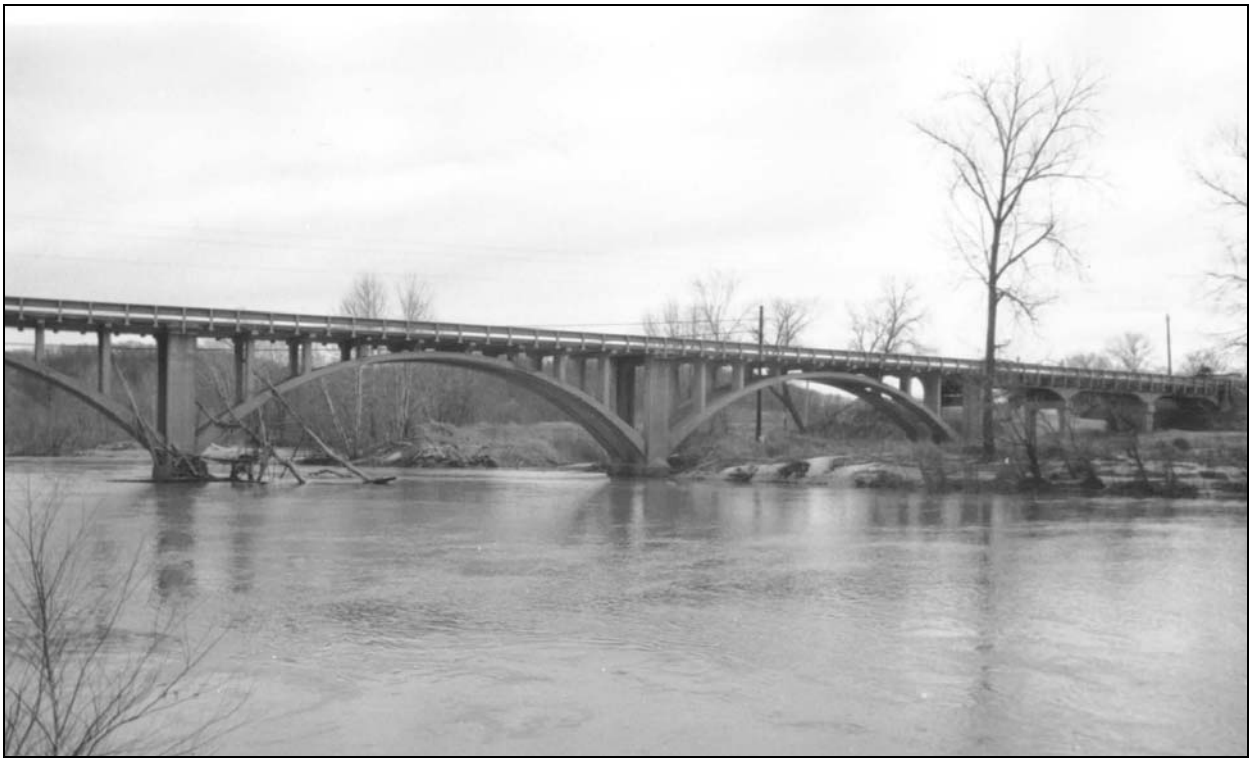
Documentation of the Historic Meramec River Bridge

Bridge No. H-996R1
Franklin County, Route 30/47



MoDOT

U.S. Department of Transportation
Federal Highway Administration

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Meramec River Bridge
Bridge No. H-996R1
Franklin County, Route 30/47
MoDOT Job No. J6P0709

David C. Austin, Historian
January 2000

Historical Narrative

The Meramec River Bridge (Bridge No. H-996R1) spans the Meramec River at Missouri State Route 30 in central Franklin County, approximately 4.5 miles east of St. Clair. Designed by the Missouri State Highway Department and constructed by the M.E. Gillioz Company in 1929-30, the Meramec River Bridge is a five-span, reinforced concrete, two-rib open spandrel arch structure, with seven concrete deck girder approach spans, and reinforced concrete bents and piers. The Meramec River Bridge is distinguished as one of Missouri's longer multiple-span, two-rib open spandrel arch bridges, and is significant for its technological achievements in the large-scale construction of this bridge type during the early years of the Missouri State Highway Department.[1]

The Missouri State Highway Department began improvements to Route 30 in the 1920s as part of its extensive statewide highway construction program. Route 30 would extend southwest from St. Louis through Jefferson County, ending at the junction with U.S. Route 66 at St. Clair. The Meramec River was one of the largest rivers along the route, with a drainage area upstream from the bridge site encompassing some 1,800 square miles. It would require a substantial crossing over its broad floodplain and an adjacent overflow channel.[2]

Sometime in 1927, W. E. Brennan of the highway department conducted an initial survey of the bridge site, briefly noting the conditions at the river channel. Brennan drew up preliminary sketch plans and profiles, and recommended a structure 825' in length. While he gave no advice as to the type of bridge or the number of required spans, his sketches accurately depicted the area to be crossed.[3] In November 1928, E. E. Dittbrenner and Vaughn Enslow conducted another survey of the bridge site and made extensive comments on the river channel and surrounding floodplain both up and downstream. The men noted an apparent high water

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[1]Clayton B. Fraser, "HAER Inventory Data Sheet, Meramec River Bridge, (No. H-996R1)," Missouri Historic Bridge Inventory, 5 Vols., Missouri Department of Transportation, Project No. NBIH (6) (Loveland, Colorado: Fraserdesign, Inc., 1996).

[2]"Bridge Report," 1927, Bridge No. H-996R1 Correspondence File, Bridge Division, Missouri Department of Transportation, Jefferson City. Hereafter cited as Bridge File; Missouri State Highway Commission, "Map of Missouri Showing State Road System, Route Numbers, Road Conditions and Points of Interest," (Jefferson City: Botz-Hugh Stephens Press, 1930).

[3]"Bridge Report," 1927, Bridge File.

velocity during flood episodes, marked by the deposition of coarse gravel and the scouring of a large overflow channel north of the main channel. Their report recommended that the bridge span both channels. To provide an effective waterway, it would be necessary to clear timber along both banks, level out the floodplain underneath the bridge, and remove a gravel bar located just upstream. Their initial proposal called for three 175' arch spans with deck girder approaches.[4]

By late February 1929, the department's Bureau of Bridges under Bridge Engineer N. R. Sack had reconfigured the structure to consist of five 105' arch spans plus seven deck girder approach spans, giving a total bridge length of 825'. During May and June, working with Division No. 6 headquartered in Webster Groves, Sack's office drew up detailed plans of the structure based on earlier standardized drawings of the open spandrel arch type. Having secured authorization from the U.S. Army Corps of Engineers to construct the structure, the department let the bridge contract on November 7, 1929, to M.E. Gillioz of Monett, Missouri. The Gillioz company was familiar with the construction of open spandrel arch bridges, having completed the three-span Pomme de Terre River Bridge in 1928. Project Engineer J. G. Lester of Division No. 6 would oversee the work for the highway department, with general supervision by the Bridge Bureau. As instructed by Sack, during the course of construction and after, Lester would conduct research into the rotation of the concrete piers and the movement of the arch ribs as caused by changes in air temperature.[5]

Work began in the early winter 1930 as M.E. Gillioz began shipping in equipment by rail to St. Clair, then hauling it over a rough dirt road to the construction site. A work force of about twenty men and a construction foreman began clearing the surrounding timber, using a sawmill to produce lumber for the cofferdams and falsework. Gillioz's crews took advantage of the frozen dirt road to haul in carloads of cement, lumber, and reinforcing steel. Other heavy equipment and materials brought in included a Koehring crane equipped with a ¾ cubic-yard clamshell bucket; a 1500-pound drop hammer with swinging leads; about eighty 28' steel sheet piles; and a gravel screening and washing apparatus capable of producing sixty cubic yards of aggregate per day. Having planned to construct the bents and piers from south to north, Gillioz began excavations for Bent 12 on the south river bank, hoping to complete one bent or pier per week. However, January's extreme cold and rises in the river caused delays in the work at the outset.[6]

Following a personal inspection of the bridge site in mid-February, the contractor Maurice Gillioz suggested using quick-setting cement for the arch ribs and possibly for the entire superstructure in order to speed up the work. Bridge Construction Engineer D. C. Wolfe, who made periodic reports on the ongoing construction, saw a possible benefit in quick-setting

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[4]"Preliminary Inspection Report," November 1928, Bridge File.

[5]T. H. Cutler to S. M. Rudder, February 28, 1929; N. R. Sack, Memorandum to Mr. Shook, June 6, 1929; S. M. Rudder to T. H. Cutler, September 28, 1929; Major John G. Gotwals to T. H. Cutler, October 29, 1929; T. H. Cutler to S. M. Rudder, September 27, 1929, Bridge File.

[6]Inspection Report, February 6, 1930, Bridge File.

"Velo" cement for the arch ribs, but suggested that a richer cement mix with less aggregate and more mixing time would cost less and be equally effective. Sack, however, agreed with Gillioz to the use of Velo cement in the arch ribs and made arrangements to procure 565 barrels. Pleased with this decision, Gillioz promised Sack, "You may rest assured that when you furnish us this cement we will do everything possible to get you a good job and complete same at the earliest possible moment . . ."[7]

Sack meanwhile developed a new instrument referred to as a "level bar" with which to measure the minute changes in the positions of the piers and the arch ribs caused by fluctuations in air temperatures. The proposed instrument included a "10 second" air bubble and an "Ames Dial" graduated to .001 of an inch. In February, he sent in a rough sketch of the device to the American Instrument Company of Washington, D.C., inquiring if they could construct one. The company agreed to build the "clinometer" for $106. They remarked that they had made similar devices, but those were held in a vertical position and differed in other details. However, based on their interpretation of Sack's "meagre drawing," the company built the instrument in approximately two months. Sack reported that it worked satisfactorily, although the air bubble was not precisely parallel to the sides of the instrument, requiring that it be held exactly plumb to obtain accurate measurements and comparable readings.[8]

Evidently, Gillioz had quickly reversed his initial strategy as his crew constructed the bents and piers from north to south. By mid-March, they had completed Bents 1 and 2 on the north bank, and had built Bents 3 and 4 up to their tie beams. The cofferdam for Pier 5 was then about halfway done. Progress slowed when frequent rises in the Meramec River flooded the cofferdams while the footings were being poured, and often forced the suspension of the work altogether. The Spring thaw brought further difficulties as the dirt road from St. Clair turned to mud and became nearly impassable, hampering the transfer of supplies and materials. Meanwhile, in March, J. P. Sparks of Kirkwood received the contract to construct approximately five miles of Route 30 leading up to the bridge.[9]

During April, Gillioz doubled his work force to about fifty men and brought in a 5" Jaeger water pump to facilitate construction of the piers. The contractor again revised his plans and built the spans as quickly as the piers were finished instead of putting all the piers in first. Wolfe remarked that this new scheme lessened the value of using the quick-setting cement. By

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[7]M. E. Gillioz to T. H. Cutler, February 12, 1930; D. C. Wolfe, Memorandum to Mr. Sack, February 25, 1930; T. H. Cutler to M. E. Gillioz, March 11, 1930; N. R. Sack, Memorandum to Mr. Reagel, March 11, 1930; M. E. Gillioz to N. R. Sack, March 12, 1930.

[8]T. H. Cutler to American Instrument Company, February 22, 1930; American Instrument Company to Missouri State Highway Department, February 27, 1930; T. H. Cutler to American Instrument Company, March 7, 1930; American Instrument Company to Missouri State Highway Department, April 5, 1930; American Instrument Company to Missouri State Highway Department, May 5, 1930; T. H. Cutler to American Instrument Company, May 12, 1930, Bridge File.

[9]Inspection Report, March 20, 1930, Bridge File.

late April, they had completed the first three north approach spans, finished Piers 5 and 6, and started the excavation for Pier 7. Difficulties in finding enough sand around the construction site required Gillioz to ship in three car loads from outside sources.[10] As they began to construct the first arch span between Piers 5 and 6, Lester reported that the arch stubs or "skewbacks" leading out from the piers at the springing line did not align properly with the intended curvature of the arch ribs. The sections on Pier 6 were therefore removed and replaced, while the stubs at Pier 5--which now supported the approach span to its north--were jack-hammered and rebuilt to conform to the proper lines. A substance called "Irox" bonded the old and new concrete at Pier 5, which they stuccoed on in ½" layers rather than pouring it into forms. While this work was being done, the crew completed Pier 7 and began excavations on Pier 8.[11]

Gillioz added another ten men and additional foremen to his crew during May, bringing his work force to about sixty. The highway department brought in C. C. Oleson from Division No. 2 as the assistant project engineer under Lester. The work now progressed more rapidly as Gillioz's men completed the arch ribs on Spans 5 and 6, began Span 7, and started pouring the spandrel bents on Span 5. Excavations began on Pier 9 in the main channel, with a temporary wood trestle placed across the Meramec River to support the locomotive crane along this part of the job. A significant drop in the river expedited this work at Pier 9, as the water level stayed below the lip of the cofferdam and the minimal seepage was easily pumped out.[12]

Construction of the arch spans obligated Lester and Oleson to pay careful attention to the methods employed, beginning with the proper concrete mix. They constantly sampled the concrete in test beams and test cylinders to ensure its proper strength. The first test beam, having cured for a day, showed a flexural strength of 650 pounds per square inch. Other test beams and cylinders after curing for three days showed flexural strengths about 25 percent that of the compressive strengths, a little higher than average. Each span's two arch ribs had to be poured simultaneously in specified stages: first, two blocks from the springing line outward 12'-6"; next, a 25'-0" section of the arch crown; then, two 17'-6" blocks left and right of the crown; and finally, two 2'-6"-wide key sections at the ends of the latter blocks to close the arch. According to construction plan notes, the keys were not poured until the adjacent blocks had been in place for at least twenty-four hours. The falsework centering under the poured ribs remained in place for at least twenty-one days, and for at least fourteen days after pouring the adjacent span. The centering was then carefully removed, placing the loads along the lengths of the ribs simultaneously. With the arch ribs completed and rubbed smooth, the spandrel bents and deck were poured, ending with the curbs, balustrades and posts.[13]

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[10] Inspection Report, April 25, 1930, Bridge File.

[11] Note from J. Lester, April 26, 1930; Inspection Report, May 7, 1930; Inspection Report, May 20, 1930; D. C. Wolfe, Memorandum to Mr. Sack, June 23, 1930, Bridge File.

[12] Inspection Report, May 20, 1930; A. R. Towse to T. H. Cutler, May 27, 1930, Bridge File.

[13] Inspection Report, May 7, May 20, 1930; Missouri State Highway Department, "Bridge Over Big Meramec River," [bridge plans, eleven sheets], July 1929, Bridge Division, Missouri Department of Transportation, Jefferson City; also see, "Reports of Tests on Concrete Cylinders," in Bridge File.

By the beginning of Summer, Wolfe reported, Gillioz's men had made "excellent progress." They had completed the first seven spans except for the balustrades, and finished the ribs on Spans 8 and 9. Having poured the footings on the last end bent, Bent 13, they began forming its columns. In contrast, the highway contractor J. P. Sparks, working on adjacent sections of Route 30, had so far made "very poor progress," according to Wolfe. Later in July, Sparks began excavating between the main channel and the overflow channel beneath Spans 6 and 7, removing the fill to an elevation of 504 feet, or just below the arches' springing lines. Spark's excavation work extended upstream from the bridge to the mouth of the overflow channel, and downstream approximately 200 feet. Altogether Sparks would need nearly 30,600 cubic yards of fill material to build up the adjacent sections of roadway north and south of the bridge. He would use Gillioz's temporary wood bridge to haul the fill across the Meramec. By late July, with the bridge crew reduced to thirty men, remaining work on the structure included the completion of Bents 11 and 12 and the three south approach spans, which Wolfe estimated would be finished by about August 1. Also, about two-thirds of the balustrades still had to be placed.[14]

On August 26, 1930, the project engineer J. G. Lester reported that the Meramec River Bridge was complete and ready for final inspection. S. M. Rudder, the Division No. 6 Engineer, handled the inspection and approval of the bridge on September 9, although it would not open for traffic until after Sparks completed his highway work. Later in September, Sparks's steam shovel operations underneath the bridge resulted in the accumulation of soot on two of the arch spans which "considerably marred" their appearance. Sack ordered Sparks to remove the soot by either rubbing or sandblasting the concrete. Sparks completed the approaches to the bridge in about mid-December, but his efforts to remove the soot continued into the Spring 1931.[15]

In the meantime, while remaining to oversee the approach work, Lester continued taking measurements of the movement of the piers and the arch ribs using the level bar which Sack had developed earlier, corresponding the measurements to changes in the air temperature. In a preliminary report to Sack in December, Lester wrote that the rise and fall of an arch rib averaged .0115 inches per degree. Readings at the expansion joints showed an average total movement of .004 inches over a temperature range of 84 degrees. Evidently, he was perplexed by the slight rotation of the piers which he called "a pain, also a headache." He reported that the piers showed a tendency to tilt "south" at higher temperatures, then straighten up or move "north" as the temperature fell to around 50 degrees, only to move "south" again as the air turned

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[14] Inspection Report, June 20, July 22, 1930; Missouri State Highway Commission, "Plan and Profile of Proposed State Road," Franklin County, Route 30, Sections 24 and 26, 1929, Plans and Records Office, Design Division, Missouri Department of Transportation, Jefferson City.

[15] S. M. Rudder to T. H. Cutler, August 26, 1930; T. H. Cutler to S. M. Rudder, September 2, 1930; T. H. Cutler to S. M. Rudder, September 25, 1930; T. H. Cutler to S. M. Rudder, September 30, 1930; Note from J. G. Lester, December 18, 1930; S. M. Rudder to T. H. Cutler, March 21, 1931; T. H. Cutler to S. M. Rudder, March 24, 1931; T. H. Cutler to J. P. Sparks, March 25, 1931, Bridge File.

colder. He hoped that additional readings would clarify the problem. Lester compiled a final report on his investigations in March 1932, which was made available to county highway departments for their designs of similar bridges.[16]

In the 1940s, the Meramec River Bridge began carrying additional traffic when Route 47 was extended south from Union, Franklin County, to Route 21 in Washington County.

Physical Description of the Meramec River Bridge

The Meramec River Bridge (Bridge No. H-996R1) spanning the Meramec River at Missouri State Route 30 consists of five 105'-0", reinforced concrete, two rib open spandrel arches carried on reinforced concrete piers, and seven reinforced concrete deck girder approach spans on reinforced concrete bents. The overall bridge length is 825'-0". The original roadway width was 20'-0", with modifications in 1997 widening it to 22'-4".

The two end bents, Bents 1 and 13, are open bents with two front-battered columns, tie beams, and wing walls. Bent 1 is slightly larger. The rectangular bent footings measure 4'-6" wide x 3'-0" high, and are 13'-7" long at Bent 1, and 12'-11" long at Bent 13. The columns, centered 18'-9" apart, are 2'-6" wide and are battered 3" per foot, rising over 33' on Bent 1 and over 30' on Bent 13 to the bridge seats. The columns are connected by 2'-0"-thick tie beams, and are backed by wing walls 7' high and over 43' long.

Bents 2, 3, and 4 on the north end, and Bents 11 and 12 on the south end are open column bents which support the seven deck girder approach spans. Although similarly designed, the bents differ slightly in their total heights. Paired rectangular footings measure 5'-0" x 4'-3" x 3'-0". They support two 3'-0" x 2'-3" columns centered 13'-8" apart, connected with 2'-0"-thick tie beams, and topped by overlapping cap beams 3'-6" x 2'-6" x 17'-2". The bent columns vary in height from over 33' to over 37'.

Piers 5 and 10 anchor either end of the five arch spans with massive footings and buttresses which act as extensions of the adjoining arch ribs. The paired footings are 23'-0" long, 7'-6" wide and 4'-0" high. The buttresses extending from the rear of the footings are 5'-0" wide and angle upward 16' to 20' to the springing line at the 505' elevation, where they are connected by a tie beam 3'-6" thick. The buttresses also tie into vertical columns, or "pilasters," placed at the front of the footings. The fluted pilasters are 5'-0" x 3'-0", and are slightly offset from the centers of the arch ribs. The two columns are connected by two upper tie beams, both 3'-0" thick. Flared crowns at the tops of the pilasters extend outward 3'-0" to support the outer edges of the deck and curbs.

