WJE

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
- Structural Analysis
- Failure/Damage Investigations
- Fitness for Service
- Concrete Structures
- Steel Structures
- Computer Modeling

REGISTRATIONS
- Professional Engineer in TX

PROFESSIONAL AFFILIATIONS
- American Concrete Institute (ACI)

TECHNICAL COMMITTEES
- ACI 209 - Creep and Shrinkage
  in Concrete
- ACI 447 - Finite Element Analysis
  of Reinforced Concrete Structures

CONTACT
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EXPERIENCE

Eisa Rahmani's expertise 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. Dr. Rahmani conducts numerous projects involving structural analysis and evaluation, and condition assessment of various structures using nonlinear finite element analysis, classical methods, and industry design codes. He 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 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 focused on 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
- Various Departments of Transportation: Bridge load rating using finite element method
- Concrete Cooling Tower: Structural analyses of tower shell using linear elastic and nonlinear finite element analysis deteriorated towers

Failure/Damage Investigations
- Large Infrastructure - Investigation and nonlinear finite element modeling of large radial deformation of natural draft concrete cooling tower under nonuniform foundation settlement
- Various Steel Structures and Components: Nonlinear finite element analysis using plasticity and creep models to evaluate performance of various loading conditions
- Assessment of Concrete Bridge Deck Cracking: Evaluation of extent and nature of cracking at closure pour joints using nonlinear finite element analyses, both with and without polyester polymer concrete retrofit; characterization and calibration of short-term plastic-cracking and long-term creep properties of PPC concrete using comprehensive in-house laboratory test data
- Collapse Investigation - Failure investigation and collapse simulation of large-scale falsework system using nonlinear finite element analysis

Fitness for Service
- Level 3 assessment of pressure equipment under corrosion or local thin areas using nonlinear finite element method

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 considered nonuniform through-thickness moisture gradient to achieve desired floor levelness in heavy machinery application

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