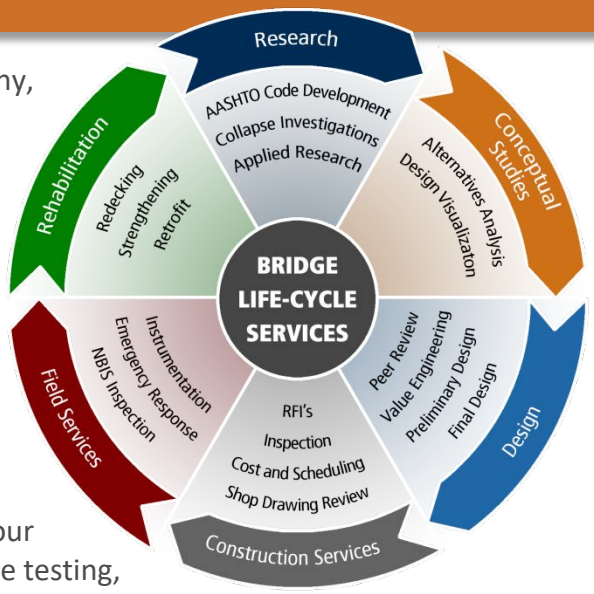
LIFE-CYCLE BRIDGE ENGINEERING

Modjeski and Masters, Inc. (MM), an employee-owned company, is a U.S. and International leader in providing full-service engineering services for all bridge types. ***For nearly 130 years,*** these bridge support areas have included research, conceptual studies, design, construction engineering, inspection, and rehabilitation services.



MM is staffed to support these life-cycle services. Our structural engineers are capable of designing both fixed and movable bridges, as well as supporting the contracting community with erection analysis and design of temporary works. Our mechanical and electrical engineers are an integral part of our instrumentation and lighting design services, while our field service engineers provide bridge inspection, nondestructive testing, and emergency response services.

With every bridge service we offer, we apply our extensive technical knowledge and experience to provide sound strategies and solutions based on a firm understanding of the desired scope of work. Whether it is using the latest in computer technology, or training our field personnel in climbing and rappelling, MM will do everything necessary to assure that the bridge's safety, and the safety of the people who use it, are never compromised.

RELEVANT INFORMATION

Client Testimonials

- *"…without MM's willingness and ability to rapidly accelerate their design efforts, the bridge would not have been funded or constructed."* (**City of Columbia, Missouri**)
- *"Every step of the development and implementation of the project was under a tight schedule, and MM met or improved upon the deadlines…"* (**Illinois DOT**)

Numerous Project Awards

- **2022** New I-74 Mississippi River Bridge, Prize Bridge Award, Major Span Category (National Steel Bridge Alliance)
- **2019** Martin Luther King Bridge Approach Complex, Innovation in Transportation (WTS St. Louis Chapter, Jerilyn Hassard)
- **2018** Illinois DOT Legal Loads Parametric Evaluation, Special Achievement Award (ACEC of Illinois Engineering Excellence)

227 Dedicated Employees

- Project Managers
- Structural Engineers
- Electrical & Mechanical Engineers
- CADD Technicians
- NBIS Bridge Inspectors
- Construction Inspectors
- Civil / Transportation Engineers
- 3D Artist & Public Involvement Specialist

To Learn More Contact –

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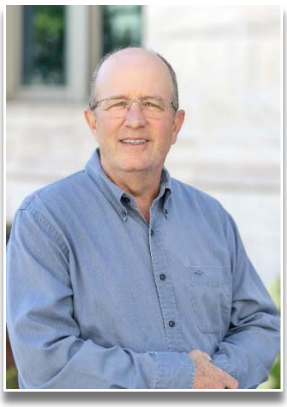
OUR MANAGEMENT TEAM

MM's MidAmerica management team brings a variety of strengths and experience to match our client's needs.



David Petermeier, PE, SE

- Senior Vice President/MidAmerica Regional Director
- 30+ years transportation engineering experience
- Licensed in Illinois and Missouri
- NBIS Program Manager/Team Leader
- QC/QA review for all MidAmerica projects
- Coordinates emergency response deployments
- Clients served: DOTs, Bi-State Development (Metro), US Army Corps of Engineers, railroads, local counties and municipalities

Jerilyn Hassard, PE, SE

- Vice President/MidAmerica Assistant Regional Director
- 25+ years transportation engineering experience
- Licensed in Illinois and Missouri
- NBIS Program Manager/Team Leader
- Corridor management including lighting and roadway design
- Public Involvement and Context Sensitive Solutions
- Award winning IDOT PM – MLK Approach Complex

Rachel Mertz, PE, SE

- Senior Project Manager
- 20+ years transportation engineering experience
- Licensed in Illinois and Missouri
- NBIS Program Manager/Team Leader
- AASHTOWare Bridge Rating expert
- Hydraulic analysis and design
- Extensive rehabilitation experience

Aaron Kober, PE, SE

- Project Manager
- 20+ years transportation engineering experience
- Licensed in Illinois and Missouri
- NBIS Team Leader
- CM/GC and Resident Engineer experience
- Railroad coordination
- LPA Federal Basic Training and LPA experience

LOAD RATING EXPERTS

MM was the Contractor for the NCHRP project that developed the AASHTO LRFD Specifications and in the 30 years since, continues to assist in developing and maintaining LRFD specifications, including NCHRP 12-78, Evaluation of Load Rating by Load and Resistance Factor Rating.