The remaining four Piers 6 through 9 have single rectangular footings placed perpendicular to the bridge centerline. The footings have varying dimensions, but generally are

[16] J. G. Lester to S. M. Rudder, October 17, 1930; T. H. Cutler to S. M. Rudder, October 23, 1930; Note from J. G. Lester, December 18, 1930; N. R. Sack to S. M. Rudder, March 7, 1932; W. G. Fowler to N. R. Sack, June 6, 1932, Bridge File.

about 29’ long x 10’ wide x 4’ high. Pyramidal column bases, battered 1” per foot, range in height from 14”-0” at Pier 9 to 17’-0” at Pier 6, all built up to the 505’ elevation. The bases, which are tied into the arch ribs, support two 5’-0” x 3”-0” fluted pilasters connected by an upper tie beam. Flared crowns extend out 2’-4-½ ”. Piers 6 through 9 also feature cone cutwaters to deflect the current and reduce crosscurrents on the downstream side.

The arch ribs are 5’-0” wide throughout. They have a vertical thickness at the springing line of 2’-10-½” and narrow gradually to a thickness of 1’-6” at the crown. The rise measures 21’-0” from the springing line to the crown extrados. The arches are 100’-0” long as measured from the outside of the piers. The arches support spandrel bents which act as floor beams to support the bridge deck. The spandrel bents are placed symmetrically 10’-0” apart, giving eight bents per span. The spandrel bent columns are 15” thick and 3’-6” wide, with cap beams 22’-0” long. The arch ribs are cross-braced with tie beams at the third and sixth spandrel bents along each span.

The seven approach spans (four at the north end and three at the south end) are continuous deck girder spans. The two end spans are 43’-7” long, and the others are 42’-6” long. The girders are 20” thick at the north spans, and 17” thick at the south spans. Cross beam floor beams 16” thick are spaced approximately 8’-8” apart.

The bridge deck originally was 20’-0” wide between the concrete curbs. The original guardrails above the curbs were 4” x 4” concrete balusters with beveled coping, interrupted at the piers by beveled posts. The curbs and rails were replaced in 1997 with thrie beam rails and steel posts, allowing for a wider roadway deck of 22’-4”. Other modifications include the installation of H-pile support beams placed under the north deck girder spans.

While these alterations have somewhat diminished its physical integrity, the Meramec River Bridge remains significant as one of the state’s longer multiple-span, two-rib open spandrel arch bridges. The Missouri State Highway Department employed open spandrel arch designs beginning in the mid-1920s and continued their use into the early 1930s, although a few additional examples date to the 1940s. The bridge type is largely limited to the south half of the state where natural supplies of sand and gravel found at the bridge sites facilitated concrete construction. Nearly all of the open spandrel arch bridges employ spans longer than 100’. However, the Meramec River Bridge is only one of three structures of five spans. The two others are the Y Bridge in Stone County built in 1927 which has five 100’ spans, and the Branson Bridge in Taney County from 1932 which has five 195’ spans. Construction of the Meramec River Bridge also furthered the understanding of concrete bridge technology with the concurrent study of how air temperatures affect the movement of the piers and arch ribs.[17]

M. E. Gillioz

M. E. Gillioz of Monett, Missouri, constructed the Meramec River Bridge. The company, headed by Maurice Ernest Gillioz, remained active from the early 1900s into the

[17] Fraser, Missouri Historic Bridge Inventory, 1: 139-140.

1960s in the construction of highways, bridges, buildings, and other types of structures throughout Missouri, Kansas, Oklahoma, and Arkansas.

Maurice E. Gillioz was born in rural Phelps County, Missouri, in 1877. His formal education at the local schools ended with the fourth grade, and when a young man he began work as a laborer for the Santa Fe Railroad in Temple, Texas. He soon moved to St. Louis where he worked for the St. Louis and San Francisco Railroad for about twelve years, becoming foreman of a construction crew. In about 1905, this position brought him to Pierce City, a railroad division point in southwest Missouri. Here Gillioz successfully bid for constructing the foundation and floor for St. Mary's Catholic Church. Having secured this contract, he quit his railroad job and started his own business as a general contractor.[18]

Gillioz's business at Pierce City steadily grew from the construction of small jobs such as sidewalks, basements, excavations and culverts, into larger road and bridge projects. In 1914, Gillioz moved his business to Monett, Barry County, Missouri, located a short distance from Pierce City. Monett would remain his home and business headquarters for the next fifty years. In the early 1920s, M.E. Gillioz began to garner numerous road and bridge construction contracts from the Missouri State Highway Department after its launching of an ambitious state-wide road building program, one said to be tailor-made for M.E. Gillioz.[19] The company pioneered the use of heavy mechanized equipment in its handling of scores of road building projects in Missouri and surrounding states, while also continuing to erect many buildings and other structures. During the 1920s, within Monett alone, M.E. Gillioz constructed the Plymouth School (1923), the City Park Casino (1926), the Monett High School (1928), the Monett City Hall (1929), and the Masonic Temple (1929). The company also built the ornate, $300,000 Gillioz Theater in Springfield, Missouri, completed in 1926.[20]

Both Maurice Gillioz and his construction company continued to thrive during the Great Depression. In 1931, Gillioz built his own Gillioz Theater in Monett, which he would continue to own and operate for decades. By 1933, Gillioz was a millionaire. In May 1934, he assumed the liabilities of a failing Monett bank, thereby becoming the sole owner of the Gillioz Bank and Trust Company. Gillioz also came to own numerous other ventures in Monett, including the Gillioz Clothing Store, the Gillioz Motor Company, the Gillioz Implement Company, and the Gillioz Paint and Body Shop. In 1949, he constructed the Gillioz Office Building in Monett; the

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[18]David D. March, *The History of Missouri* (New York: Lewis Historical Publishing Company, 1967), 3: 451; Nellie Alice Mills, *Historic Spots in Old Barry County* (Monett: Free Will Baptist Gem, 1952), 144-146; *Monett Times*, March 6, 1957, April 18, 19, 1962.

[19]During this period, the name M. E. Gillioz referred to both the man and the construction company. In 1943, the company name was registered as the Gillioz Construction Company. Registration of Fictitious Names and Certificates of Authority for Contractors to Work in Missouri, "Gillioz Construction Company," June 1943, Plans and Records Office, Design Division, Missouri Department of Transportation, Jefferson City.

[20]*Monett Times*, April 18, 19, 1962; March, *History*, 451-452.

grand opening drew 2,000 visitors and an honorary parade down Broadway Street. The following year, Monett recognized Gillioz as its "Outstanding Citizen of the Year."[21]

The Gillioz Construction Company meanwhile remained Gillioz's principal enterprise. It maintained a reputation as one of the region's premiere construction contractors. Some of its major projects over the years included the Fifty-first Street (Route 66) Bridge over the Arkansas River in Tulsa, Oklahoma; the $2 million Fellows Lake project near Springfield, Missouri; the Medical Arts Building in Springfield; the Blue Mountain Dam near Boonville, Arkansas; Lock and Dam No. 13 at Fort Smith, Arkansas; and the Kansas City Southwest Trafficway. Countless other projects involved highways, bridges, viaducts, public and business buildings, sewage treatment plants, hospitals, and factories. During the 1950s, the company annually secured contracts totaling $3 to $5 million. Continual business with the Missouri State Highway Department in itself amounted to over $31 million by 1957. Gillioz Construction Company then had over 100 employees and a $228,000 payroll; half of the workers had been with the company for at least ten years, providing a dependable and experienced workforce. Chief among Gillioz's long-term associates in the business were O. E. Parscale, his general superintendent who had joined the company in 1914, and Late Taylor, a construction foreman employed since 1922.[22]

Maurice Gillioz demonstrated a strong loyalty to his adopted community, chiefly by continuing to headquarter his multi-million-dollar firm in Monett. His generous philanthropy and civic contributions earned him the sobriquets "Mr. Monett" and "Monett's First Citizen." Each year Gillioz would sponsor a Christmas party for the local youth at his Gillioz Theater, personally handing out shiny new quarters to each child. He also became known for his elaborate birthday parties attended by scores of his friends, employees, business associates and government officials. Over 300 guests attended his eightieth birthday party in 1957, where Gillioz received an oil portrait, a resolution of congratulations from the Missouri State Senate, and accolades from the Chief Engineer of the Missouri State Highway Department, Rex Whitton. The *Monett Times* also honored him with an eighteen-page newspaper supplement outlining Gillioz's life and achievements. During the celebration, Gillioz announced his plans for the perpetuation after his death of the Gillioz Construction Company, in which he remained actively involved.[23]

Maurice Gillioz died on April 17, 1962, shortly after his eighty-fifth birthday. He was remembered as a "tempestuous and restless community leader who loved his home town."[24] The Gillioz Construction Company continued into the late 1960s, generating an annual business of about $5 million in construction projects.[25]

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[21]Ibid.; *Monett Times*, March 6, 1957, April 18, 1962.

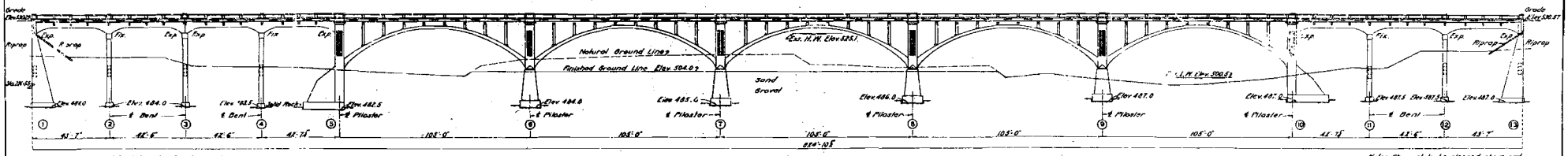
[22]March, *History*, 452; *Monett Times*, March 6, 1957.

[23]March, *History*, 452; *Monett Times*, March 4, 7, 1952, March 6, 11, 1957, April 18, 1962.

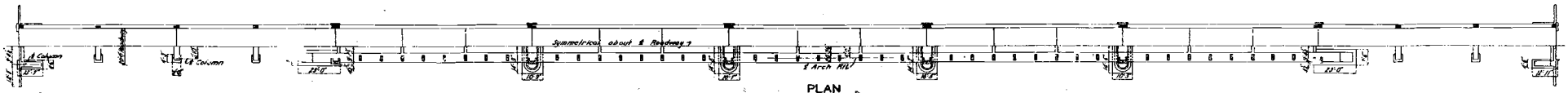
[24]Ibid., April 19, 1962.

[25]March, *History*, 452.

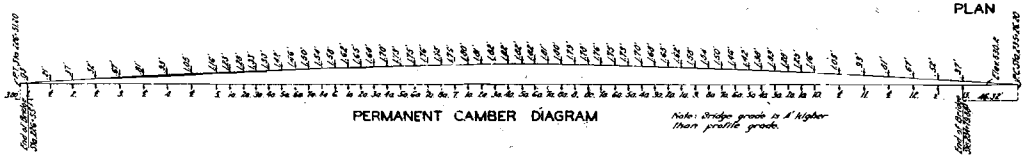
MISSOURI STATE HIGHWAY DEPARTMENT



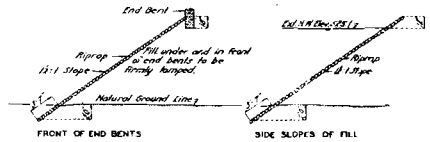
GENERAL ELEVATION



PLAN



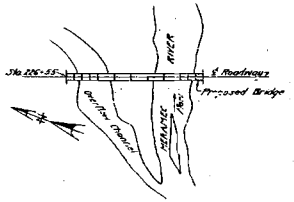
PERMANENT CAMBER DIAGRAM



*Riprap fills all ends of bridge as shown in sketches.

*Approximately 640 cu. yds. of riprap work included in road contract.

RIPRAP SKETCHES



LOCATION SKETCH

GENERAL NOTES ÷

Concrete mixes to be as follows:
All handrail 3:2:3.
All deck girders 1:2:3.
Slab and curbs over arch rings 1:2:3.
All girder bents, piers, pilasters, spandrel walls and arch rings 1:2:4.
Exposed edges shall be beveled ¾" where no other bevel is noted.
Arch rings shall be poured in radial blocks in the order indicated on the detail drawings.
Corresponding sections in both ribs of each span shall be poured at the same time.
Columns over arches shall not be cast until after wedges under ribs have been released.
Provision must be made in the arch centering to bring loading upon all points of the ring as nearly simultaneously as practical in removing centering.
The centering shall not be removed from any span until the concrete over it has been in place at least 21 days, nor until the concrete in the adjacent span has been in place at least 14 days.
Contractor shall submit details of the proposed centering to the State Highway Department before work is begun.
Horizontal expansion joints in concrete superstructures to consist of 3 layers of tar paper applied on smoothly finished surfaces, except as noted.
Where bituminous felt is used to expansion or partition joints in concrete, stitch felt in vertical joints securely to one face of concrete with copper wire.
Entire bridge is to be considered as shown by permanent camber diagram.
Exposed surfaces to be rubbed to a smooth and uniform appearance.
No plastering permitted.
Shoring under deck girders to be removed before handrail is placed.
Two name plates, type "A" as shown on Std. 508, to be furnished and placed by contractor. Cost of name plates to be included in price bid for other items.

INDEX OF SHEETS ÷

Sheet No. 1 General Elevation and Plan
Sheet No. 2 Bill of Reinforcing Steel
Sheet No. 3 Bents 1, 2, 3, 4, 11, 12 and 13
Sheet No. 4 Pilasters 5 and 10
Sheet No. 5 Pilasters 6 and 9
Sheet No. 6 Pilasters 7 and 8
Sheet No. 7 Arch ring and spandrel bents
Sheet No. 8 Arch slab
Sheet No. 9 Bearing Plates and Anchor Bolt Plan
Sheet No. 10 Spans (7)(8)(9)(10)(5)
Sheet No. 11 Spans (1)(2)(3)(4)(11-12)(12-13)

ESTIMATED QUANTITIES

Item	Concrete Cu. Yds. 1:2:3 mix.	1:2:3 mix.	1:2:4 mix.
Handrail	80.6		
Deck Girder Spans (1)(2)(3)(4)(7)(8)(9)(10)(11)(12)(13)		410.2	
Slab and Curbs on Arch Spans		397.0	
Arch Rings			359.0
Piers & Pilasters above Elev. 510.33			139.7
Piers below Elev. 510.33			365.0
Spandrel Bents			116.4
Girder Bents 1, 2, 3, 4, 11, 12 & 13			296.6
Totals	80.6	807.2	1876.7
Fabricated Structural Steel Bridge Pts. - Lbs.			4460
Reinforcing Steel - lbs.			369050
Excavation - Cu. Yds.			3100

B.M. Elev. 509.11 Three nails in 24" Sycamore 30' Lt. of Sta. 229+00.

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL
ABOUT 4.5 MILES EAST OF ST. CLAIR
PROJECT NO. R30-525 STA. 226+55

FRANKLIN COUNTY

FINISHED
DRAWN BY M. K. Hawkins
CHECKED BY H. A. Collins

STD. 58.8
H996

Sheet No. 1 of 11

DRAWN MAY 1929 BY W.S.M.
TRACED MAY 1929 BY W.S.M.
CHECKED MAY 1929 BY H.H.M.

24

29-1

646

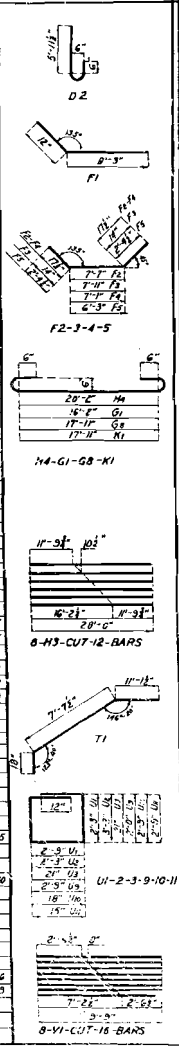
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	R30-525	19		

MISSOURI STATE HIGHWAY DEPARTMENT

COMPLETE BILL OF REINFORCING STEEL

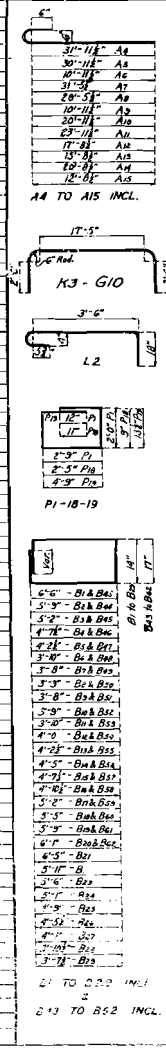
No.	Size	Length	Mark	Location
End Bents No. 1 & 13				
24	1"ⓢ	7'-3"	D2	Footings
24	½"ⓢ	3'-3"	F1	Haunches
24	1"ⓢ	10'-6"	F2	"
12	1"ⓢ	20'-9"	G4	Tie Beams
16	½"ⓢ	17'-9"	H2	Wings
12	½"ⓢ	28'-0"	H3	"
28	½"ⓢ	22'-9"	H4	Beams
8	½"ⓢ	28'-9"	H5	Front Wall
12	½"ⓢ	20'-9"	H6	" "
12	½"ⓢ	20'-3"	T1	Wings
6	½"ⓢ	28'-9"	T6	Front Wall
46	½"ⓢ	11'-0"	U1	Beams
32	½"ⓢ	8'-0"	U3	Tie Beam
16	½"ⓢ	9'-9"	V1	Wings
4	½"ⓢ	7'-6"	V2	"
4	½"ⓢ	5'-9"	V3	Wall
24	½"ⓢ	8'-3"	V4	"
24	1"ⓢ	22'-6"	V5	Columns
8	1"ⓢ	23'-6"	V6	Col. Bent No. 1
8	1"ⓢ	20'-6"	V7	Col. Bent No. 13
4	1"ⓢ	26'-6"	V8	Col. Bent No. 1
4	1"ⓢ	21'-9"	V9	Col. Bent No. 13
Int. Bents No. 2, 3, 4, 11 & 12				
80	1"ⓢ	7'-3"	D2	Footings
40	1"ⓢ	10'-5"	F3	Haunches
60	1"ⓢ	10'-0"	F4	"
30	1"ⓢ	18'-9"	G1	Beams
10	1"ⓢ	16'-9"	G2	"
30	1"ⓢ	15'-6"	G3	Tie Beams
222	½"ⓢ	10'-6"	P1	Columns
16	1"ⓢ	16'-0"	P2	Col. Pier No. 2
16	1"ⓢ	16'-3"	P3	Col. Pier No. 3
16	1"ⓢ	17'-9"	P4	" " " 4
16	1"ⓢ	13'-3"	P11	" " " 11
16	1"ⓢ	15'-0"	P12	" " " 12
80	1"ⓢ	24'-3"	P26	Column
80	½"ⓢ	12'-0"	U2	Beams
60	½"ⓢ	8'-0"	U3	Tie Beams
Piers No. 5 & 10				
48	½"ⓢ	4'-9"	A3	Pilasters
28	½"ⓢ	22'-3"	A10	Pilaster No. 5
8	½"ⓢ	25'-3"	A11	" " 5
8	½"ⓢ	19'-0"	A12	" " 5
24	½"ⓢ	17'-0"	A13	" " 10
8	½"ⓢ	22'-0"	A14	" " 10
8	½"ⓢ	14'-0"	A15	" " 10
32	½"ⓢ	2'-0"	D1	Footings
14	1"ⓢ	20'-6"	K1	Beams
8	½"ⓢ	18'-3"	K2	"
14	1"ⓢ	24'-0"	K3	"
16	½"ⓢ	5'-9"	L1	Coping
20	½"ⓢ	6'-0"	L2	"
16	½"ⓢ	16'-6"	N2	Tie Beams
56	½"ⓢ	7'-3"	P18	Columns
28	½"ⓢ	12'-9"	P19	"
28	1"ⓢ	27'-6"	P22	Pilaster No. 5
48	1"ⓢ	19'-9"	P23	Pilasters
8	1"ⓢ	13'-9"	P24	"
28	1"ⓢ	23'-0"	P25	Pilaster No. 10
40	½"ⓢ	9'-6"	U10	Beams
36	½"ⓢ	9'-0"	U11	"
Piers No. 6 & 9				
76	½"ⓢ	4'-3"	A3	Pilasters
28	½"ⓢ	32'-9"	A7	Pilaster No. 6
28	½"ⓢ	23'-9"	A8	" " 9
56	½"ⓢ	12'-3"	A9	Pilasters
56	½"ⓢ	2'-0"	D1	Footings
16	1"ⓢ	11'-0"	F5	Haunches

