PERSONNEL QUALIFICATIONS

Ángel L. Pérez Irizarry | Associate III

EDUCATION

- University of Puerto Rico at Mayagüez
  - Bachelor of Science, Civil Engineering, 2013
- University of Wisconsin-Madison
  - Master of Science, Civil Engineering, 2016
  - Doctor of Philosophy, Civil Engineering, 2020

PRACTICE AREAS

- Reinforced Concrete Structures
- Instrumentation/Monitoring/Load Testing
- Structural Testing
- Nondestructive Evaluation
- Seismic Repair and Retrofit

REGISTRATIONS

- Professional Engineer in IL

PROFESSIONAL AFFILIATIONS

- American Concrete Institute (ACI)
- Structural Engineers Association of Illinois (SEAOI)

TECHNICAL COMMITTEES

- ACI 544 - Fiber Reinforced Concrete

CONTACT

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EXPERIENCE

Ángel Pérez Irizarry joined WJE in 2020 and is involved in structural testing and instrumentation projects, including large-scale tests of structural elements, testing of anchors and post-tensioning systems, design of test assemblies and reaction frames, structure condition surveys, and vibration monitoring. Dr. Pérez Irizarry has also been involved in nondestructive structural evaluations, structural analyses, and seismic evaluations and retrofit of concrete buildings.

Prior to joining WJE, Dr. Pérez Irizarry conducted research at the University of Wisconsin-Madison that focused on the seismic behavior of steel fiber-reinforced concrete (SFRC) coupling beams without diagonal reinforcement. He was also involved in several post-earthquake reconnaissance efforts through the Earthquake Engineering Research Institute and conducted research on viscoelastic properties of fused filament fabrication (FFF) 3D-printed parts using ultrasonic methods.

REPRESENTATIVE PROJECTS

Reinforced Concrete Structures

- Parking Garage Slab Cracking Investigation - Fort Lauderdale, FL: Structural drawings review, punching shear analysis of two-way slab, and calculation of as-built demand-capacity ratio
- SFRC Coupling Beams - Madison, WI: Evaluation of structural performance of SFRC coupling beams without diagonal bars through large-scale component tests; design recommendations for coupling beams accounting for SFRC material performance *
- Northbrook, IL: Structural and materials consulting for performance of SFRCs in proprietary foundations systems to evaluate for global implementation

Instrumentation/Monitoring/Load Testing

- Condition Assessment and Monitoring - IA and IL: Pre- and post-construction condition evaluation, monitoring plan development, vibration data analysis, and reporting
- Iowa DOT Blasting Vibration Study - Bettendorf: Attenuation analysis of blast-induced vibrations and development of monitoring plan to protect adjacent properties and utilities
- Iowa DOT - Bettendorf: Bridge demolition review of structural and demolition drawings and development of special provisions for vibration monitoring

Structural Testing

- Ultra-High Performance Concrete Beams Research - Northbrook, IL: Vertical shear tests of ultra-high performance fiber-reinforced concrete pre-stressed girders
- International Airport Parking Garage - Northbrook, IL: Testing and instrumentation of large-scale reinforced concrete beams
- Window Load Testing - Northbrook, IL: Structural load (wind pressure) testing, including instrumentation, data acquisition, and processing
- FRP Modular Walls - Northbrook, IL: Design of test setup and out-of-plane flexural tests (similar to ASTM E72) and AC447 and ASTM E564 static shear tests
- Post-Installed Concrete Anchors - Northbrook, IL: Reference tensile and residual strength (cyclic) tests per AC193
- Characterization of SFRC Mechanical Properties - Madison, WI: Evaluation of mechanical properties and response of SFRCs through direct tension, ASTM C1609, and ASTM C39 tests *

Nondestructive Evaluation

- Reinforced Concrete Tunnel - Chicago, IL: Condition assessment, including visual inspection, hammer sounding, and nondestructive evaluation (GPR, MIRA, and impulse response)
- Chicago, IL: Structural condition assessment of concrete slab and columns, including GPR, ultrasonic pulse velocity, and half-cell potential testing
- Viscoelastic Properties of FFF Parts - Madison, WI: High-frequency ultrasonic wave testing to estimate dynamic modulus, attenuation, and loss tangent of polymer (ABS) FFF parts *

Seismic Repair and Retrofit

- Universidad Sagrado Corazón - San Juan, PR: Seismic evaluation per ASCE 41 and retrofit concepts for multiple reinforced concrete buildings

** Work performed while at the University of Wisconsin-Madison*