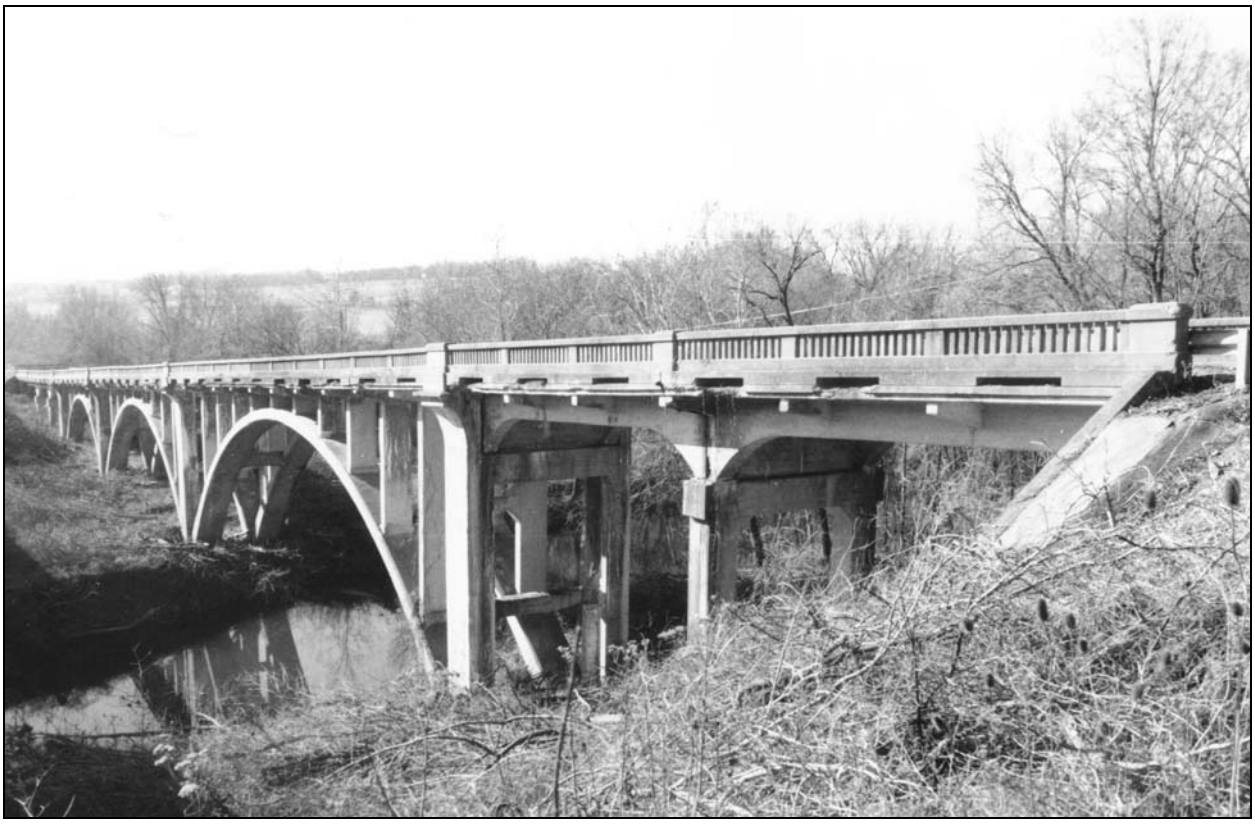
Documentation of the Historic Pomme de Terre River Bridge

Bridge No. H-636
Greene County, Route 65



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Pomme de Terre River Bridge
Bridge No. H-636
Greene County, U.S. Route 65

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Description of the Pomme de Terre River Bridge

The Pomme de Terre River Bridge (Bridge No. H-636) spanning the Pomme de Terre River at U.S. Route 65 in northeast Greene County consists of three reinforced concrete open spandrel arch spans, with two reinforced concrete deck girder approach spans on the north end, and a three-span, reinforced concrete, continuous girder approach on the south end. The superstructure is carried on reinforced concrete abutments, bents, and piers all founded on bedrock. The overall bridge length is 521'-11", while the roadway width is 20' with a 4.9 percent climbing grade from south to north.

