
Documentation of the Historic Blackwater River Bridge

MoDOT Bridge No. G0785
(Off System Bridge Number 4760019)
Saline County, Old Route 65 (County Road 339)
May 2011



Historic Blackwater River Bridge

MoDOT Bridge No. G0785
Off System No. 4760019

Saline County, Missouri
County Road 339
Historic Alignment of U.S. Route 65

Historical and Photographic Documentation

Prepared by:
Karen L. Daniels, Historian
Randall D. Dawdy, Photographer

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

May 2011

HISTORIC DOCUMENTATION
BRIDGE G0785 (Off System Bridge Number 4760019)

Location: Saline County, County Road 339 over the Blackwater River

Construction Dates: 1924

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

Present Use: Bridge on County Road 339, locally known as Jewel Avenue, to be transferred to Saline County. The road serves as an access road to a quarry.

Significance: Bridge G0785 is significant as the oldest surviving multi-span, rigid-connected, Pratt through truss built on a Missouri highway, and is the eleventh oldest rigid-connected Pratt through truss (the ten older are all single span).¹

Historian: Karen L. Daniels, Historic Preservation Section, Design Division, Missouri Department of Transportation, May 2011.

¹ Dawdy, Randy. "Bridge Evaluation." Manuscript. Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri, 2011.

Introduction

The Missouri Department of Transportation (MoDOT) is turning bridge G0785 over to Saline County, formalizing a process that began in the 1960s when U. S. Highway 65 was realigned and the this alignment became part of a county road. Although Saline County took over maintenance of the bridge and the bridge was assigned an off-system bridge number, 4760019, the transfer was not formalized at that time.

History of Bridge G0785

On February 13, 1924 the Missouri State Highway Commission appropriated funds for improvements to Missouri Route 3 (which would become U. S. Route 65) between Springfield, Sedalia and Trenton. The Commission authorized expenditure of \$460,000 for the improvements.² The Commission further appropriated \$166,448.70 for Federal Aid Project Number 243, which involved improvements to 12.8 miles of road in Saline County.³

By late March the Marshall newspaper was reporting that almost all the right of way necessary for the road between Sedalia and Marshall had been given between Marshall and the Pettis County line. It was reported that the agents responsible for acquiring the last of the right of way had such a hard time traveling on the existing road that they ended up in a wagon pulled by two strong mules. The newspapers informed readers that acquisition was important because the state would not let the contract until it “has complete authority” over the necessary land.⁴ It was speculated that construction would begin simultaneously in Sedalia and Marshall and work would be done toward the middle.⁵

In late March B. H. Piepmeier, Chief Engineer of the State Highway Department, addressed the annual meeting of the Lakes to Gulf Highway Association of Missouri at their annual meeting held in Sedalia. Piepmeier reported that the Marshall-Sedalia road would receive grading work and “be made in as good a condition as possible this summer...but in all probability would not receive [concrete or gravel] surfacing.”⁶ By April the Bridge Division had prepared plans and estimates for the Blackwater River crossing required by the location of Route 3. The division designed a bridge with six 20-

² Missouri State Highway Commission. “Minutes of the State Highway Commission Meeting, Jefferson Hotel, St. Louis, Missouri February 13, 1924.” As held by the Secretary of the Commission, Missouri Department of Transportation, Jefferson City, Missouri, pp. 16-16a.

³ Ibid., p. 30.

⁴ “Last of State Road Land Given.” *The Weekly Democrat-News*. 20 March 1924, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

⁵ Ibid.

⁶ “Piepmeier Talks to L-G Men.” *The Weekly Democrat-News*. 27 March 1924, p. 4. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

foot concrete slabs, two 120-foot steel trusses and one 12-foot concrete slab.⁷ They also designed a concrete beam overflow structure located north of the Blackwater Bridge.⁸

On April 17, 1924 it was reported that all the right of way for the Marshall-Sedalia road had been acquired. The initial estimates for the total cost of the right of way had been \$8000 but total cash outlay would be about \$750 since most of the right of way had been donated.⁹ The commissioners charged with acquiring the right of way requested the road be shifted in the vicinity of the home of A. J. Ussery, recommending if the road was moved away from his house there would be practically no damages to his property.¹⁰ This recommendation was acted on by the State Highway Department.¹¹

By mid-May plans for Route 3, south of Marshall, had been submitted to the Bureau of Public Roads for approval. As soon as the plans were approved the State Highway Department would be able to put the projects out for bid.¹²

There was considerable consultation between the Missouri State Highway Department and the Bureau of Public Roads in the U. S. Department of Agriculture about the concrete piles in the approach span. After considerable consultation between the two agencies the original 17' tall concrete piles called for in the plans were substituted for cast in place concrete bents on timber piles.¹³

The project was put out for bid in June 1924 with bids accepted until July 8. There were two projects, totaling just over five miles between Blackwater Creek and the Pettis County line, much of it on new alignment. The contract had to be separated into two projects because the state road law prohibited projects exceeding five miles. Included in one of the contracts was the bridge across the Blackwater, which would be about fifty

⁷ Missouri State Highway Department. "Bridge over Blackwater Creek." Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

⁸ Missouri State Highway Commission. "Plan and Profile of Proposed State Road. Federal Aid Project 243-B, Saline County." 1924. Microfilm, Design Division, Missouri Department of Transportation, Jefferson City, Missouri.

⁹ "Gets Sedalia Right-of-Way." *The Weekly Democrat-News*, 17 April 1924, p.1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹⁰ "Important Road Meeting Held." *The Weekly Democrat-News*, 17 April 1924, p.1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹¹ Missouri State Highway Commission. "Plan and Profile of Proposed State Road, Federal Aid Project 243-A, Saline County." 1924. Microfilm, Design Division, Missouri Department of Transportation, Jefferson City, Missouri.

¹² "Saline in State Highway System." *The Weekly Democrat-News*, 18 May 1924, p.6. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹³ Correspondence file. Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

feet west of the existing bridge.¹⁴ Contracts for about \$300,000 were let for projects on the Marshall-Sedalia road with about \$100,000 of that sum being spent on the portion of the road in Saline County between Marshall and the Pettis County line.¹⁵

The notice to contractors indicated that project 243-A was 4.876 miles and consisted of grading, constructing culverts and a bridge together with any incidentals. Project 243-B was 0.625 miles and consisted of grading, constructing culverts and bridges, together with any incidentals; this project included the Blackwater Bridge. Combined bids could be proposed for the projects.¹⁶

When contracts were awarded on July 8, 1924 both projects, 243-A and 243-B were awarded to M. E. Gillioz of Monett, Missouri. The combined bid on both projects was \$149,404.¹⁷ Gillioz was a well known and respected builder from southwest Missouri who built many projects for the State Highway Department.¹⁸ The reason Gillioz did not build project 243-B, including the Blackwater Bridge, do not survive in the records of the State Highway Commission or the Bridge Division.

By August 1924 the C. T. Fogle Construction Company of Jefferson City was under contract to construct the bridge over the Blackwater. They started moving equipment into the area in August 1924 and hoped to have the structure completed before the end of the year. By August 7 they were already constructing tool houses and other buildings. A camp for workers would be located at the north end of the bridge.¹⁹

Charles McAtee, the State Highway Department Project Engineer for Saline County, provided the Marshall newspaper, *The Weekly Democrat-News*, with detailed information about the bridge:

The new bridge will be placed about forty feet west of the present bridge.
It will be practically on a straight line with the new fill over the bottom on

¹⁴ "Call for Bids on Road Work." *The Weekly Democrat-News*, 26 June 1924, p. 3. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹⁵ "Much Road Money Spent Here Now." *The Weekly Democrat-News*, 26 June 1924, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹⁶ "State Road Work, Notice to Contractors." *The Weekly Democrat-News*, 26 June 1924, p.4. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

¹⁷ Missouri State Highway Commission. "Minutes of the Meeting of the State Highway Commission, July 10, 1924." As held by the Secretary of the Commission, Missouri Department of Transportation, Jefferson City, Missouri, p. 9.

¹⁸ Austin, David C. "Documentation of the Historic Meramec River Bridge, Bridge No. H-996R1, Franklin County Route 30/47, MoDOT Job No. J6P0709." Historic Preservation Section, Missouri Department of Transportation, Jefferson City, Missouri, p. 9.

¹⁹ "Begin Working on New Bridge." *The Weekly Democrat-News*, 7 August 1924, p.3. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

the north and will largely eliminate the angle to the westward from the south end to the present bridge.

The bridge will have two 120-foot steel spans and on the north end will have an 120-foot concrete pile span. That means that the water clearance will have a length of 360 feet. The bents or concrete piling for the pile span will be set 20 feet apart. All the piers are to be sunk to bed rock. The floor will be of concrete 18 inches thick. The bridge will not be on a level but will elevate toward the south end, having a rise of about 9 feet in the 360-foot length.

At the center of the stream the floor of the new bridge will be 10 feet above the extreme high water mark of Blackwater, which is about the floor of the old bridge. The floor of the new bridge will be 20 ft in width, sufficient for three motor cars to be abreast...

The highway department is taking particular care to avoid floods of Blackwater and at one place in the road across the bottoms an outlet for flood waters is to be made. This outlet will be an 100-foot concrete piling trestle bridge.²⁰

By October 1924 work was progressing rapidly on the bridge with much of the substructure completed. An October 14 bridge inspection report indicated that the work was 15% completed and specified that pedestal 10, pier 9, and bent 6 were complete, and pier 8 poured to above the water line, pier 7 the footings were excavated, bents 2-5 footings were excavated and pilings driven, and bent 1 footings were excavated and ready for pilings.²¹

One week later, L. J. Sverdrup, Bridge Engineer with the State Highway Department inspected the bridge with J. R. Chamberlain. The bridge was reported to be 25% complete. It was reported that the piles for bent 1 were being driven and forms were being constructed for another bent. Forms were being removed from pier 8. Workmanship was reported as good in all cases except pier 8, where construction joints were visible.²²

Although early projections were that all the work on the bridge would be completed by the end of the year that did not happen. The Biennial Report of the State Highway Commission of Missouri for 1924 noted that the estimated completion date for the project (243-B) was September 1, 1925 and that \$16,722.50 had been paid on the contract to

²⁰ Ibid.

²¹ Enslow, V. W. "Inspection Report." Construction file. Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri, dated 14 October 1924.

