

Eisa Rahmani | Senior Associate



EDUCATION

- Isfahan University of Technology
 - Bachelor of Science, "Civil Engineering, 2007
- Sharif University of Technology
 - Master of Science, Civil Engineering, 2010
- Texas A&M University
 - Doctor of Philosophy, Civil Engineering, 2015

PRACTICE AREAS

- Structural Analysis/Computer Applications
- Finite Element Analysis
- Concrete Structures
- Steel Structures
- Structural Analysis
- Failure/Damage Investigations
- Computer Modeling

REGISTRATIONS

- Professional Engineer in TX

PROFESSIONAL AFFILIATIONS

- American Concrete Institute
- American Society of Civil Engineers

CONTACT

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EXPERIENCE

Eisa Rahmani's primary interest is in finite element modeling and analysis of structural systems composed of various civil, structural, and mechanical engineering materials such as reinforced concrete, steel, asphalt concrete, and granular materials. Since joining WJE, Dr. Rahmani has been involved in multiple projects involving structural analysis and evaluation, and condition assessment of a wide variety of structures using nonlinear finite element analysis, classical methods, and industry design codes. Dr. Rahmani has been using Abaqus finite element software since 2011 and has experience with ATENA structural analysis software for reinforced concrete.

Dr. Rahmani's graduate work focused on the numerical modeling and laboratory calibration and validation of damage behavior of asphalt concrete materials under environmental effects. He has published papers in various engineering journals and conference proceedings. Before his graduate work, he had experience in the structural design of various commercial and industrial steel structures using commercial design software.

REPRESENTATIVE PROJECTS

Finite Element Analysis

- Oklahoma Department of Transportation Girder Crack Investigation: Nonlinear finite element analysis of distress in anchorage zone of girder beams using ABAQUS concrete damage plasticity model
- PCI TEE Flange Connector Modeling: Stress-strain and deflection analyses of steel connectors and elastic analysis of welded joints for fatigue requirements
- Parking Structure Restoration - Detroit, MI: Nonlinear finite element analysis of parking deck to investigate load-bearing capacity of slabs with repaired unbonded post-tensioned tendons
- Two-Way Slab-Column Joint Analysis: Three-dimensional component-level structural analysis of slab-column connection using nonlinear finite element approach; investigation of post-cracking strength of the slab to evaluate the system's adequacy in response to load test conditions

Structural Analysis

- Mississippi Department of Transportation: Load rating analysis of over two hundred county bridges using AASHTOWare bridge rating software
- Concrete Cooling Tower: Structural analyses of tower shell using linear elastic finite element analysis of as-designed and deteriorated towers

Failure/Damage Investigations

- Lid Frame Evaluation - Fargo, ND: Nonlinear finite element analysis of manhole frame-cover performance to evaluate the failure cause of the manhole covers
- Assessment of Concrete Bridge Deck Cracking: Evaluation of the extent and nature of cracking at closure pour joints using nonlinear finite element analyses both with and without Polyester Polymer Concrete (PPC) retrofit; characterization and calibration of short-term plastic-cracking and long-term creep properties of PPC concrete using comprehensive in-house laboratory test data
- Investigation of Tower Flange Grout Cracking: Detailed finite element modeling of wind turbine tower foundation to assess stresses due to restrained thermal contraction of the grout; characterization of grout material properties to predict short- and long-term structural behavior under wind load and temperature variations

Computer Modeling

- Insulating Glass Unit (IGU) Modeling - Dubai, UAE: Detailed finite element modeling of cold-bent IGU including glass, silicones, PVB interlayer, gasket, and extruded aluminum frame to help investigate short- and long-term induced stresses on structural silicone sealants
- Slab Curling Analysis - Toledo, OH: Finite element modeling and analysis of slab-on-ground curling including soil sublayers considering nonuniform through-thickness moisture gradient to help achieve desired floor levelness in heavy machinery application