



Historic Bridge Foundation Facebook Archives

Focus Bridge: Cotter Bridge, Arkansas

May 2017

While the nearby state of Kansas may have the greatest quantity of surviving Marsh type rainbow arch bridges in the country, it is this single surviving example in Arkansas that is arguably the greatest surviving Marsh arch bridge. This bridge's impressive height over the waterway, consisting of very large arch spans over the river (complimented by a single small arch span over railroad tracks), and the overall multi-span layout of this bridge that all combine to form what is the most impressive and historically significant Marsh rainbow arch bridge in the entire country. Truly, this bridge also represents the ultimate aesthetic potential of concrete in bridge construction. From every angle that this bridge is viewed, it projects a profound beauty that is unmatched in more simple concrete bridge forms. This beauty is achieved not through non-structural decorations, but by careful design of the functioning structure of the bridge.

The bridge is also a good example of historic preservation of a concrete bridge. The bridge was extensively rehabilitated in 2004, including a new deck, repairs to the concrete arches, and replica lighting (the bridge's original lighting had not been used on the bridge for many years). Beautifully rehabilitated and preserved, this bridge remains in good condition today. Repairs and replacements made, such as railing and lighting, are respective of the original bridge design.

A bridge with a well-documented history, surviving historical photos of this bridge's construction show how the unique Marsh arch design was constructed. Marsh arch bridges do not use rebar for concrete reinforcement. Instead, built-up riveted steel arches reinforce the concrete. A benefit of this type of reinforcement was that the steel arches could be assembled on the ground and then lifted into place. There, they could support themselves, the formwork, and the concrete during pouring, all without the traditional falsework (centering) commonly used to support concrete arches during construction.

Beyond the design of the bridge, the Cotter Bridge was also significant in the development of Ozark tourism, because it was a critical crossing that was part of the only east-west route in northern Arkansas.

In 1986, the bridge became the first National Historic Civil Engineering Landmark in Arkansas.



1 – Historical photo showing the construction of the bridge. Note the span in the foreground. The reinforcing of the arches has been erected with little else present, something made possible by the solid nature of the Marsh type of reinforcement.



3 - Historical photo showing the construction of the bridge. This photo shows formwork in place for the concrete of the arch rib. A construction cableway (used to haul materials out to the span) is visible above the pier. The steel portions of the overhead bracing and hangers (already holding part of the deck) are shown in this photo before formwork was placed for concrete pouring. Note the railroad swing bridge in the background, which remains today.



cotter_1297_8_9vib – Elevation of one of the bridge spans. Based on the trees growing under both this span, and the railroad swing bridge (visible in the background), the river appears to have adjusted its course under the bridges such that portions of the bridges do not have as much water under them during normal conditions.



cotter_1333_4_5vib_stitch – A panoramic projection photo showing the five main spans of the bridge. Completely hidden from view is the railroad overpass span at far right.



cotter_1375 – An oblique view of the bridge as seen from the parking lot of the public park under the bridge.



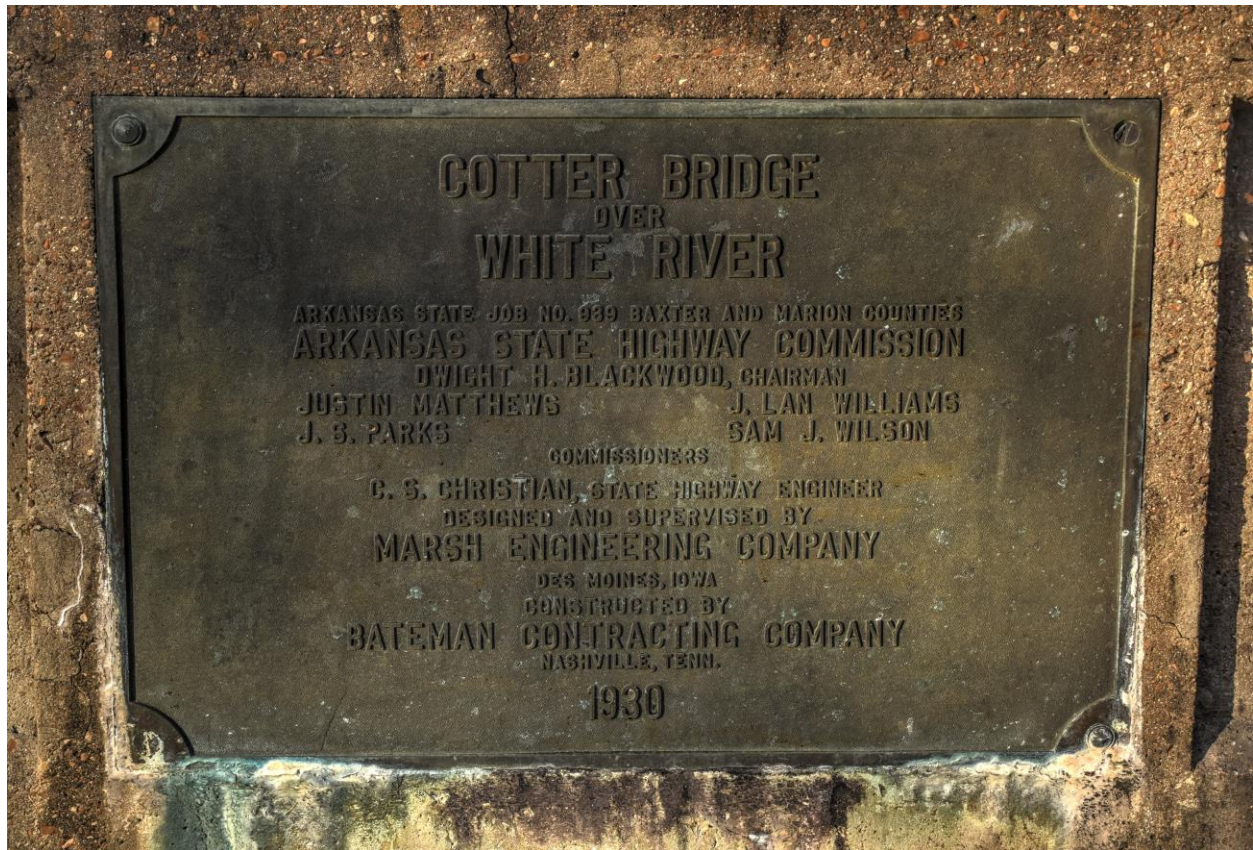
cotter_1390_1_2bal – A view of the railroad overpass span. This span differs from the main spans both in that it is shorter, and it also lacks overhead bracing, due to its shorter length.