²² Sverdrup, L. J. "Inspection Report." Construction file. Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri, dated 22 October 1924.

date. The report also indicated that the other portion let at the same time, project 243-A, was also still under construction by M. E. Gillioz and had an estimated completion date of August 5, 1925.²³

In February 1925, while excavating for the footings of pier 7, the C. T. Fogle Construction Company encountered a thick layer of “very hard and cemented course sand and gravel” approximately six feet below the bed of the river, which required picks and bars to loosen. The layer was five feet deep; a similar layer had been encountered when excavating for pier 8. It was decided to excavate this layer for twelve inches and place the footing on it. The footings were enlarged to reduce the soil pressure caused by the bridge.²⁴

While the C. T. Fogle Construction Company was busy constructing the concrete pile span and the piers, the Stupp Brothers Bridge and Iron Company was fabricating the two truss spans. They had begun the fabrication in October 1924 and by December were consulting over changing the way the structure was painted. Apparently the bridge was supposed to receive at least a base coat of lead paint before it left the Stupp Brothers plant in St. Louis, but after discussions with the Missouri Highway Department Bridge Division it was agreed that they could apply linseed oil to the bridge and would apply all three coats of paint in the field—the red lead base coat and two coats of sublime blue lead paint.²⁵

The final payment to the contractor, C. T. Fogle Construction Company, was made in October 1925.²⁶ The Fifth Biennial Report of the State Highway Commission reported that the bridge had been completed on October 5, 1925 and the total cost was \$80,286.05.²⁷

In August 1925 four contracts to complete the concrete paving of highway 3 between Marshall and Sedalia were announced. There were four projects in Saline County, totaling 12.768 miles, and two contracts would be let in Pettis County at the same time.²⁸

²³ Missouri State Highway Commission. *Fourth Biennial Report of the State Highway Commission of Missouri for the Period Ending December First 1924*. Jefferson City, MO: The Hugh Stephens Press, 1924, p. 169.

²⁴ Letter. H. H. Boyd to L. J. Sverdrup. February 11, 1925. Microfiche. Construction files, Bridge G785, Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

²⁵ Letter. B. H. Piepmeier to H. W. Brush, December 29, 1924. Microfiche. Shop files, Bridge G785, Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

²⁶ Missouri State Highway Commission. “Minutes of the Meeting of the State Highway Commission, held at Jefferson City, Missouri, November 10, 1925.” As held by the Secretary of the Commission, Missouri Department of Transportation, Jefferson City, Missouri, p. 23.

²⁷ Missouri State Highway Commission. *Fifth Biennial Report of the Missouri State Highway Commission for the Period Ending December First 1926*. Jefferson City, MO: The Hugh Stephens Press, 1926. p. 215.

²⁸ “To Put Marshall-Sedalia Highway under Contract.” *The Weekly Democrat News*. August 20, 1925, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

Bids were received on August 28, 1925 and numerous bidders bid on each of the contracts. The local newspaper, *The Weekly Democrat-News*, reported that many of the bidders had a clause in their bids that they would only accept the job if they won all of the bids. The paper further reported that the contracts would be awarded to the “lowest and best” bidder, and that it would take several days before awards were made.²⁹

On September 10, 1925 the newspaper reported that the Smith Brothers Company of Dallas, Texas had been awarded the contracts for the paving jobs, totaling 23.064 miles between Odell Avenue in Marshall and just south of the Bothwell Lodge in Pettis County.³⁰

In November 1925 the national system of highway numbering was announced. This system would create a uniform numbering system for interstate highways, and utilized the “nation’s best roads.”³¹ Route 65 would run through Marshall following the Lakes to Gulf highway and what in the Missouri State system was designated highway 3.³²

Paving on the highway began in the spring of 1926 as soon as the weather allowed for proper curing of the concrete. Smith Brothers had laid up supplies in Marshall, Sweet Springs and Hughesville in anticipation of the work.³³

Work progressed rapidly through the summer with much of the roadway south of the Blackwater Creek being open in August.³⁴ In late August the Smith Brothers crew set a new Missouri record for concrete pour in one day, laying 1,500 feet of concrete between 4 a.m. and the end of the day, the previous record of 1,450 had been set earlier in the summer on a different section of highway 65 by a Smith Brothers crew.³⁵

On September 1, 1926 crowds in Marshall watched as the last concrete was poured on the Marshall-Sedalia highway. A crowd had gathered to watch the pour where U. S. Highway

²⁹ “Announce Bids on Highway No. 3 to Sedalia.” *The Weekly Democrat-News*. September 3, 1925, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁰ “Contract on No. 3 is Awarded to Smith Brothers.” *The Weekly Democrat-News*. September 10, 1925, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³¹ “Select Roads to be Federal Through Routes.” *The Weekly Democrat-News*, November 26, 1925, p. 5. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³² Ibid.

³³ “Hope to Start Laying Concrete Early in April.” *The Weekly Democrat-News*, March 25, 1926, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁴ “Open Slab at the Mount Olive Crossroad.” *The Weekly Democrat-News*, August 19, 1926, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁵ “Concrete Crew Seeks to Set New State Record.” *The Weekly Democrat-News*. August 26, 1926, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

65 would intersect with Odell Avenue in Marshall and at 7 p.m. the last concrete pour occurred.³⁶ State Engineers promised to protect the new slab of concrete during the twenty-one days necessary for proper curing, threatening to post guards is necessary to keep drivers off.³⁷

The formal opening of the road was scheduled for Saturday, September 18 and included a luncheon, concert and a parade of cars. The lead car would be allowed to knock down a ribbon opening the road and after the parade all would return to the courthouse for short speeches.³⁸ Over one thousand people attended the opening of the road. Judge Reynolds made the primary remarks declaring “that under the new transportation era hard surface roads had become a necessity” and praising the state for building the roads without a property tax.³⁹

The bridge continued to be part of the state highway system until a new alignment of U. S. Highway 65 was constructed in the area in 1963.⁴⁰ When this area was bypassed the road was given to Saline County and became County Road 339, and was locally known as Jewel Avenue. Although Saline County assumed maintenance of the bridge it was not formally transferred to the county until 2011.⁴¹

Builder and Fabricator

Stupp Brothers Bridge & Iron—Metal trusses

The Stupp Brothers Bridge and Iron Company was formed in December 1890 by George, Peter and Julius Stupp. These three brothers were the sons of John Stupp, who, in 1856, had formed the South St. Louis Iron Works. Stupp manufactured steel and ornamental iron products, fences, gates and building fronts. During the 1880s, George, Peter and Julius Stupp joined the family business, which began to design, fabricate and construct bridges.⁴²

³⁶ “Crowd Watched Completion of US 65 at Odell Avenue.” *The Weekly Democrat-News*, September 2, 1926, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁷ “Will Protect Slab with 24 Hour Guards.” *The Weekly Democrat-News*. September 2, 1926, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁸ “Formal Road Opening Saturday.” *The Weekly Democrat-News*. September 16, 1926, p. 1. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

³⁹ “Road Opening Ceremonies End with Speeches.” *The Weekly Democrat-News*. September 23, 1926, p. 2. Microfilm, State Historical Society of Missouri, Columbia, Missouri.

⁴⁰ Missouri Department of Transportation. “Saline County Project History Map.” Transportation Planning, Missouri Department of Transportation, Jefferson City, Missouri.

⁴¹ Missouri Department of Transportation. “Categorical Exclusion Review.” North Central District, Missouri Department of Transportation, Macon, Missouri.

⁴² “History Overview—Stupp Bros., Inc.” Stupp Brothers, Inc. Downloaded November 8, 2010 from www.stupp.com/history.html.

The Stupp Brothers Bridge and Iron Company formed with the purpose of “building, constructing and repairing iron and steel bridges, and manufacturing, constructing and repairing all kinds of iron and steel structural work.”⁴³ The three brothers were equal partners in the company which was based in St. Louis and was incorporated for a term of fifty years.⁴⁴ In 1939 the company amended their articles of incorporation to have a perpetual existence.⁴⁵

A query run on the Bridgehunter.com web-site identified 57 bridges fabricated by Stupp Brothers Bridge and Iron in Missouri, Arkansas and Illinois. These bridges include major spans such as Grand Glaize Bridge (1930) and Hurricane Deck Bridge (1936) in Camden County, the Missouri River Bridge (1955) at Jefferson City, Missouri and numerous small spans.⁴⁶

The Stupp Brothers Bridge and Iron continues in business as the Stupp Bridge Company division of Stupp Bros., Incorporated.⁴⁷

C. T. Fogle Construction Company—sub structure and approach spans

The C. T. Fogle Engineering and Construction Company was founded in early 1922 by C. T. Fogle, who had previously worked for the American Barytes Corporation in Eldon, Missouri.⁴⁸

Little information is available on the C. T. Fogle Construction Company. There are no records of the company at the Corporations Division of the Missouri Secretary of State’s Office so information from the charter on the principals of the business and purposes is not available.⁴⁹

⁴³ “Articles of Agreement of the Stupp Bros. Bridge & Iron Co.” Stupp Bros. Bridge & Iron Company. Downloaded November 8, 2010 from: <https://www.sos.mo.gov/BusinessEntity/soskb/Filings.asp?5305>.

⁴⁴ Ibid.

⁴⁵ “Certificate of Amendment of Articles of Association of Stupp Bros. Bridge & Iron Co.” Stupp Bros. Bridge & Iron Co. Downloaded November 8, 2010 from: <https://www.sos.mo.gov/BusinessEntity/soskb/Filings.asp?5305>.

⁴⁶ Baughn, James, et. al. Bridgehunter.com. Query on Stupp Brothers Bridge and Iron Company run April 8, 2011. Downloaded from: <http://bridgehunter.com/category/builder/stupp-brothers-bridge-iron-co/>.

⁴⁷ Stupp Bros., Inc. “History Overview.” Downloaded from: <http://www.stupp.com/history.html>, November 8, 2010.

⁴⁸ *Engineering News-Record*. “C. T. Fogle.” In Personal Notes column. 18, no. 16 (1922): 670.

⁴⁹ E-mail. Kelly Raetz to Karen Daniels, April 11, 2011.

