

ANTONIO DE LUCA, PH.D., P.E., S.E.

Associate Principal



Summary

Antonio De Luca is a forensic structural engineer specializing in diagnosing the behavior of existing structures and identifying the root causes of construction defects and material failures. His work frequently incorporates field testing and structural health monitoring to understand structural performance and distress mechanisms. He has experience in the repair, retrofit, and strengthening of buildings, including projects complicated by adjacent construction activities and in the analysis and design of pedestrian bridges. Antonio has co-authored numerous publications on the evaluation, design, and repair of reinforced concrete structures. In addition, Antonio lectures at the University of Miami, where he has taught courses in forensic engineering as well as concrete design.

Areas of Technical Expertise

- Forensic Engineering
- Vibration Analysis and Monitoring
- Adjacent Construction

Education

- Ph.D., Structural Engineering, 2009, University of Miami, Coral Gables, FL
- M.S., Structural and Geotechnical Engineering, 2006, University of Naples, "Federico II," Italy
- B.S., Civil Engineering, 2004, University of Naples, "Federico II," Italy

Registrations

- Licensed Professional Engineer in MD and FL
- Licensed Structural Engineer in IL

Professional Activities

- Member, International Editorial Board, ASCE Journal of Composites for Construction, 2020-present
- Part-time lecturer, University of Miami, Coral Gables, FL, 2019-present
- Voting Member, International Concrete Repair Institute (ICRI) Committee 160 Life Cycle
- Member of American Concrete Institute Artificial Intelligence Task Force, Fall 2023

Select Project Experience

Forensic Engineering and Structural Analysis

261 Madison Avenue Emergency Response, New York, NY. Damage assessment and structural stabilization following the collapse of a mechanical unit.

Sundy Village Tower Crane Collapse Investigation, Delray Beach, FL. Investigation of cause and origin of crane collapse.

AMC Garage Assessment, Abu Dhabi, UAE. Analysis of concrete deterioration due to chloride intrusion and evaluation of garage structure's service life.

Crane Collapse Investigation, Miami/Fort Lauderdale, FL. Field investigation and structural analysis to determine causes of collapse of two cranes.

Pegasus Statue, Hallandale Beach, FL. Design review and structural analysis of the Pegasus Statue structure.

Safeco Field Rail Investigation, Seattle, WA. Structural analysis of the rail sections supporting a movable roof structure.

The Shed, New York, NY. Analysis and design of steel rail sections and rail assembly supporting a movable structure subjected to termite welding.

One Thousand Museum, Miami, FL. Design review and construction administration for the installation of glass fiber reinforced concrete precast façade panels.

Wedgewood, Hollywood, FL. Opined on the design of the underpinning of an existing slab-on-grade using push piles.

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Vibration Analysis and Monitoring

Bradford Marina, Fort Lauderdale, FL. Preconstruction evaluation and construction vibration monitoring during sheet metal pile driving.

Industrial Facility, Miami, FL. Performed vibration testing and structural analysis to evaluate the dynamic behavior of a 400-ft tall steel braced frame structure. The analysis included the evaluation of the braced connections for fatigue.

Lone Tree Pedestrian Bridge, Lone Tree, CO. Analysis and field performance evaluation of a 168-foot cable-stayed pedestrian bridge to assess pedestrian- and wind-induced vibrations.

Hollywood Circle Apartment, Hollywood, FL. Analysis of wind-induced vibrations of aluminum railings and assessment of fatigue failure risk.

UCF Football Stadium Monitoring, Orlando, FL. Vibration monitoring for performance evaluation of steel frame grandstands and user comfort assessment.

The Vessel, New York, NY. Dynamic analysis of the Vessel structure, assessment of user comfort, and performance evaluation of tuned-mass damping system.

Adjacent Construction and Demolition

Health First Crane Collapse Demolition, Merritt Island, FL. Scope included engineering services for the demolition and removal of components of a crane collapsed onto a building under construction.

334 East 54th Street, New York, NY. Condition assessment of a 5-story brick masonry building neighboring an active construction site.

50 North Federal Highway Wall Collapse, Dania Beach, FL. Assessment of wall collapse caused by adjacent construction and design of temporary stabilization system.

Tropicana Building Assessment, Sunny Isles Beach, FL. Condition assessment and analysis of a circa 40-year-old reinforced concrete building allegedly damaged by construction vibrations.

