Historic Bridge Foundation Facebook Archives

Focus Bridge: Caddo Lake Drawbridge

January 2015

The Caddo Lake Drawbridge in Mooringsport, Louisiana, was built in 1914 by the Midland Bridge Company of Kansas City, Missouri. It once carried Louisiana Highway 538 over Caddo Lake. The bridge is a vertical lift design by noted engineering firm Waddell and Harrington, which was invented and patented by John A. L. Waddell in 1893. The design allows the center span to lift in a vertical direction, which allows tall boats to pass under. The first vertical lift bridge of this type was the South Halsted Street Bridge in Chicago.

Most of the bridge members are constructed of riveted steel angle. Despite the loss of certain elements of the lifting mechanisms, the bridge easily conveys its historic appearance. The 575-foot bridge traverses Caddo Lake in a generally north-south direction with a total of seven spans resting upon riveted steel caissons, which are filled with concrete. The third span from the south shore is equipped to lift for marine traffic to pass beneath. This span corresponds to the lake's main channel. All of the spans are of the Warren pony truss type and feature a repetitive pattern of diagonal and vertical members. The lift span is slightly longer than the others (95 versus 80 feet) with a superstructure roughly square in profile. At each end is a slender tower consisting of a single vertical post on each side and diagonal webbing. A shallow overhead truss formed of two chords and diagonal webbing braces the towers. There were two components to the bridge's lifting capability. One was a system of counterweights and pulleys that made it easier to lift the span. These worked in a similar fashion to window sashes with counterweights. The other was a system consisting of a crank, winches, pulleys and cables that actually lifted the span. Cables ascending from an eye in each corner of the lift span were threaded through four massive sheaves at the top of the towers. These were attached to a pair of coffin-shaped counterweights. This system, which made it possible to elevate the span with a relatively small amount of force, survives with the exception of the counterweights, which were removed by the Louisiana Department of Transportation and Development (LADOTD) and dropped in the lake in the mid-1940s. The manual crank device and the cables no longer survive. An asphalt deck replaced the original wooden deck.

Despite the loss of some original elements of the lifting mechanism, the bridge retains the majority of its

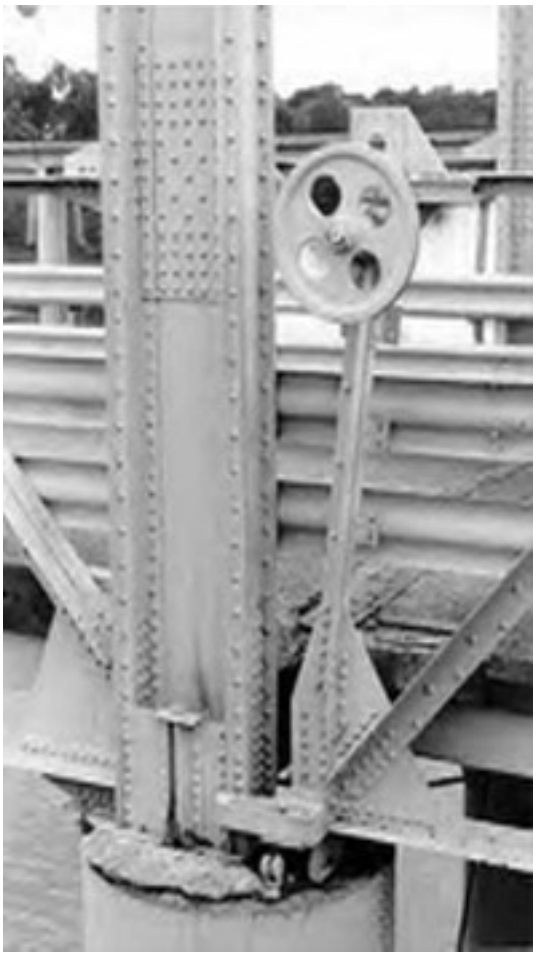
original character defining features. The bridge was listed on the National Register of Historic Places in 1996 and is significant in the area of engineering as a rare surviving example of a recognized historic bridge type and in the area of transportation as Louisiana's sole surviving historic steel pony truss vertical lift bridge.

In the late 1970's due to the narrow width of the bridge, the flow of vehicular traffic was changed to one alternating lane. At this time, the LADOTD determined that the useful life of the bridge had been exhausted and it was time to consider its replacement. In 1989, the LADOTD received funds from the Federal Highway Administration for a bridge replacement project. The project called for the construction of a new two-lane bridge approximately fifty feet to the east of the historic bridge. The construction proposal also called for the historic bridge to be destroyed when the new one was completed. Locals launched a crusade, led by Mooringsport native Darren Guin, to save the bridge and convert its use into a pedestrian walkway, civil engineering landmark, and tourist attraction. After two years of negotiations, the LADOTD and the Federal Highway Administration agreed to use the funds appropriated for removing the structure to refurbish the historic bridge. This agreement was made with the stipulation that Caddo Parish agreed to assume ownership and liability. On June 26, 1991, the Caddo Parish Commissioners voted to accept the bridge into the Caddo Parish Department of Parks and Recreation.