The company worked on at least two other projects for the Missouri State Highway Department in the 1920s. These projects included a graded earth project in Madison County and a section of highway 76 in Taney County.⁵⁰

Physical Description of Bridge G0785

Bridge G0785 is two, 120-foot, steel, rigid-connected Pratt through trusses with a concrete slab approach span at the south end and six reinforced concrete slab approach spans at the north end.⁵¹

The northern approach span has a substructure of five reinforced concrete pile bents and a reinforced concrete abutment with wing walls, the bents are spaced twenty feet apart and have shoulders to the bent cap. The approach span superstructure includes a reinforced concrete slab with asphalt roadway between concrete guardrails. The northern approach spans substructure and superstructure were replaced in 1984.⁵²

The substructure for the truss spans are two reinforced concrete dumbbell piers (7 and 8) and a reinforced concrete solid shaft pier (9). Pier 7 is under the north end of the truss span. The footing of the pier was sunk to 337.2 feet above median sea level. The plans originally called for bases 8' 2" square but they were changed to 10' square during construction. The base is 5' deep. The columns are 37' 5.75" tall between the base and the cap and taper from 6' 8" wide at the base to 7' wide at the cap. Connecting the two columns is a wall that extends 18' from the cap down and which is 15" thick. The cap is 2' thick and overhangs the columns by 3 inches. The back wall extends 2' 11.5" above the bridge seat and is 14.5" thick. The bridge seat is 2' 9.5" deep. On top of the seat is an expansion bearing plate.

Pier 8 is located between the two truss spans. The footing of the pier was sunk to 326 feet above median sea level. The footings for the columns are 9.5' square and 5' deep. The columns are 40' 7.875" high between the top of the footings and the bottom of the cap, and taper from 7' 11" wide at the base to 5' wide at the cap. Connecting the two columns is a wall that extends from the cap to the footings and which is 15" thick. The cap is 2' thick and overhangs the columns by 3 inches. On top of the pier are two sets of expansion plates, two centered over each column, the plate toward pier 7 is a fixed plate and the plate toward pier 9 is an expansion plate.

⁵⁰ Missouri State Highway Commission. "Minutes of the Meeting of the State Highway Commission, held on September 11, 1923," p. 15, "Minutes of the Meeting of the State Highway Commission held on December 8, 1931," p. 53. As held by the Secretary of the Commission, Missouri Department of Transportation, Jefferson City, Missouri. These are the results of a query run on the Commission Minutes, since not all the Minutes were made searchable when turned into .pdf format, the results are not presented as a comprehensive list of projects the C. T. Fogle Construction Company did for the State Highway Department.

⁵¹ Fraser, Clayton. "Missouri Historic Bridge Inventory, Blackwater River Bridge." Missouri Highway and Transportation Department, Project NBIH (6). Loveland, CO: Fraserdesign, 1996.

⁵² Saline County Court. "Index to County Proceedings 1942-1991." p. 71. Microfilm, Missouri State Archives, Jefferson City, Missouri.

Pier 9 is located on the southern end of the truss spans. The footing of the pier was sunk to 378.83 feet above median sea level. The footing is 28' wide, 5' 8" thick and 2' deep. The shaft is 8' high and tapers from 4' 2" thick at the base to 3' 6" at the cap. The cap is 2' thick and overhangs the shaft by 3 inches. The bridge seat is 2' 9.5" deep and the back wall rises 1' 3" behind it and is 14" thick. On the bridge seat are two fixed bearing plates.

The two truss spans are identical 120-foot, steel, six-panel, rigid-connected Pratt through trusses. The bottom chords are built up members composed of channels with small plates connecting them on top and bottom. The floor beams are I-beams as are the seven stringers across each truss. The bottom lateral bracing is composed of two angles that cross and are joined with a small plate.

The inclined end posts are built up members of channels with solid plates on top and small bar lacing and small plates on the bottom. The portal bracing is struts made of angles with small bar lacing; the brace pattern is three "V"s formed by angles with short bar lacing joined to the struts with square plates.

The hip vertical and vertical posts are two pairs of back to back angles with short bar lacing between the angles. The diagonals in the two center panels of each truss are two angles joined by small plates; the diagonals in the two outer panels are two heavy angles joined edged-to-edge with short plates.

The top chord is built up members of channels with solid plates on top and short bar lacing on the bottom. The top lateral bracing is two angles that cross and are joined at the center. The top and intermediate struts are formed by back to back angles; the sway bracing is six angles joined to the struts with plates.

The southern approach span is supported by pier 9 and the south abutment. The approach span is a concrete slab.

The bridge deck is an 18" concrete slab which has an asphalt surface. A concrete curb with drains runs the length of the two trusses and the south approach span. A two-tier gas pipe guardrail runs the length of the two trusses and the south approach span. It is attached, by loops, to the verticals, the inclined end posts, and to posts, which are attached to the outermost floor stringers. There are collars where pipe sections join, and round balls where the pipes join the end post on the south end of the bridge. On the north end of the bridge the pipes are joined to the concrete guardrail, the top rail is bent down to meet the concrete.

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 April 5, 2011 using a Canon G10 digital camera.

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.

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 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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**Blackwater River Bridge
MoDOT Bridge No. G0785
(Off System No. 4760019)
Historic Alignment of U. S. Route 65
(County Road 339)
Saline County, Missouri**

Photographer: Randall Dawdy, Missouri Department of Transportation
Date: April 5, 2011
Location of Digital Images: Missouri State Historic Preservation Office

Photo Index:

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- #2 of 31. Bridge G0785. South portal. View to north.
- #3 of 31. Bridge G0785. South portal detail. View to north.
- #4 of 31. Bridge G0785. Sway bracing and lateral bracing. View to north.
- #5 of 31. Bridge G0785. Portal detail and north span. View to north.
- #6 of 31. Bridge G0785. West side. View to northwest.
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- #8 of 31. Bridge G0785. End post and top chord connection. View to west.
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- #11 of 31. Bridge G0785. Southwest guardrail. View to northwest.
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- #14 of 31. Bridge G0785. North portal. View to south.
- #15 of 31. Bridge G0785. North approach. View to south.
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- #17 of 31. Bridge G0785. East side. View to southwest.
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- #27 of 31. Bridge G0785. Pier 8 and sub-deck. View to north.
- #28 of 31. Bridge G0785. East side. View to northwest.
- #29 of 31. Bridge G0785. East side. View to northwest.
- #30 of 31. Bridge G0785. East side. View to northwest.
- #31 of 31. Bridge G0785. East side. View to northwest.

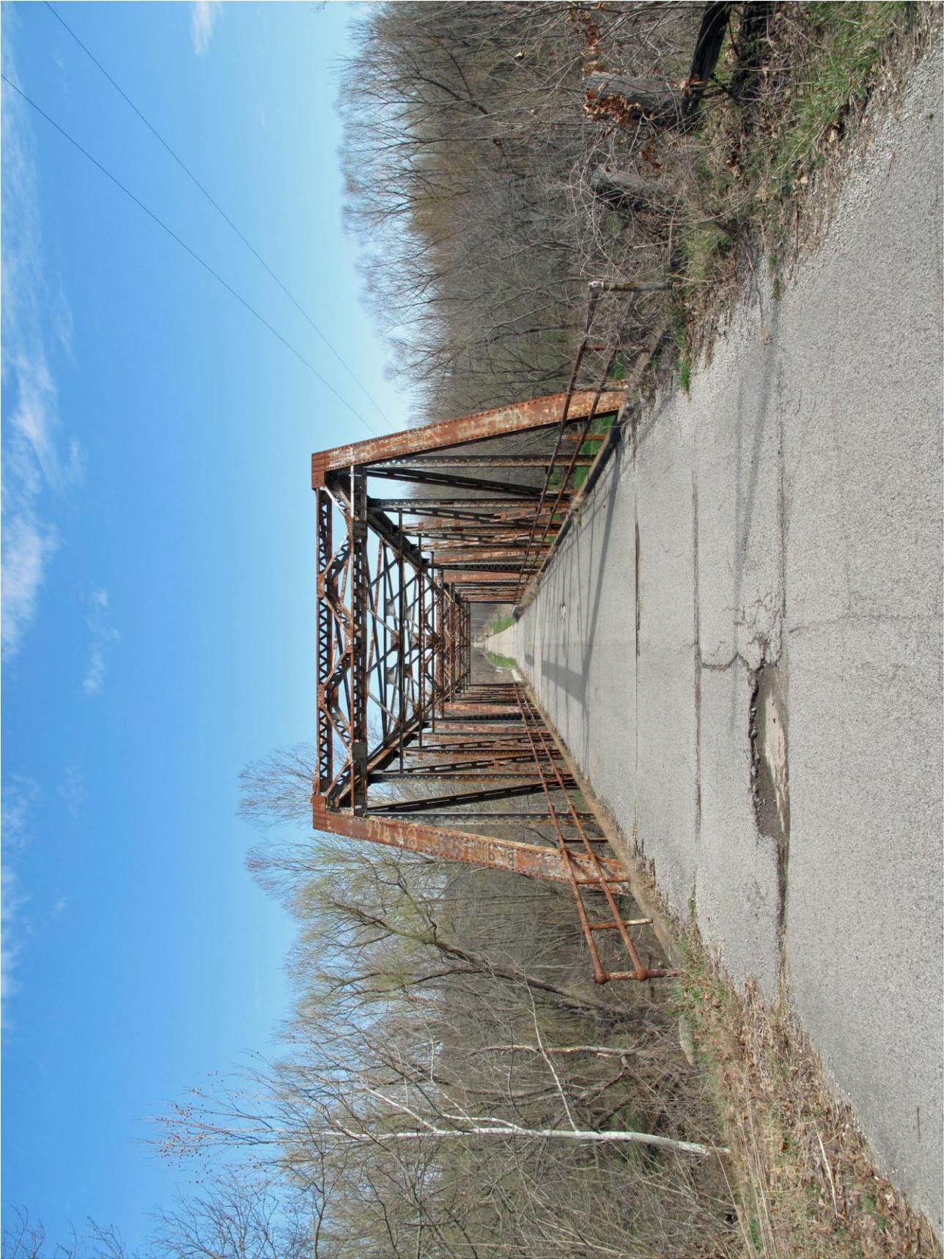
Permanence rating for Epson prints framed under glass

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 31. Bridge G0785. South approach. View to north.



