PERSONNEL QUALIFICATIONS

Nathaniel S. Rende | Principal

EDUCATION

- University of Illinois at Urbana-Champaign
  - Bachelor of Science, Civil Engineering, 2004
  - Master of Science, Structural Engineering, 2005

PRACTICE AREAS

- Condition Assessment
- Repair and Rehabilitation Design
- Structural Evaluation
- Nondestructive Evaluation
- Testing and Instrumentation
- Vibration Analysis
- Vibration and Noise Monitoring

REGISTRATIONS

- Professional Engineer in FL, HI, IA, MI, and MO
- Structural Engineer in IL

PROFESSIONAL AFFILIATIONS

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

TECHNICAL COMMITTEES

- ACI 228 - Nondestructive Testing of Concrete
- ACI 228-0B - Visual Inspection
- ACI C601-F - Nondestructive Testing Technician

CONTACT

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EXPERIENCE

Since joining WJE in 2005, Nathaniel Rende has been a project associate and manager for a broad range of assignments, including structural condition assessment, testing and instrumentation, and repair design. He specializes in applying nondestructive evaluation (NDE) methods to the evaluation of concrete, stone, and masonry structures. His NDE expertise includes reflective ultrasonics (impact-echo, shear wave tomography), ultrasonic pulse velocity, impulse-response, ground-penetrating radar (GPR), structural defect assessment using infrared thermography, and corrosion testing (half-cell potential, surface resistivity, corrosion rate). He has investigated as-built conditions and distress in historic buildings, prestressed and post-tensioned concrete structures, industrial tanks and cooling towers, bridges, parking garages, slabs-on-ground and pavements, and foundations. Mr. Rende is also experienced in structural health monitoring using acoustic emission and measurement and analysis of earthborn and structural vibrations. He has conducted condition assessment surveys and vibration and building movement surveillance projects of historic buildings, museums, and other sensitive structures.

Mr. Rende is affiliated with several professional societies, is a member of technical committee ACI 228 and associated subcommittees, and has given technical presentations and seminars in NDE and vibration assessment throughout the United States.

REPRESENTATIVE PROJECTS

Structural Evaluation

- Byron Nuclear Generating Station, Hyperbolic Cooling Towers - Byron, IL: Structural condition assessment of two 500-foot-tall natural draft cooling towers
- Eco Sapucai Business Tower - Rio de Janeiro, Brazil: Prepurchase inspection of concrete framing of high-rise building under construction
- Byron Nuclear Generating Station, Essential Service Water Cooling Tower - Byron, IL: Structural condition assessment of mechanical draft cooling tower in support of Nuclear Regulatory Commission license renewal

Nondestructive Evaluation

- Kennedy Space Center, Vehicle Assembly Building - FL: As-built and corrosion evaluation of elevated concrete slabs, service life modeling, and repair development
- Palo Verde Nuclear Generating Station Water Reclamation Facility - Tonopah, AZ: Evaluation, service life modeling, and repair development for thirty-year life extension of trickling filters, clarifiers, thickeners, and pumping station structures
- Iowa Department of Transportation/NCHRP: Research of distress and corrosion in slip-formed concrete bridge parapets and decks
- Iowa City Municipal Water Treatment Plant - IA: Condition assessment and GPR testing of double-tee roof beams, structural capacity analysis, design and implementation of fiber-reinforced plastic repairs, and quality assurance testing
- Ninety-First Avenue Wastewater Treatment Facility - Phoenix, AZ: Impact-echo evaluation of repaired reinforced concrete walls and pilasters; concrete slab on grade evaluation using GPR
- Route 880 Collapse/Fire Damage Investigation - Oakland, CA: Impact-echo evaluation of fire-damaged concrete bridge deck; ultrasonic pulse velocity testing of concrete bridge columns

Testing and Instrumentation

- Art Institute of Chicago - IL: Preconstruction and post-construction condition assessment surveys; vibration monitoring and analysis during Jackson Street bridge demolition and interior renovations
- Aloha Stadium - Honolulu, HI: Measurement and evaluation of crowd-induced vibrations in stadium seating area
- Chicago Public School District - IL: Structural condition assessment; instrumentation and load testing of reinforced concrete roofs
- FDIC Building - San Francisco, CA: Long-term structural tilt and vibration monitoring during adjacent construction
- Iowa Department of Transportation: Construction vibration expert providing condition assessments and vibration monitoring to protect historic structures