
Documentation of the Historic Turley Bridge over Petite Saline Creek

Bridge No. W0304
Cooper County, Route V
March 2012



Historic Turley Bridge over Petite Saline Creek

MoDOT Bridge No. W0304

Cooper County, Route V
MoDOT Safe & Sound Project

Historical and Photographic Documentation

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Submitted to:

State Historic Preservation Office
Missouri Department of Natural Resources

Prepared for:

Federal Highway Administration
In Compliance with
Section 106 of the National Historic Preservation Act

Kevin L. Keith, Director
Missouri Department of Transportation

March 2012

HISTORIC DOCUMENTATION
BRIDGE W0304

Location: Cooper County, Route V over Petite Saline Creek, ¼ mile west of Gootch Mill

Construction Dates: 1906, relocated 1938

Present Owner: Missouri Department of Transportation, Jefferson City, Missouri

Present Use: Highway Bridge to be removed and replaced by new river crossing

Significance: Nine panel, pin-connected Parker through truss; this bridge is a well-documented example of an uncommon bridge type. The Parker truss was popular for long spans after the turn of the twentieth century, as they required less steel for construction than other truss types.

Historian: Karen L. Daniels, Historic Preservation Section, Design Division, Missouri Department of Transportation, March 2012.

I. Introduction

The Turley Bridge was originally constructed, in 1906, by the Cooper County Court over the Lamine River. The Missouri Highway Department took over the bridge when it took over the road in the 1920s during the development of the state highway system. The bridge could only accommodate one lane of automobile traffic so plans to replace the bridge began in 1925 with the preparation of plans for a two-lane bridge.¹ In 1937 the new bridge project proceeded and the two-span Turley Bridge was sold back to Cooper County for use elsewhere. One span of the bridge ended up in Boone County on Moon Valley Road over Hinkson Creek.² The second span was relocated to the Petite Saline Creek in Cooper County near the community of Gootch's Mill,³ that span is the subject of this report. The history will describe the events that lead to the original construction of the Turley Bridge in 1906 over the Lamine River, its replacement and relocation to Gootch's Mill, and the current plans for the bridge.

II. History of Bridge W0304

In 1883 J. S. Murdock and others petitioned the Cooper County Court for an iron bridge across the Lamine River on the Boonville-Arrow Rock Road.⁴ The county studied the request and determined that there was not sufficient money in the road fund for the bridge to be constructed at that time.⁵ In May 1885 the County determined that it would build an iron bridge at the crossing known as Turley's Ferry. It would be iron with stone piers. The sum of \$16,000 was budgeted for construction of the bridge.⁶

September 1905 was a very wet month and County streams were swollen. In late September the county received an additional twelve inches of rain over four days, bringing those streams well above flood stage. As a result of this flooding many Cooper County bridges were destroyed. Across the three main rivers, the Blackwater, the Lamine, and the Petite Saline, only one bridge remained after the flooding. The Turley Bridge was one of those that were washed away. It was described as having "floated" off its supports on the morning of Sunday, September 17. One newspaper noted that of the older wooden bridges in the county only one was destroyed, and of the newer iron

¹ Missouri State Highway Department. "Bridge over Lamine River, Cooper County, Project No. R4-S13." Missouri Department of Transportation, Bridge Division, Jefferson City, Missouri.

² Frasier, Clayton. HAER Inventory, Moon Valley Bridge (Hinkson Creek Bridge). Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri.

³ Ibid, HAER Inventory, Turley Bridge. Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri.

⁴ Cooper County Court. County Court Record, February 12, 1883. Book P, p. 395. Microfilm, Missouri State Archives, Jefferson City, Missouri.

⁵ Ibid. May 11, 1883, Book P, p. 487.

⁶ Ibid. May 5, 1885, Book Q, p. 285.

bridges in the county, only one survived the flooding.⁷ One long time resident, Mr. C. G. Hull, described cause of the bridge failure in the 1905 flood as drift wood collecting below the bottom chord of the bridge. He said water on the supper side of the bridge was three feet higher than on the lower side of the bridge.⁸

On October 4, 1905 the County Commissioners and the County road engineer visited two of the bridge sites that had been wiped out: Blackwater and Turley. The Blackwater Bridge had been greatly damaged, but it was estimated that the materials could be reused and the bridge replaced for about \$2000. The Turley Bridge was a complete loss, and it was estimated that only the approach span could be salvaged and reused. The County Commissioners decided to immediately proceed with replacing the Blackwater Bridge, and would replace the Turley Bridge as soon as it could be advertised and a contract let. The other bridges in the county would have to wait until county residents approved a tax increase to fund replacement.⁹ The county court estimated that it would cost \$40,000.00 to replace all the bridges that had been destroyed, and that when all the bridges currently under contract had been paid for, less than \$2000 would be left in the county road fund.¹⁰

The County Commission decided to prioritize the bridge replacements. Those areas that could raise the greatest subscription to help fund the replacement of the bridge would be replaced earliest. After early opposition the plan was adopted and “much sooner than had been hoped by the most optimistic” every bridge in the county was restored.¹¹ As early as late October 1905 county residents were being asked to pay the promised subscriptions, and those who had not subscribed were reminded that “and those who have not subscribed, and there are many who should do so, are also invited to come to the bank and donate.”¹²

To assist residents of Lamine and those wanting to cross the river in that area, the town of Blackwater sold a ferry boat to the community for use until their destroyed bridge was replaced. The ferry was floated to the location in late October 1905 and was sold for the original purchase price: \$100.¹³

⁷ “Death, Destruction and Ruin,” *Boonville Weekly Advertiser*, September 22, 1905, p.1; “Most Damaging Flood in Years,” *Central Missouri Republican*, September 21, 1905, p.1; “The Mighty Waters,” *The Blackwater News*, September 22, 1905, p.1.

⁸ Remarks by Division. Construction File, Bridge K0236. Microfiche, Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

⁹ “The County Court Transacts Business,” *Central Missouri Republican*, October 5, 1905, p. 1.

¹⁰ Untitled article, *Blackwater News*, October 13, 1905, p. 1.

¹¹ Johnson, W. F., *History of Cooper County, Missouri*. Ft. Worth, TX: VKM Publishing Company, 1978, p. 96.

¹² Untitled article. *Blackwater News*. October 20, 1905, p.1.

¹³ “Ferry Boat Sold.” *Blackwater News*. October 20, 1905, p. 1.

