Forensic Engineering and Investigations

Foundation Differential Movement Investigations, Multiple locations, AZ, TX. Structural investigation of building slab-on-ground and foundation differential movement and distressed caused by expansive soils. Work also included design of repairs to restore distress caused by the differential movement and specification of remediation measures to mitigate future floor movement.

Roof Collapse Investigation, USPS North Houston Facility, Houston, TX.* Investigation of roof collapse during Tropical Storm Imelda, caused by deficient design and installation of the roof drainage system, in a single-story steel-framed warehouse building, enclosed by perimeter concrete tilt-up panel walls.

Retaining Wall Cracking Investigation, Vie Lofts at San Marcos, TX. Performed an assessment of a retaining wall exhibiting cracking and movement. The work included an evaluation of the structural integrity of the retaining wall and providing recommendations for remediation.

Pavement and Storm Sewer Settlement Investigation, Vie University Downs, Tuscaloosa, AL. Performed an evaluation of pavement settlement and underground storm and sanitary utilities to identify the cause of pavement settlement and extent of damage.

Power Plant Air Condensed Cooling Unit Damage Assessment, Elwood, IL. Investigation of damage caused by a series of freeze events to an air condensed cooling (ACC) Unit in an energy generation plant and evaluation of stability and fatigue performance of the ACC to determine expected operation life of the unit considering the freeze damage.

Furnace Skid System Failure Investigation, Baytown, TX. Performed an evaluation of a conveyor skid system within a steel fabrication plant furnace to identify the root cause of skid system failure and to determine the resulting scope of damage.

*Denotes work performed with previous employer.

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Wastewater Digester Tank Covers Defect Investigation, Leawood, KS.* Investigation of construction defects in three new steel dome covers for concrete digester tanks. The investigation consisted of evaluating the fabricated steel covers and determining if the construction defects were caused during shop fabrication or during field erection of the steel cover components.

Fire Damage Evaluations, Multiple locations, TX. Performed damage assessment of multiple residential and commercial structures affected by fire, including wood-framed, mass timber, and steel-framed, and concrete structures.

Vehicular Impact Damage Evaluations, Multiple locations, LA, MS, TX. Evaluated extent of damage resulting from vehicle impacts at multiple buildings. Evaluations performed include exterior brick veneer façades, cold-formed steel wall framing, and concrete masonry walls.

Building Envelope Forensic Investigations

Façade Veneer Collapse Investigation, Houston, TX. Performed evaluation of brick veneer façade system to determine the root cause of structural failure and collapse.

Tornado, Wind, and Hail Damage Evaluations, multiple locations, AZ, FL, LA, TX. Structural and building envelope investigations of various types of commercial and residential buildings to determine damage caused by wind and hail as a result of extreme weather events. Cladding system including cement board siding, brick veneer, stucco. Roofing systems including asphalt shingle, metal panel, single-ply membrane, modified-bitumen membrane, spray-applied foam.

Hurricane Damage Evaluations, Multiple locations, FL, LA, TX. Structural and building envelope investigations of various types of commercial and residential buildings to determine damage caused by wind, flood, and storm surge as a result of hurricane activity in the affected areas.

Water Intrusion Investigations, multiple locations, TX. Investigation of commercial and residential buildings to determine the root cause of damage caused by water intrusion. System evaluated include building enclosure facades, roofs, and fenestrations, and building mechanical and plumbing systems.

Structural Engineering

Building Steel Spire Demolition, Confidential Building, Houston, TX.* Structural engineering consulting for the demolition of a 60-foot-long steel spire from the roof level of a high-rise medical tower, and design of maintenance repairs to restore deteriorated steel framing.

Brick Veneer Façade and CMU Wall Restoration, Houston Community College, Houston, TX.* Design of repairs to restore a CMU wall and exterior brick veneer façade damaged by vehicular impact.

Cast Stone Façade and Steel Column Fireproofing Repairs, Houston Methodist Hospital, Katy, TX.* Assessment, design and preparation of construction documents, and construction administration for repairs to restore cracked cast stone façade panels, and distressed fireproofing and corroded steel columns on the building's balcony.

Steel Parking Garage Repairs, 2313 Voss, Houston, TX. Structural assessment and restoration of a steel framed parking garage structure. The restoration project consisted of preparing repair documents and construction administration for the repair of severely corroded steel framing, open web joists, steel beams and supporting posts and columns.

Sworn Testimony

Hearing, Blueridge Transp. Grp., LLC, v. The Houston Parks Board & Millis Dev. & Constr., Inc., n/k/a Millis D&C, Inc., regarding the failure of a retaining wall at the SH 288 Highway Bridge over Sims Bayou, and motion for spoliation sanctions. April 14, 2025.

Deposition, Blueridge Transp. Grp., LLC, v. The Houston Parks Board & Millis Dev. & Constr., Inc., n/k/a Millis D&C, Inc., regarding the failure of a retaining wall at the SH 288 Highway Bridge over Sims Bayou. June 5, 2024.

Litigation

Sandra Power, v. Windsor Court Condo., Inc., AAM, LLC d/b/a AAM Cmty. Mgmt., LLC, & Jenniann Colon, regarding water intrusion damage allegations.

Select Papers, Lectures and Publications

"Structural Failures: From Unserviceable Buildings to Ultimate Collapse", Forensic Engineering Conference, University of Texas at Austin, Austin, TX. February 2021. (presenter)

"Shear-Resisting Performance of Reinforced Concrete Flat Plates with Different Headed Stud Layouts," American Concrete Institute, Structural Journal Vol. 118 Issue 1, 2021. (lead author)

"Punching Shear of Reinforced Concrete Flat Plates: Behavior and Design Considerations", The University of Texas at Austin, Doctorate Dissertation, Austin, TX. May 2018. (author)

"Application of an Inclined Shear Reinforcing Assembly for Slab-Column Connections," American Concrete Institute, Symposium Paper, Special Publication Vol. 321, 2017. (co-author)

"Testing and Analysis of Two Deep Beams Designed Using Strut-and-Tie Method," American Concrete Institute, Structural Journal Vol. 114 Issue 6, 2017. (co-author)

"Punching Shear in Reinforced Concrete (RC) Flat Plates with Different Stud Rail Configurations", American Concrete Institute Convention, Detroit, MI. Spring 2017. (presenter)