Historic Bridge Foundation Facebook Archives

Focus Bridge: Rio Hondo Bridge, Lincoln County, New Mexico

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The Rio Hondo Bridge carries Highway 395 over Rio Hondo in Lincoln County, New Mexico. The bridge was originally built in 1927 to carry the famous Route 66 over Arroyo Laguna near Montoya, Quay County, New Mexico. In 1953, a new bridge replaced it and the 1927 bridge was relocated to this location to Highway 395 in Lincoln County. The bridge was listed in the State Register of Cultural Resources in 1979, and is considered eligible for listing in the National Register of Historic Places. Unfortunately, the bridge became the victim of an over height truck that drove across the bridge, colliding with and damaging all of the overhead sway and portal braces. In order to repair this damage, the New Mexico Department of Transportation (NMDOT) proposed to repair the bridge using heat straightening to repair existing members were possible, and to replace the remainder of damaged members in-kind. Although not a busy bridge, the bridge is locally important with no short detour available. As such, fieldwork on the bridge was limited to no more than 30 days. Initially, the project proposed using bolts for the connections and built-up laced sway bracing instead of rivets. The State Historic Preservation Office supported this decision, concurring with a letter from NMDOT stating that "the rivets used for connections as the bridge was originally constructed are no longer used for the industry," a statement which later turned out to be inaccurate. NMDOT awarded this project to TMI Coatings of St. Paul Minnesota. TMI Coatings in turn subcontracted the steel repair work to Bach Steel of Holt, Michigan. As a firm specializing in the in-kind restoration of historic metal truss bridges, including hot riveting, Bach Steel proposed using rivets for all repairs rather than bolts, with no increase in price. NMDOT agreed to this proposal, and the project proceeded using rivets in all areas of the work, making this the first known modern-day highway bridge project in New Mexico to use rivets. Bach Steel conducted a site visit to the bridge to take field measurements of the existing sway bracing, including not just basic dimensions, but also details such as the curved shapes of the gusset plates. The new steel was fabricated in the Bach Steel shop. For the built-up bracing members, this included shop riveting the v-lacing and angles. These fabricated parts were then shipped to New Mexico. Before the new bracing could be installed, the existing vertical members, which had been bent by the force of the truck's

impact, required heat straightening. Additionally, the existing bracing had to be non-destructively removed from the bridge. Following this, the new bracing was field riveted into place. After completion of the steel work, TMI Coatings followed through with painting of the repaired portions of the bridge. The result of this project is a historic bridge that looks exactly the way it was when first fabricated in 1927, thanks to the combination of shop and field riveting employed for the project. Both field riveting and shop riveting for this project was completed using pneumatic rivet hammers and holder-ons, with the rivets being heated in a propane forge. Rivets were sourced from Jay-Cee Sales Inc. of Farmington, Michigan.

Bridge after restoration by Bach Steel, awaiting repainting.

General view of bridge prior to repair. Note the damaged overhead sway bracing.

Riveting the replica sway bracing at the Bach Steel shop.

Bridge prior to repair. Note the bowed out and bent sway bracing beam.

Bridge prior to repair. Note the damaged sway bracing angle.

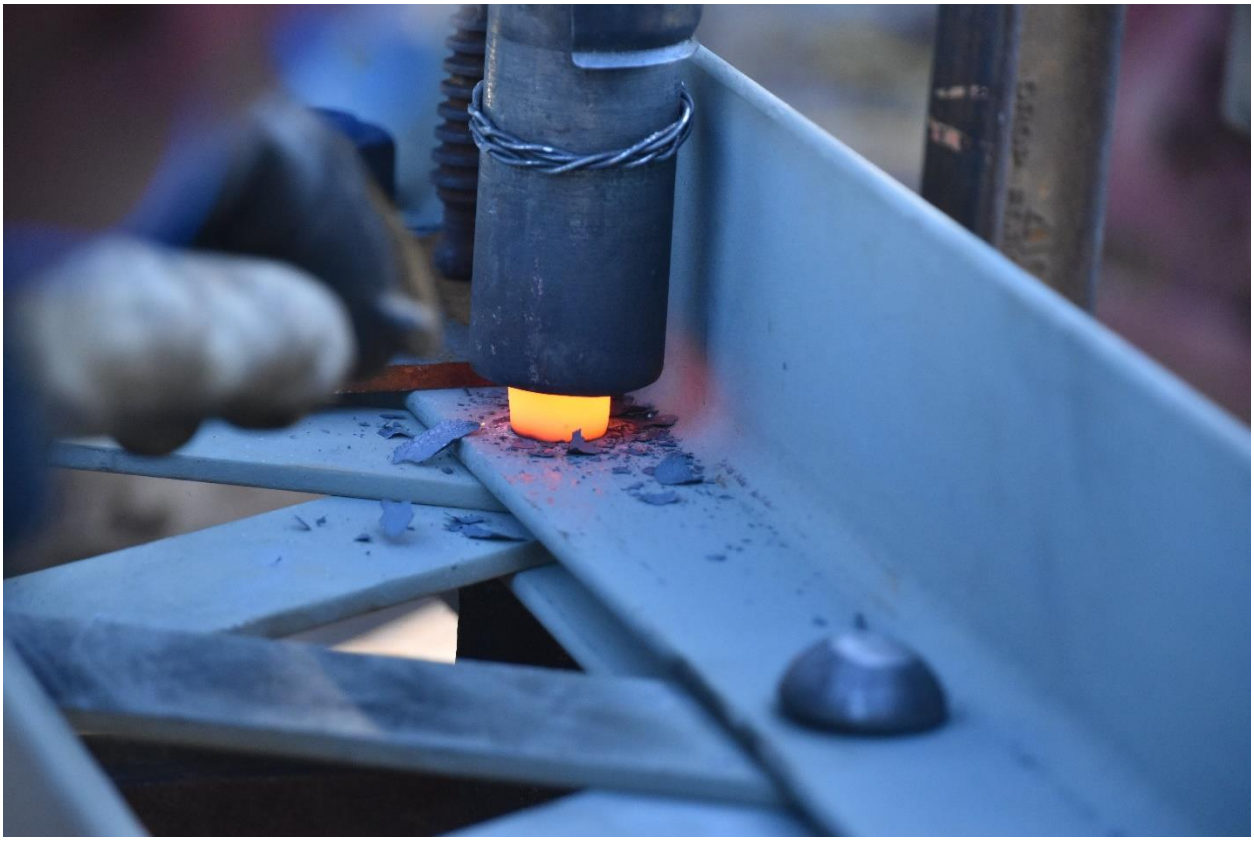
Shop fabrication of gusset plate.

Shop fabricated lacing bars.

Shop fabrication showing completed fit-up of replica sway bracing, which prepared them for being riveted.

Shop riveting. This photo shows a cold rivet being inserted into the forge to be heated.

Shop riveting. This photo shows a hot rivet being removed from the forge for installation.



Shop riveting. This photo shows a rivet being driven into place on the replica sway bracing.

Completed replica sway bracing, with all shop rivets installed.

Field repairs in progress. Note the removed section of damaged portal bracing to the right in the photo.

Field repairs in progress. The photo shows the newly installed replica sway bracing. Note the new field rivets connecting the sway bracing to the vertical member.

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