In late November it was announced that the county would have sufficient funds on hand to contract for the replacement of the Turley Bridge early in 1906. It was “the most important bridge in the county and will therefore be rebuilt first.”¹⁴

Bridge W0304 (the Turley Bridge) was constructed in 1906 over the Lamine River in Cooper County, Missouri. In May 1906 the County Court was informed of a “very urgent necessity” for a bridge across the Lamine River to replace an earlier bridge.¹⁵

The County road supervisor was ordered to prepare plans and specifications for a steel bridge. Sealed bids were to be accepted until noon on June 6, 1906.¹⁶ The public notice for requesting bidders for the Turley Bridge, and a small culvert, appeared in the *Central Missouri Republican* in May 1906.¹⁷

PUBLIC NOTICE.

Sealed bids will be received by C. W. Nixon, county clerk, until 12 o'clock noon, June 6, 1906, for the superstructure of a two span steel bridge, each spans to be 170 feet long from face of abutments to center of middle pier, according to plans and specifications filed in the county clerks office. Also bids will be received until 12 o'clock noon, June 6, 1906, by C. W. Nixon, county clerk, for the construction of an arched concrete culvert to include about 40 cubic yards of concrete according to specifications filed in county clerks office.

E. T. HALE,
Co. Sr. Ex-officio R. & B. Com.

Figure 1. Public Notice for acceptance of bridge bids.¹⁸

Twelve bids were received, all were considered too high by the county court. After negotiation with the lowest bidder, the Kansas City Bridge Company, the County Court accepted the bid of \$8200 for the construction of the bridge.¹⁹

¹⁴ “Bridge.” *Blackwater News*. November 24, 1905, p. 3.

¹⁵ Cooper County Court. County Court Record, May 9, 1906. Book X, pp. 90-91.

¹⁶ Ibid.

¹⁷ “Public Notice.” *Central Missouri Republican*. May 17 1906 p. 4. Ibid. May 24, 1906, p. 4.

¹⁸ Ibid.

¹⁹ Cooper County Court. June 6, 1906, Book X, p. 99.

On June 6, 1906 a contract was to be let for a concrete pier for the Turley Bridge across the Lamine River.²⁰ On July 9, 1906 the contract for the bridge pier was awarded to the Kansas City Bridge Company, whose bid of \$9.50 per cubic yard was the lowest and best bid.²¹

The Kansas City Bridge Company was familiar with working conditions in the area. The year before they had been responsible for the replacement of the Blackwater Bridge that had been destroyed during the 1905 flood.²²

After little fanfare, the Turley Bridge was opened to traffic in March 1907. The County Court received the county surveyor's report recommending acceptance of the bridge on March 7, 1907, and made the final payment to the Kansas City Bridge Company that same day.²³

In 1917 the state highway department started the state highway system by outlining the principle roads that were already well known. These included many of the major named highways. The counties were asked to recommend which of the roads in their jurisdictions should become part of the state highway system. These roads were inspected and formed the beginning of the state highway system.²⁴ By 1922 the state highway department had taken control of this section of road²⁵, and in 1926, when the system of numbered U. S. Highways was developed, it was designated as part of U. S. Highway 41.²⁶

In 1928 the bridge survived a major flood, during which the limb of a floating tree got hung up on the guard rail of the bridge. The guard rail was bent, and the bridge was shaken "badly" before the limb was removed.²⁷

In 1933 the state highway department began to improve U. S. Highway 41 through Cooper County, replacing the existing dirt surface with a 30 foot graded crushed stone

²⁰ Ibid. June 6, 1906. Book X, p. 98.

²¹ Ibid. July 9, 1906. Book X, p. 102.

²² Untitled article. *Blackwater News*. October 13, 1905, p.1.

²³ Untitled article. *Blackwater News*. March 8, 1907, p. 1.

²⁴ State Highway Board. Report of the State Highway Board of Missouri for the Period Ending December 1, 1918. Jefferson City, MO: Hugh Stephens Co. Printers, 1918, p. 73.

²⁵ Missouri Department of Transportation. "Project History Map Cooper County." Transportation Planning, Missouri Department of Transportation, Jefferson City, Missouri.

²⁶ Missouri State Highway Commission. *Map of Missouri Showing State Road System*. Jefferson City, MO: Missouri State Highway Department 1926. Ibid, 1927.

²⁷ Remarks by Division. Construction File, Bridge K0236. Microfiche, Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

surface. The existing Turley Bridge was replaced as part of this project. Replacement of the bridge began in 1932, when a wider bridge was constructed just downstream from the Turley Bridge. That new bridge was opened to traffic on December 7, 1933.²⁸ During the construction of the new bridge the remains of the bridge that had been destroyed by the 1905 flood were encountered in the location of pier 4 and removed.²⁹

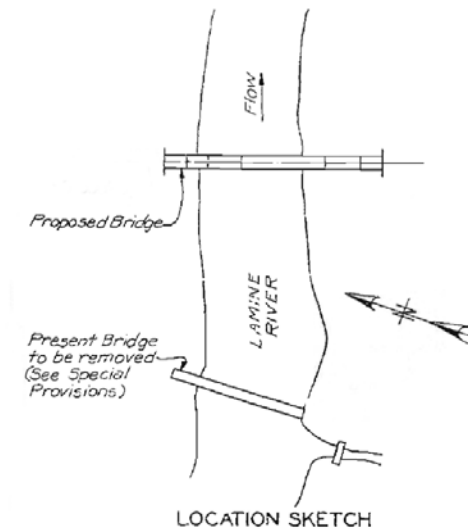


Figure 2. Turley Bridge and 1933 replacement.³⁰

Once the new bridge was completed, improvements to the new highway, which routed traffic away from the Turley Bridge, were begun. Those improvements were completed by 1937. In December 1937 Cooper County purchased the Turley Bridge back from the State Highway Department for use on the county road system.³¹

In November 1938, one truss of the Turley Bridge was moved to Hinkson Creek in Boone County on Moon Valley Road and is now known as the Moon Valley Bridge.³² The second truss was moved to Route V over the Petite Saline Creek in eastern Cooper County.³³

²⁸ Correspondence between W. F. Boone, Project Engineer and N. N. Ropes. Microfiche. Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

²⁹ Ibid.

³⁰ Missouri State Highway Department. *Bridge over Lamine River*. Bridge Division, Missouri Department of Transportation, Jefferson City, MO, p.5.

³¹ Cooper County Court. December 22, 1937, Book HH, page 554.

³² Frasier, Clayton. HAER Inventory, Moon Valley Bridge (Hinkson Creek Bridge). Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri.

³³ Ibid, HAER Inventory, Turley Bridge. Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri.