After the bridge was cleaned, painted and barricaded to vehicular traffic, ownership of the bridge was transferred back to Caddo Parish on October 3, 1995. A rededication ceremony was held in Mooringsport later that month to mark the saving of the town's chief landmark and to honor those who had contributed to the endeavor.

In August 2014, LADOTD returned two matching bronze plaques that convey the Waddell & Harrington Lift Bridge patent information. This included the eight original bolts that held the plaques to the bridge's tower since 1914. On September 12, 2014, one of the two patent plaques was mounted back on the bridge in its original location using the original bolts.

On September 13, 2014, a Centennial Ceremony was held in Mooringsport during the annual Mooringsport Cypress Festival to recognize the 100-year anniversary of the civil engineering landmark and to recognize those that had played a role in saving the historic structure.



1. View of one of the tower posts, with a surviving pulley from the bridge mechanics to the right.

4. Portal view on bridge. A new sign was added in 2014 commemorating the bridge's 100th year.

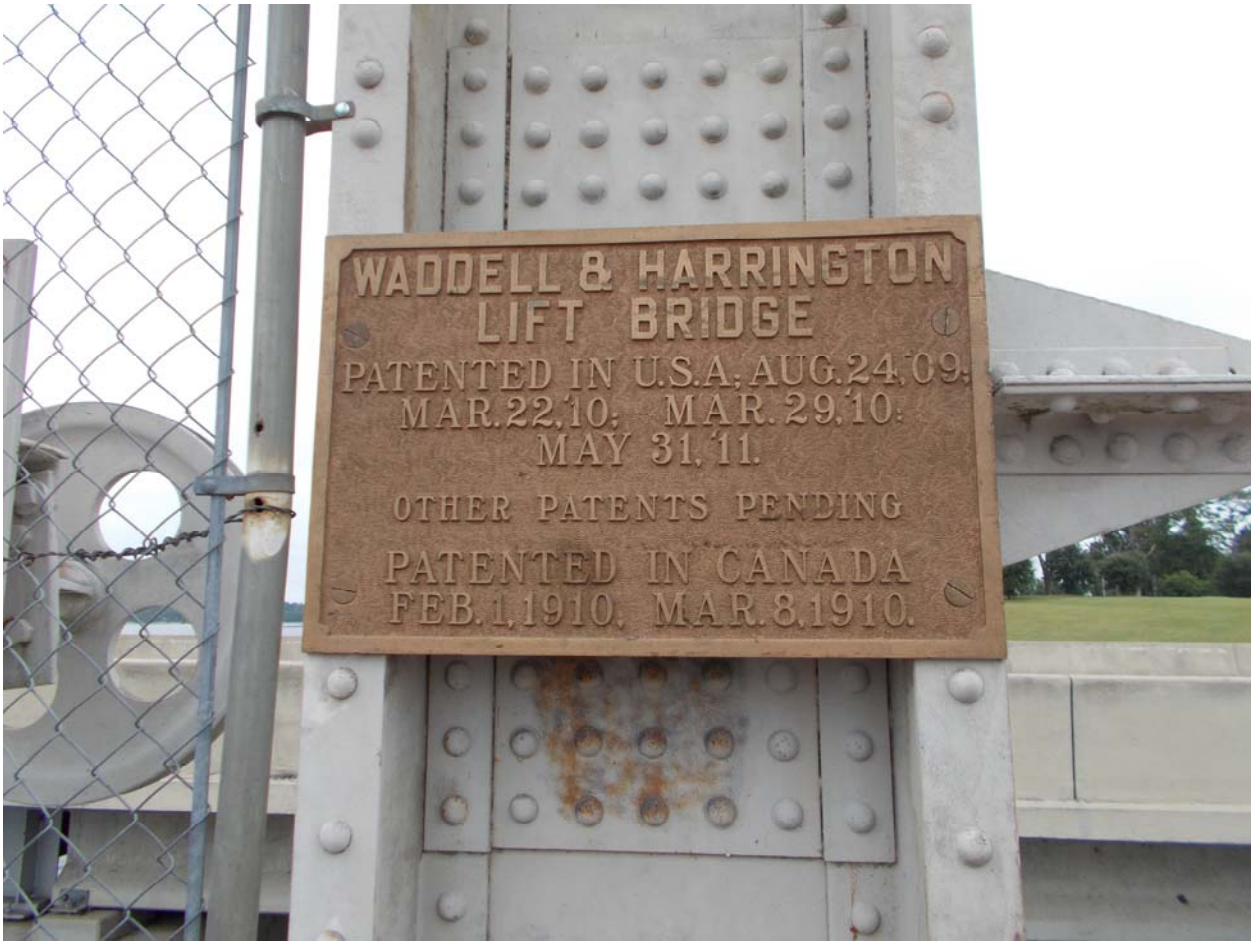
5. View beside the bridge showing the lift towers, pony truss approach spans, and pony truss lift span.

