Springfield Bridge

- Patented design of the King Iron Bridge Company of Cleveland, Ohio
- Fabricated in a small branch shop of the company at Iola, Kansas in 1871.
- Local politics prevented erection until 1874.
- Design: Cast and wrought iron bowstring through truss.
- Oldest known surviving bridge in Arkansas.
- Historical name: Springfield – Des Arc Bridge
- Common name: Springfield Bridge

King Bridge Company of Cleveland

- Prolific, nationwide builder of iron and steel truss bridges for highways and railroads.
- One of the largest and most successful 19th Century bridge companies.
- Founded by Zenas King.
Earlier Generation King Bowstrings

- Example: 1871 Green Mill Ford Bridge, Iowa.
- Lower Chord: Traditional eyebar heads with pin.
- Separate star iron verticals and outriggers with no lattice.
- Wrought iron tube struts.
- Floor beams bear on top of lower chord.

Middle Generation King Bowstrings

- Example: 1878 Cowley Bridge, Tennessee.
- Lower Chord: Traditional eyebars paired with split eyebar heads to reduce pin length and reduce spreading of bars near these locations.
- Combined star iron verticals/outriggers with lattice.
- Wrought iron tube struts.
- Floor beams hung from lower chord and may include unusual post-tension rods.
Late Generation King Bowstrings

- Example: Danville-Mickles Bowstring Bridge, Arkansas.
- Lower Chord: Traditional eyebars paired with split eyebar heads to reduce pin length and reduce spreading of bars near these locations.
- Combined star iron verticals/outriggers with lattice.
- Latticed struts. Some examples may have ornamental knee braces.
- Floor beams hung from lower chord and may include unusual post-tension rods.

Springfield Bridge: 1871, Early Gen Details

- Lower Chord: Traditional eyebar heads with pin.
- Separate star iron verticals and outriggers with no lattice.
- Wrought iron tube struts.
- Floor beams bear on top of lower chord.
Springfield Bridge Fabrication Marks

• Used by fabricators to assist in proper fabrication of the bridge. Punch marks on wrought iron, and part numbers cast into cast iron parts.
• Some of these marks have not been seen since 1871 because they were in between sections that were riveted together.

Springfield Bridge Mysteries

• Disassembly revealed a few parts that appeared hand-made in the field. See hand-made pin to the right above.
• Broken top chord sections repaired by crude pieces of plate suggesting a field repair.
• Cracks in some cast iron feet that appeared very old, perhaps original.
• Cause unknown, but repairs are consistent with the type of repairs that might be needed if an accident or collapse occurred during construction.
Springfield Bridge Restoration

• All bridge parts (including the aforementioned unanticipated damage) were inspected by the Engineer and repaired as needed to ensure safety and structural integrity.

Springfield Bridge Restoration

• The deterioration-resistant properties of wrought iron kept this bridge in excellent condition.
• Minimal section loss and pack rust on the bridge.
• Upper chord had been packed with dirt at the ends for decades. Some pad welding to repair section loss was completed here.
Springfield Bridge Restoration

- Repair and replacement of damaged castings and pins as needed.
- Replacement of damaged and missing lower lateral bracing rods.
- Lower chord repaired using heat straightening.

Springfield Bridge Railing

- Springfield Bridge was not originally built with any substantial railing system.
- New railing compliments historic design, uses genuine rivets, and meets today’s safety standards.
- Railing inspired by ornamental designs used by prominent bridge builders in the 19th Century such as the Phoenix Bridge Company of Phoenixville, PA and the King Bridge Company of Cleveland, OH.