The bridge was moved to Gootch Mill (also Gooche's Mill, formerly Milton), about 12 miles east of Boonville.³⁴ This small community had a post office and the mill from which it took its name. Big Lick, a noted salt lick, was located nearby.³⁵ A covered bridge originally crossed the Petite Saline Creek at Gootch Mill. This covered bridge, which had survived the flooding of 1905, was replaced by the truss of the Turley Bridge.³⁶ A stone culvert to the east of the bridge location and the original stone bridge piers for the covered bridge are extant at the current Turley bridge location.

The bridge remained on the county road system until 1952. In that year the State Highway Department took over 12,000 miles of county roads, adding them to the supplementary road system as a result of a major highway expansion passed by the state legislature that year.³⁷

The bridge was inspected in 1955, and plans created. The bridge was found to be in generally good shape. It needed a new floor, and some additional stringers added to the floor, it also needed cleaning, painting and oiling. Some rusting was noted.³⁸

The Turley Bridge was included in the Safe and Sound Bridge Improvement Program. The program is a two-phase program to improve 802 of the most deficient and worn bridges in the state by October 31, 2014. Because the Turley Bridge is a one-lane bridge it was determined that it could not be rehabilitated to meet acceptable standards and would have to be replaced. As mitigation for the replacement of the Turley Bridge this historical documentation was prepared and archival photographs of the bridge were taken.³⁹

III. Builder and Fabricator—Kansas City Bridge Company

The Kansas City Bridge Company of Kansas City, Missouri was awarded the contract to build the original two-span Turley Bridge at its location over the Lamine River.

³⁴ Moser, Arthur Paul. "A Directory of Towns, Villages and Hamlets Past and Present of Cooper County, Missouri." Accessed on-line at: <http://thelibrary.org/lochist/moser/cooperpl.html>, 4 February 2010.

³⁵ Levens, Henry C. & Nathaniel M. Drake. *A History of Cooper County, Missouri*. St. Louis, MO: Perrin & Smith, 1876. Downloaded 7 April 2010 from <http://books.google.com/books?id=-cIUAAAYAAJ&printsec=frontcover&dq=A=History+of+Cooper+County+Missouri&cd=1#vonepage&q&f=false>.

³⁶ "The Mighty Waters." *The Blackwater News*, September 22, 1905, p. 1.

³⁷ Missouri State Highway Commission. *Eighteenth Biennial Report of the State Highway Commission of Missouri for the Period July 1, 1950 to June 30, 1952*. Jefferson City, MO: Missouri State Highway Commission, 1952, pp. 21-22.

³⁸ Missouri Highway and Transportation Department. "Bridge Report on Structures to be Used in Place." Microfiche. Bridge Division. Missouri Department of Transportation, Jefferson City, Missouri, 1955.

³⁹ Memorandum of Agreement and Information to Accompany for Missouri Safe and Sound Design Build Project. Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri, 2009.

The Kansas City Bridge Company had been formed in 1893 by Paul H. Everhard, Edward B. Watts, Reuben D. Swainn, and Frank N. Chick of Kansas City, Missouri and William W. Miller of Osage City, Kansas. They incorporated as the “Kansas City Bridge Company” with the purpose to “work in wood and iron, to design, build and sell railway and highway bridges and all kinds of structural work.”⁴⁰

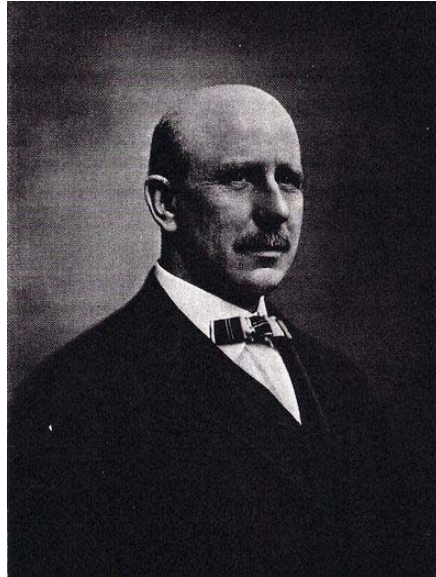


Figure 3. Joseph W. Hoover⁴¹

Joseph W. Hoover was the first president of the Kansas City Bridge Company, and served in that position from 1893 until before 1912. Hoover had studied engineering at the University of Michigan, graduating in 1875, and had worked for the Indianapolis Bridge Company and the Wrought Iron Bridge Company of Canton, Ohio (which later merged with the American Bridge Company of New York). Hoover came to Kansas City in 1884, establishing a branch office of the Wrought Iron Bridge Company. He remained a director of the Kansas City Bridge Company until his death in 1925.⁴² Hoover had extensive business interests related to bridge building including having formed his own construction company, the Hoover Construction Company and the Contractors Machinery Company, which built the equipment necessary for bridge building.⁴³

By 1912 Alexander Mainland, Junior had become the president of the Kansas City Bridge Company. Maitland had joined the company in 1905 after several years of working for the American Bridge Company and the Missouri Pacific Railroad Company. Maitland

⁴⁰ Kansas City Bridge Company, “Articles of Association.” January 30, 1893. Accessed on-line at: <http://www.sos.mo.gov/imaging/24898820.pdf>, 1 March 2010.

⁴¹ “Joseph Warren Hoover” in *Missouri*. Chicago, IL: American Historical Society, Inc. 1930. p. 97.

⁴² Ibid.

⁴³ Whitney, Carrie Westlake. *Kansas City, Missouri, Its History and Its People 1800-1908*. Chicago, S. J. Clarke Publishing Company, 1908, pp. 396-399.

had studied civil engineering at the University of Missouri and had been a professor there following his graduation.⁴⁴



Figure 4. Alexander Maitland, Junior.⁴⁵

The Kansas City Bridge Company constructed a number of iron bridges around Missouri and the Middle West in the early twentieth century. The bridges constructed included small stream crossings and large structures over the Missouri River.⁴⁶ Joseph Hoover claimed expertise in bridge construction over the Mississippi River and the Colorado River.⁴⁷



Figure 5. Kansas City Bridge Company Advertisement⁴⁸

⁴⁴ Alkire, Arthur N., ed., *Men of Affairs in Greater Kansas City 1912*. Kansas City, MO: Gate City Press, 1912, p. 43.

⁴⁵ Ibid.

⁴⁶ Gubbels, Thomas J., *Lexington Bridge Historic American Engineering Record*. Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri, pp. 29-30.

⁴⁷ Whitney, p. 396.

⁴⁸ *The Frisco Employees Magazine*, May 1931, p. 70.