Bending Sketches & Cutting Diagrams



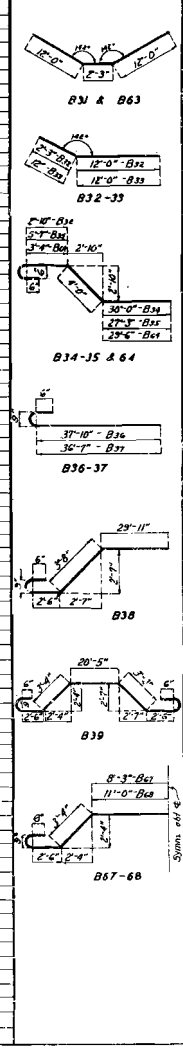
No.	Size	Length	Mark	Location
Piers No. 6 & 9 (Continued)				
16	1"ⓢ	20'-6"	O8	Beams
4	1"ⓢ	19'-6"	O9	"
6	1"ⓢ	24'-0"	S10	"
20	½"ⓢ	5'-9"	L1	Coping
20	½"ⓢ	6'-0"	L2	"
64	1"ⓢ	20'-3"	P17	"
96	½"ⓢ	7'-3"	P18	"
48	½"ⓢ	12'-3"	P19	"
64	1"ⓢ	5'-6"	P20	"
39	½"ⓢ	10'-6"	U9	Beams
Piers No. 7 & 8				
76	½"ⓢ	4'-3"	A3	Pilasters
28	½"ⓢ	33'-3"	A4	Pilaster No. 7
28	½"ⓢ	32'-3"	A5	" " 8
56	½"ⓢ	12'-3"	A6	Pilasters
56	½"ⓢ	2'-0"	D1	Footings
16	1"ⓢ	11'-0"	F5	Haunches
16	1"ⓢ	20'-6"	G8	Beams
4	1"ⓢ	18'-6"	G9	"
6	1"ⓢ	24'-0"	G10	"
20	½"ⓢ	5'-3"	L1	Coping
20	½"ⓢ	6'-0"	L2	"
64	1"ⓢ	20'-3"	P17	Pilasters
96	½"ⓢ	7'-3"	P18	"
48	½"ⓢ	12'-3"	P19	"
64	1"ⓢ	9'-6"	P20	"
39	½"ⓢ	10'-6"	U9	Beams
Girder Spans				
26	⅝"	16'-3"	B1	Girders
4	½"ⓢ	14'-9"	B2	"
4	½"ⓢ	13'-3"	B3	"
4	½"ⓢ	12'-6"	B4	"
4	½"ⓢ	11'-3"	B5	"
4	½"ⓢ	11'-0"	B6	"
4	½"ⓢ	10'-3"	B7	"
166	½"ⓢ	9'-3"	B8	"
4	½"ⓢ	10'-6"	B9	"
4	½"ⓢ	10'-9"	B10	"
4	½"ⓢ	11'-0"	B11	"
4	½"ⓢ	11'-3"	B12	"
4	½"ⓢ	11'-3"	B13	"
4	½"ⓢ	12'-3"	B14	"
4	½"ⓢ	12'-6"	B15	"
4	½"ⓢ	13'-0"	B16	"
4	½"ⓢ	13'-3"	B17	"
4	½"ⓢ	14'-3"	B18	"
4	½"ⓢ	14'-9"	B19	"
4	½"ⓢ	15'-6"	B20	"
4	½"ⓢ	16'-3"	B21	"
4	½"ⓢ	15'-3"	B22	"
4	½"ⓢ	14'-3"	B23	"
4	½"ⓢ	13'-6"	B24	"
4	½"ⓢ	12'-9"	B25	"
4	½"ⓢ	12'-3"	B26	"
4	½"ⓢ	11'-6"	B27	"
4	½"ⓢ	11'-0"	B28	"
4	½"ⓢ	10'-6"	B29	"
8	½"ⓢ	31'-3"	B30	"
8	½"ⓢ	26'-3"	B31	"
12	½"ⓢ	14'-3"	B32	"
24	½"ⓢ	15'-0"	B33	"
8	1"ⓢ	35'-6"	B34	"
8	1"ⓢ	38'-6"	B35	"
32	1"ⓢ	35'-6"	B36	"
8	1"ⓢ	38'-3"	B37	"
8	1"ⓢ	37'-9"	B38	"
8	1"ⓢ	35'-0"	B39	"
24	1"ⓢ	14'-0"	B40	"
4	1"ⓢ	38'-0"	B41	"
8	1"ⓢ	20'-0"	B42	"

Bending Sketches



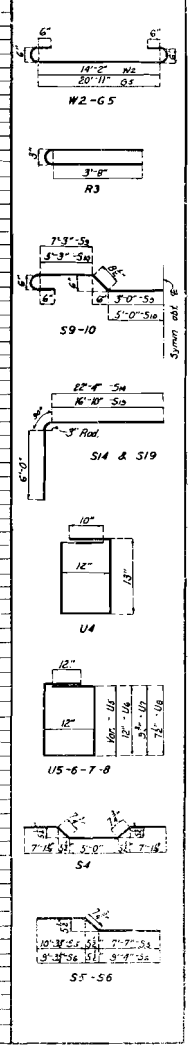
No.	Size	Length	Mark	Location
58	½"ⓢ	16'-9"	B42	Girders
8	½"ⓢ	15'-3"	B43	"
8	½"ⓢ	14'-3"	B44	"
8	½"ⓢ	13'-0"	B45	"
8	½"ⓢ	12'-3"	B46	"
8	½"ⓢ	11'-6"	B47	"
8	½"ⓢ	11'-0"	B48	"
8	½"ⓢ	11'-0"	B49	"
222	½"ⓢ	10'-3"	B50	"
8	½"ⓢ	11'-3"	B51	"
8	½"ⓢ	11'-3"	B52	"
8	½"ⓢ	11'-6"	B53	"
8	½"ⓢ	11'-9"	B54	"
8	½"ⓢ	12'-3"	B55	"
8	½"ⓢ	12'-9"	B56	"
8	½"ⓢ	13'-0"	B57	"
8	½"ⓢ	13'-6"	B58	"
8	½"ⓢ	14'-3"	B59	"
8	½"ⓢ	14'-9"	B60	"
8	½"ⓢ	15'-3"	B61	"
8	½"ⓢ	16'-0"	B62	"
16	½"ⓢ	26'-3"	B63	"
16	1"ⓢ	38'-6"	B64	"
16	1"ⓢ	26'-9"	B65	"
16	1"ⓢ	32'-6"	B66	"
8	1"ⓢ	31'-6"	B67	"
8	1"ⓢ	37'-0"	B68	"
70	½"ⓢ	14'-9"	W1	Web Walls
62	½"ⓢ	16'-9"	W2	" "
126	½"ⓢ	5'-6"	W3	" "
108	½"ⓢ	4'-9"	W4	" "
224	½"ⓢ	15"	C1	Curb
24	½"ⓢ	33'-6"	C3	"
48	½"ⓢ	26'-3"	C6	"
280	½"ⓢ	9"	R2	Rail
196	½"ⓢ	7'-9"	R3	Subpost
56	½"ⓢ	3'-3"	R4	Posts
4	½"ⓢ	2'-3"	R7	"
8	½"ⓢ	5'-3"	R8	Rails
48	½"ⓢ	5'-6"	R9	"
8	½"ⓢ	11'-3"	R10	"
16	½"ⓢ	5'-6"	R11	"
16	½"ⓢ	12'-0"	R12	"
32	½"ⓢ	12'-0"	R13	"
64	½"ⓢ	5'-6"	R14	"
32	½"ⓢ	5'-6"	R15	"
2688	⅝"ⓢ	18"	R5	Balusters
216	½"ⓢ	24'-6"	S3	Slab
215	½"ⓢ	24'-6"	S14	"
217	½"ⓢ	22'-3"	S16	"
217	½"ⓢ	16'-3"	S12	"
14	½"ⓢ	28'-3"	S14	"
170	½"ⓢ	22'-3"	S15	"
16	½"ⓢ	23'-3"	S19	"
84	½"ⓢ	32'-9"	S20	"
Arch Rings (5 Spans)				
350	½"ⓢ	38'-3"	A1	Ring
140	½"ⓢ	21'-0"	A2	"
820	½"ⓢ	4'-9"	A3	"
80	½"ⓢ	15'-0"	N1	Tie Beam
Spandrel Bents				
200	½"ⓢ	23'-6"	G1	Spans
200	½"ⓢ	18'-6"	G2	"
160	½"ⓢ	6'-6"	G7	Haunches
64	½"ⓢ	11'-6"	F3	Columns
128	½"ⓢ	17'-6"	P2	"
48	½"ⓢ	14'-9"	P7	"
64	½"ⓢ	6'-6"	P8	"
64	½"ⓢ	11'-3"	P9	"
40	½"ⓢ	5'-9"	P10	"

Bending Sketches



No.	Size	Length	Mark	Location
Spandrel Bents (Continued)				
32	½"ⓢ	17'-3"	P13	Columns
32	½"ⓢ	11'-3"	P14	"
32	½"ⓢ	13'-9"	P15	"
64	½"ⓢ	6'-3"	P16	"
680	½"ⓢ	5'-0"	U4	"
80	½"ⓢ	5'-3"	U5	"
80	½"ⓢ	5'-0"	U6	"
80	½"ⓢ	4'-6"	U7	"
80	½"ⓢ	4'-3"	U8	"
Slab & Rail For Arch Spans				
60	½"ⓢ	33'-0"	C1	Curb
360	½"ⓢ	15"	C2	"
30	½"ⓢ	33'-6"	C3	"
36	½"ⓢ	9'-9"	C4	Posts
290	½"ⓢ	11'-0"	R1	Rail
540	½"ⓢ	9"	R2	"
390	½"ⓢ	7'-3"	R3	Subposts
5040	⅝"ⓢ	18"	R5	Balusters
80	½"ⓢ	10'-6"	R6	Rail
40	½"ⓢ	4'-0"	R16	Posts
96	½"ⓢ	6'-0"	R17	"
415	½"ⓢ	22'-0"	S1	Slab
380	½"ⓢ	12'-9"	S2	"
300	½"ⓢ	15'-3"	S3	"
285	½"ⓢ	20'-6"	S4	"
400	½"ⓢ	18'-6"	S5	"
200	½"ⓢ	13'-3"	S6	"
190	½"ⓢ	14'-3"	S7	"

Bending Sketches



BEARING PLATES AND ANCHOR BOLTS REQUIRED

8 --Plates-----15" x ⅜" x 2'-6"---P1
4---Plates-----15" x ⅜" x 2'-6"---P2
4---Plates-----2'-6" x ⅜" x 2'-6"---P3
4---Plates-----2'-6" x ⅜" x 2'-6"---P4
2---Plates-----2'-6" x ⅜" x 2'-7"---P5
4---Plates-----15" x ⅜" x 2'-3"---P6
4---Plates-----15" x ⅜" x 2'-3"---P7
8---Plates-----2'-6" x ⅜" x 2'-3"---P8
4---Plates-----2'-6" x ⅜" x 2'-3"---P9
2 Plates-----2'-6" x ⅜" x 2'-3"---P10
} Planed to ½" thickness.
8--Copper Plates--15" x 2'-6"--#16 Gauge---P11
4 Copper Plates--15" x 2'-3"--#16 Gauge--P12
2 Copper Plates--2'-6" x 2'-3"--#16 Gauge---P13
24 Bent Plates 2½" x ⅜" x 2'-6"-----P14
16 Bent Plates 2½" x ⅜" x 4'-6"-----P15

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4.5 EAST OF ST. CLAIR

PROJECT NO. R30-525 STA. 2.26 +55

FRANKLIN COUNTY

SUBMITTED BY: [illegible] DATE [illegible] BRIDGE ENGINEER

APPROVED BY: [illegible] DATE [illegible] CHIEF ENGINEER

STD. S816

H-996

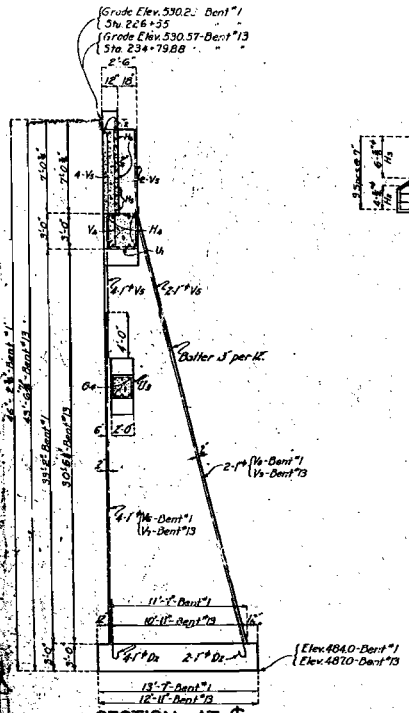
Note: Dimensions are given along ℄ of bars and are for computed lengths. Bars in above units to be billed and tagged separately.

Drawn May 1929 by T.H.M.
Traced May 1929 by L.H.V.
Checked June 1929 by H.L.M.

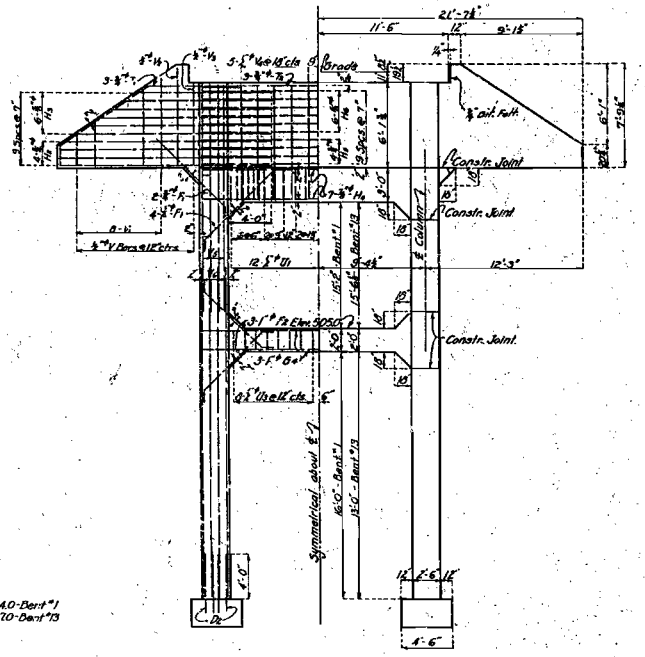
Sheet No. 2 of 11

MISSOURI STATE HIGHWAY DEPARTMENT

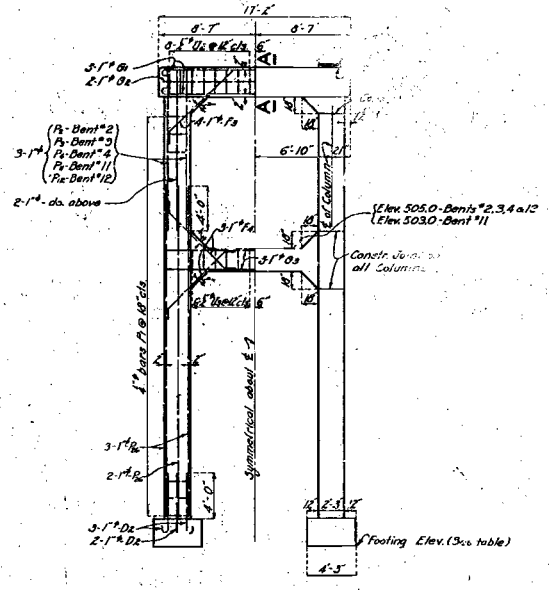
Fed. Road Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
5	MO.	R30-525			



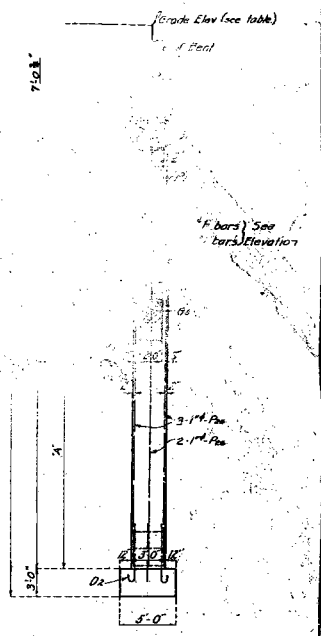
SECTION AT ℄



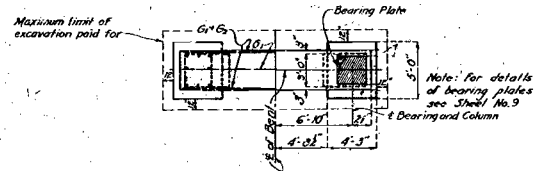
ELEVATION



ELEVATION



SECTION AT ℄

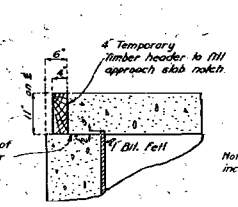


PLAN

DETAILS OF BENTS NO. 2, 3, 4, 11 & 12

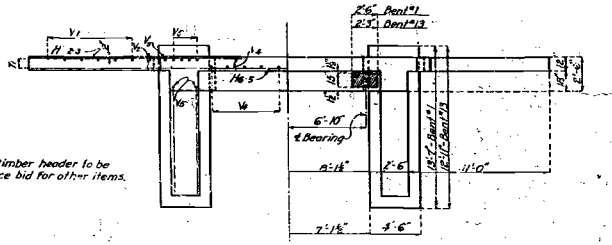
TABLE OF DIMENSIONS							
Bent No.	A	B	C	D	Gr. Elev.	Pb bars	Flg. Elev.
2	16'-0"	16'-0⅛"	36'-8⅝"	46'-7"	530.57	23	48'-3"
3	16'-0"	16'-9⅜"	36'-9⅜"	46'-10⅝"	530.87	29	484.0
4	16'-6"	16'-6⅝"	37'-6⅜"	47'-7⅜"	531.13	23	493.5
11	10'-6"	15'-6⅝"	38'-6⅜"	53'-7⅜"	531.13	21	487.5
12	12'-6"	16'-9⅜"	39'-9⅜"	53'-4⅜"	530.87	21	487.5

Note: Column of Pb bars in table gives number of bars for one column only.



DETAIL OF NOTCH FOR APPROACH SLAB

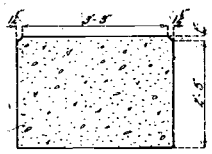
Note:- Cost of timber header to be included in price bid for other items.



PLAN

DETAILS OF BENTS NO. 1 & 13

Note:- This drawing is not to scale. Follow dimensions.



SECTION A-A

(Showing Bevel)

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4.5 MILES EAST OF ST. CLAIR

PROJECT NO. R30-525 STA. 226+55

FRANKLIN COUNTY

SUBMITTED BY D.R. Hays DATE 1/20/29 BRIDGE ENGINEER

APPROVED BY T.H. Cutler DATE CHIEF ENGINEER

Drawn May 1929 By P.B.R.
Checked June 1929 By H.H.M.