Sanlando Commerce Center, Altamonte Springs, FL. Performed structural analysis to evaluate the condition of a one-story tilt-up wall warehouse damaged by adjacent excavation and pile driving. Designed underpinning system to control settlements.

La Costa, Miami Beach, FL. Developed demolition plans for the removal of interior finishes to prepare for the demolition of a 1960 circa reinforced concrete high-rise. Engineered measures to protect adjacent properties and pedestrians during the structural demolition.

Eton House, West Palm Beach, FL. Evaluated the effects of construction activities occurring in proximity to two two-story residential buildings.

Downtown 5th, Miami, FL. Pre-construction survey of an existing residential tower adjacent to the Okan Tower development site.

Broward County Judicial Center, Fort Lauderdale, FL. Review of drawings for the demolition of two eleven-story buildings and preparation of recommendations for the demolition contractor.

One Tampa, Tampa, FL. Peer review of monitoring plans and protocols to evaluate the effects of construction adjacent to two three-story unreinforced masonry buildings.

Sworn Testimony

Deposition & Arbitration, Wedgewood Bus. Park Ansin Condo. Ass'n, Inc. v. MDS 2019, Inc. d/b/a Nsquare Inc. & Ramos Eng'g & Assoc., LLC, regarding the continuation of the foundation and slab settlement after remediation work. September 23, 2024, March 11, 2025.

Select Papers, Lectures and Publications

"Design Considerations for Aluminum Structures In South Florida," STRUCTURE magazine, 2024 (co-author)

"Adjacent Construction Vibrations: Perception versus Reality," ASCE 2024 Forensics Congress, Seattle, WA (co-author)

"Evaluation of Risks from Adjacent Construction," ASCE 2024 Forensics Congress, Seattle, WA (co-author)

"Evaluation and Mitigation of Risks from Adjacent Construction," STRUCTURE magazine, 2022

"Performance of Building Envelope Systems in South Florida: Case Studies," ASCE 2022 Forensics Congress, Denver, CO (co-author)

"Aluminum Interaction with Cementitious Materials in a Coastal Environment," ASCE 2022 Forensics Congress, Denver, CO (co-author)

"Service Life Prediction of Concrete Parking Structures: Case Studies," ASCE 2022 Forensics Congress, Denver, CO (co-author)

"Case Studies of Construction Vibration Monitoring and Evaluation through Soil-Structure Interaction," ASCE 2022 Forensics Congress, Denver, CO (co-author)

"Advanced Analysis of a Pedestrian Bridge and Considerations on Crowd-Structure Interaction," IABSE 2022 Symposium, Prague, CZ (co-author)

"Evaluation and Mitigation of Risks from Adjacent Construction," Structures Magazine, April 2022 (co-author)

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“Service Life Evaluation of Concrete Structures,” International Concrete Repair Institute, 2022 Spring Convention, Baltimore, MD (co-presenter)

“Evaluation and Monitoring of the Effects of Construction Activities on Adjacent Buildings,” Structural Engineering Institute, Bay Area and Palm Beach County Chapters, March 23, 2022, Virtual (co-presenter)

“Introduction to Forensic Engineering,” College of Architecture and Construction Management, Kennesaw State University, November 4, 2021 (presenter)

“Issues Related to Construction Vibrations in Densely Populated Cities,” Under Construction, American Bar Association Forum on Construction Law, Summer 2021 (co-author)

“Introduction to Forensic Engineering,” Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute, April 15, 2021 (presenter)

“Service Life Prediction of Parking Structures: Case Studies,” 2021 Engineering Mechanics Institute International Conference, Virtual (co-presenter)

“Vibration Testing of a Footbridge Subjected to Crowds,” 2021 Engineering Mechanics Institute International Conference, Virtual (co-presenter)

“Assessment of Reinforced Concrete Structures in Marine Environment: A Case Study,” Corrosion Reviews, Vol 37, Issue 1, 2019 (co-author)

“Vibration Analysis of Footbridges: an Overview of the Current Practice,” The 14th International Conference on Vibration Engineering and Technology of Machinery (VETOMAC XIV), 2018 (co-author)

“Evaluation of the Vibrational Behavior of Cable-stayed Footbridges Under Pedestrian and Wind Loading,” ASCE Structures Congress, 2017 (co-presenter)

“Weighty Matters: An Overview of In-Situ Load Testing,” The Construction Specifier, 2015 (co-author)

“FRP Reinforced Concrete Structures - Theory, Design and Practice,” CRC Press, 978-0-415-77882-4, 2014 (co-author)

CONTACT

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