The company was originally chartered to exist for 50 years⁴⁹ but this article of the incorporation was amended in 1933, along with the purpose of the business. The business expanded to provide general engineering and contracting work on any building, road, highway, manufacturing plant, bridge, pier, dock, mine, shaft, waterworks, railroads, railways, and the list continued. This amendment also made the company a perpetual entity, removing the 50 year life span of the original charter.⁵⁰

In 1953 the company charter was amended again, the revised articles of incorporation restated the general business practices that the company had been involved with to date. The common stock of the company was also reallocated to recapitalize the company.⁵¹ In 2000 the Kansas City Bridge Company was dissolved by an act of the shareholders.⁵²

IV. Physical Description of Bridge W0304

The Turley Bridge is a steel, 9-panel, 171' pin-connected Parker through truss on concrete abutments.

The substructure of the bridge consists of concrete abutments with no intermediate piers or bents. Each abutment has a bridge seat measuring 16" deep and 13' long. There are no wings constructed as part of the abutments. The bridge superstructure rests on steel plate bearings mounted on the bridge seats.

The bottom chord is formed by 2 runs of eye bars. The two end floor beams are channels. There are six runs of stringers—the two outer runs are formed by channels and the four interior runs are I-beams. The stringers rest on floor beams consisting of rolled steel I-beams. The bottom lateral bracing is composed of crisscrossed metal bolted together through the I-beam floor beams.

The bridge deck has a wooden floor and double wood beam curbing. The wearing surface is number six bituminous asphalt. The floor consists of 4" planks set on edge and laid perpendicular to the stringers. This was laid down in 1961 when the original decayed oak planking was replaced.

The end posts are built up sections consisting of back to back channels covered with continuous flat plates on top, and short flat plates and short bar lacing on the bottom. The end verticals are two angles connected with square plates. The portal bracing consists of horizontal angles connected with crisscrossed angles by means of rivets and small square gusset plates. Below the lower horizontal are knee braces formed of back-to-back curved angles.

⁴⁹ Ibid.

⁵⁰ Kansas City Bridge Company, "Certificate of Amendment." November 25, 1933. Accessed on-line at: <http://www.sos.mo.gov/imaging/24898839.pdf>, 1 March 2010.

⁵¹ Kansas City Bridge Company. "Certificate of Amendment." May 5, 1953 Accessed on-line at: <http://www.sos.mo.gov/imaging/24898955.pdf>, 1 March 2010.

⁵² State of Missouri, "Articles of Dissolution by Voluntary Action." July 25, 2000. Accessed on-line at: <http://www.sos.mo.gov/imaging/24898859.pdf>, 1 March 2010.

The panels alternate in width between 18 feet and 20 feet. They are taller near the center of the bridge to accommodate the curved top chord. The panel verticals are composed of two back to back channels connected with riveted metal bar lacing. The diagonals alternate between square bars with turnbuckles and flat eye-bars. The sway bracing is composed of two built up horizontal struts connected by crisscrossed metal rods with turnbuckles.

Like the end posts, the top chord is formed by back to back channels covered with a continuous flat plate on top and short flat plates and short bar lacing on the bottom. The top lateral bracing consists of metal rods that cross forming an "X" between the panel points.

The guardrail is original to the bridge and is formed of two angles, riveted back to back, which form the top horizontal of the guardrail and one angle forms the bottom horizontal of the guardrail. A double lattice of bars fills the area between the horizontals. The guardrail is riveted to the verticals by means of a short angle on the top and bottom. On the east end of the bridge the top angles are curved downward to form the post, on the west end of the bridge the angles have been cut off and riveted to an angle which is bolted to the wooden curb.

Modifications

The Turley Bridge has had 2 major modifications. One occurred when the bridge was removed from its original location and the two original trusses were separated and placed as two separate bridges. The second occurred in 1961 when the State Highway department made significant repairs to the floor stringers and flooring.

Rehabilitation of the bridge, done in 1961, replaced several of the stringers on the bridge along with the decking. The original end and center stringers were 8" X 2 1/4" channels, and the remaining intermediate stringers were 8" X 4" I-beams. The replacement stringers were spaced 26" apart. In 1961 the stringers in the center five panels of the bridge were replaced with 4 10" I-beam stringers spaced 3' 2" apart. The bridge deck that existed at the time was composed of 3" X 10" oak planking that was in poor condition. The flooring was replaced by new 4" thick planking in 1961; this was later covered with an asphalt road surface.

V. Photographic Methods and Processing

The archival photographs accompanying this documentation were taken and processed according to the standards for photographs accompanying NRHP documentation.⁵³ Randall Dawdy took photographs on March 3, 2010 using a Canon G10 digital camera. Images were captured in a raw (nef) format, which was manipulated for light contrast before being converted to a tagged image file format (.tiff) and printed. Images were

⁵³ National Park Service. "Proposed Updated Photographic Policy National Register of Historic Places." Downloaded 8 June 2008 from: www.nps.gov/history/nr/policyexpansion.html.

numbered according to the NRHP Photographic Imaging Policy⁵⁴ and burned onto a Delkin Archival Gold compact disc, which was provided to the SHPO along with this report.

Prints were made on Epson Premium Glossy Photo Paper and used Epson Matte Black Ultra Chrome K3 Ink, both identified as “best” practices by the NRHP photo policy, and which Epson identifies as having 85-year permanence under glass.⁵⁵ Kept in archival conditions the materials will exceed the 75 year permanence standard for the NRHP, which is the standard being used for this project.

A copy of the photographs and .tiff images on an archival compact disc will also be maintained by the MoDOT Historic Preservation Section.

⁵⁴ Ibid.

⁵⁵ Ibid. Draft of a Proposed New National Register Photographic Imaging Policy.” Downloaded 26 March 2009 from: www.nps.gov/history/nr/policyexpansion.html. Epson. “Permanence ratings from Wilhelm Imaging Research.” Downloaded 30 April 2009 from www.epson.com/pdf/LightfastCPD_15334R2.pdf.

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**Turley Bridge over Petite Saline Creek (Bridge No. W0304)
Route V, Cooper County, Missouri**

Photographer: Randall Dawdy, Missouri Department of Transportation

Date: March 3, 2010

Location of Negatives: Digital Images Provided to
Missouri State Historic Preservation Office

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#25 of 40. Bridge W0304. West pier. View to northeast.

#26 of 40. Bridge W0304. West pier and subdeck. View to west.

#27 of 40. Bridge W0304. West portal. View to east.

#28 of 40. Bridge W0304. Sway bracing. View to east.

#29 of 40. Bridge W0304. East portal. View to east.

#30 of 40. Bridge W0304. South side. View to northeast.

#31 of 40. Bridge W0304. West end. View to northeast.

#32 of 40. Bridge W0304. West end. View to north.

#33 of 40. Bridge W0304. Typical panel. View to northeast.