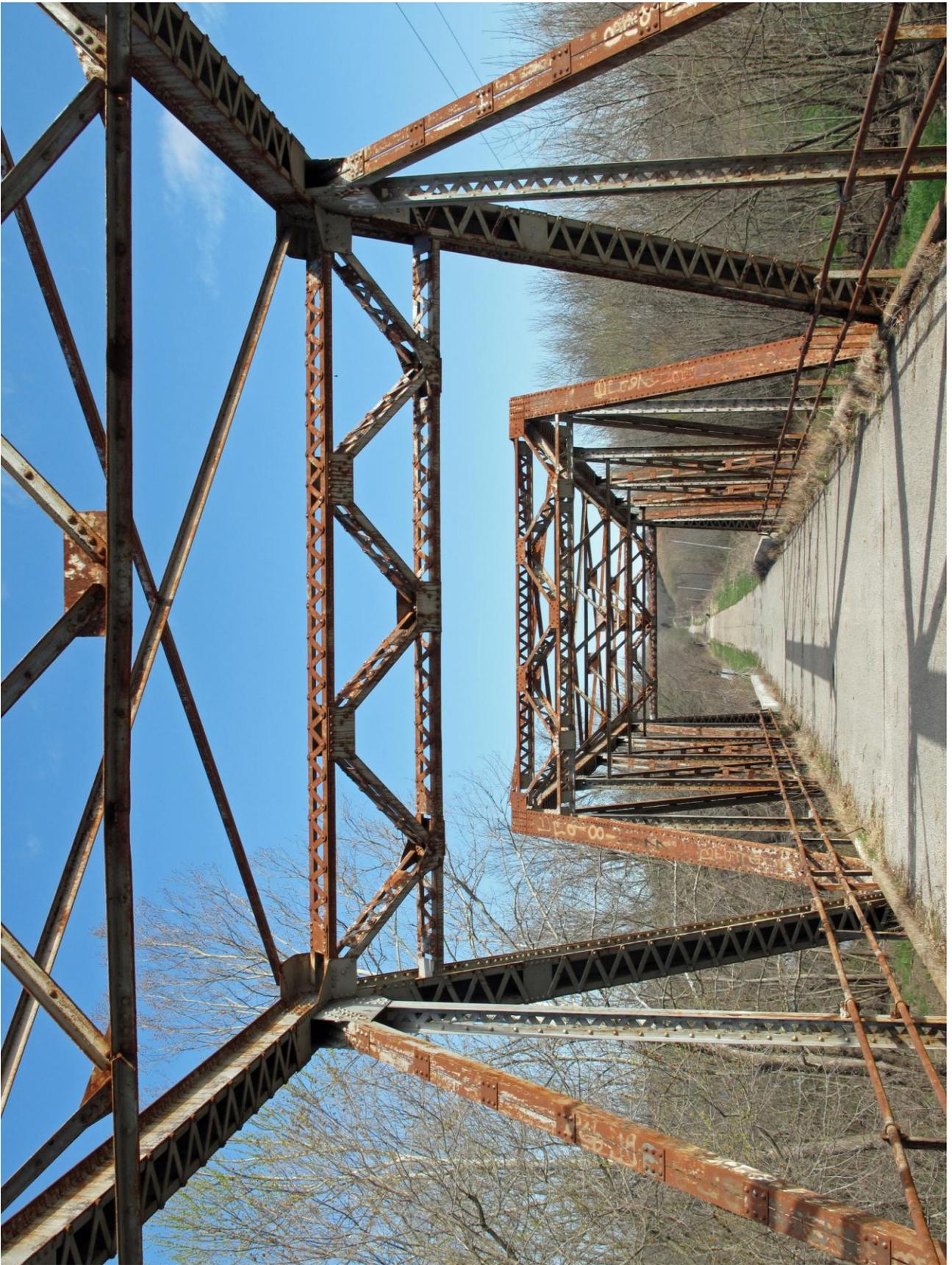
#2 of 31. Bridge G0785. South portal. View to north.



#3 of 31. Bridge G0785. South portal detail. View to north.



#4 of 31. Bridge G0785. Sway bracing and lateral bracing. View to north.



#5 of 31. Bridge G0785. Portal detail and north span. View to north.



#6 of 31. Bridge G0785. West side. View to northwest.



#7 of 31. Bridge G0785. West side detail. View to southwest.



#8 of 31. Bridge G0785. End post and top chord connection. View to west.



#9 of 31. Bridge G0785. Top chord and vertical connection. View to northwest.



#10 of 31. Bridge G0785. Diagonal intersection. View to northwest.



#11 of 31. Bridge G0785. Southwest guardrail. View to northwest.



#12 of 31. Bridge G0785. Guardrail. View to southwest.



#13 of 31. Bridge G0785. Northwest guardrail. View to west.



#14 of 31. Bridge G0785. North portal. View to south.



#15 of 31. Bridge G0785. North approach. View to south.



#16 of 31. Bridge G0785. North approach spans. View to southwest.



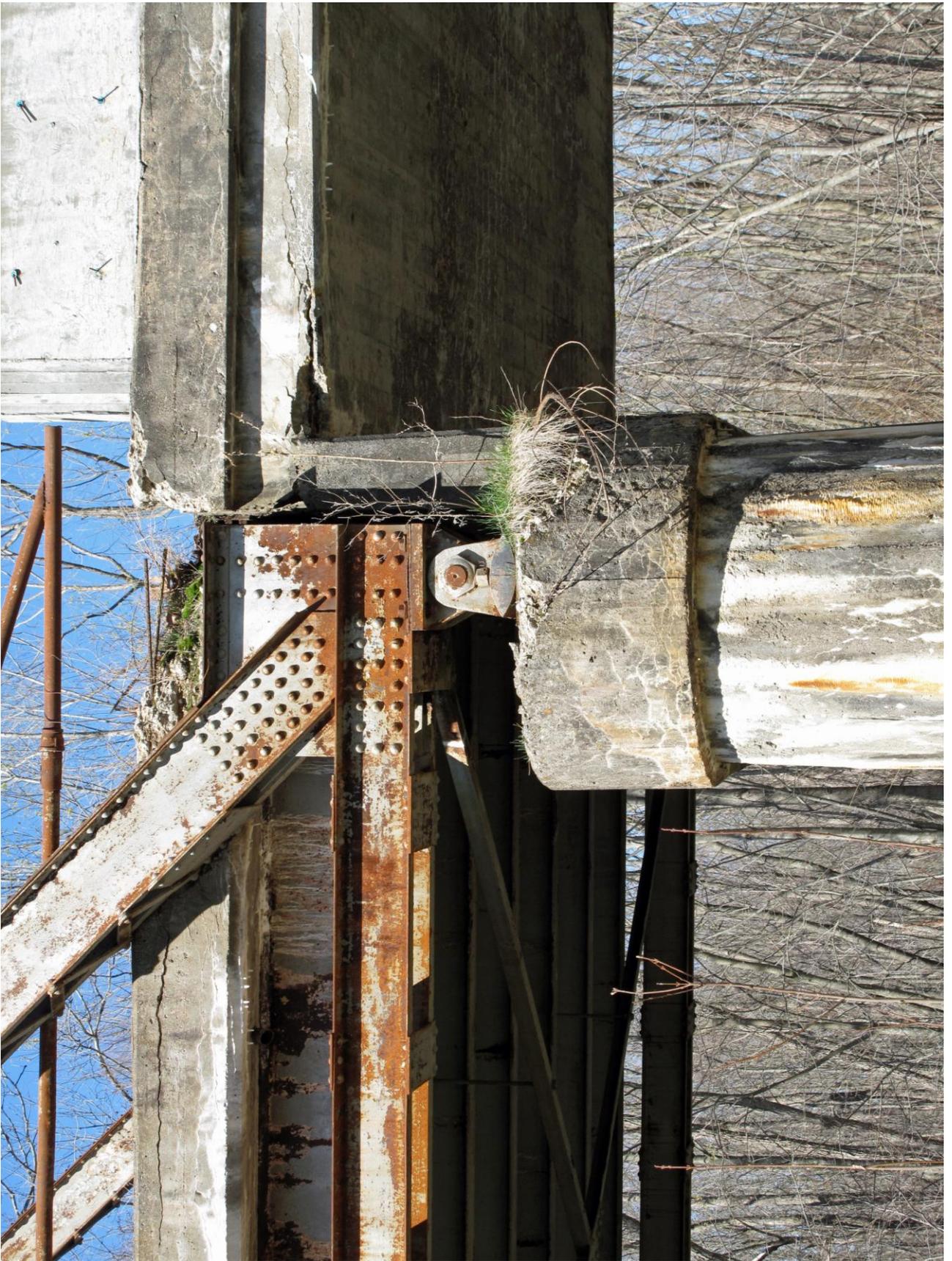
#17 of 31. Bridge G0785. East side. View to southwest.



#18 of 31. Bridge G0785. North approach spans. View to northwest.



#19 of 31. Bridge G0785. Pier 7. View to northwest.