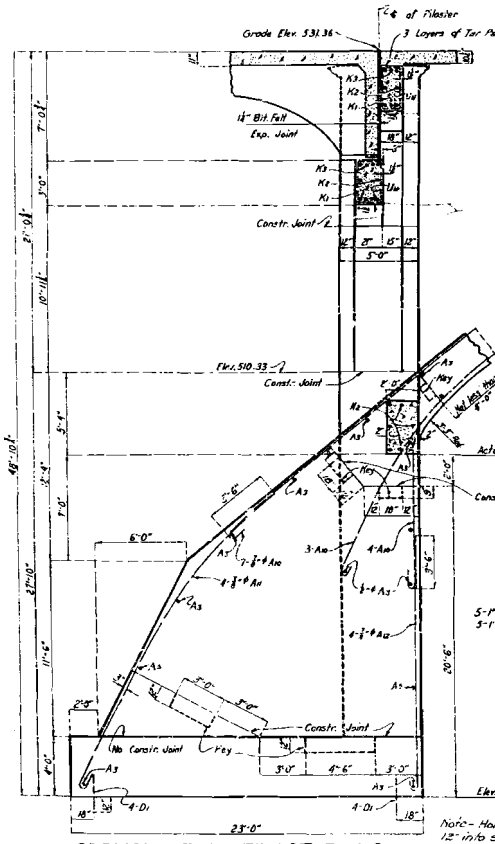
Sheet No. 3 of 11

STD. S818

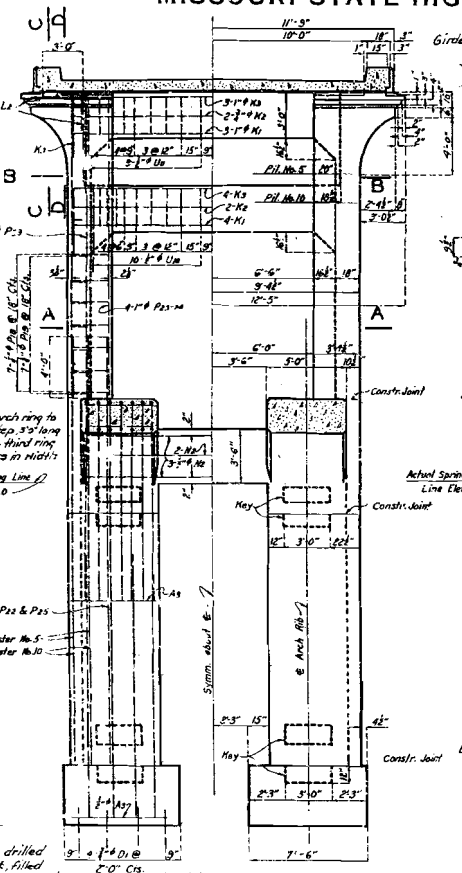
H996

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	R30-1.25	19		

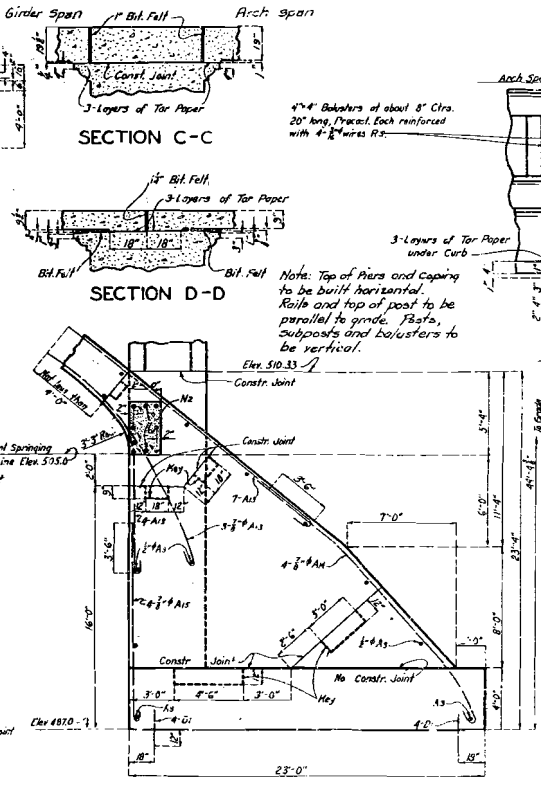
MISSOURI STATE HIGHWAY DEPARTMENT



SECTION AT ℄ PILASTER NO. 5



ELEVATION



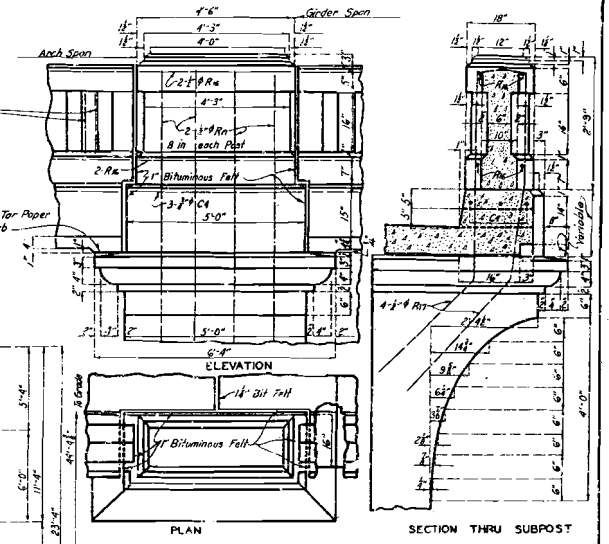
SECTION C-C

SECTION D-D

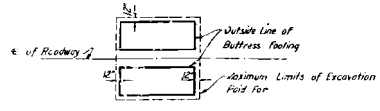
Note: Top of Piers and Coping to be built horizontal. Rails and top of post to be parallel to grade. Posts, subposts and balusters to be vertical.

SECTION AT PILASTER NO. 10

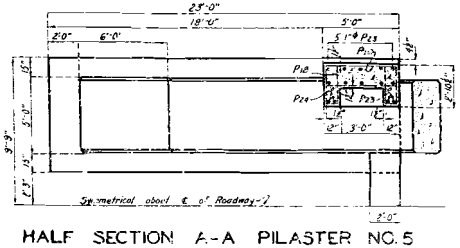
Note: Details not shown same as for Pilaster No. 5



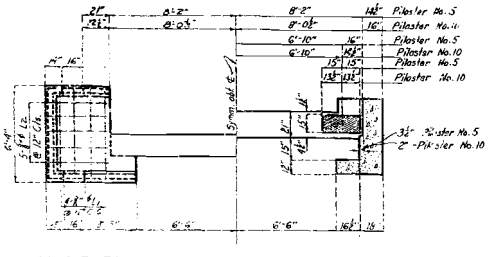
DETAILS OF HANDRAIL POST OVER PILASTERS NO. 5 & 10



SKETCH SHOWING MAXIMUM LIMITS OF EXCAVATION FOR PILASTERS NO. 5 & 10

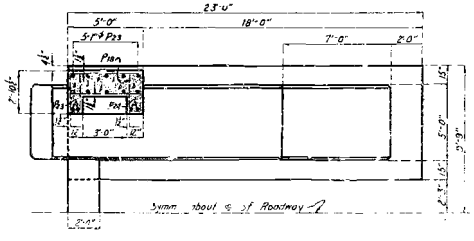


HALF SECTION A-A PILASTER NO. 5



HALF PLAN OF PIER TOP

HALF SECTION B-B



HALF SECTION A-A PILASTER NO. 10

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-1.25 STA. 226+55

FRANKLIN COUNTY

SUBMITTED BY _____ DATE _____ BRIDGE ENGINEER

APPROVED BY _____ DATE _____ CHIEF ENGINEER

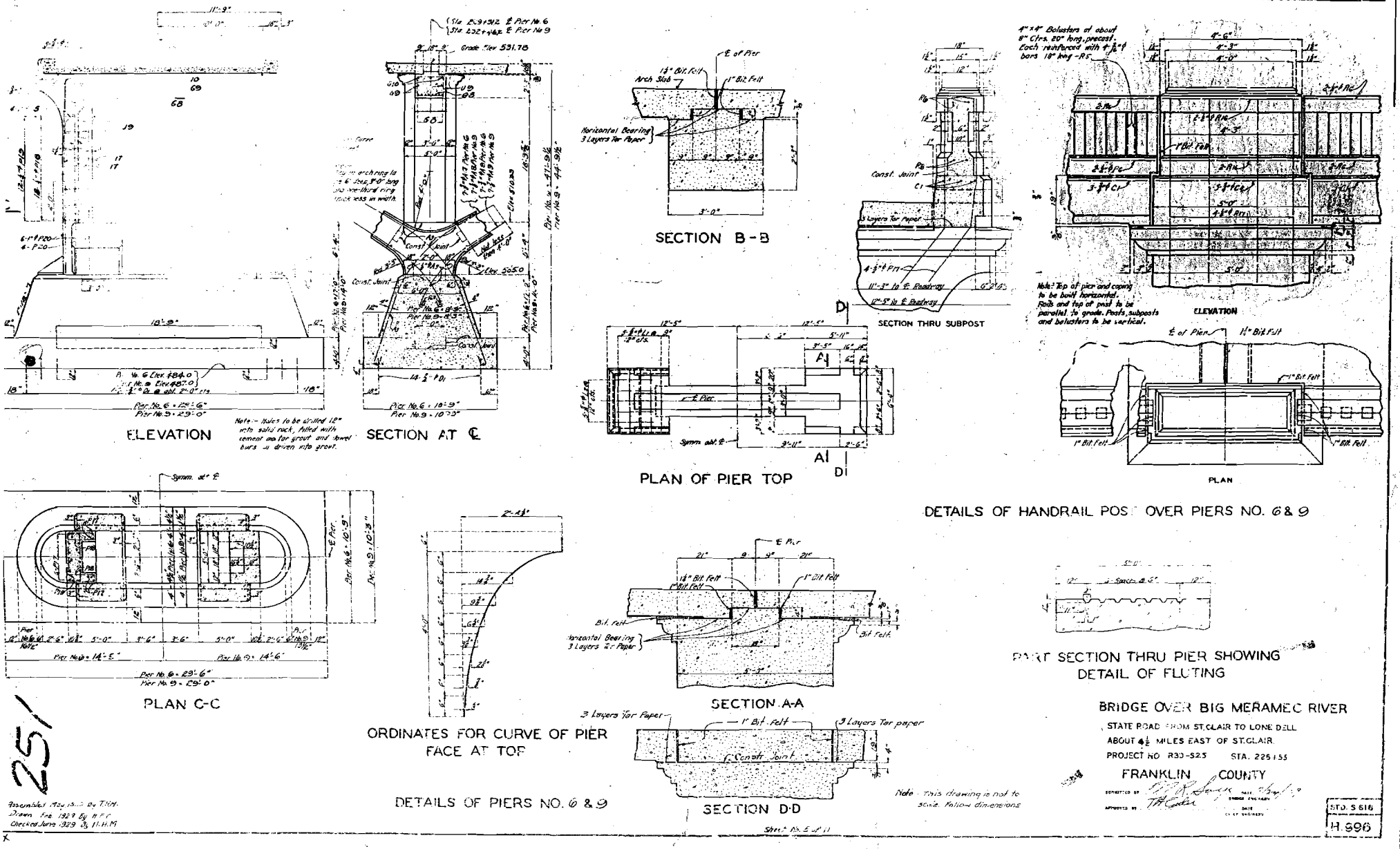
STD. S-818

H-996

Drawn Mar. 1929 by T.H.M.
Traced Mar. 1929 by L.M.V.
Checked June 1929 by H.H.M.

Sheet No. 4 of 11

MISSOURI STATE HIGHWAY DEPARTMENT



BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-S25 STA. 225+55

FRANKLIN COUNTY

STD. S 616

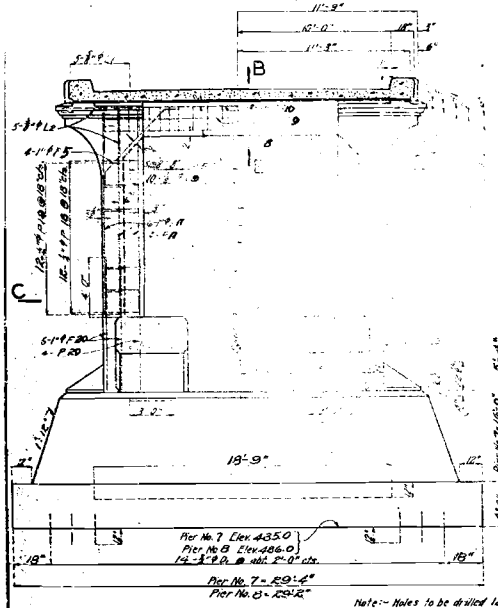
H.996

251

Assembled May 1929 By T.H.M.
Drawn Feb. 1929 By H.F.C.
Checked June 1929 By H.H.M.

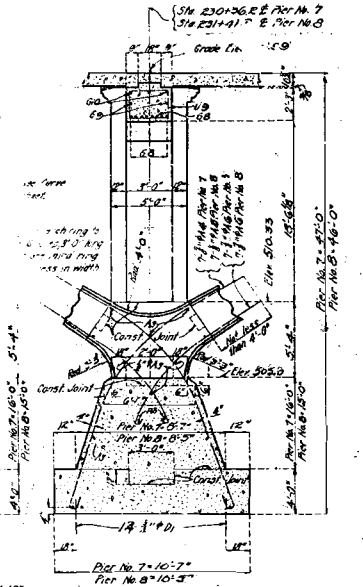
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST. NO	STATE	FED AID PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MO	R30-225	33		

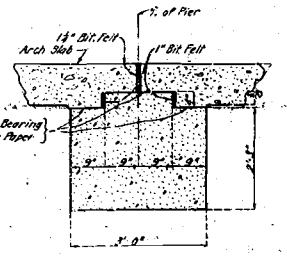


ELEVATION

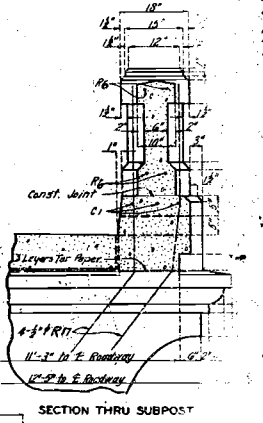
Note:- Holes to be drilled 12" into solid rock, filled with cement mortar grout and dowel bars to be driven into grout.



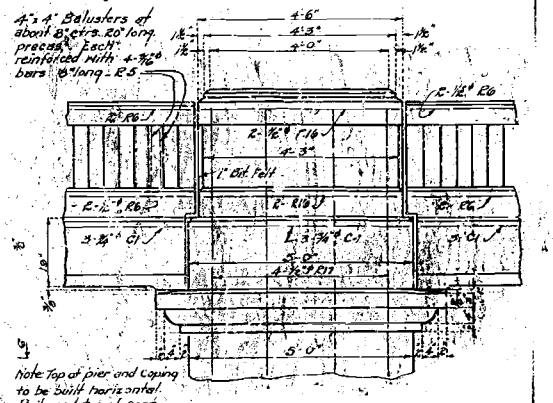
SECTION AT ℄

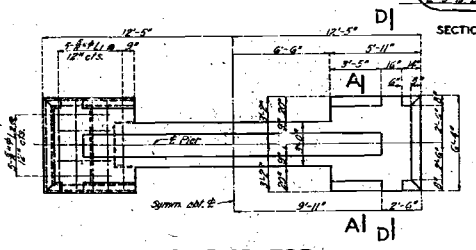


SECTION B-B

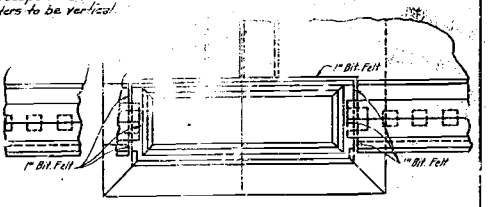


SECTION THRU SUBPOST



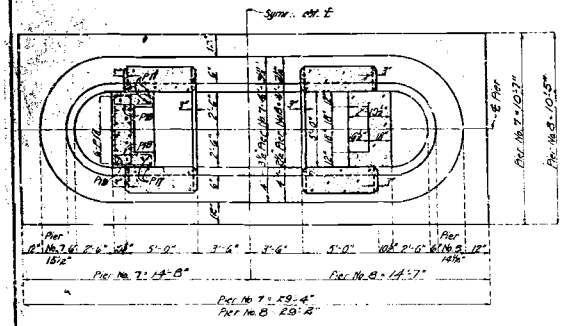


PLAN OF PIER TOP

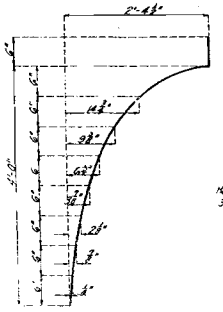


PLAN

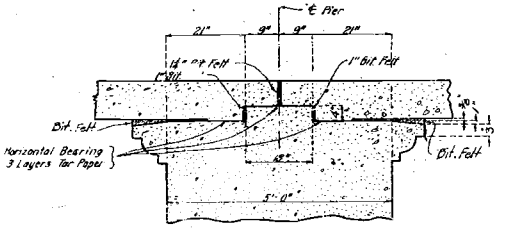
DETAILS OF HANDRAIL POST OVER PIERS NO. 7 & 8



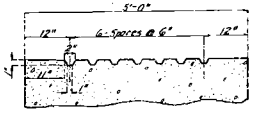
PLAN C-C



ORDINATES FOR CURVE OF PIER FACE AT TOP



SECTION A-A



PART SECTION THRU PIER SHOWING DETAIL OF FLUTING

SECTION D-D

DETAILS OF PIERS NO. 7 & 8

Note: This drawing is not to scale. Follow dimensions

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-25 STA. 226 + 55.

FRANKLIN COUNTY

SUBMITTED BY R. R. Rogers BRIDGE ENGINEER DATE 7-29-29

APPROVED BY J. A. Cole STATE ENGINEER DATE

STD. S 91A

H 996

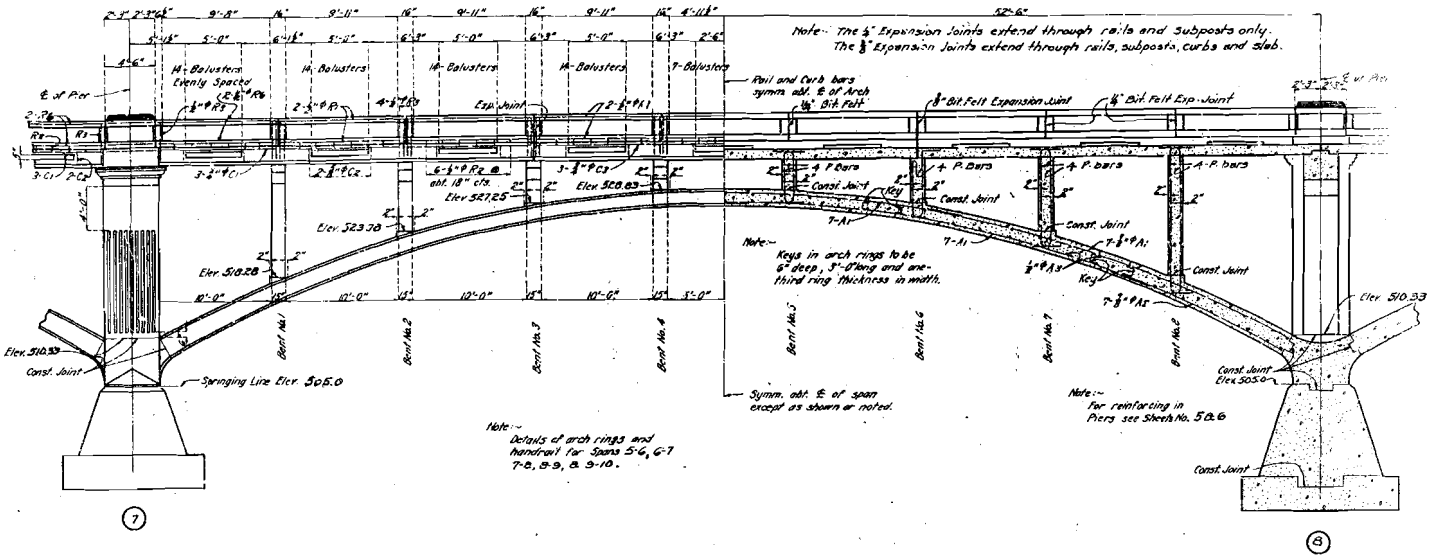
252

Assembled May 1929 By T.H.M.
Drawn Feb. 1929 By
Checked June 1929 By H.H.M.