#34 of 40. Bridge W0304. Two typical panels. View to north.

#35 of 40. Bridge W0304. Lower pin connection. View to north.

#36 of 40. Bridge W0304. Pin connection detail. View to north.

#37 of 40. Bridge W0304. South side. View to northeast.

#38 of 40. Bridge W0304. East end. View to northeast.

#39 of 40. Bridge W0304. Lower chord. View to northeast.

#40 of 40. Bridge W0304. East end. View to northeast.

Permanence rating for Epson prints framed under glass

MEDIA	6-Color Photo Dye Inks		DURABrite® Ink	PictureMate™ Ink	UltraChrome™ Ink	UltraChrome Hi-Gloss™ Inks
	Epson Stylus Photo 825/925/960/1280	Epson Stylus Photo R200/R300/R320/RX500/RX600	Epson Stylus C64/C66/C84/C86/CX4600/CX6400/CX6600	PictureMate Personal Photo Lab	Epson Stylus Photo 2200	Epson Stylus Photo R1800/R800
EPSON PREMIUM PHOTO PAPERS						
Premium Glossy Photo Paper		23 years			85 years	104 years
Premium Luster Photo Paper – Cut Sheet		22 years			71 years	64 years
Premium Semigloss Photo Paper		22 years			77 years	In progress
EPSON MATTE PAPERS						
Double-Sided Matte Paper	15 years					
Enhanced Matte Paper			71 years		76 years	110 years
Matte Paper Heavyweight	18 years	30 years	105 years			Over 150 years
Photo Quality Ink Jet Paper		8 years				In progress
PremierArt™ Matte Scrapbook Photo Paper for Epson			94 years		108 years	In progress
Premium Bright White Paper		5 years	74 years			In progress
EPSON FINE ART PAPERS						
UltraSmooth Fine Art Paper					108 years	
Epson Velvet Fine Art Paper					61 years	
Watercolor Paper Radiant White					92 years	
PremierArt Water-Resistant Canvas for Epson					75 years	
EPSON GLOSSY PAPERS						
ColorLife™ Photo Paper	27 years	36 years				
DURABrite Ink Glossy Photo Paper			55 years			
PictureMate Photo Paper				104 years		
Semigloss Scrapbook Photo Paper	27 years	36 years				

* Lightfastness ratings are based on accelerated testing of prints on specialty media displayed indoors, under glass. Actual print stability will vary according to media, printed image, display conditions, light intensity and atmospheric conditions. Lightfastness ratings do not measure paper deterioration, such as yellowing. Epson does not guarantee the longevity of prints. For maximum print life display all prints under glass or lamination or properly store them. Ratings based on testing conducted by Epson and Wilhelm Imaging Research www.wilhelm-research.com

**Testing currently in progress. Projected time estimated on current progress of test.

As with traditional photos, proper care will maximize display life. For indoor display, Epson recommends that prints be framed under glass or in a protective plastic sleeve to protect the prints from atmospheric contaminants like humidity, cigarette smoke, and high levels of ozone. And, as with all photographs, the prints should be kept out of direct sunlight. For proper storage, Epson recommends that your prints be stored in a photo album (or plastic photo storage box or museum storage box) in acid free, archival sleeves commonly available from most camera shops and other retailers. By taking these steps to protect prints from direct sunlight and contaminants, you can preserve your photos for many years.



#1 of 40. Bridge W0304. East approach. View to west.



#2 of 40. Bridge W0304. East approach. View to west.



#3 of 40. Bridge W0304. East approach. View to west.



#4 of 40. Bridge W0304. North side. View to southwest.



#5 of 40. Bridge W0304. South side. View to northwest.



#6 of 40. Bridge W0304. East end. View to northwest.



#7 of 40. Bridge W0304. South side. View to northwest.



#8 of 40. Bridge W0304. North side. View to northwest.



#9 of 40. Bridge W0304. East portal. View to west.



#10 of 40. Bridge W0304. Sway bracing. View to west.



#11 of 40. Bridge W0304. Sway bracing. View to west.



#12 of 40. Bridge W0304. Sway bracing detail. View to west.



#13 of 40. Bridge W0304. West portal bracing. View to west.



#14 of 40. Bridge W0304. Upper hip vertical pin connection. View to north.



#15 of 40. Bridge W0304. Typical upper vertical. View to northwest.



#16 of 40. Bridge W0304. Upper vertical detail. View to northwest.



#17 of 40. Bridge W0304. Lattice guardrail. View to northwest.



#18 of 40. Bridge W0304. Lattice guardrail. View to north.



#19 of 40. Bridge W0304. South side. View to northeast.



#20 of 40. Bridge W0304. East end. View to northeast.



#21 of 40. Bridge W0304. East pier. View to northeast.



#22 of 40. Bridge W0304. Subdeck and east pier. View to east.



#23 of 40. Bridge W0304. East pier. View to east.



#24 of 40. Bridge W0304. East pier. View to northwest.



#25 of 40. Bridge W0304. West pier. View to northeast.



#26 of 40. Bridge W0304. West pier and subdeck. View to west.



#27 of 40. Bridge W0304. West portal. View to east.



#28 of 40. Bridge W0304. Sway bracing. View to east.



#29 of 40. Bridge W0304. East portal. View to east.



#30 of 40. Bridge W0304. South side. View to northeast.



#31 of 40. Bridge W0304. West end. View to northeast.



#32 of 40. Bridge W0304. West end. View to north.



#33 of 40. Bridge W0304. Typical panel. View to northeast.



#34 of 40. Bridge W0304. Two typical panels. View to north.



#35 of 40. Bridge W0304. Lower pin connection. View to north.



#36 of 40. Bridge W0304. Pin connection detail. View to north.



#37 of 40. Bridge W0304. South side. View to northeast.



#38 of 40. Bridge W0304. East end. View to northeast.



#39 of 40. Bridge W0304. Lower chord. View to northeast.