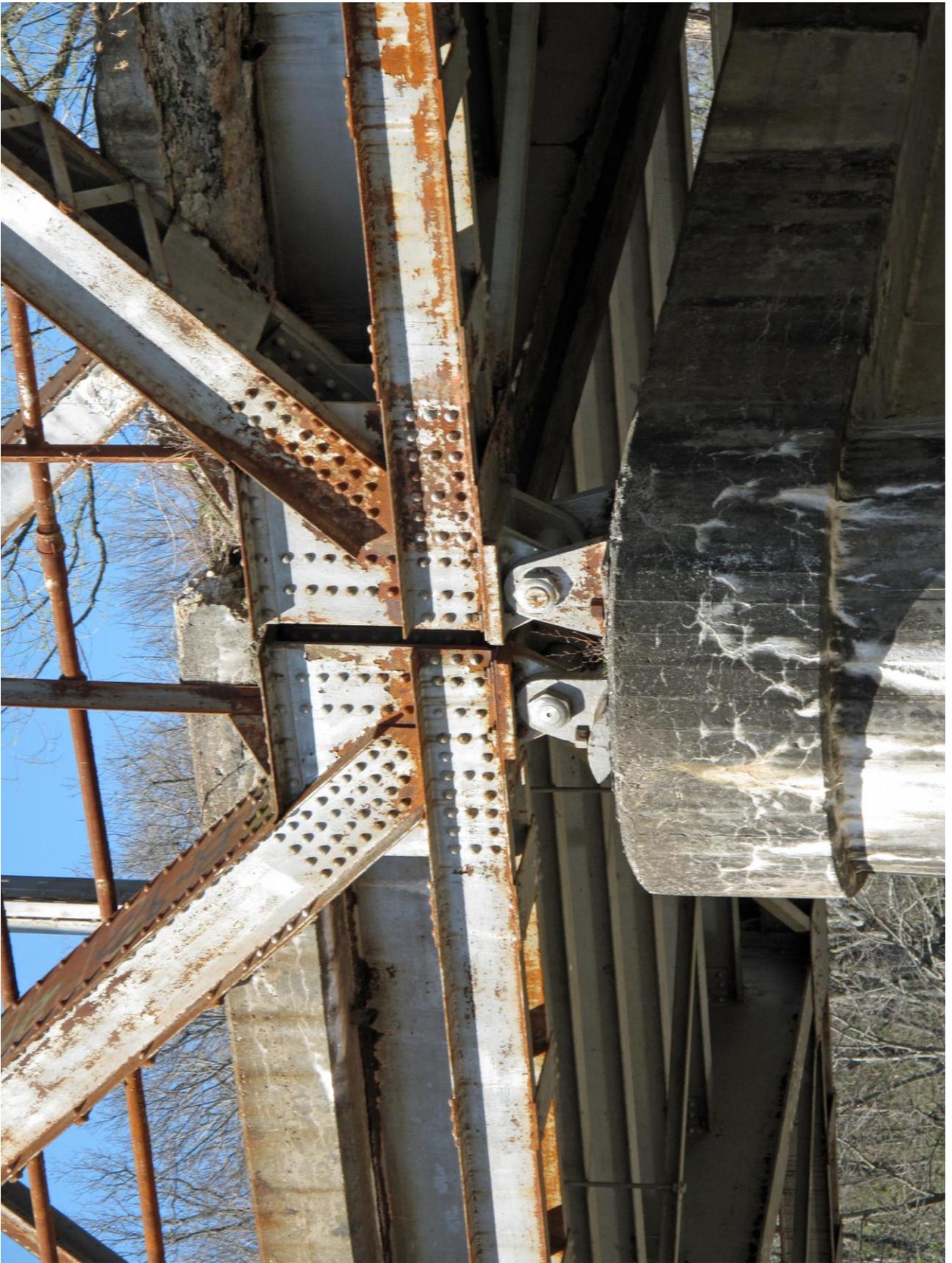
#20 of 31. Bridge G0785. Pier 7 detail. View to west.



#21 of 31. Bridge G0785. Rocker bearing at Pier 7. View to west.



#22 of 31. Bridge G0785. Pier 8. View to southwest.



#23 of 31. Bridge G0785. Detail at Pier 8. View to southwest.



#24 of 31. Bridge G0785. South span. View to southwest.



#25 of 31. Bridge G0785. Pier 9. View to south.



#26 of 31. Bridge G0785. South span sub-deck. View to south.



#27 of 31. Bridge G0785. Pier 8 and sub-deck. View to north.



#28 of 31. Bridge G0785. East side. View to northwest.



#29 of 31. Bridge G0785. East side. View to northwest.



#30 of 31. Bridge G0785. East side. View to northwest.

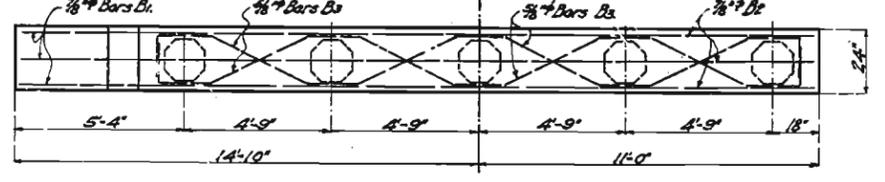
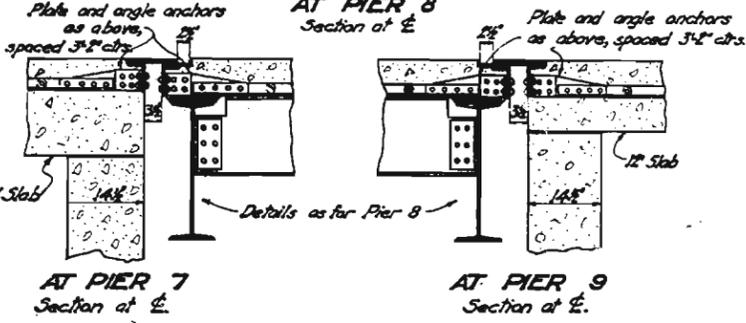
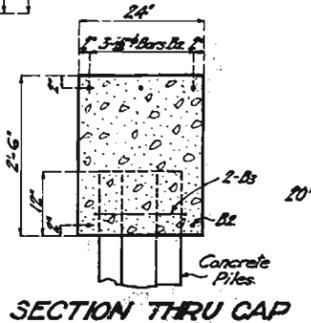
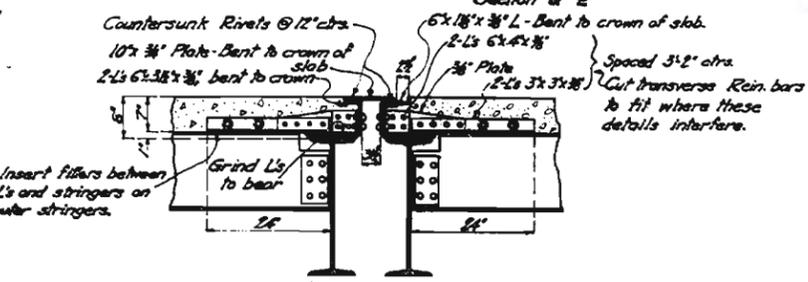
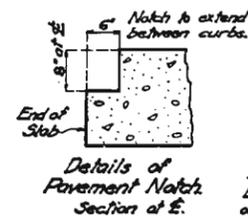
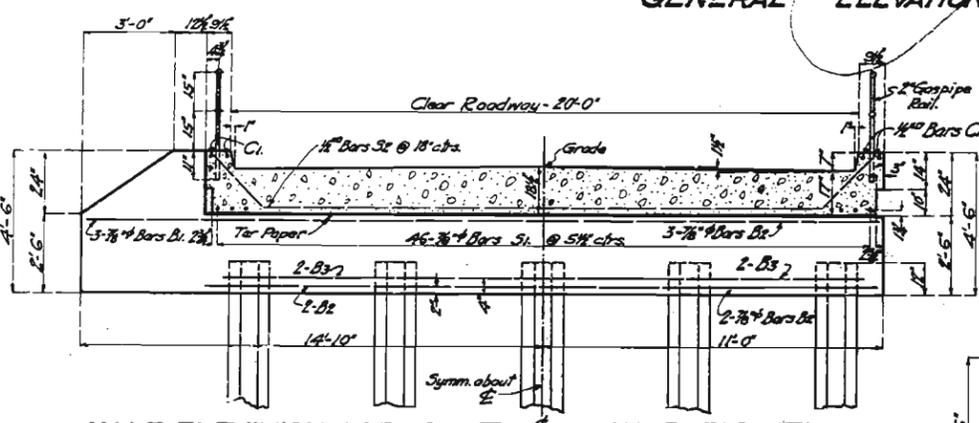
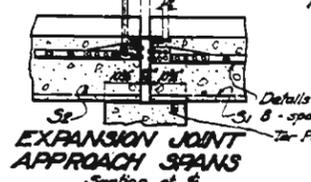
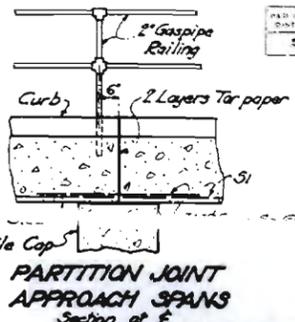
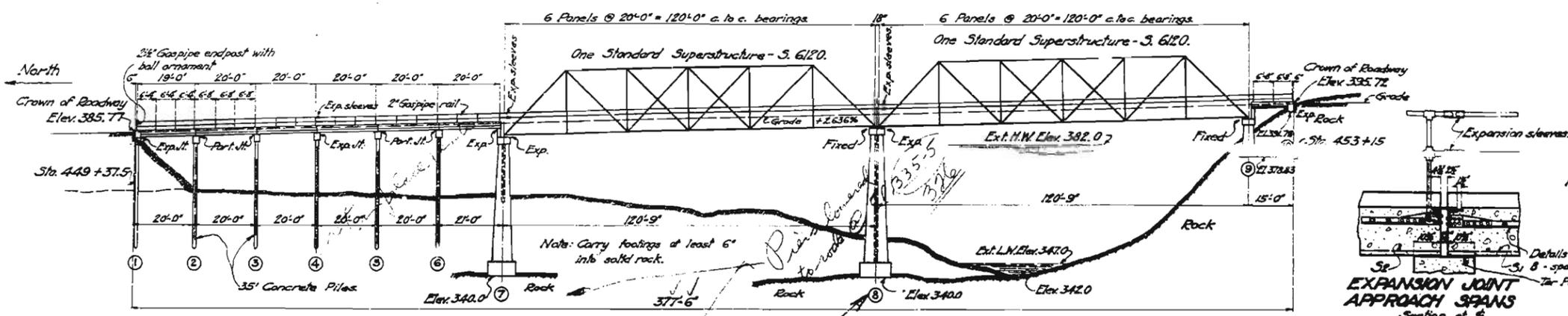


#31 of 31. Bridge G0785. East side. View to northwest.

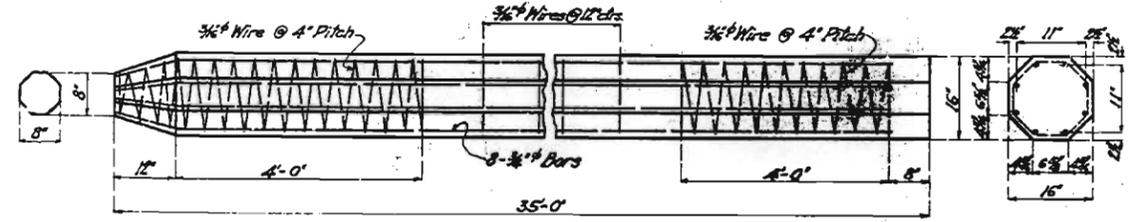
Bridge Plans

**Blackwater River Bridge
MoDOT Bridge No. G0785
(Off System No. 4760019)
Saline County, Missouri**

PROJ. NO.	STAGE	DATE	BY	NO.	TOTAL SHEETS
MO. 243 B		1924		75	



DETAILS OF PILE BENTS - NOS. 1 TO 6



GENERAL NOTES.
 Concrete in Pier No. 9 and footings of Piers 7 & 8 to be 1:3:5 mix. Concrete in floor slabs of steel spans to be 1:2:3 mix. All other concrete to be 1:2:4 mix, except top 1" of slabs to be 1:2:3 mix, cast monolithic with rest of slab; finish to smooth hard surface; maximum size of aggregate 3/4".
 Piles to be driven to sustain a load of 20 tons per pile.
 Exposed edges to be beveled 3/4" where no other bevel is noted.
 Expansion joints in approach spans to consist of 2 layers of tar paper applied on smoothly finished surfaces except as noted.