Sheet No. 6 of 11

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
		R30-525	192	

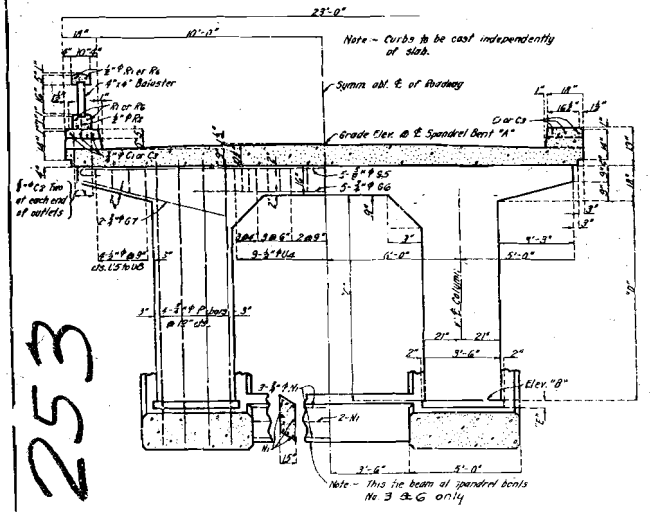


HALF ELEVATION

HALF SECTION THRU ARCH RING

N				
60	2'-5⅛"	80	14⅜"	
60	2'-2⅞"	60	14⅞"	
60	23⅛"	60	13⅞"	
60	20⅞"	60	14⅜"	
60	18⅞"	120	14⅛"	
60	17⅛"	120	14⅛"	
60	15⅞"	80	14"	
60	15⅛"	60	16⅞"	
60	15"			

Note:- *Weight of bar spacers included in weight of arch ring reinforcement.

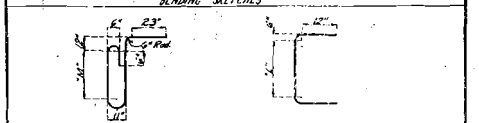


SECTION NEAR SPANDREL BENTS

DIMENSIONS & BARS FOR SPANDREL BENTS

BENT NO.	ELEVATIONS "A"	ELEVATIONS "B"	DIMENSIONS "C"	DIMENSIONS "D"	DIMENSIONS "E"	P-BARS NO.	P-BARS MARK	P-BARS "L"	P-BARS "M"
				Spans (5-6) & (8-10)					
1	531.43	518.28	10'-11⅜"	10'-9⅜"	11⅛"	32	P13	12'-6"	
2	531.40	523.78	5'-6"	5'-4"	7⅞"	32	P14	7'-8"	
3	531.53	527.25	2'-1"	1'-3"	4⅞"	16	P15		3'-11"
4	531.58	528.83	0⅜"	4⅜"	1⅛"	32	P16	2'-9"	
5	531.62	528.83	7⅛"	5⅛"	1⅞"	32	P16	2'-9"	
6	531.66	527.25	2'-2⅞"	2'-0⅞"	4⅞"	16	P15		3'-11"
7	531.70	523.78	5'-6⅞"	5'-6⅞"	7⅞"	32	P5	7'-11"	
8	531.74	518.28	11'-3⅛"	11'-1⅛"	11⅛"	32	P6	12'-11	
				Spans (6-7) & (8-9)					
1	531.82	518.28	11'-4⅜"	11'-2⅜"	11⅛"	32	P6	12'-11"	
2	531.89	523.78	5'-10⅞"	5'-8⅞"	7⅞"	32	P5	7'-11"	
3	531.98	527.25	2'-5⅛"	2'-3⅛"	4⅞"	16	P7		4'-2"
4	531.90	528.83	10⅛"	8⅛"	1⅞"	32	P8	2'-11"	
5	531.93	528.83	10⅜"	8⅜"	1⅞"	32	P8	2'-11"	
6	531.93	527.25	2'-6"	2'-4"	4⅞"	16	P7		4'-2"
7	531.96	523.78	5'-11⅞"	5'-10⅞"	7⅞"	32	P9	6'-2"	
8	531.98	518.28	11'-6"	11'-4"	11⅛"	32	P6	12'-11"	
				Span (7-8)					
1	532.00	518.28	11'-6⅜"	11'-4⅛"	11⅛"	16	P6	12'-11"	
2	532.01	523.78	6'-0⅜"	5'-10⅜"	7⅞"	16	P9	6'-2"	
3	532.02	527.25	2'-6⅞"	2'-4⅞"	4⅞"	8	P7		4'-2"
4	532.02	528.83	11⅞"	9⅞"	1⅞"	16	P10	3'-8"	
5	532.02	528.83	11⅞"	9⅞"	1⅞"	16	P10	3'-8"	
6	532.02	527.25	2'-6⅞"	2'-4⅞"	4⅞"	8	P7		4'-2"
7	532.01	523.78	6'-0⅜"	5'-10⅜"	7⅞"	16	P9	6'-2"	
8	532.00	518.28	11'-6⅜"	11'-4⅛"	11⅛"	16	P6	12'-11"	

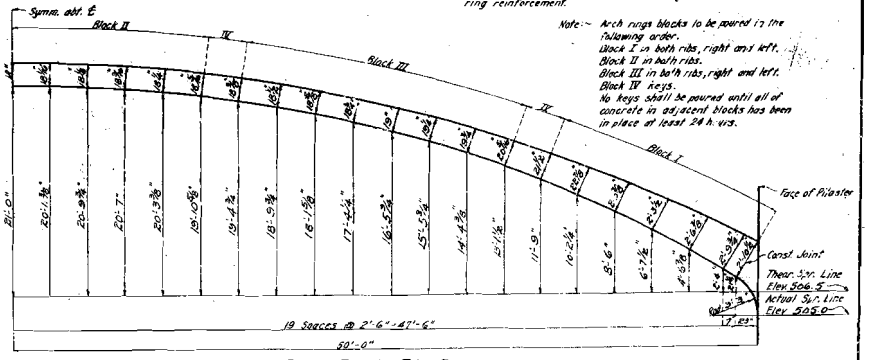
BENDING SKETCHES



P7 & P15 P5, P6, P8, P9, P10, P13, P14 & P16

Note:- Dimensions given are along ℄ of bar and are for computed lengths for length of P bars see Sheet No.
P bars to be placed in spandrel columns so as to allow all arch slab sections to expand up grade.
Spandrel Bents in Spans (8-9) & (9-10) read from Right to Left.

Sheet No. 7 of 11



Note:- Arch rings blocks to be poured in the following order.
Block I in both ribs, right and left.
Block II in both ribs.
Block III in both ribs, right and left.
Block IV keys.
No keys shall be poured until all of concrete in adjacent blocks has been in place at least 24 hours.

DIMENSIONS OF ARCH RING

Note - This drawing is not to scale. Follow dimensions.

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-525 STA. 226+55.

FRANKLIN COUNTY

SUBMITTED BY W. R. Lacy DATE 7-24-29 BRIDGE ENGINEER

APPROVED BY T. H. Cullen DATE CHIEF ENGINEER

STD. S 818

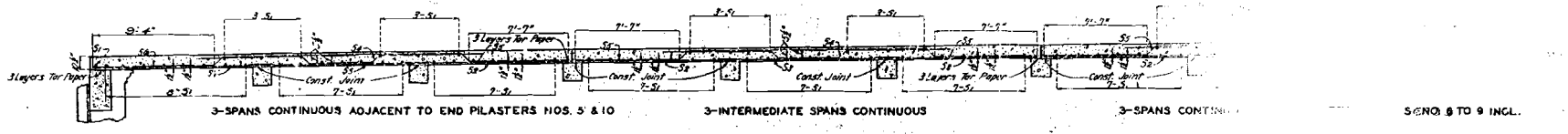
H 995

Assembled May 1929 by Chrt.
Drawn 1-1928 By H.F.C.
Checked June 1929 By H.H.M.

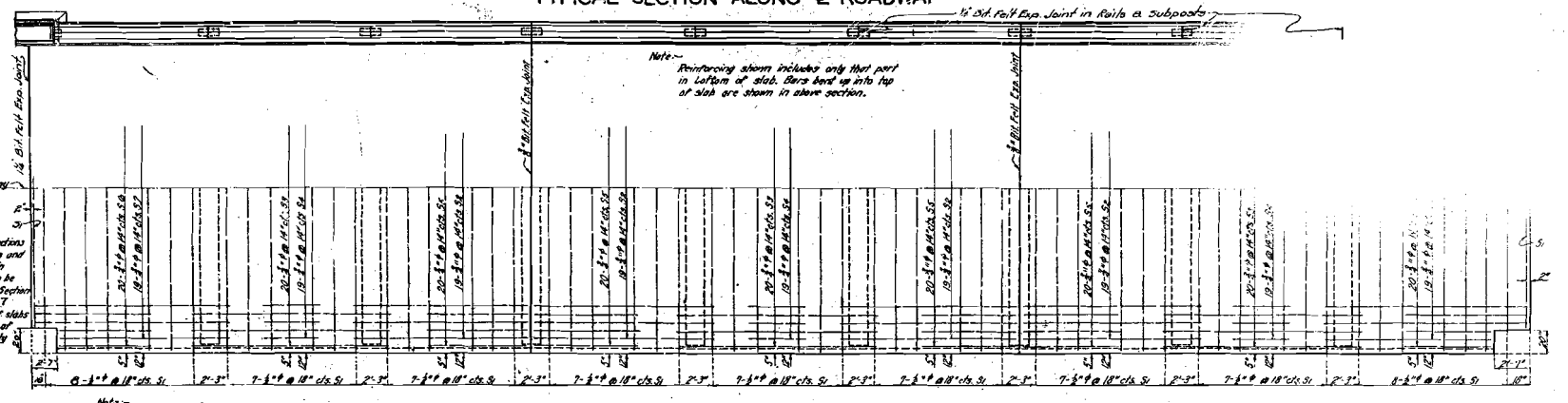
253

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	R30-525	1937		



TYPICAL SECTION ALONG ℄ ROADWAY



⑤-⑩

TYPICAL PLAN OF SLAB SPANS OVER ARCHES SHOWING REINFORCING

FINISHED

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-525 STA. 226 + 55.

FRANKLIN COUNTY

SUBMITTED BY V. R. Sayre DATE 7-6-38 BRIDGE ENGINEER

APPROVED BY [illegible] DATE CHIEF ENGINEER

Note: This drawing is not to scale. Follow dimensions.

FINISHED

Recorded Mar 1939 - T.H.M.
Drawn Feb 1939 By H.F.C.
Checked June 1939 B. H.H.M.

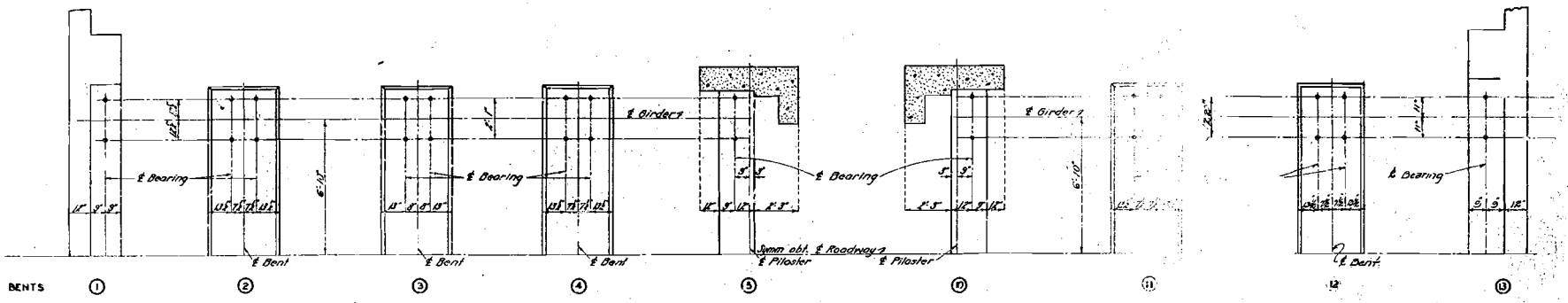
Sheet No. 6 of 11

STD. S 818

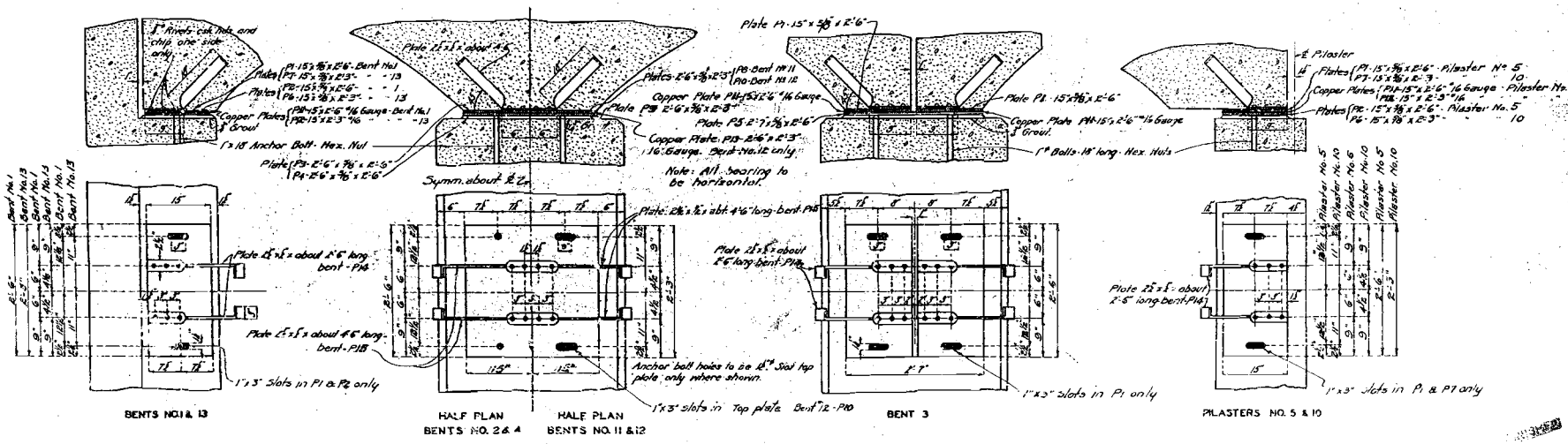
H996

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	R30-525	19		



HALF ANCHOR BOLT PLAN



DETAILS OF BEARING PLATES

Note: Plates to be bolted tightly in place to insure bearing over entire area during casting of concrete. Nuts on expansion ends to be released to a clearance after concrete has set.

Note: All bearing plates to be planed to ½" thickness.

Note: This drawing is not to scale. Follow dimensions.

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4½ MILES EAST OF ST. CLAIR

PROJECT NO. R30-525 STA. 228+55

FRANKLIN COUNTY

SUBMITTED BY [signature] DATE 7/24/29 BRIDGE ENGINEER

APPROVED BY [signature] DATE CHIEF ENGINEER

STD. 5818

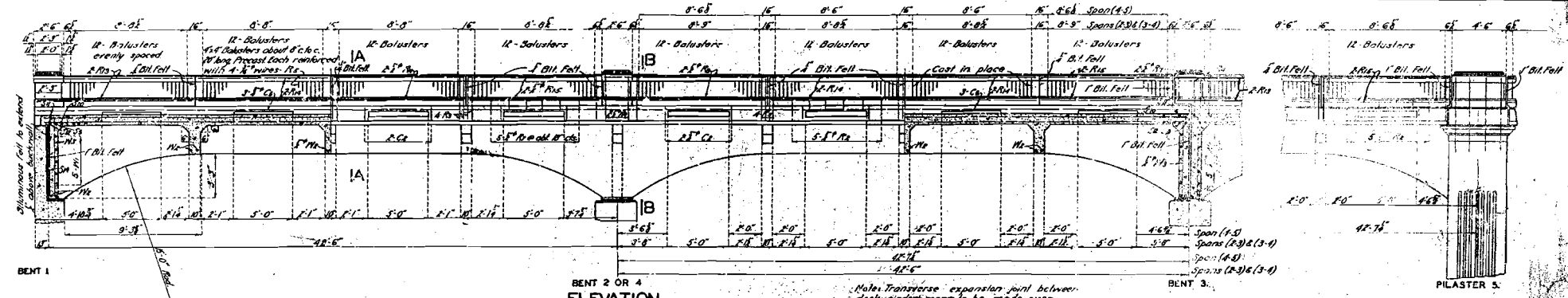
H 996

Assembled Nov. 1929 By T.H.M.
Drawn Nov. 1929 By H.S.M.
Checked June 1929 By H.H.M.

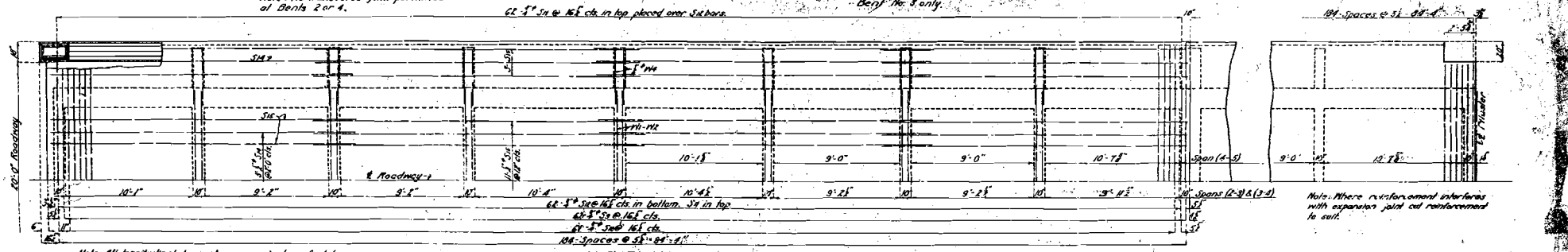
Sheet No. 9 of 11

MISSOURI STATE HIGHWAY DEPARTMENT

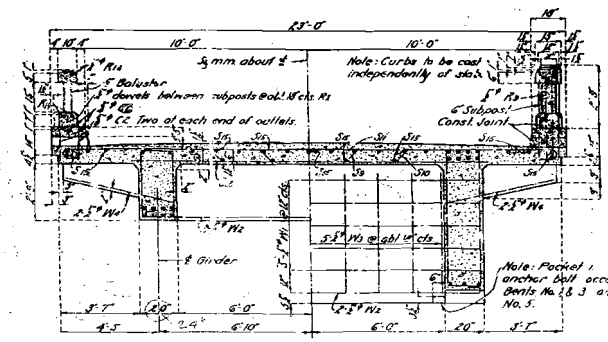
FED. AID PROJ. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
S	MO	R30-325			



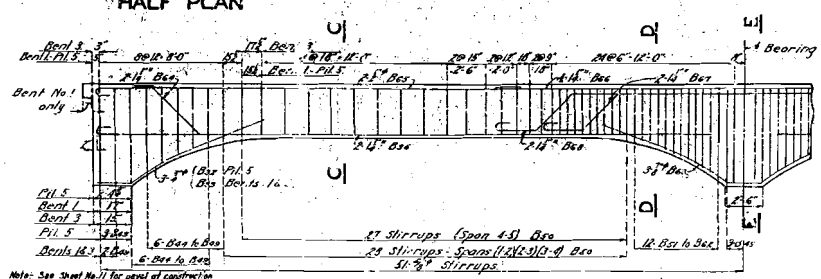
ELEVATION



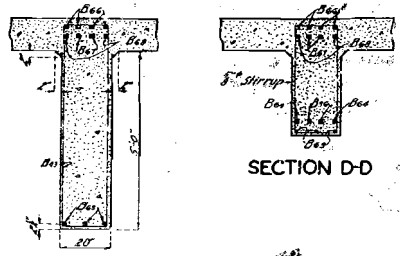
HALF PLAN



HALF SECTION A-A HALF SECTION B-B

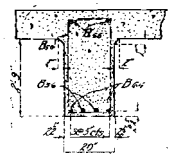


GIRDER REINFORCEMENT



Longitudinal construction joint in slab of girder spans to be located parallel to and approximately midway between girders transverse construction joints to occur only at center of spans, concrete between construction joints to be cast in one operation.