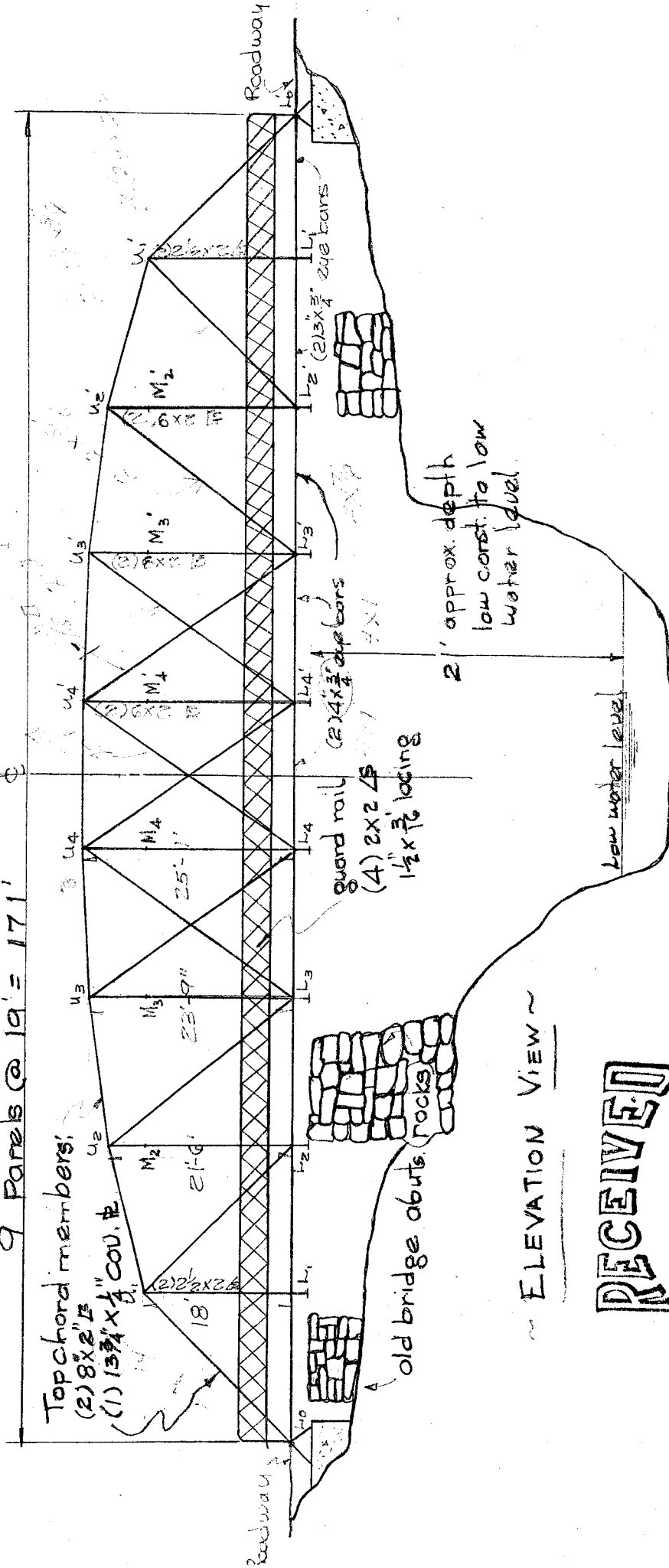
#40 of 40. Bridge W0304. East end. View to northeast.

Note:
Truss sym.
with

9 Panels @ 19' = 171'

Top chord members:

(2) 8" x 2" L₃
(1) 13 3/4" x 1 1/2" cov. L₃



ELEVATION VIEW ~

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Cooper County Rte. V
Pennsylvania Truss
August 15, 1955
Page 1 of 7

South end

Truss sym.
with
φ

15x5 1/2" I-Beams
used thruout for
floor beams

8x2 1/4" C

8x4" I-Beam

8x4" I-Beam

8x2 1/4" C

8x4" I-Beam

8x4" I-Beam

8x2 1/4" C

1 1/2" rounds cross braces

conc.
abut.

19'-0" 19'-0" 19'-0" 19'-0" 19'-0"

~ Floor Plan View ~

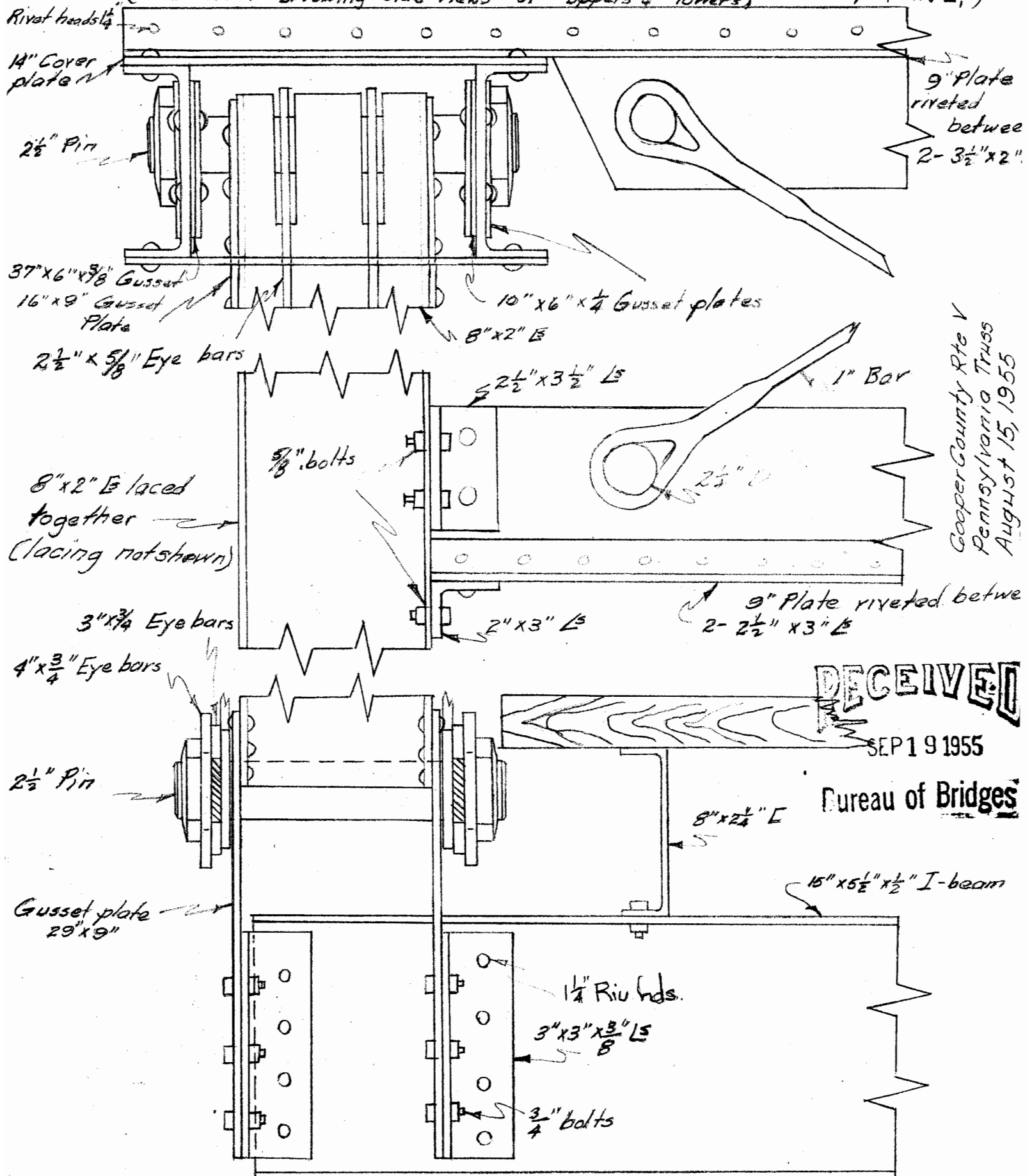
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Cooper County Rte-1
Pennsylvania Truss
August 15, 1955
Page 2 of 7