B.M. - Elev. 377.94 Spike in 24" Sycamore. 30' left Sta. 450+62

No.	Size	Length	Mark	Bending Sketches
3	3/8"	18'-0"	B1	
4	3/8"	18'-0"	B2	
5	3/8"	18'-0"	B3	
6	3/8"	18'-0"	B4	
7	3/8"	18'-0"	B5	
8	3/8"	18'-0"	B6	
9	3/8"	18'-0"	B7	
10	3/8"	18'-0"	B8	
11	3/8"	18'-0"	B9	
12	3/8"	18'-0"	B10	
13	3/8"	18'-0"	B11	
14	3/8"	18'-0"	B12	
15	3/8"	18'-0"	B13	
16	3/8"	18'-0"	B14	
17	3/8"	18'-0"	B15	
18	3/8"	18'-0"	B16	
19	3/8"	18'-0"	B17	
20	3/8"	18'-0"	B18	
21	3/8"	18'-0"	B19	
22	3/8"	18'-0"	B20	
23	3/8"	18'-0"	B21	
24	3/8"	18'-0"	B22	
25	3/8"	18'-0"	B23	
26	3/8"	18'-0"	B24	
27	3/8"	18'-0"	B25	
28	3/8"	18'-0"	B26	
29	3/8"	18'-0"	B27	
30	3/8"	18'-0"	B28	
31	3/8"	18'-0"	B29	
32	3/8"	18'-0"	B30	
33	3/8"	18'-0"	B31	
34	3/8"	18'-0"	B32	
35	3/8"	18'-0"	B33	
36	3/8"	18'-0"	B34	
37	3/8"	18'-0"	B35	
38	3/8"	18'-0"	B36	
39	3/8"	18'-0"	B37	
40	3/8"	18'-0"	B38	
41	3/8"	18'-0"	B39	
42	3/8"	18'-0"	B40	
43	3/8"	18'-0"	B41	
44	3/8"	18'-0"	B42	
45	3/8"	18'-0"	B43	
46	3/8"	18'-0"	B44	
47	3/8"	18'-0"	B45	
48	3/8"	18'-0"	B46	
49	3/8"	18'-0"	B47	
50	3/8"	18'-0"	B48	
51	3/8"	18'-0"	B49	
52	3/8"	18'-0"	B50	
53	3/8"	18'-0"	B51	
54	3/8"	18'-0"	B52	
55	3/8"	18'-0"	B53	
56	3/8"	18'-0"	B54	
57	3/8"	18'-0"	B55	
58	3/8"	18'-0"	B56	
59	3/8"	18'-0"	B57	
60	3/8"	18'-0"	B58	
61	3/8"	18'-0"	B59	
62	3/8"	18'-0"	B60	
63	3/8"	18'-0"	B61	
64	3/8"	18'-0"	B62	
65	3/8"	18'-0"	B63	
66	3/8"	18'-0"	B64	
67	3/8"	18'-0"	B65	
68	3/8"	18'-0"	B66	
69	3/8"	18'-0"	B67	
70	3/8"	18'-0"	B68	
71	3/8"	18'-0"	B69	
72	3/8"	18'-0"	B70	
73	3/8"	18'-0"	B71	
74	3/8"	18'-0"	B72	
75	3/8"	18'-0"	B73	
76	3/8"	18'-0"	B74	
77	3/8"	18'-0"	B75	
78	3/8"	18'-0"	B76	
79	3/8"	18'-0"	B77	
80	3/8"	18'-0"	B78	
81	3/8"	18'-0"	B79	
82	3/8"	18'-0"	B80	
83	3/8"	18'-0"	B81	
84	3/8"	18'-0"	B82	
85	3/8"	18'-0"	B83	
86	3/8"	18'-0"	B84	
87	3/8"	18'-0"	B85	
88	3/8"	18'-0"	B86	
89	3/8"	18'-0"	B87	
90	3/8"	18'-0"	B88	
91	3/8"	18'-0"	B89	
92	3/8"	18'-0"	B90	
93	3/8"	18'-0"	B91	
94	3/8"	18'-0"	B92	
95	3/8"	18'-0"	B93	
96	3/8"	18'-0"	B94	
97	3/8"	18'-0"	B95	
98	3/8"	18'-0"	B96	
99	3/8"	18'-0"	B97	
100	3/8"	18'-0"	B98	
101	3/8"	18'-0"	B99	
102	3/8"	18'-0"	B100	

ESTIMATED QUANTITIES			
Description	Units	Substructure	Superstructure
Excavation	Cu Yds	430	430
Concrete Piles	Lin Ft	1050	1050
Conc. Piles cut off	Lin Ft	90	90
Concrete 1-2-3 mix	Cu Yds	126.0	126.0
Concrete 1-2-4 mix	Cu Yds	242.6	149.5
Concrete 1-3-5 mix	Cu Yds	108.6	108.6
Reinforcing steel	Lbs	38100	48100
Structural steel	Lbs	281560	281560
Sheet Piling	Lbs	3500	3500
Gas Pipe Rail	Lin Ft	1655	1655

MISSOURI STATE HIGHWAY DEPARTMENT
 BRIDGE OVER BLACKWATER CREEK
 STATE ROAD FROM MARSHALL TO SEDALIA.
 ABOUT 10 MILES SOUTH OF MARSHALL
 PROJECT NO. 243 B (P.T.) STA. 449+37.5

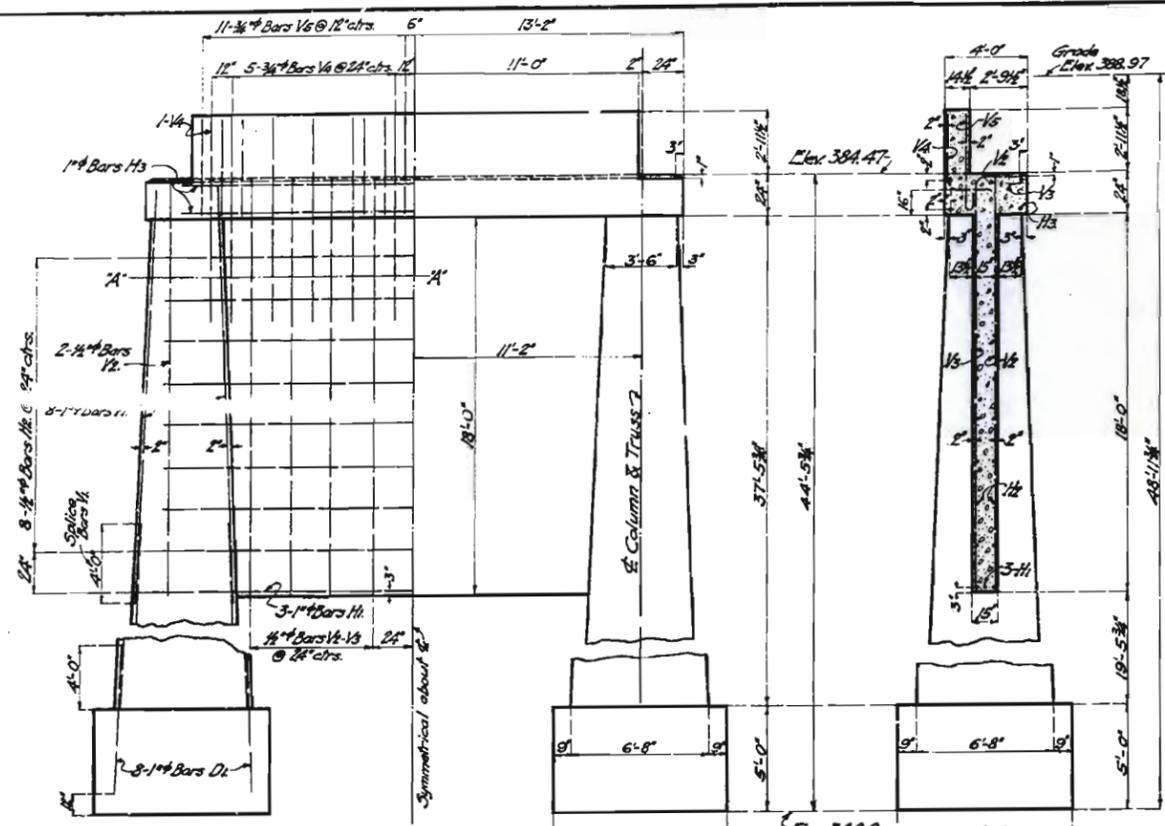
SALINE COUNTY
 SUBMITTED BY: *[Signature]*
 APPROVED BY: *[Signature]*
 BRIDGE ENGINEER
 CHIEF ENGINEER

