



#### EDUCATION

- Purdue University
  - Bachelor of Science, Civil Engineering, 2009
  - Master of Science, Civil Engineering, 2010

#### PRACTICE AREAS

- Bridge Engineering
- Testing and Instrumentation
- Failure Investigation
- Structural Analysis/Computer Modeling
- Damage Assessment and Documentation
- Code Compliance Review

#### REGISTRATIONS

- Bridge Inspection Team Leader in IA, IL, IN, and NE
- Bridge Load Rating Engineer in IN
- Bridge Program Manager - Element in IL
- NHI Course 130055 - Safety Inspection of In-Service Bridges
- NHI Course 130078 - Fracture Critical Inspection Techniques for Steel Bridges
- Professional Engineer in IA, IL, and IN
- Society of Professional Rope Access Technicians (SPRAT) - Level I Technician
- Structural Engineer in IL

#### CONTACT

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#### EXPERIENCE

Steve Lauer has gained specialized experience through his involvement with the inspection, instrumentation, retrofit, load rating, and design of various steel, concrete, and timber bridge structures. To support these efforts, he has performed nondestructive testing in both the laboratory and on in-service bridges. Mr. Lauer is also well-versed in several structural analysis programs and has used his skills to perform reviews of structural adequacy and code compliance for a variety of steel, concrete, timber, and tensile membrane structures.

#### REPRESENTATIVE PROJECTS

##### Bridge Engineering

- AASHTO Bridge Subcommittee T-18 and Illinois Department of Transportation: Design guide development for refined analytical methods to load rate gusset plates and ballot item submittal for modification of the Manual for Bridge Evaluation
- Cook County, IL: Safety and fracture critical inspection of through-truss, bascule, and other types of bridges
- IH 345 - Dallas, TX: Fracture critical inspection, instrumentation, load testing, and retrofitting
- IA-9 over the Mississippi River, IA-136 over the Mississippi River, U.S. 20 over the Des Moines River, and U.S. 20 over the Mississippi River - IA: Fracture critical inspections
- Oklahoma Department of Transportation: Fracture critical inspection using rope techniques of five off-system truss bridges
- Sunshine Bridge - St. James Parish, LA: Jacking frame design, monitoring of members through instrumentation during removal and replacement of damaged lower chord member, and field support
- Timber and Complex Bridges - MS: Load rating of more than two hundred bridges and NBIS inspection of a subset, including railroad flatcar bridges
- U.S. 12 (Indianapolis Boulevard) Bascule Bridge over Lake George Canal - East Chicago, IN: Routine, fracture critical, and special inspections related to passage of heavy haul vehicles; Load Rating Engineer responsible for typical trucks and the heavy haul vehicles
- U.S. 44 - Ottawa County, OK: Fatigue retrofit installation on deck truss bridge

##### Testing and Instrumentation

- Arecibo Observatory - Arecibo, Puerto Rico: Instrumentation system development, installation, and monitoring of cable anchorages at support towers and backstays
- Bridge Balance Testing - Chicago, Hardin, and Joliet, IL: Thirteen bascule bridges and two vertical lift bridges
- Cedar Street Bridge - Peoria, IL: Strain gage instrumentation and load testing of steel truss bridge for load rating
- I-40 Hernando de Soto Bridge over the Mississippi River - Memphis, TN: Fractured tie girder repair support using instrumentation
- Pleasant Ridge Road Bridge - Fairview Heights, IL: Design of test frame and procedure, building test components and instrumentation, and full-size failure testing of FRP slab panel bridge
- Private Class 1 Railroad Bridges Tower Leg and Hanger Instrumentation - Western U.S.: Instrumentation to characterize behavior during train and environmental loading
- Rail Rapid Transit System: Composite tie assembly testing for materials evaluation and failure characterization
- Rail Rapid Transit System: Direct fixation fastener instrumentation to determine rail loads and fastener behavior

##### Failure Investigation

- Metropolitan Water Reclamation District - Chicago, IL: Blast investigation of reservoir tunnel and drop shaft
- Rail Rapid Transit System: Cause of failure determination for slope and earth retention structure; documentation, instrumentation, monitoring, and structural analysis
- Ringer Crane Mast Failure - Convent, LA: Analysis of mast and cable assembly to determine cause of failure

##### Structural Analysis/Computer Modeling

- Cavalia and Odysseo Traveling Performances - U.S. and Canada: Structural evaluation of tents and bleachers
- IA-415 Bridge over the Saylorville Reservoir - Polk, IA: Finite element modeling for wind-induced model behavior
- Washington Avenue Bridge over the Mississippi River - Minneapolis, MN: Three-dimensional finite element modeling using staged construction and instrumentation