7. Main plaque on bridge showing engineers, builder, and officials involved with building the bridge.

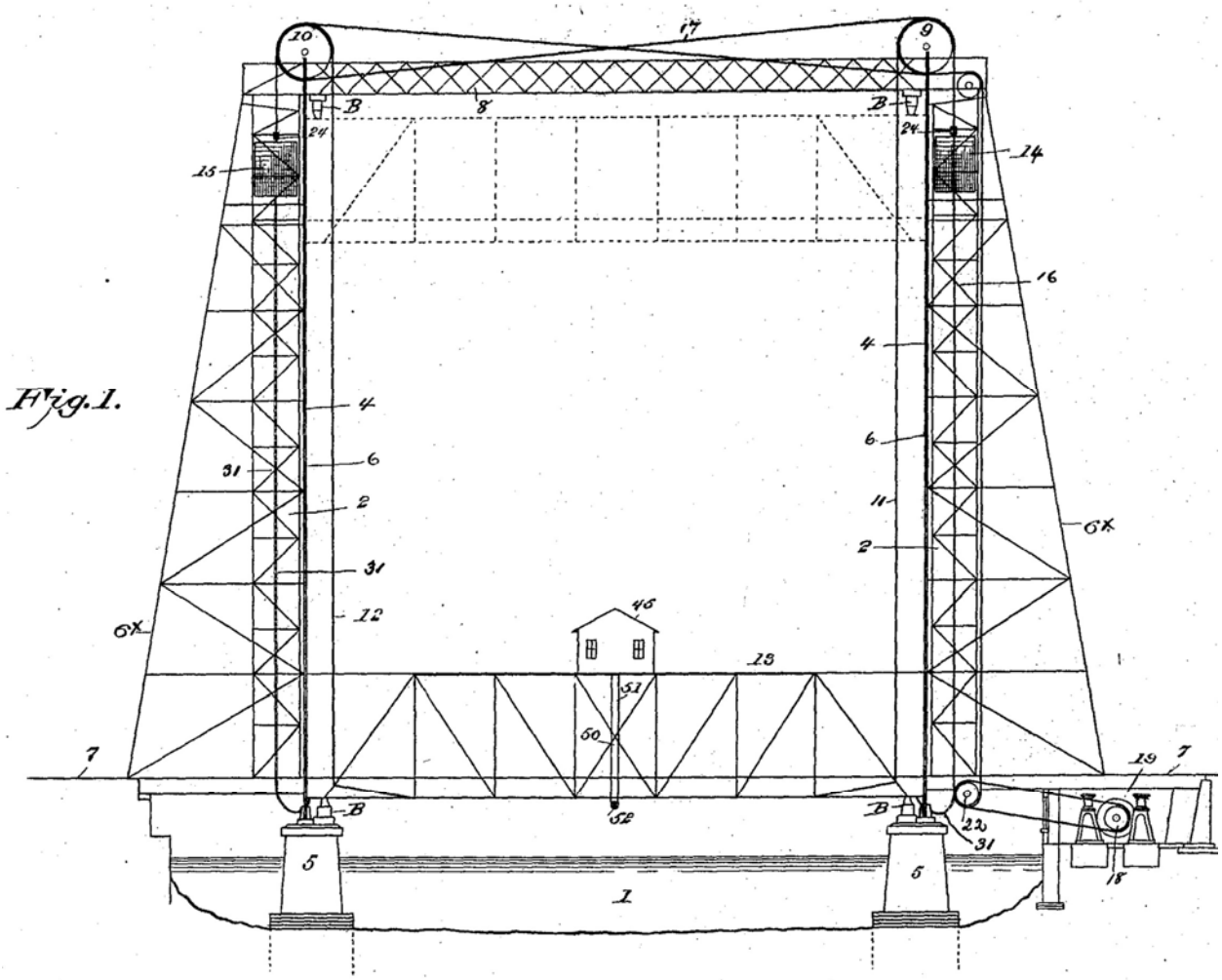
8. Overview of the bridge. Photo Credit: Daniel Foster, CC BY-NC-SA 2.0, https://www.flickr.com/photos/danielfoster/4241841421