cotter_1567 – A portal view on the roadway of the bridge looking at the main spans. Note the date (1930) cast into the overhead bracing.



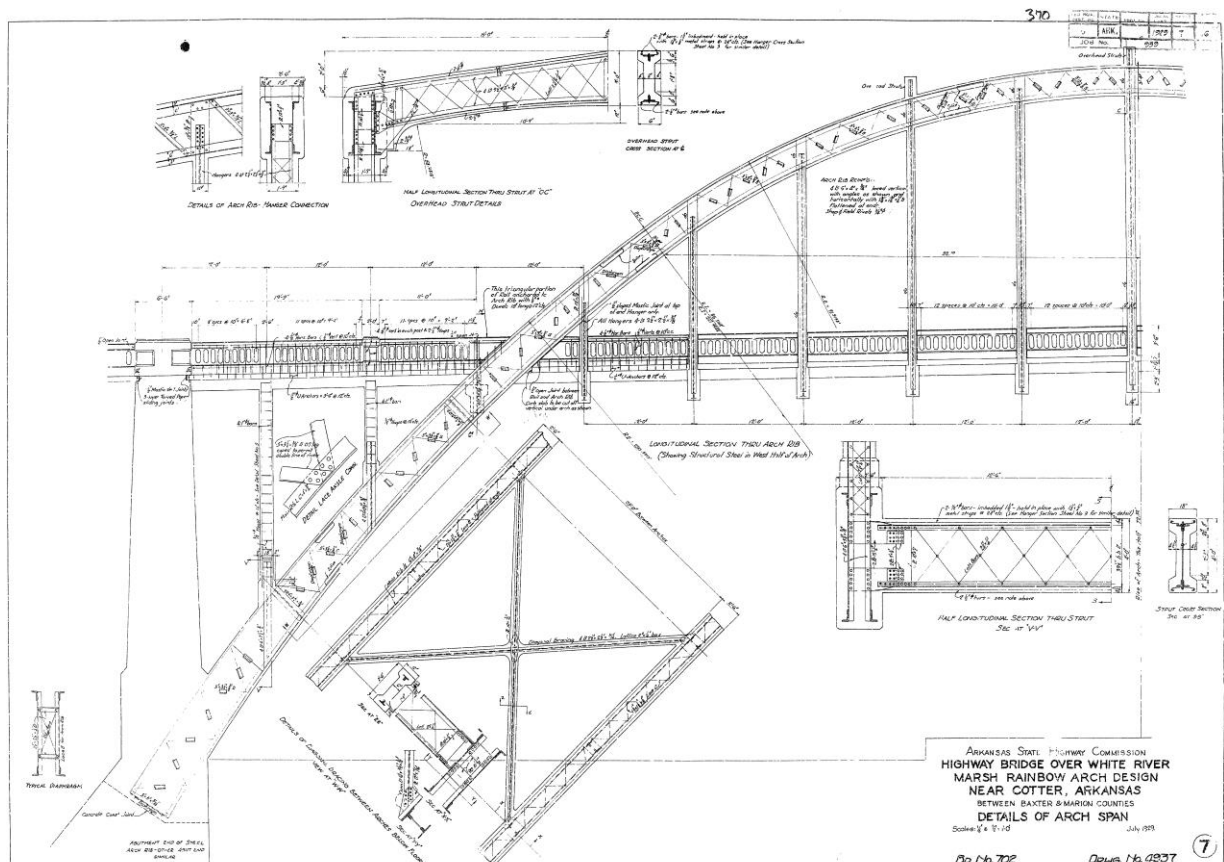
cotter_1954_5_6vib – A view of a plaque that rededicated this bridge on December 31, 1976 to R. M. Ruthven.



cotter_1957_8_9vib – A view of the original plaque on the bridge. Marsh Engineering Company of Des Moines Iowa is listed as the designer, and Bateman Contracting Company of Nashville, Tennessee is shown as the builder.



cotter_2023_4_5bal – This photo shows a distant view taken from south of the bridge, looking north down on the bridge and the expansive river valley in which it is located.



plans1 – One of the original drawings for this bridge, this page shows the structural steel reinforcement of the bridge, including the overhead bracing (upper left corner), floorbeams and hanger connections (lower right corner), lower lateral bracing (bottom center), and one of the main arch spans (center).