CONSTRUCTION JOINT



SECTION C-C

Note: This drawing is not to scale. Follow dimensions.

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4.5 MILES EAST OF ST. CLAIR

PROJECT NO. R30-325 STA. 226+55

FRANKLIN COUNTY

SUBMITTED BY: W. R. Gray DATE: 7/26/29 BRIDGE ENGINEER

APPROVED BY: W. H. Cowles DATE: CHIEF ENGINEER

Drawn Mar. 1929 By A.F.K.
Assembled May 1929 By P.B.R. & W.S.M.
Checked June 1929 By H.H.M.

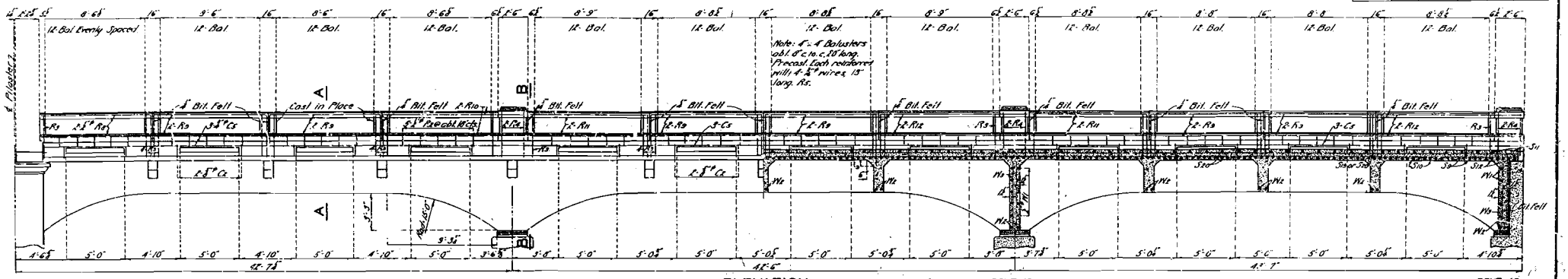
S. 581B

H996

Sheet No. 10 of 11

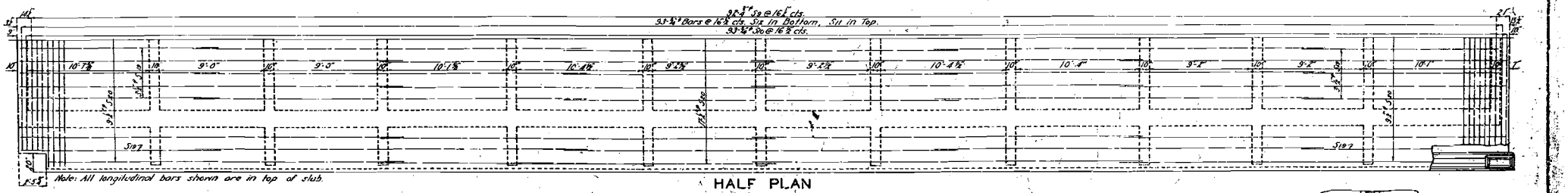
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	R30-S25	19		

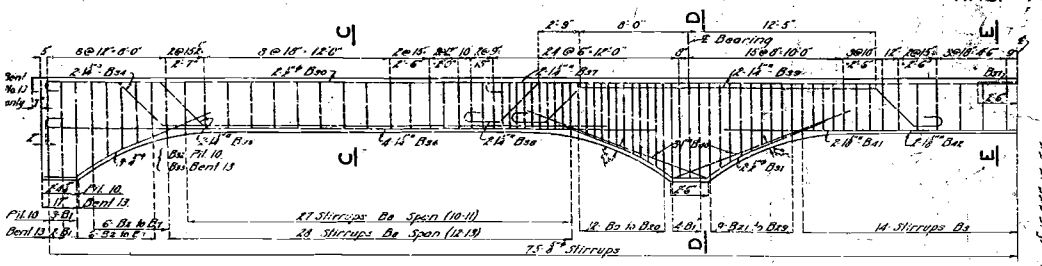


ELEVATION

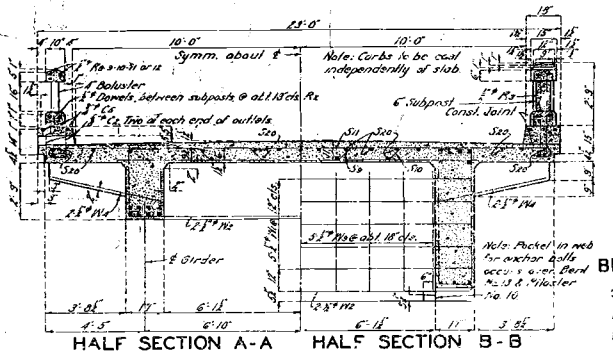
Note: See Sheet No. 10 for longitudinal and transverse construction joints.



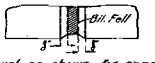
HALF PLAN



GIRDER REINFORCEMENT



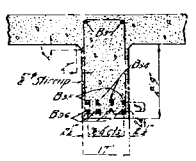
HALF SECTION A-A HALF SECTION B-B



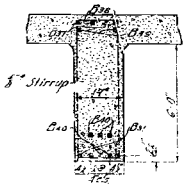
Note: Use ⅜" bevel as shown for exposed faces of all joints consisting of bituminous felt except joints in handrail and at top surface of roadway slab. Use ¼" bevel in handrail and use edging tool at top surface of roadway slab each side of felt joints.

DETAIL OF BEVEL FOR BIT. FELT JOINT

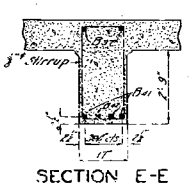
DETAIL OF BEVEL FOR CONSTR. JOINT AT CURB



SECTION C-C



SECTION D-D



SECTION E-E

DETAILS OF 3 - 40' CONTINUOUS GIRDER SPANS

BRIDGE OVER BIG MERAMEC RIVER

STATE ROAD FROM ST. CLAIR TO LONE DELL

ABOUT 4.5 MILES EAST OF ST. CLAIR

PROJECT NO. R30-S25 STA. 226 + 55

FRANKLIN COUNTY

SUBMITTED BY M. R. Boys DATE 7/24/29 BRIDGE ENGINEER

APPROVED BY [illegible] DATE CHIEF ENGINEER

FINISHED

STD. S818

H 996

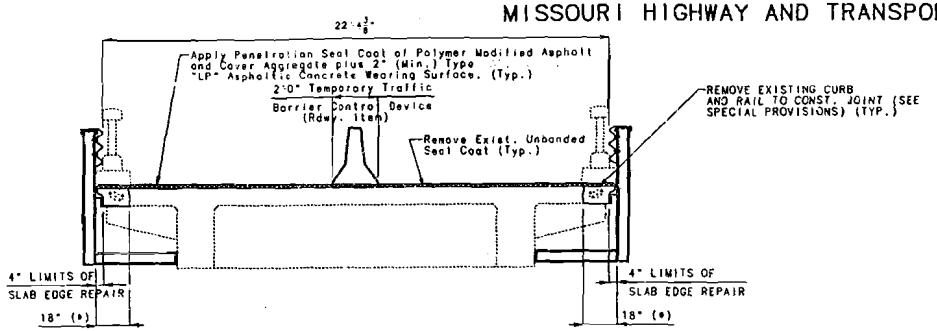
Drawn May 1929 By W.S.M.
Traced May 1929 By W.S.M.
Checked June 1929 By H.A.M.

Sheet No. 11 of 11

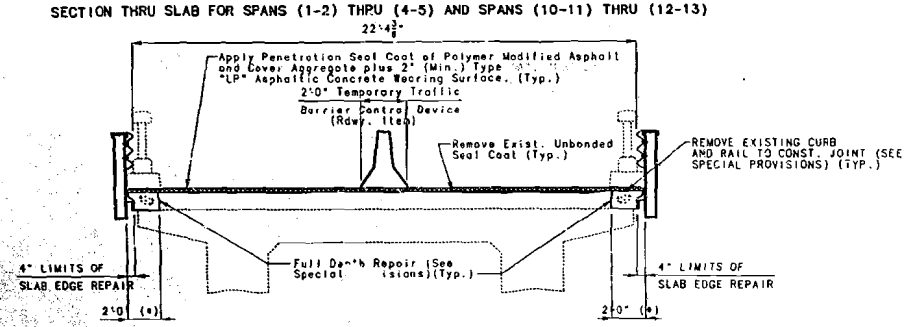
FINAL PLANS

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	JOB NO. J6P0709B	SHEET NO.
MO.	PROJ. NO. J6P0709B	6
SEC.	CUR. TWP.	RGE.



SECTION THRU SLAB FOR SPANS (1-2) THRU (4-5) AND SPANS (10-11) THRU (12-13)



SECTION THRU SLAB FOR SPANS (5-6) THRU (9-10)

(*) IF THE DIMENSION EXCEEDS 4", THE REPAIR EXTENDING TO THE EDGE OF SLAB SHALL BE MADE AND PAID FOR AS "FULL DEPTH REPAIR" PER SQ. FT. (SEE SPECIAL PROVISIONS).

GENERAL NOTES:

Design Specifications:
A.A.S.H.T.O-1992 and Interims Thru 1995

Old Work:
Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Maintain Traffic:
Maintain one lane of traffic over structure during construction. (See Rdwy. Plans).

Maintain Grade:
In order to maintain grade and a minumum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure. No payment will be allowed for additional labor, materials or equipment for variations in thickness of overlay.
Roadway surfacing adjacent to bridge ends to match bridge overlay. (See Rdwy. Plans).

QUANTITIES

ITEM		TOTAL
Curb Removal For Thrie Beam Installation	Lin. Ft.	1650
Alternate Asphaltic Concrete Wearing Surface (Bridge)	Sq. Yd.	2105
Polymer Modified Asphalt (Seal Coat) ~~PG 76-22~~	Gallon	720
Cover Aggregate	Ton	22
Full Depth Repair	Sq. Ft.	685
Slab Edge Repair (Bridges)	Lin. Ft.	0
Bridge Guard Rail (Thrie Beam)	Lin. Ft.	1643

NOTE:
The polymer modified asphalt shall be applied at a rate of 0.35 gallons per sq. yd.

The cover aggregate shall be applied at a rate of 0.0125 tons per sq. yd.

QUANTITIES FOR ALTERNATE ASPHALTIC CONCRETE WEARING SURFACE

TYPE OF WEARING SURFACE	ASPHALT CEMENT (TONS)	MINERAL AGGREGATE (TONS)	MIX USED (✓)
Limestone Porphyry (LP) Asphaltic Concrete Mix	10.8	204	✓
Limestone Steel Slag (LS) Asphaltic Concrete Mix	12.5	243	
Type A Asphaltic Concrete Mix	11.6	219	

NOTE:
MoDOT Construction Personnel shall complete column labeled "Mix Used (✓)". Type PG 64-22/AC-20 Asphalt Cement is required in the Asphaltic Concrete mix for the bridge deck overlay.

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DESIGNED AUG. 1996
DETAILED AUG. 1996
CHECKED SEPT. 1996

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

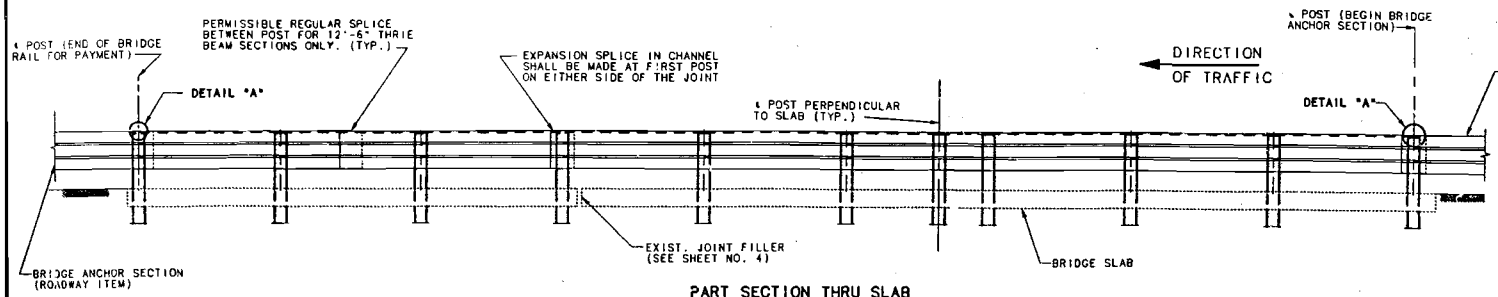
SHEET NO. 3 OF 4

REPAIRS TO:
BRIDGE OVER MERAMEC RIVER
STATE ROAD FROM RTE. K TO RTE. FF
ABOUT 2.5 MILES EAST OF RTE. KK
PROJECT NO. STA. 226+55.00±
JOB NO. J6P0709B RTE. 47
FRANKLIN COUNTY

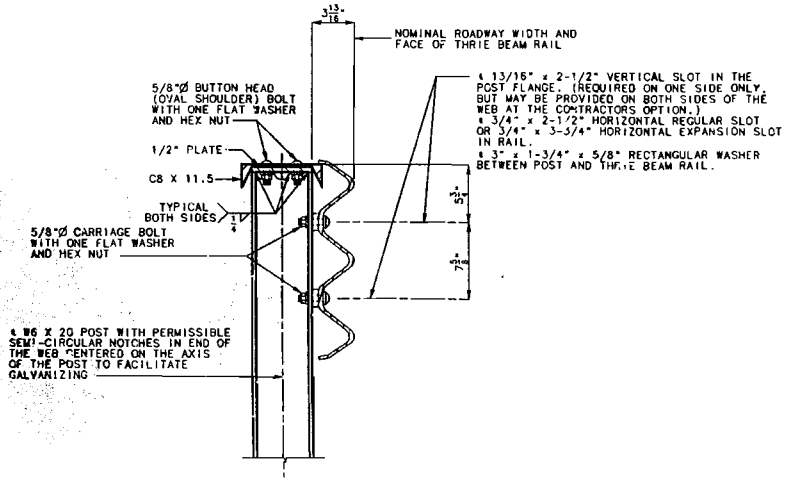
STD. 606.00
STD. 606.23
H09963

FINAL PLANS

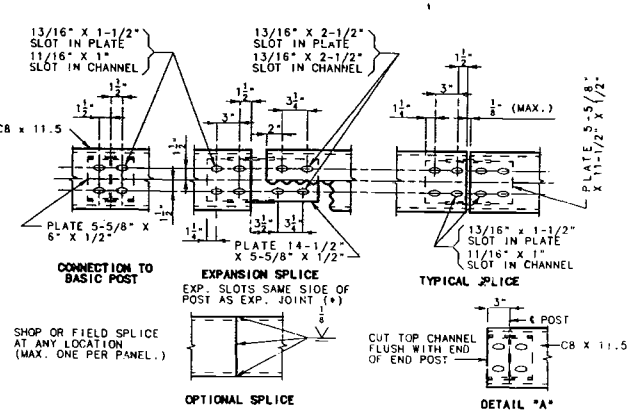
STATE	JOB NO. J6P0709B	SHEET NO.
MO.	PROJ. NO. J6P0709B	7



PART SECTION THRU SLAB SHOWING THRIE BEAM RAIL

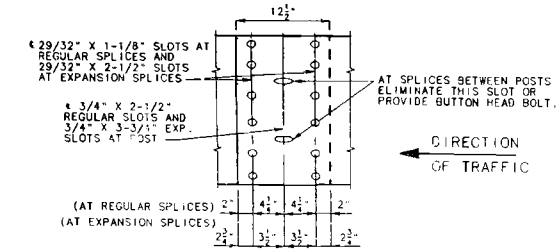


PART SECTION AT RAIL POST

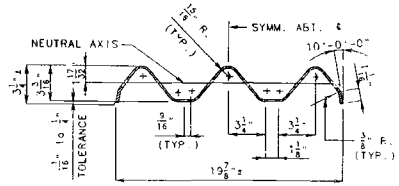


CHANNEL MEMBER DETAILS

(*) REQUIRED ON BOTH SIDES FOR RAIL POSTS ATTACHED TO PILASTERS.



THRIE BEAM RAIL SPLICE DETAILS



SECTION THRU THRIE BEAM RAIL

GENERAL NOTES:

DESIGN AASHTO 1989 SPECIFICATIONS AND INTERIM 1995

PANEL LENGTHS OF CHANNEL MEMBERS SHALL BE ATTACHED CONTINUOUSLY TO A MINIMUM OF FOUR POSTS AND A MAXIMUM OF SIX POSTS (EXCEPT AT END BENTS).

ALL BOLTS, NUTS, WASHERS AND PLATES ARE CONSIDERED AS PARTS OF THE THRIE BEAM RAIL FOR PAYMENT.

ALL STEEL CONNECTING BOLTS AND FASTENERS FOR POSTS AND RAILING AND ALL ANCHORS, BOLTS, NUTS, WASHERS AND BOTTOM PLATES SHALL BE GALVANIZED AFTER FABRICATION. FOR PROTECTIVE COATING AND MATERIAL REQUIREMENT OF STEEL RAILING, SEE SECTION 1040 OF THE MISSOURI STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION, AND ALIGNED ACCORDING TO SECTION 713 OF THE MISSOURI STANDARD SPECIFICATIONS, EXCEPT THAT THE RAIL POSTS SHALL BE ALIGNED BY THE USE OF SHIMS SO THAT IN THE FINAL ADJUSTMENT NO PART SHALL DEVIATE MORE THAN ONE INCH FROM TRUE HORIZONTAL ALIGNMENT. THE SHIMS SHALL BE 3" X 1-3/4" AND PLACED BETWEEN THE POST AND THE THRIE BEAM RAIL. THE THICKNESS OF THE SHIMS SHALL BE DETERMINED BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER BEFORE ORDERING MATERIAL FOR THIS WORK.

AT THE EXPANSION SLOTS IN THE THRIE BEAM RAILS AND CHANNELS, TIGHTEN BOLTS, BACK OFF ONE-HALF TURN AND BURR THREADS.

AT THE THRIE BEAM CONNECTION TO POSTS AT END OF BRIDGE, TIGHTEN BOLTS, BACK-OFF ONE-HALF TURN AND BURR THREADS.

MINIMUM LENGTH OF THRIE BEAM SECTIONS IS EQUAL TO ONE POST SPACE.

USE 5/8 INCH BUTTON HEAD, OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS. (THICKNESS OF HEX NUTS = 3/8" MIN.)

THRIE BEAM GUARD RAIL ON THE BRIDGE SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE.

POSTS, TOP PLATES, CHANNELS AND CHANNEL SPLICE PLATES SHALL BE FABRICATED FROM A-36 STEEL AND GALVANIZED.

WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN THE BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1-3/4" X 3/16" MIN.) AND FLAT WITH A 11/16" X 1" SLOT, OR WHEN NECESSARY OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE BEAM. (USE A 3" X 1-3/4" X 5/8" RECTANGULAR WASHER BETWEEN THE POST AND THE THRIE BEAM RAIL.)

SPECIAL DRILLING OF THE THRIE BEAM MAY BE REQUIRED AT THE SPLICES (ALL DRILLING DETAILS ARE TO BE SHOWN ON THE SHOP DRAWINGS.)

FABRICATION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 712 OF MISSOURI STANDARD SPECIFICATIONS.

