



EDUCATION

- University of Delaware
 - Bachelor of Civil Engineering, 2012
 - Master of Civil Engineering, Structural Engineering, 2013

PRACTICE AREAS

- Bridges and Civil Infrastructure
- Structural Analysis
- Repair and Rehabilitation

REGISTRATIONS

- Bridge Inspection Team Leader in IA, IL, and IN
- INDOT Certified Load Rating Engineer
- NHI Course 130053 - Bridge Inspection Refresher Training
- NHI Course 130056 - Safety Inspection of In-Service Bridges
- NHI Course 130078 - Fracture Critical Inspection Techniques for Steel Bridges
- Professional Engineer in IA, IN, MD, NJ, and SD
- Structural Engineer in IL

CONTACT

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EXPERIENCE

Since joining WJE in 2016, Patrick Marra has been involved in the assessment, evaluation, and rehabilitation of multiple timber, steel, and concrete structures. His projects have included special and fracture critical bridge inspections, bridge instrumentation monitoring, structural analysis, load rating, and design and installation of structural repairs. Prior to joining WJE, Mr. Marra worked as a structural engineer for a marine structures design firm. His work covered the analysis and design of a wide variety of maritime structures, including multiuse wharf structures, bulkhead sheet pile wall systems, and mooring and berthing systems.

REPRESENTATIVE PROJECTS

Bridges and Civil Infrastructure

- St. Francisville Bridge Inspections: Project manager for inspection of fracture critical truss, two-girder bridge, and timber multipin approach bridge
- Iowa 9 Over the Mississippi River - Lansing, IA: Team leader for in-depth, element-level, and fracture critical inspection of steel truss bridge
- 92nd Street Bascule Bridge West Leaf - Chicago, IL: Assessment of truss and live load shoe damage after vessel allision
- 106th Street Bascule Bridge Emergency Repairs - Chicago, IL: Assessment of various bridge components as part of rack-and-pinion alignment repairs
- Danziger Lift Bridge - New Orleans, LA: Structural assessment and instrumentation to determine cause of seating issues
- Sherman Minton Bridge - New Albany, IN: In-depth and fracture critical inspection of complex deck truss and tied-arch bridge structure
- Indiana SR-46 - Columbus, IN: In-depth and fracture critical inspection of cable-stayed bridge
- Mississippi Department of Transportation Bridges: NBIS inspection of more than fifty bridges statewide; detailed assessment of timber member deterioration
- Port of Houston Facilities Inspection and Condition Assessment Program - TX: Element-level inspection of wharf assets

Structural Analysis

- Sherman Minton Bridge - New Albany, IN: Load rating of steel stringer connections and design of retrofits for stringer ends and floor beams with severe section loss
- Oregon Department of Transportation (ODOT) - Refined load ratings for various structures in ODOT's system to determine as-built capacities
- Chicago Department of Transportation, 31st Street Bridge - Development of demolition procedure for multigirder bridge spanning several railroad tracks
- Chicago Department of Transportation, 43rd Street Bridge - Development of temporary truss bridge lowering procedure and demolition procedure as part of construction of new pedestrian bridge over rail tracks and Lake Shore Drive

Repair and Rehabilitation

- Lake Shore Drive Girder Fracture - Chicago, IL: Emergency bridge jacking for failed girder ends; construction support for repair of bridge girder ends under live loads
- Sunshine Bridge - Donaldsonville, LA: Design of jacking components and brackets to repair damaged compression chord from vessel impact
- Connection Plate Cracking Study - Decatur, IL: Inspection and trial retrofit study for several highway bridges
- I-20 Over Valley Street - Pearl, MS: Detailing and installation of retrofits for out-of-plane fatigue issues
- Barbours Cut Terminal 3 - Houston, TX: In-depth condition assessment, including nondestructive evaluation and repair design for wharf upgrade
- Jefferson Barracks Bridge - IL/MO Border: NBIS and fracture-critical inspection, deck survey, and weathering steel evaluation; follow-up emergency repairs for cracked fracture-critical members identified during inspection