9. Historical photo showing the bridge with the counterweights still in place.

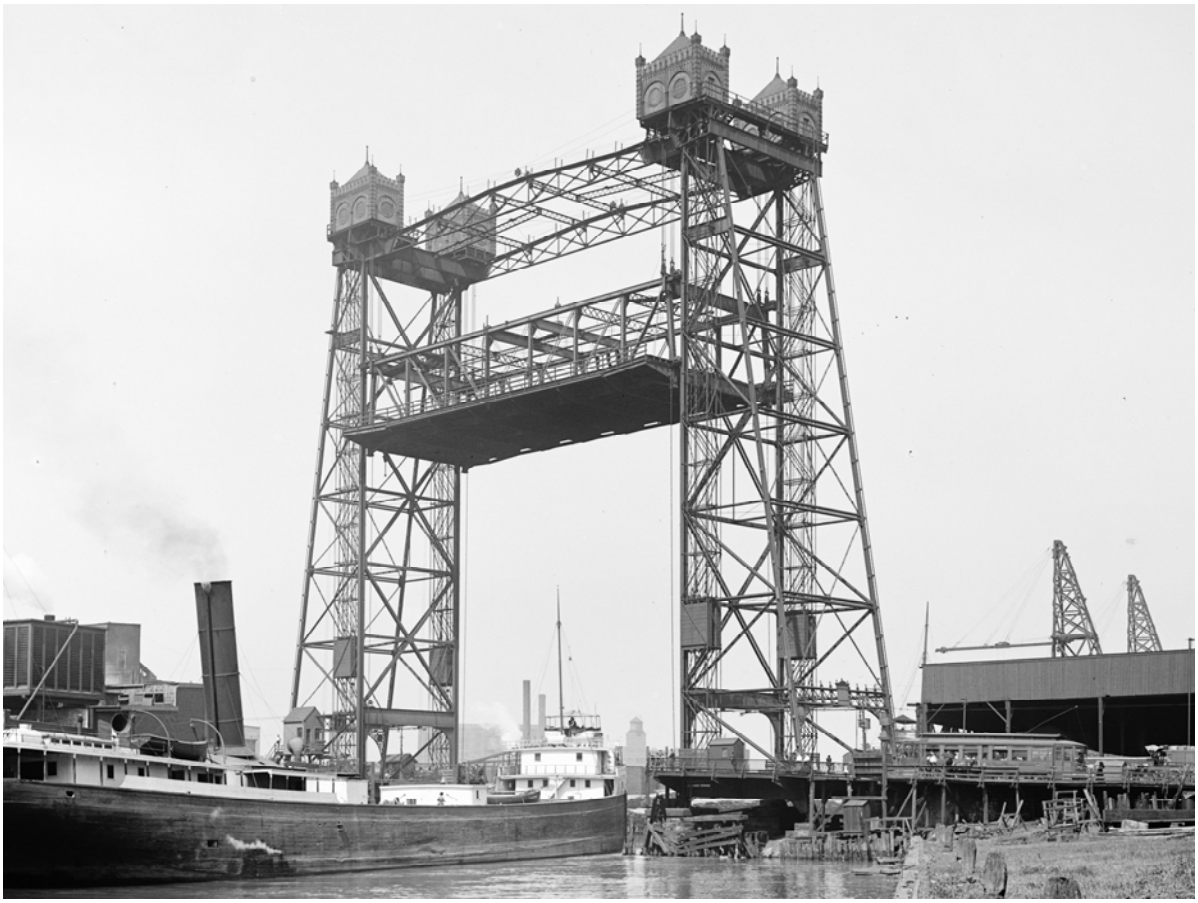
11. Historical photo from on bridge showing the bridge with a concrete deck and the counterweights still in place.



12. Photo showing one of the original patent plaques which was remounted back onto the bridge in 2014. The plaque is mounted on one of the lift tower posts. Visible to the left is a surviving pulley from the bridge mechanics.



13. Drawing from J. A. L. Waddell's 1893 patent for a vertical lift bridge. Although the exact details shown in this drawing differ from the Caddo Lake Bridge, the general design principals outlined in the patent are present in the Caddo Lake Bridge's design.



14. This historical photo from the Library of Congress shows the South Halsted Street Bridge which was completed in 1893. This photo shows the bridge in the raised position. This bridge no longer exists today, but it was the first vertical lift bridge built to J. A. L. Waddell's patented design.

15. View beside the bridge showing the lift towers, pony truss approach spans, and pony truss lift span.

Photo of J. A. L. Waddell Appearing In *Bridge Engineering* (1916) Digitized By Internet Archive.

John Lyle Harrington
Source: Power, Vol. 55, No. 22, 1922, Digitized By Google

16. Photos of John Alexander Low Waddell (left) and John Lyle Harrington (right). Waddell and Harrington's engineering firm designed the Caddo Lake Bridge. John Alexander Low Waddell was noted for publishing noteworthy texts related to bridge engineering and pioneering the modern vertical lift bridge.