EXPANSION SPLICES IN THE THRIE BEAM RAIL SHALL BE MADE AT EITHER THE FIRST OR SECOND POST ON EITHER SIDE OF THE JOINT AND ON STRUCTURE AT BRIDGE ENDS. WHEN THE SPLICE IS MADE AT THE SECOND POST, AN EXPANSION SLOT SHALL BE PROVIDED IN THE THRIE BEAM RAIL FOR CONNECTION TO THE FIRST POST TO ALLOW FOR MOVEMENT.

THRIE BEAM RAIL AND CHANNEL CONNECTION TO RAIL POSTS ATTACHED TO PILASTERS SHALL BE EXPANSION SPLICES.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING NEW MATERIAL.

SHIM PLATES 6" X 6" X 1/16" MAY BE USED BETWEEN THE TOP OF POST AND THE CHANNEL MEMBER AS REQUIRED FOR VERTICAL ALIGNMENT.

SEE MISSOURI STANDARD PLAN DRAWING 606.00 FOR DETAILS NOT SHOWN.

FOR RAIL POST SPACING SEE SHEET NO. 3.

THRIE BM.DGN 3.30.RDH. JA

DETAILED AUG. 1996
CHECKED SEPT. 1996

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

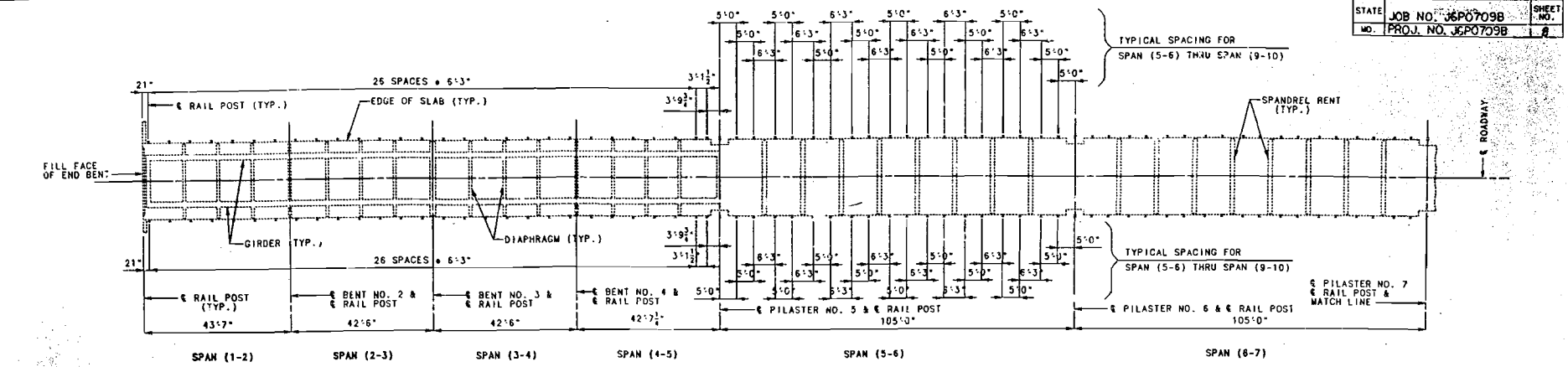
SHEET NO. 2 OF 6

FRANKLIN COUNTY

H09963

FINAL PLANS

STATE	JOB NO. J6P0709B	SHEET NO.
MO.	PROJ. NO. J6P0709B	8



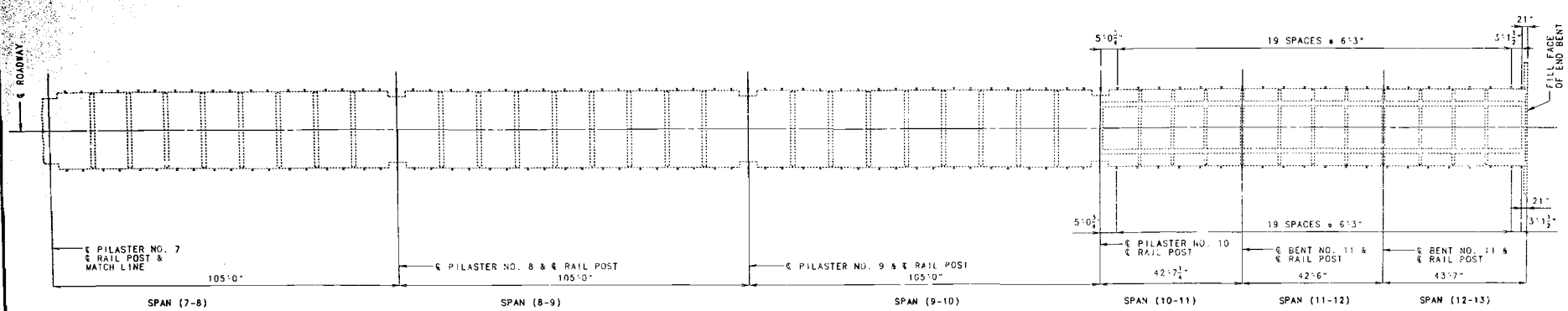
NOTE: FOR RAIL POST ATTACHMENT AT END BENTS, SEE SHEET NO. 5.
FOR RAIL POST ATTACHMENT TO DECK GIRDERS, SEE SHEET NO. 6.
FOR RAIL POST ATTACHMENT IN SPANDREL ARCH SPANS, SEE SHEET NO. 7.
FOR RAIL POST ATTACHMENT TO PILASTERS, SEE SHEET NO. 8.

NOTE:
THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS. THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURE'S SPECIFICATIONS EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS.

COST OF FURNISHING AND INSTALLING THE RESIN ANCHOR SYSTEMS, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE PRICE BID FOR "BRIDGE GUARD RAIL (THRIE BEAM)".

THE 7/8"ø RESIN ANCHOR SYSTEMS SHALL HAVE A MIN. ULTIMATE PULLOUT STRENGTH OF 27,500 LBS. IN CONCRETE WITH f'c = 4,000 PSI. SEE SPECIAL PROVISIONS.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Standard Specification 106 and Field Section (FS-712) from Materials Manual.



PLAN OF SLAB SHOWING RAIL POST SPACING

DETAILED AUG. 1996
CHECKED SEPT. 1996

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 3 OF 3

FRANKLIN COUNTY

H09963

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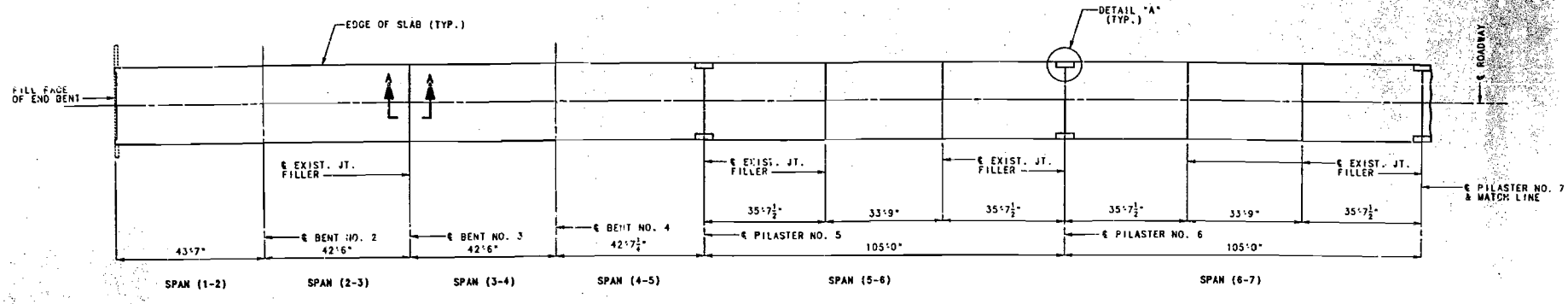
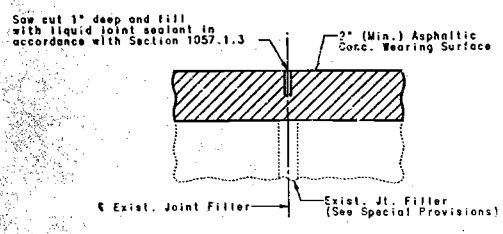
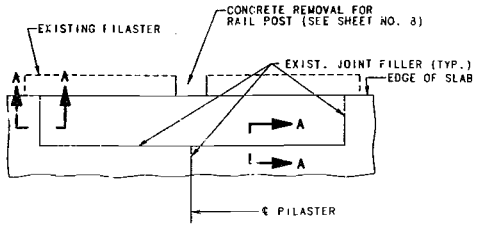
FINAL PLANS

STATE	JOB NO. J6P0709B	SHEET NO.
NO.	PROJ. NO. J6P0709B	9

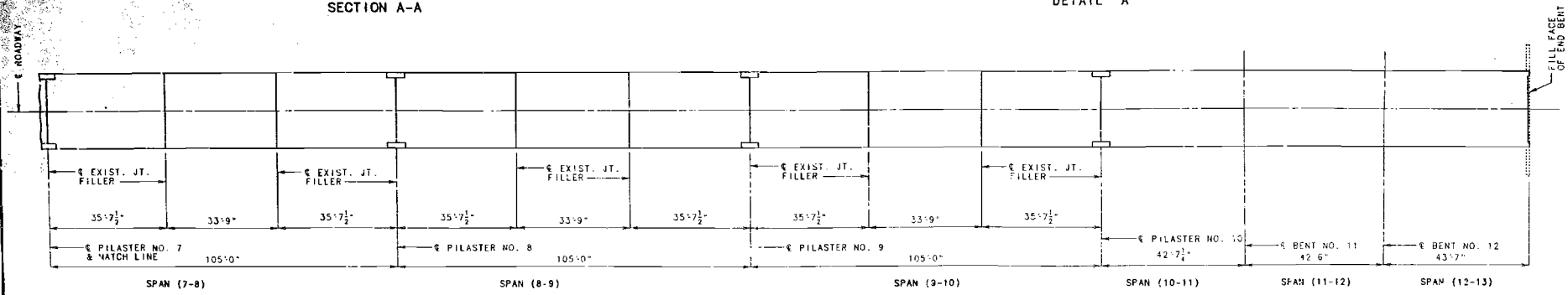




SECTION A-A



DETAIL "A"



PLAN OF ASPHALTIC CONCRETE WEARING SURFACE

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DETAILED AUG. 1996
CHECKED SEPT. 1996

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

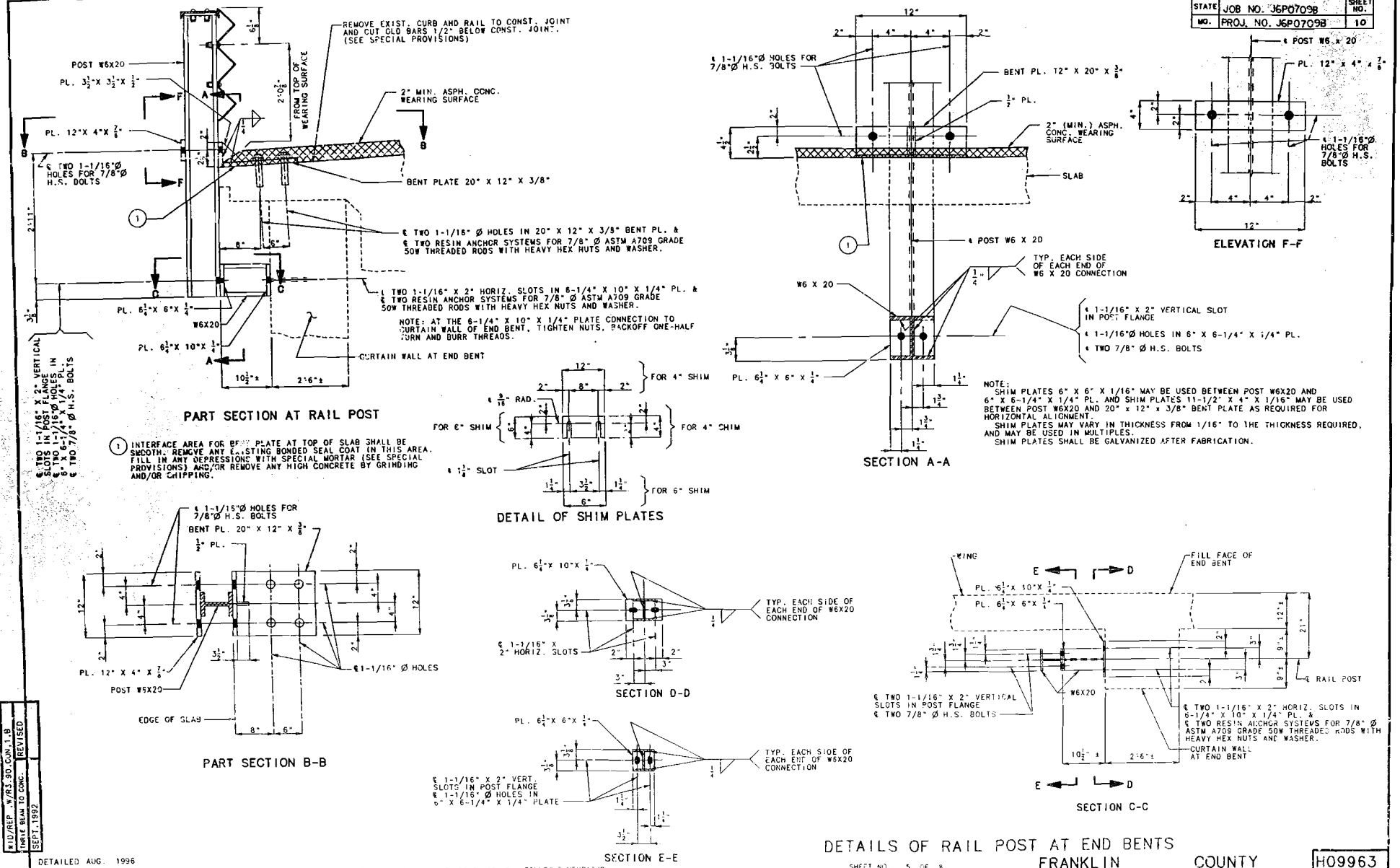
SHEET NO. 4 OF 8.

FRANKLIN COUNTY

H09963

FINAL PLANS

STATE	JOB NO. J6P0709B	SHEET NO.
NO.	PROJ. NO. J6P0709B	10



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RID/REP._W/R3.90.CON.1.B	
THRIE BEAM TO CONC.	REVISED
SEPT. 1992	

DETAILED AUG. 1996
CHECKED SEPT. 1996

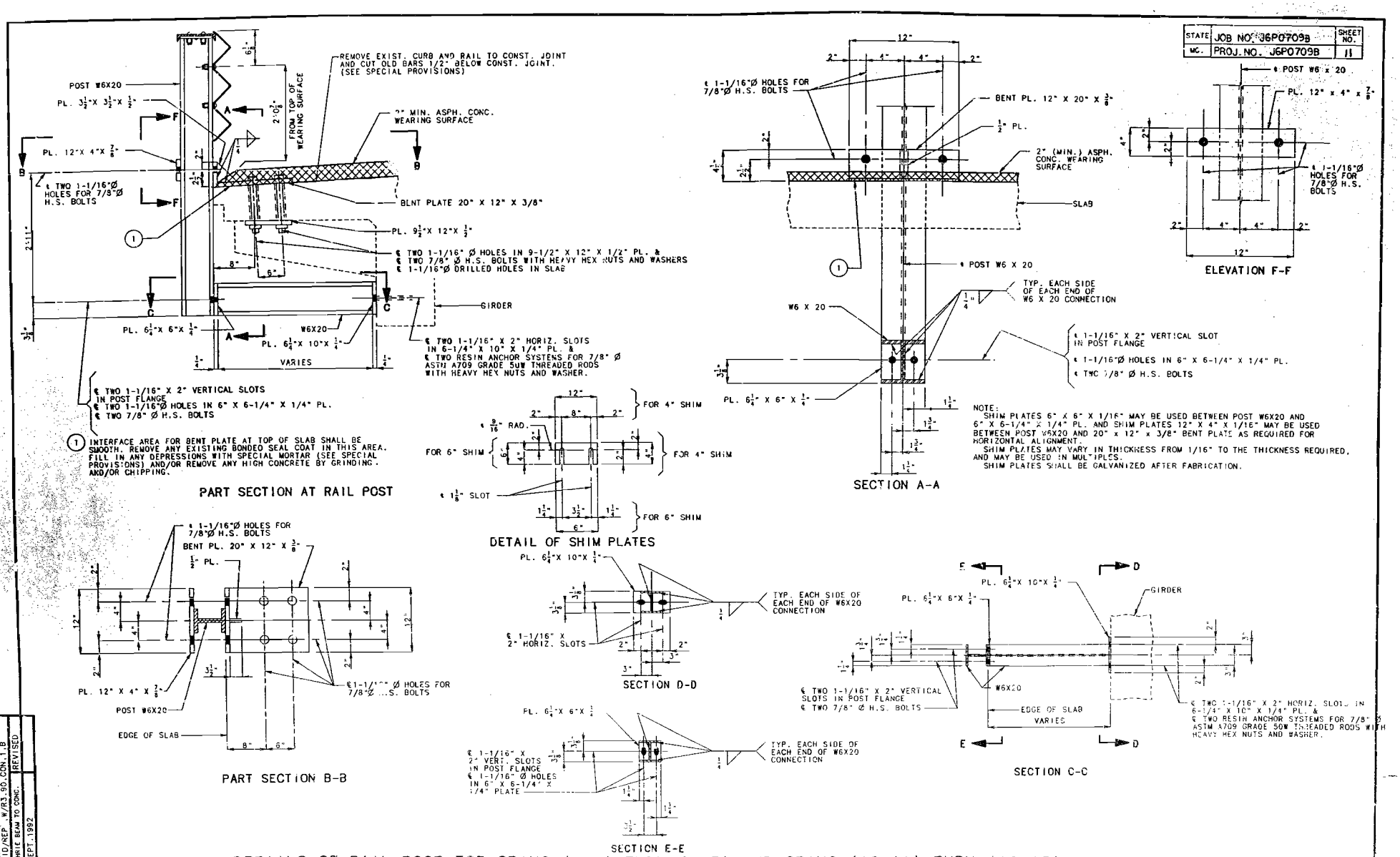
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

DETAILS OF RAIL POST AT END BENTS

SHEET NO. 5 OF 8 FRANKLIN COUNTY H09963

FINAL PLANS

STATE	JOB NO. J6P0709B	SHEET NO.
MC.	PROJ. NO. J6P0709B	11



DETAILS OF RAIL POST FOR SPANS (1-2) THRU (4-5) AND SPANS (10-11) THRU (12-13)

WID/REP	W/R3.90.CON.1.B
THRIE BEAM TO CONC.	REVISED
SEPT. 1992	

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DETAILED AUG. 1996
CHECKED SEPT. 1996

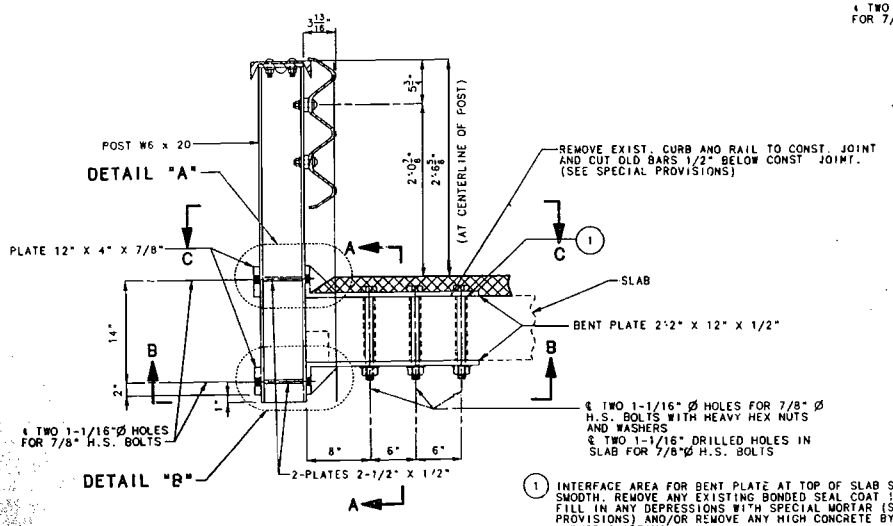
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 6 OF 8

FRANKLIN COUNTY

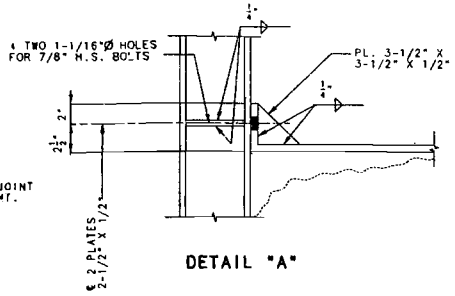
H09963

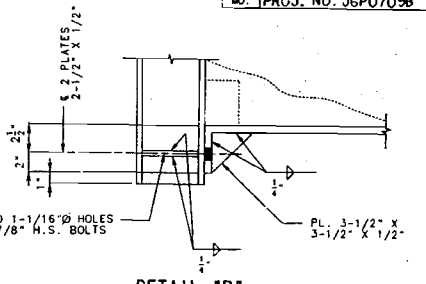
STATE	JOB NO. J6P0709B	SHEET NO.
NO.	PROJ. NO. J6P0709B	12

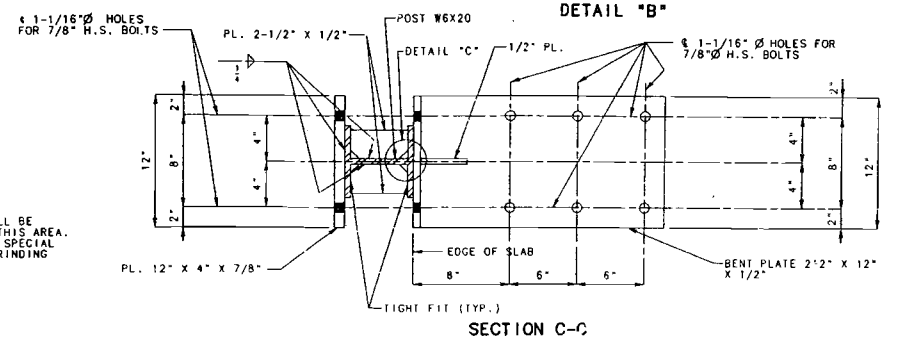


1 INTERFACE AREA FOR BENT PLATE AT TOP OF SLAB SHALL BE SMOOTH. REMOVE ANY EXISTING BONDED SEAL COAT IN THIS AREA. FILL IN ANY DEPRESSIONS WITH SPECIAL MORTAR (SEE SPECIAL PROVISIONS) AND/OR REMOVE ANY HIGH CONCRETE BY GRINDING AND/OR CHIPPING.

