

Historic Bowstring Truss Kern Bridge



The Kern (Yaeger) Bridge is a single-span, wrought-iron, bowstring arch through truss resting on limestone abutments. Until February 6, 2020, the bridge was located in Blue Earth County connecting Mankato and South Bend Townships spanning the Le Sueur River. It was constructed by John Mahowald and the Wrought Iron Bridge Company in 1873.

The bridge is significant as the only example of a bowstring through truss bridge in Minnesota and for its exceptional span length.

Key facts

- **Listed on National Register of Historic Places**
- **Initial Crossing** – Mankato/South Bend Ivywood Lane (Township Road 190) over Le Sueur River
- **Type** – only bowstring arch in Minnesota; made of wrought iron
- **Year built** - 1873 (one of Minnesota's oldest bridges) for a cost of \$8,652
- **Length** - 189 ft.; extant longest bowstring span in the United States
- **Use** – initially used for horse and buggy traffic; closed to pedestrians and vehicles early 1990s
- **Ownership** – After removal and disassembly the bridge will be transferred from Mankato & South Bend Townships to MnDOT District 7 for safe keeping until a new owner can be found

Removal and storage project

- Managed by Blue Earth County / County Engineer Ryan Thilges, P.E. & Assistant County Engineer Stefan Gantert, P.E.
 - Funded with Federal (FHWA) aid (80%) and State Aid Township Bridge funds (20%)
 - Contractor by Carlton Companies, Inc. of Mankato, MN with a bid of \$595,660
 - Removed the bridge from the failed limestone block abutments, carefully disassembled, catalogued, hauled and placed bridge components in storage containers.
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- Due to the design and age of the bridge this project has required intricate structural engineering analysis of the bridges components strength characteristics as well as a carefully detailed pick and salvage plan in order to maintain the integrity of the bridge structure for disassembly and future re-use in a new location.
- Due to the length of the bridge this operation required two cranes with one crane picking at each end of the bridge.
 - A large crane was be placed on a rock pad in the middle of the Le Sueur River to lift the west side of the bridge.
 - Another slightly smaller crane sat on the east bank to lift the east side of the bridge.
 - The bridge was temporarily set down while the east crane was re-positioned to set the bridge for disassembly
- After removal the structure was carefully marked and disassembled into large pieces for future refurbishing and re-assembly

Background of Bowstring Truss Bridges

The bowstring truss bridge – also commonly referred to as a bowstring arch bridge – were a popular bridge type from the 1850s to the 1880s. Typically constructed of cast or wrought iron, these bridge types marked the transition from wood, stone, and timber building materials to metal. Bowstring arch bridges peaked in popularity in the 1870s and could be found in states throughout the Midwest during their settlement period. The Kern Bridge is an example of the bowstring arch bridge type erected during this period. By the 1880s, bridge builders shifted their attention to Pratt truss as the preferred crossing type and construction of bowstring arches declined. Today there are few bowstring arch bridges still standing in the Midwest or the United States. (*Historic Bridge Foundation, "Seeking a New Home: Kern Bridge, America's Largest Bowstring Span, 2019*).

Future of Historic Kern Bridge

MnDOT will be soliciting interested agencies to find a new home for the Kern Bridge. Federal (FHWA Funds) are available to cover 80 percent with state or local match of 20 percent required

Requirements: Must rehabilitate to historic standards (Secretary of the Interior's Standards for the Treatment of Historic Projects). All FHWA/MnDOT rules and requirements must be followed.

Qualifications: Cities, counties and state agencies. Cities of less than 5,000 population must have county sponsor. Similar to ATP Transportation Alternatives, letter of intent followed by a formal application needed.

For more information: Look for notices after July 14, 2020 at

<https://www.dot.state.mn.us/historicbridges/available-bridges.html> .

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