Std. S.5
 Std. S.15
 G 785

DRAWN APRIL 19 24 BY *[Signature]*
 CHK'D APRIL 19 24 BY *[Signature]*

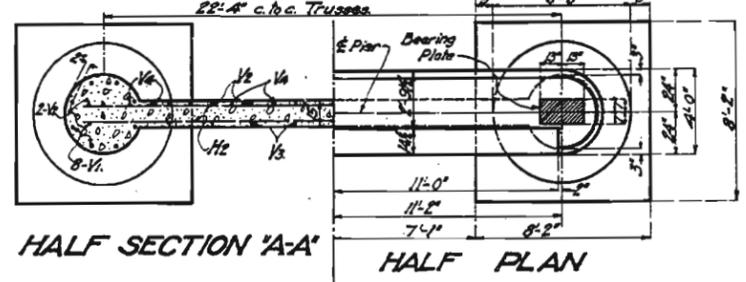
192

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
5	MO.	243 B	15 24	76	



ELEVATION

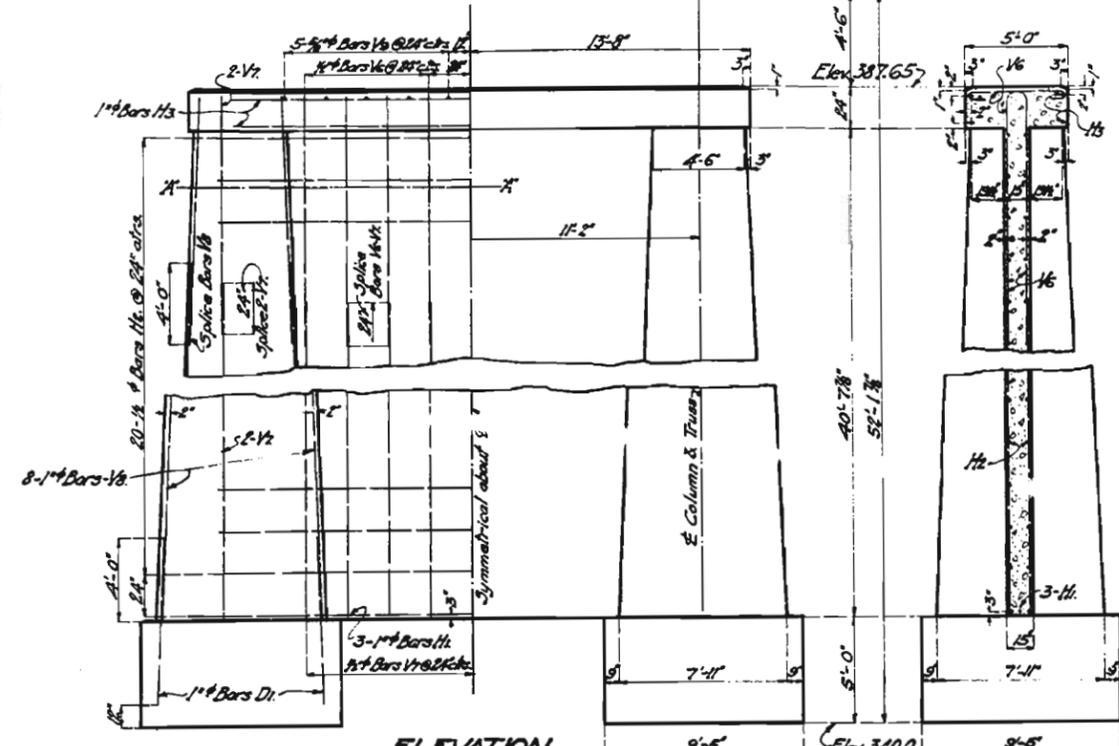
SECTION AT \mathcal{C}



HALF SECTION 'A-A'

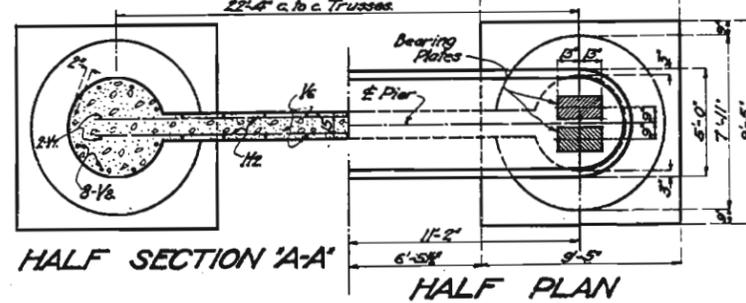
HALF PLAN

DETAILS OF PIER NO. 7



ELEVATION

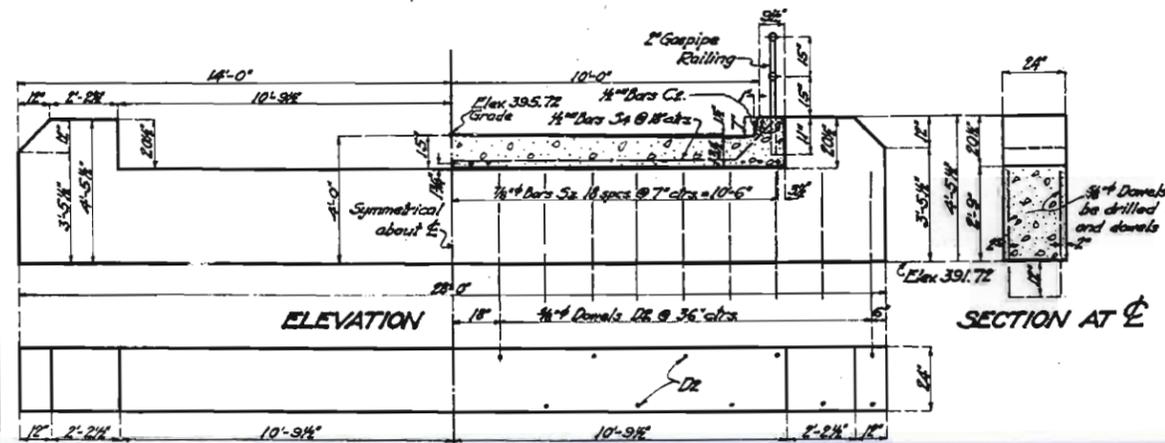
SECTION AT \mathcal{C}



HALF SECTION 'A-A'

HALF PLAN

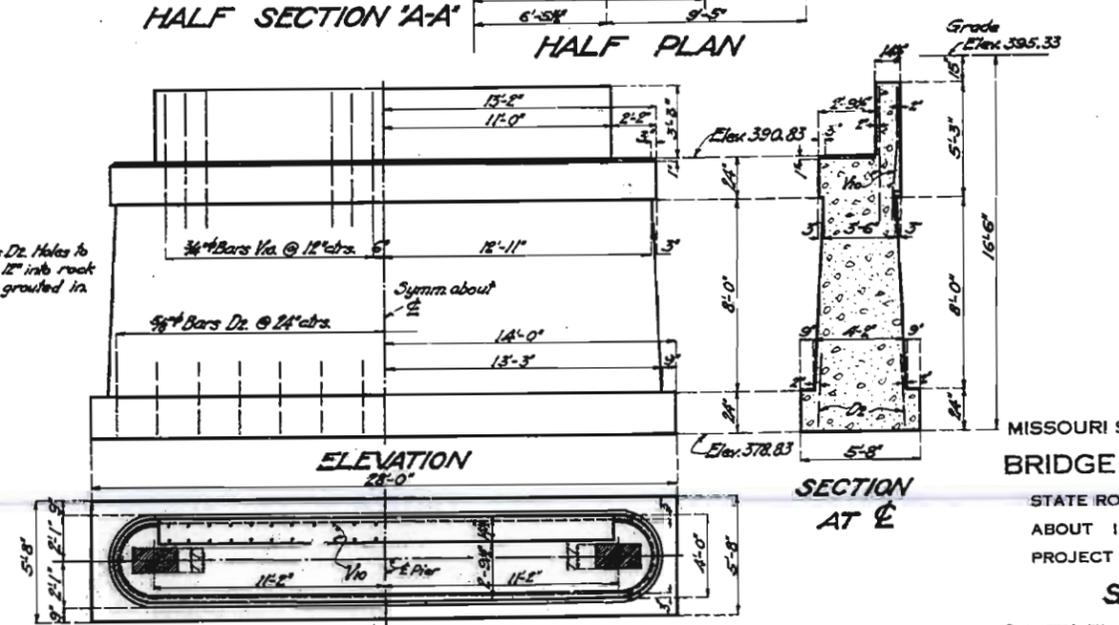
DETAILS OF PIER NO. 8



ELEVATION

SECTION AT \mathcal{C}

PLAN
DETAILS OF SILL FOR 12' SPAN



ELEVATION

SECTION AT \mathcal{C}

PLAN
DETAILS OF PIER NO. 9

MISSOURI STATE HIGHWAY DEPARTMENT
 BRIDGE OVER BLACKWATER CREEK
 STATE ROAD FROM MARSHALL TO SEDALIA,
 ABOUT 10 MILES SOUTH OF MARSHALL.
 PROJECT NO. 243 B STA. 449 + 37.5

SALINE COUNTY

SUBMITTED BY *[Signature]* BRIDGE ENGINEER
 APPROVED BY *[Signature]* CHIEF ENGINEER

Std. S. 5
 Std. S. 15
 G 785

Sheet 2 of 2.

FA

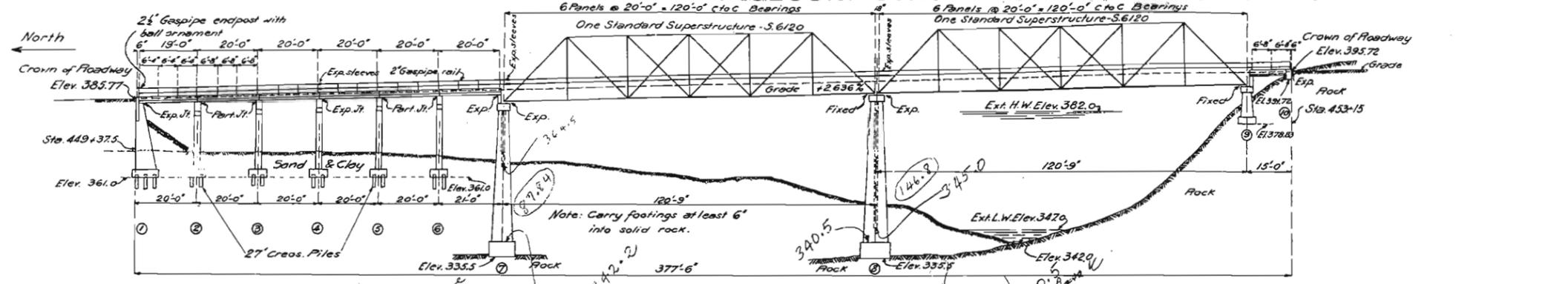
97-4

193

DRAWN April, 1924 BY *[Signature]*
 CHK'D April, 1924 BY *[Signature]*

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	243 B	19		



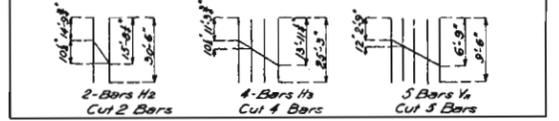
BILL OF REINFORCING STEEL FOR BENTS

No.	Size	Length	Mark	Bending Sketches
52	3/8"	5'-3"	D ₂	
40	3/8"	8'-6"	F ₁	
40	3/8"	8'-6"	F ₂	
25	1"	21'-3"	G ₁	
30	1"	21'-3"	G ₂	
4	3/8"	24'-6"	T ₁	
6	3/8"	16'-3"	H ₄	
2	3/8"	30'-6"	H ₅	
4	3/8"	25'-3"	H ₆	
4	1"	21'-3"	H ₇	
4	3/8"	21'-3"	H ₈	
4	3/8"	21'-3"	H ₉	
8	3/8"	21'-0"	P ₁	
8	3/8"	21'-6"	P ₂	
8	3/8"	22'-0"	P ₃	
8	3/8"	22'-6"	P ₄	
8	3/8"	23'-0"	P ₅	
126	3/8"	8'-0"	P ₆	
5	3/8"	9'-6"	V ₁	
2	3/8"	7'-0"	V ₂	
12	3/8"	20'-6"	V ₃	
11	3/8"	5'-0"	V ₄	