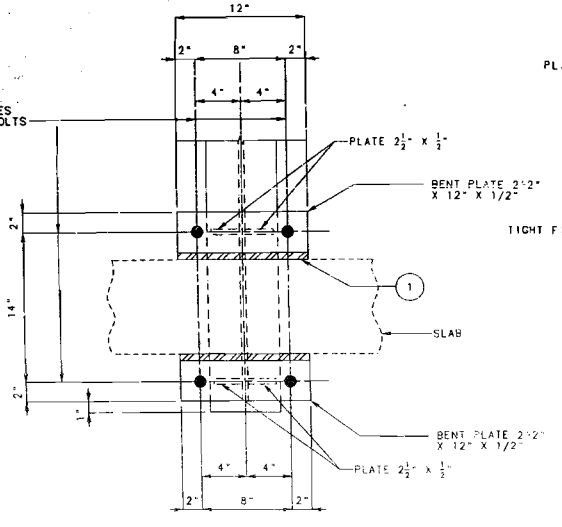
PART SECTION AT RAIL POST



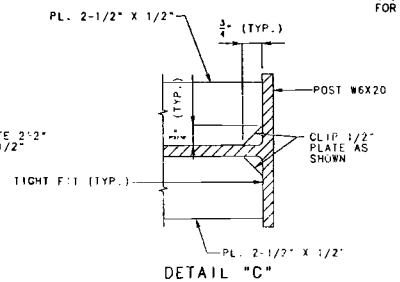




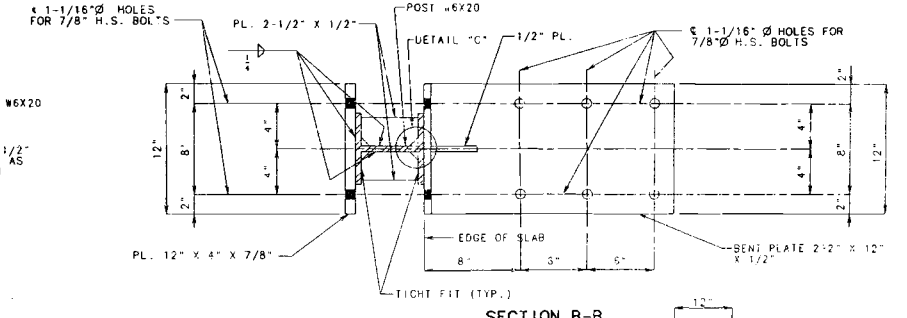
SECTION C-C



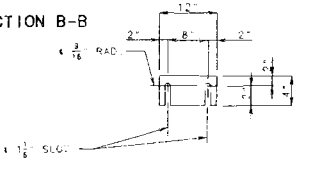
SECTION A-A



DETAIL "C"



SECTION B-B



DETAIL OF SHIM PLATES

NOTE: SHIM PLATES 12" X 4" X 1/16" MAY BE USED BETWEEN POST W6X20 AND 2'-2" X 12" X 1/2" BENT PLATE AS REQUIRED FOR HORIZONTAL ALIGNMENT. SHIM PLATES MAY VARY IN THICKNESS FROM 1/16" TO THE THICKNESS REQUIRED, AND MAY BE USED IN MULTIPLES.
SHIM PLATES SHALL BE GALVANIZED AFTER FABRICATION.

DETAILS OF RAIL POST FOR SPANS (5-6) THRU (9-10)

DETAILED AUG. 1996
CHECKED SEPT. 1996

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

SHEET NO. 7 OF 8

FRANKLIN COUNTY

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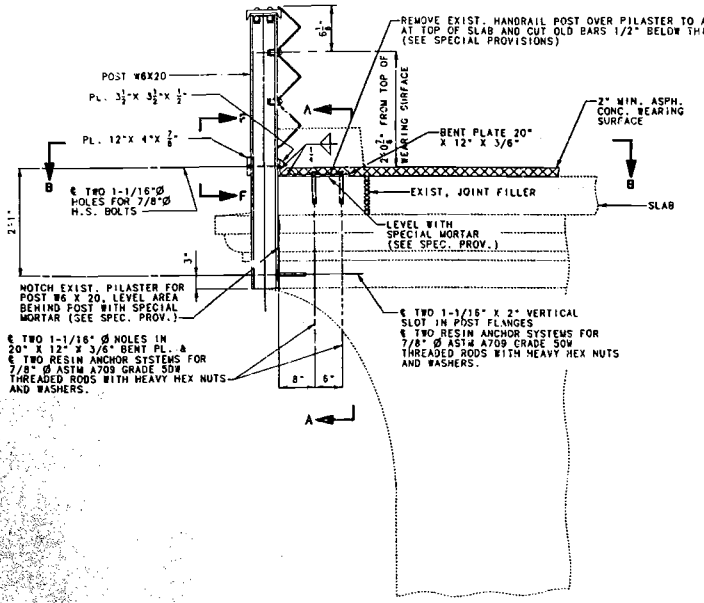
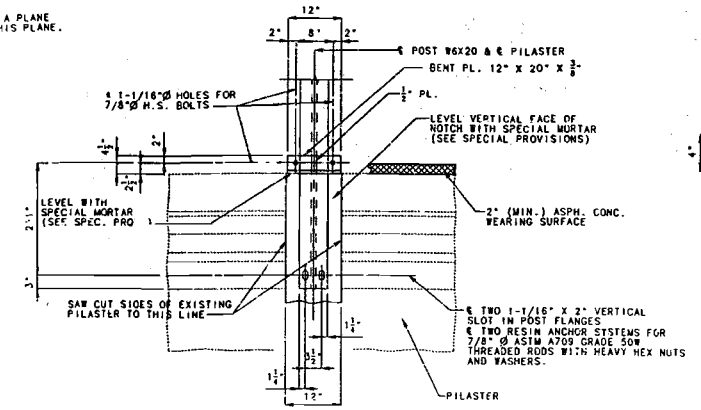
FINAL PLANS

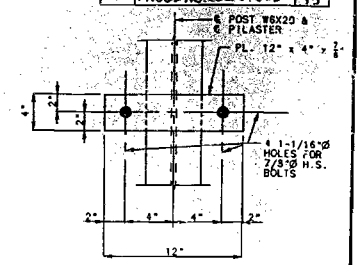
STATE	JOB NO. J6P0709B	SHEET NO.
NO.	PROJ. NO. J6P0709B	13



PART SECTION AT RAIL POST AT PILASTER

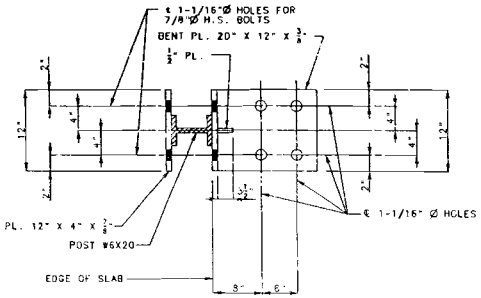


SECTION A-A



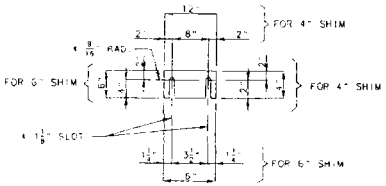
PART ELEVATION F-F

NOTE: SHIM PLATES 6" X 6-1/4" X 1/16" MAY BE USED BETWEEN POST W6X20 AND PILASTER AND SHIM PLATES 20" X 12" X 1/16" MAY BE USED BETWEEN POST W6X20 AND 20" X 12" X 3/8" PLATE AS REQUIRED FOR HORIZONTAL ALIGNMENT.
SHIM PLATES MAY VARY IN THICKNESS FROM 1/16" TO THE THICKNESS REQUIRED, AND MAY BE USED IN MULTIPLES.
SHIM PLATES SHALL BE GALVANIZED AFTER FABRICATION.



SECTION B-B

NOTE: CONCRETE REMOVAL AT PILASTERS TO THE LINES SHOWN, SHALL BE INCLUDED IN THE PRICE BID FOR "CURB REMOVAL FOR THRIE BEAM INSTALLATION".



DETAIL OF SHIM PLATES

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WID/REP. W/R3.90.CON.1.B
THRIE BEAM TO CONC.
REVISED
SEPT. 1992

DETAILED AUG. 1996
CHECKED SEPT. 1996

DETAILS OF RAIL POST AT PILASTERS 6 THRU 10

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 8 OF 8

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Index to Photographs

Meramec River Bridge over Meramec River

Bridge No. H-996R1
Franklin County, Route 30/47

Randall Dawdy, Photographer
January 1999

1. View of Meramec River Bridge (north end) looking northeast.

2. View of Meramec River Bridge (south end) looking east.

3. View of Meramec River Bridge looking southwest.

4. View of Meramec River Bridge looking northwest

5. View of Meramec River Bridge looking south.

6. View of open rib spandrel arches (Pier 8 in foreground) looking north.

7. View of open rib spandrel arch span (Span 7) looking upstream.

8. View of open rib spandrel arch span (Span 8) looking upstream.

9. View of Spans 8 and 9 at Pier 9.

10. Close-up view of arch springing line at Pier 9.

11. View of underside of arch ribs.

12. Close-up view of flared pilaster crown.

13. View of north deck girder approach spans (Spans 1-4), with H-pile supports beams, looking northeast.

14. View of south deck girder approach spans (Spans 10-12), looking southeast.

15. View of deck girder approach span (Span 12) at Bent 12 and Abutment 13.

16. View of deck girder approach span (Span 10) at Pier 10 and Bent 11.

17. View of Pier 10, with deck girder approach span and open rib spandrel arch span.

18. View of replacement guardrails of thrie beam rails and steel posts.

19. View of bridge deck, looking north.

Photograph 1

Photograph 2

Photograph 3

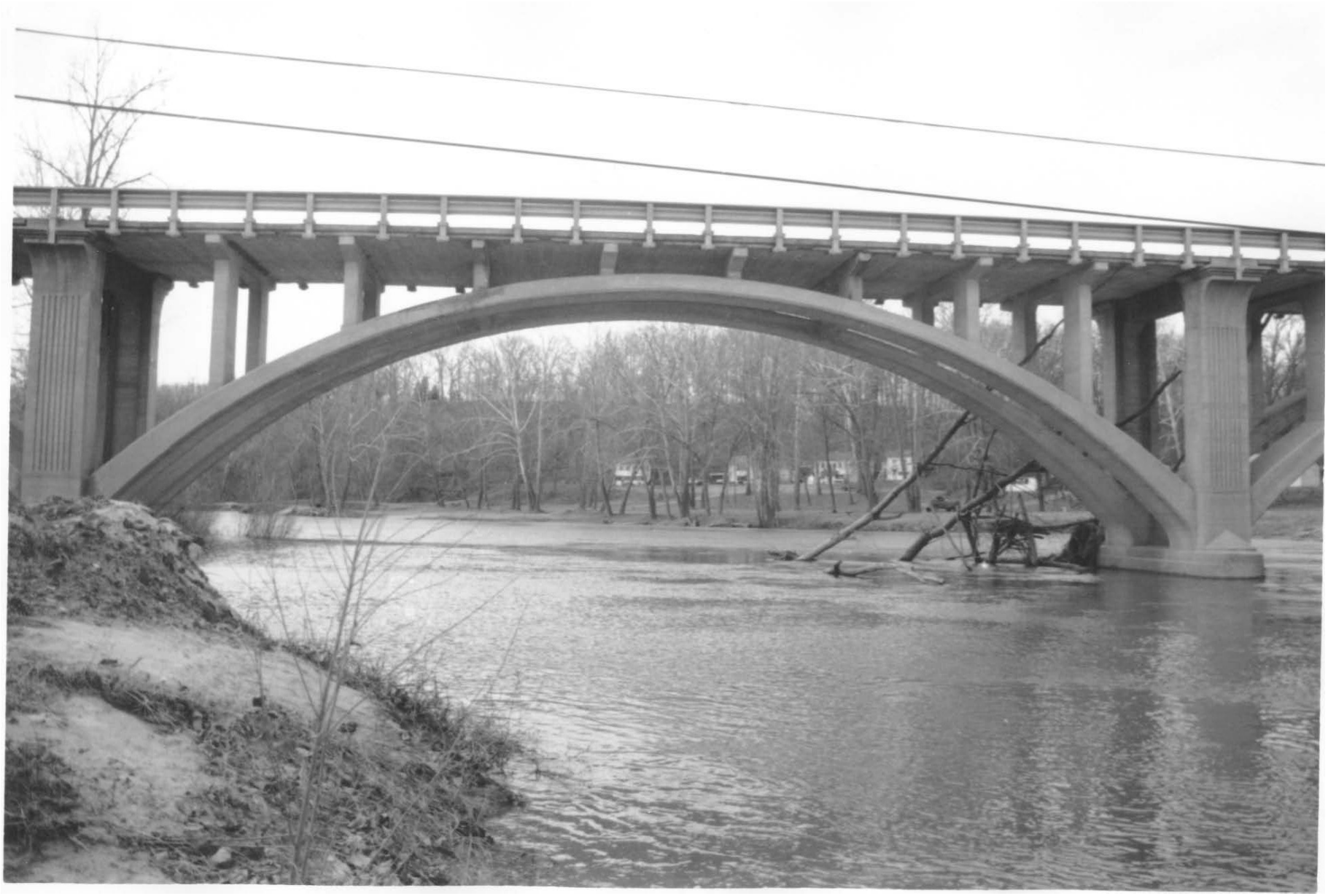
Photograph 4

Photograph 5

Photograph 6

Photograph 7

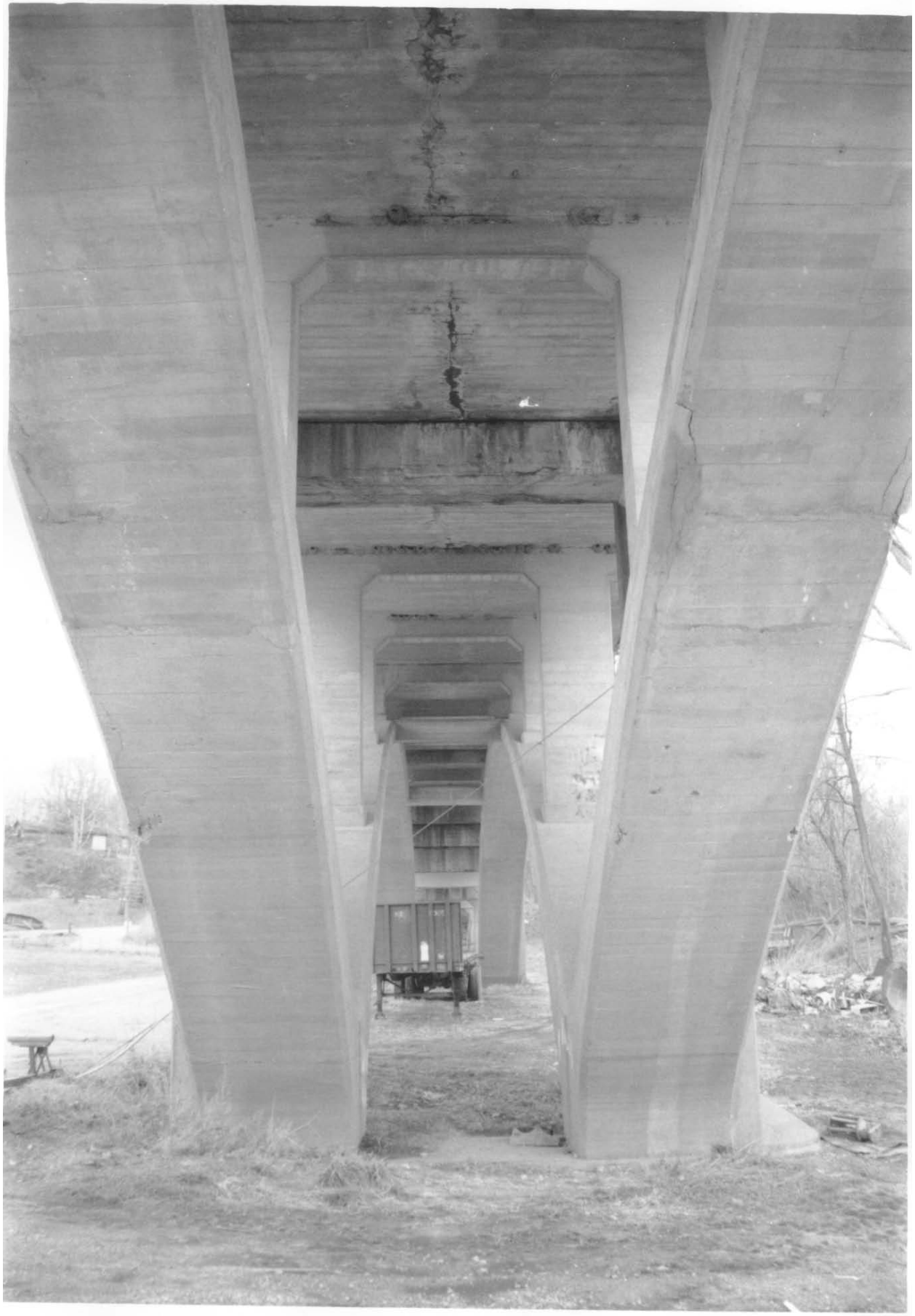
Photograph 8



Photograph 9

Photograph 10

Photograph 11



Photograph 12

Photograph 13

Photograph 14

Photograph 15

Photograph 16

Photograph 17

Photograph 18

Photograph 19