MM has expertise in performing load capacity ratings for all bridge types on many complexity levels and is proficient in all rating methods. Our local MidAmerica Staff have led or participated in the following rating projects:

Emergency Vehicle Parametric Study. *Statewide, IL* | The Illinois DOT was notified by the FHWA that IDOT's load rating procedures do not meet the requirements of 23 CFR 650.313(c), which require bridges on the Interstate System and within reasonable access to the Interstate System to be load rated for emergency vehicles. To assist with their Plan of Corrective Action, MM performed a parametric study and a culvert investigation and results were used to calculate load ratings for the emergency vehicles utilizing existing design load ratings for 2,703 bridges and 1,240 culverts.

Parametric Study for Load Ratings. *Statewide, TN* | MM recently performed a parametric study for load ratings for the Tennessee DOT. An evaluation of TDOT's existing suite of rating and posting vehicles determined that they were not in conformance with Tennessee's statutes for legal and permitted vehicles and FHWA mandates. A parametric study was completed and a new suite of posting and permit vehicles were developed. Inferred ratings were calculated for most of their bridge inventory based on results from the parametric study for the new rating vehicles and existing design load ratings. The State's entire bridge inventory was then prioritized to identify structures that need immediate action.

Legal Loads Parametric Evaluation. *Statewide, IL* | The Illinois DOT was notified by the FHWA that a parametric study was required to verify the compliance of the State's load rating procedures with FHWA mandates. MM performed the parametric study, identified areas in load rating procedures that did not meet federal mandates, and recommended policy changes, including modifications to existing posting/permit vehicles and the introduction of new posting/permit vehicles. These implementations allowed IDOT to continue assigning load ratings and improved the accuracy of IDOT's rating evaluations. MM analyzed 280 structure configurations and calculated over 2000 force effects for each study vehicle.

Major River Bridge Load Ratings. *Statewide, IL* | MM has performed or updated as-built and as-inspected load capacity ratings for the Illinois DOT, utilizing the AASHTOWare Bridge Rating program, for over a dozen major river bridges spanning the Mississippi and Illinois Rivers. Members were rated for AASHTO HS loading, as well as Illinois legal and permit vehicles and emergency vehicles. This included the evaluation and load capacity rating of gusset plates, when applicable.

Load Rating of 354 Off System Bridges. *Statewide, LA* | MM is performing bridge inspection, analysis, and load rating; sampling, instrumentation, and NDT; and plan production for 354 off system bridges. The bridge types include concrete slabs, concrete precast slab units, and lightweight precast slab units. For the analysis and load rating task, MM is generating a system of structural models and performing an analysis of each bridge to determine dead and live load forces in the members.

Load Rating of Fourteen Complex Bridges. *Statewide, LA* | MM is performing bridge inspection, analysis, and load rating; sampling, instrumentation, and NDT; and plan production for 14 complex bridges. The bridge types include swing spans, bascule spans, truss spans and curved steel spans. For the complex bridges, a three-dimensional structural model is needed. MM is also developing influence lines and COMPSTIL2 input files for complex substructures including hammerhead piers and inverted-T pier caps.

PROVEN EXPERIENCE

A sampling of our local bridge engineering services includes the following projects.

MO Route D over Byrd Creek. *Cape Girardeau County, MO* | MM provided preliminary design services, including hydraulic and scour analysis, preliminary roadway plans, bridge memorandum, and preliminary cost and workday estimates for the replacement of the existing five-span structure. MM is currently providing final roadway and bridge design and limited construction support services. MM is currently exceeding the advertised DBE goal for this project.

Creve Coeur Mill Road Bridge. *Maryland Heights, MO* | The Creve Coeur Mill Road Bridge No. 232 carries vehicular and pedestrian traffic across Fee Fee Creek. MM was selected to evaluate this structure which had experienced deterioration of the end diaphragms and adjacent girder ends. Previous repair attempts had failed. Various structural constraints were found to be inducing tensile stresses into the girder ends / integral end bents. A rehabilitation strategy was proposed and designed.

Route A over Indian Creek Bridge Replacement. *Perry County, MO* MM provided preliminary engineering, final design, and construction services for this replacement bridge, including hydraulic and scour analysis. An in-depth substructure investigation and cost comparison were completed to determine the appropriate foundations. The new structure is a four-span precast prestressed concrete spread box beam superstructure supported on pile bent caps and integral end bents.

MLK Bridge Approach Complex. *East St. Louis, IL* | MM provided Phase I, II and III engineering services for the replacement of the original east approach structure to the MLK Bridge. The project also included miscellaneous repairs and roadway improvements to six other structures in the approach complex, incorporated late in the schedule to help maximize the project's value. MM also provided highway lighting and MSE wall design.

MM excels in providing streamlined design and construction solutions to best meet our client's needs.

LOCATIONS

MM, an employee-owned company, is a U.S. and International leader in providing full service engineering services for all bridge types. These full service bridge support areas include research, conceptual studies, design, construction engineering, field, and rehabilitation services. MM is a part of the communities we serve, but with a global outreach.

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