Typical section, showing upper, intermediate, and lower joints. (U, thru U', M₂ thru M₂', L, thru L,')
(see sheet showing side views of uppers & lowers)



Cooper County Rte V
Pennsylvania Truss
August 15, 1955

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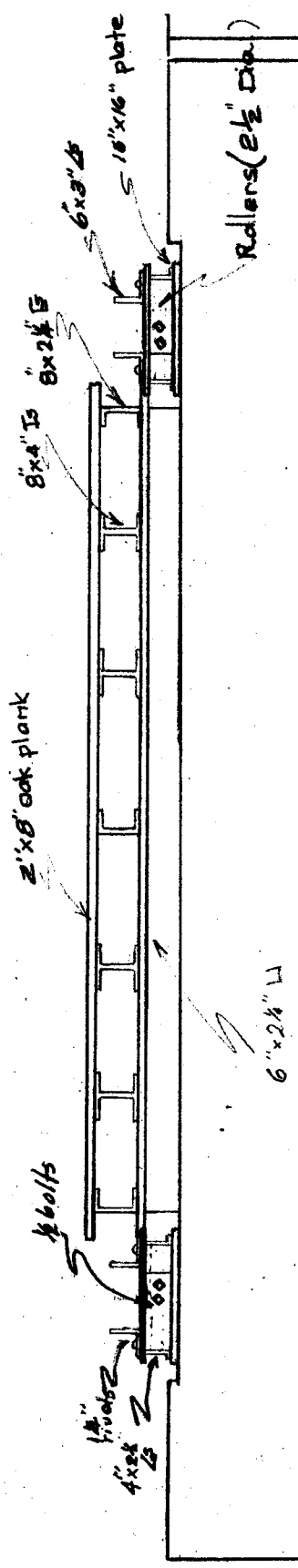
SEP 19 1955

Bureau of Bridges

Route V, Cooper Co.
 Pennsylvania Truss
 15 August, 1955

4/7

13'



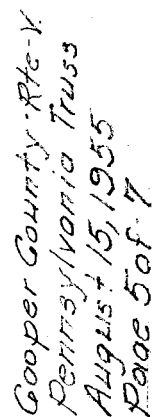
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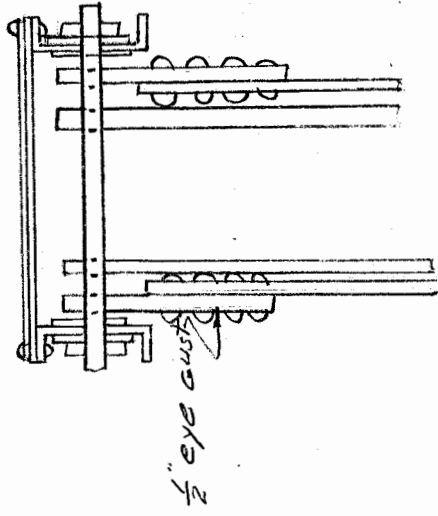
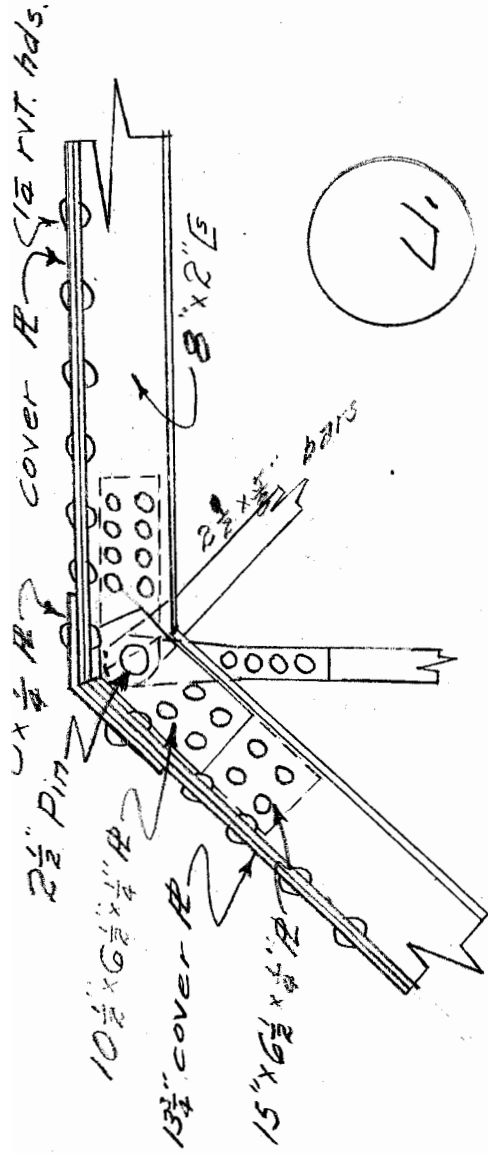
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Cooper County Rte. V
 Pennsylvania Truss
 August 15, 1955
 Enc 4 of 7