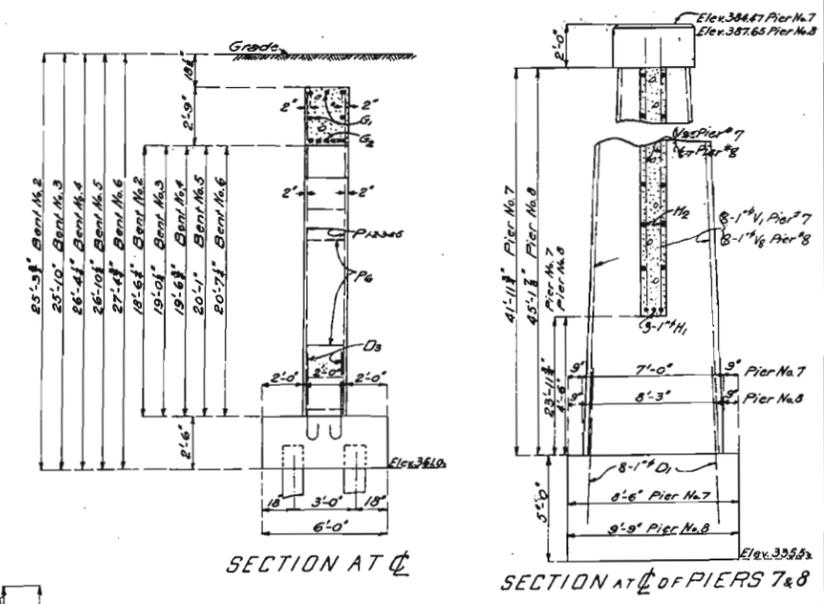
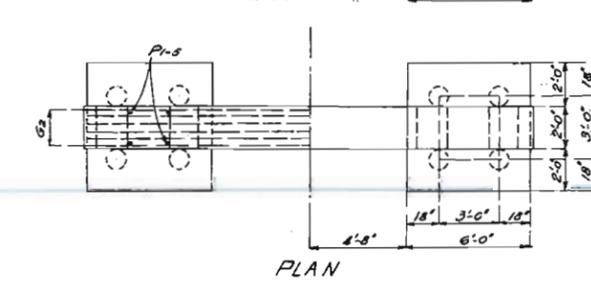
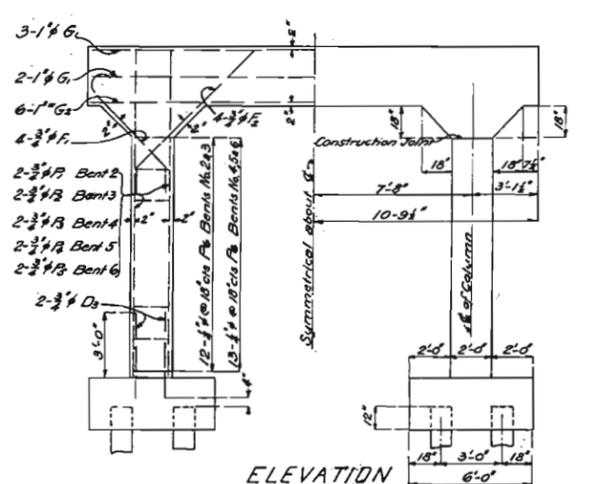
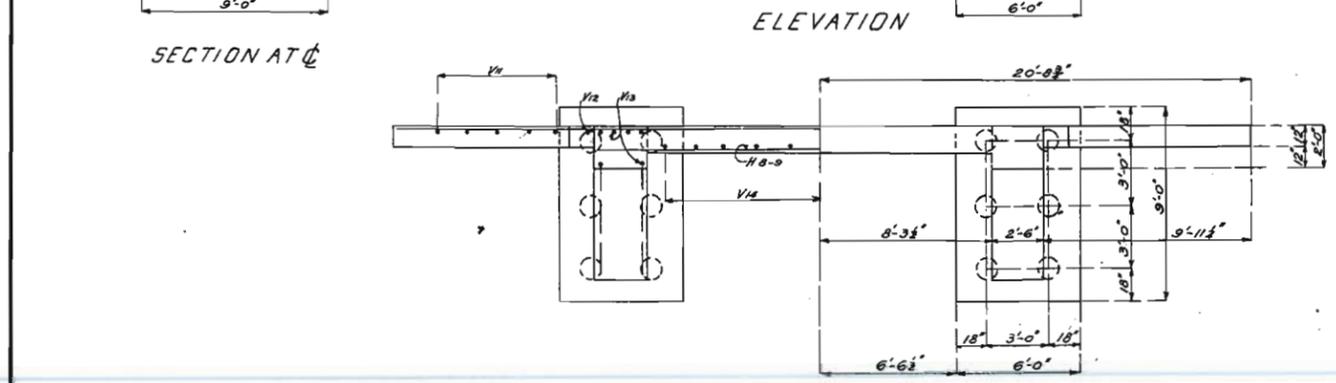
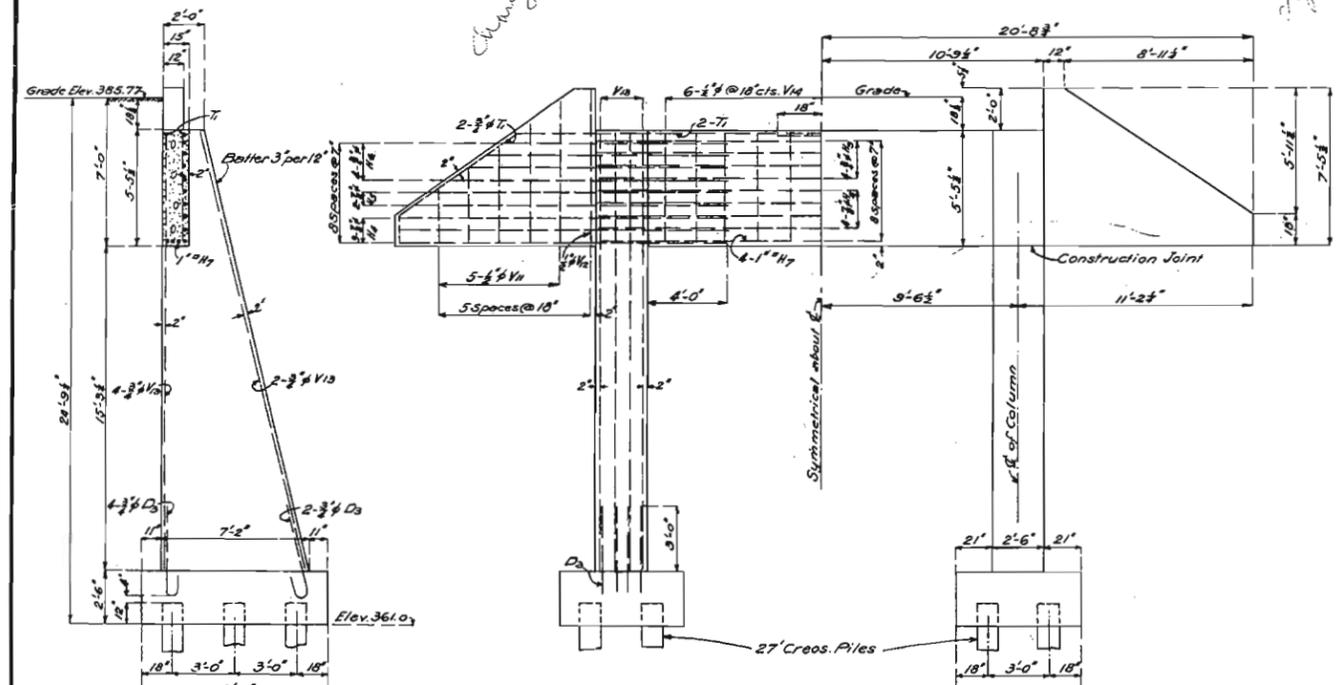
REVISED ESTIMATED QUANTITIES (COM)

	Superstr.	Substr.	Total
Excavation	Cu.Yds.	860	860
Creos. Piles	Lin.Ft.	1404	1404
Creos. Piles - Cut-Offs	Lin.Ft.	156	156
Concrete 1:2:3 mix.	Cu.Yds.	126.0	126.0
Concrete 1:2:4 mix.	Cu.Yds.	149.5	522.9
Concrete 1:3:5 mix.	Cu.Yds.	1132	1132
Reinforcing Steel	Lbs.	38100	55000
Structural Steel	Lbs.	241560	241560
Cast Steel	Lbs.	3500	3500
Gas Pipe Rail	Lin.Ft.	1655	1655

Cutting Diagrams.



General Notes
Concrete in Bents Nos. 1,2,3,4,5,6 to be 1:2:4 mix.
Piles to be driven to rock.
For details not shown on this drawing see G. 785.



BRIDGE OVER BLACKWATER CREEK
STATE ROAD FROM MARSHALL TO SEDALIA
ABOUT 10 MILES SOUTH OF MARSHALL
PROJECT NO. 243 B (REV. 3) STA. 449 + 37.5

SALINE COUNTY
SUBMITTED BY: *[Signature]* BRIDGE ENGINEER
APPROVED BY: *[Signature]* CHIEF ENGINEER

Std. S5
Std. S15
G 785A

F.A. 97-7

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Drawn Aug. 1924 by J.I.
Traced Aug. 1924 by J.A.J.
Ch'kd Aug 1924 by R.A.S.