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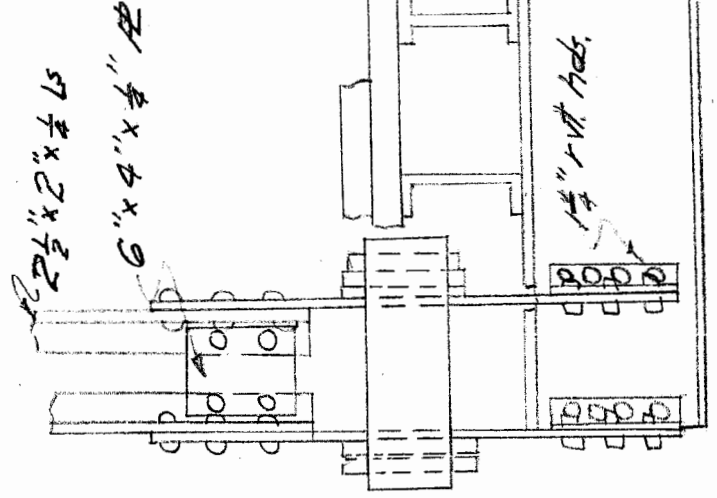
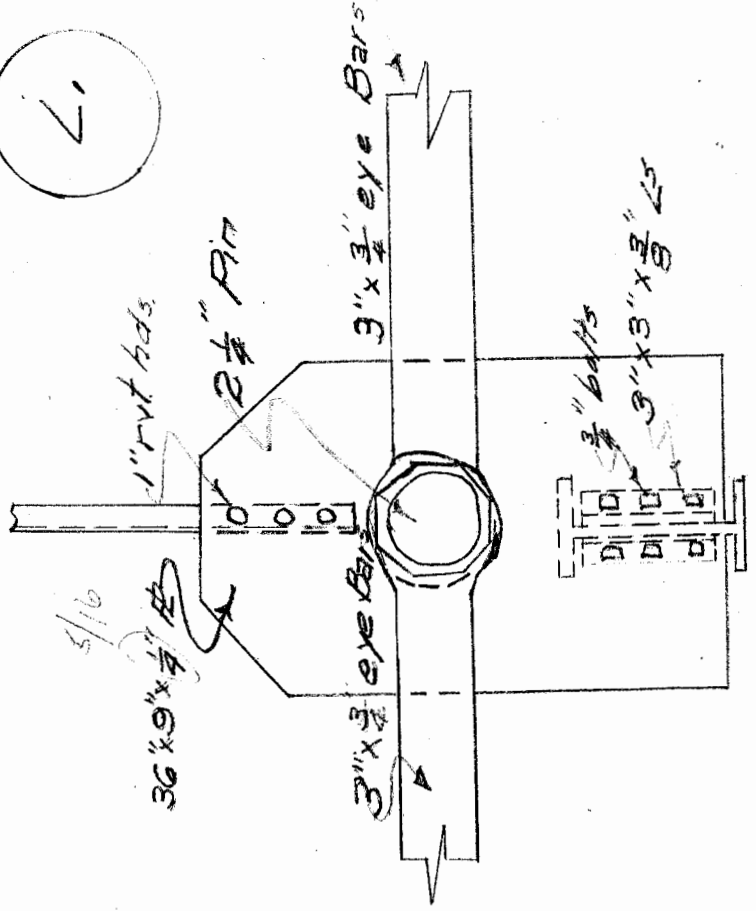


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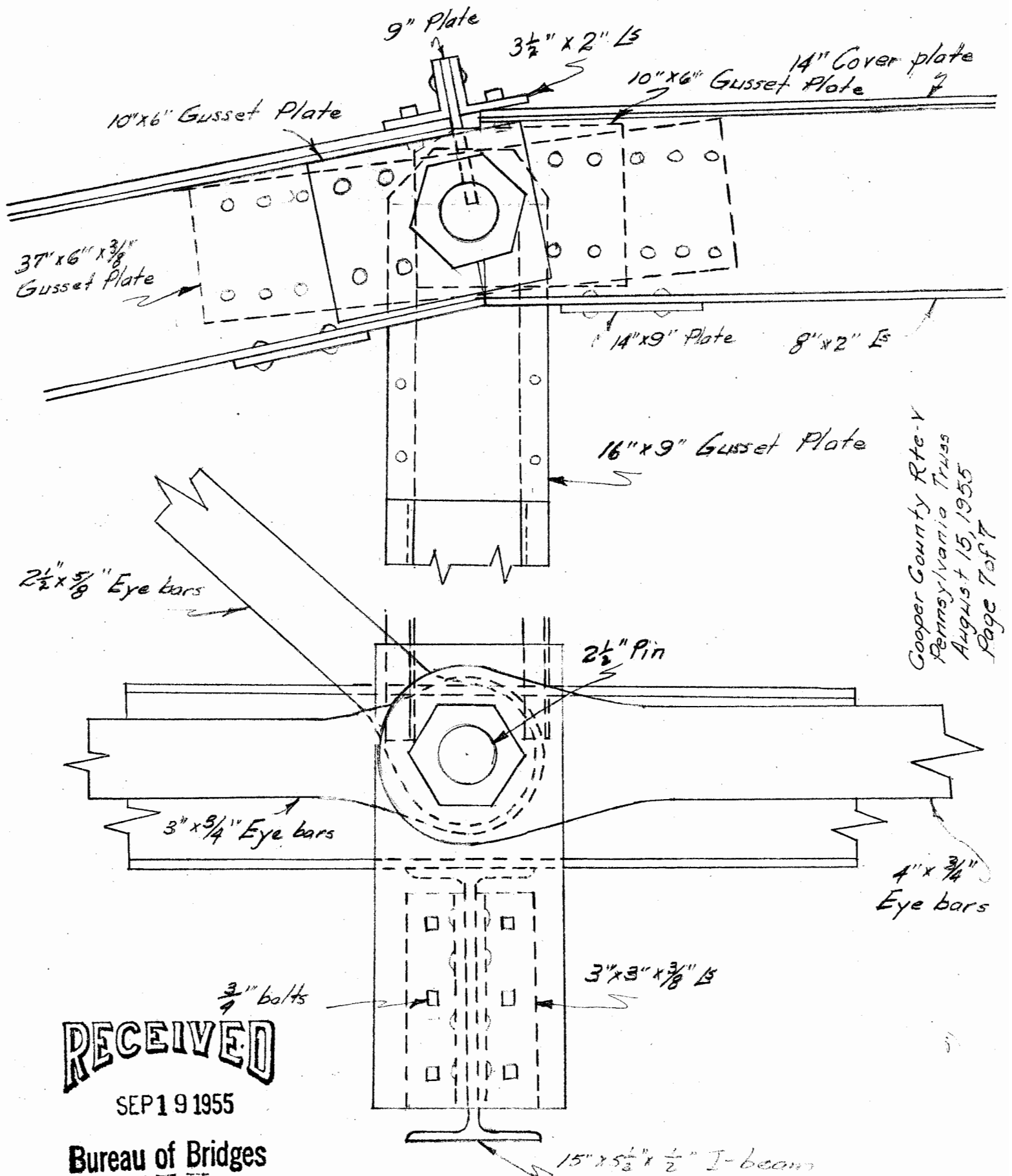
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17



Cooper County Riv
 Pennsylvania Truss
 August 15, 1955
 Date Conf

Side View of typical Upper & lower joints
(U, thru U', & L, thru L')



Cooper County Rte. 1
Pennsylvania Truss
August 15, 1955
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