The following description of the Pomme de Terre River Bridge is based on the original design plans.[1] Actual dimensions of some components of the substructure changed during construction when the depths of solid bedrock varied from the plans. The original design of Abutment No. 1 on the north river bluff consisted of a bridge seat and backwall. After actual construction had started, engineers reconfigured the design. The abutment's finished dimensions are unknown. As shown on the design plans, however, the reinforced concrete bridge seat measures 17'-6" long x 1'-10" wide x 2'-6" high, and supports the first deck girder span. The north ends of the two reinforced concrete girders rest on two multilayered plate bearings consisting of upper and lower ½"-thick steel bearing plates and a middle plate of 16-gauge copper, riveted together and secured to the bridge seat with grout and two 18"-long anchor bolts. Two bent steel bars extend at a 45-degree angle from the bearings into the girders for approximately 18". The adjoining backwall of the abutment measures 45'-6" long x 1' wide x 7'-10-¼" high, and is strengthened by two rear counterforts. The rear of the backwall at Abutment No. 1 is covered in fill up to the roadway grade elevation of 1160.85'.

Bent No. 2 supporting the two deck girder spans is an open bent set on the north slope of the river bluff. As designed, the bent consists of two square columns measuring 2'-6" x 2'-6" resting on square footings 4'-6" x 4'-6" x 2'-6". The centers of the columns are spaced 13'-8" apart, and the columns rise 14'-9" high to the base of the connecting cap beam. The cap beam, with dimensions of 17'-2" x 2'-9" x 2'-6", carries the deck girder spans on plate bearings composed of a 16-gauge copper plate sandwiched between two ½"-thick steel plates. Bent steel bars extend into the girders from the bearing plates.

Pier Nos. 3 through 6 are open piers that carry the three open spandrel arch spans. Pier No. 3 also carries the second deck girder approach span, while Pier No. 6 also supports the north

[1] Missouri State Highway Department, "Bridge Over Pomme de Terre River," [bridge plans, fourteen sheets], July 24, 1928." Microfiche. Bridge Division, Missouri Department of Transportation, Jefferson City, Missouri.

span of the continuous girder. Pier Nos. 3 through 5 are built up from a base elevation of 1105', while Pier No. 6 rests at a base elevation of 1108'. Pier No. 3 has a large rectangular footing measuring 15' x 18'-9" x 3' for an arch buttress that anchors the first arch span. The buttress extends nearly the length and width of the footing, and is tied in with ¾"-diameter reinforcing rods. At 6'-6" above the footing, the solid buttress divides into two arch butts 5' wide that emerge from the buttress at the springing line elevation of 1114.5'. Two column shafts, offset from the arch ribs, are keyed into the footing and buttress. The columns at Pier No. 3 measure 5' x 2'-10-½", and are 36'-1-1/8" high from the extradoses of the arch ribs to the roadway deck. A center tie beam between the columns is 1'-9" x 1'-9". Pier No. 3 features a second upper beam on its north side and a pier cap that together support the end of the deck girder span. The two bearing plates at Pier 3 are two combined ½"-thick steel plates. Bent steel bars extend into the girders from the bearing plates. The upper 4' of the columns' outer faces curve outward to support the edges of the bridge deck.

Pier Nos. 4 and 5 are of a similar design but vary in the heights of the columns and, in certain instances, in the size of the reinforcing steel. Large rectangular footings measure 29'-3" x 10'-6" x 3'. Oval column bases are 27'-3" x 8'-6" x 6'-6", with a slight batter and a 6" bevel, and are built up to the springing line elevation of 1114.5'. Cutwater cones are at the edges of the column bases. Four arch ribs at each pier are integrated into the footings and the column bases with steel reinforcing bars. The columns of Pier Nos. 4 and 5 have similar configurations and dimensions as those of Pier No. 3. The height of the columns at Pier No. 4 as measured from the arch ribs to the upper tie beam is 27'-1-¾". The columns at Pier No. 5 are 22'-6-¼" high.

Pier No. 6 has a rectangular footing measuring 18'-9" x 11' x 3' that supports an arch buttress for the southernmost arch span. The solid arch buttress rises 3'-6" high from the top of the footing to the arch ring intradoses. The two pier columns, offset from the arch ribs, are 5' x 2'-10-½" x 21'-8", and are connected by a rear tie beam that supports the continuous girder approach span with multilayered bearing plates of steel, copper, and steel. Bent steel bars extend into the girders from the bearing plates.

Bent Nos. 7 and 8 supporting the continuous girder are both open bents similar to Bent No. 2. Each bent has two square footings measuring 4'-6" x 4'-6" x 2'-6", and square columns 2'-6" x 2'-6". The centers of the columns are spaced 13'-8" apart. Bent No. 7 is 16'-8" high, and Bent No. 8 is 15' high. The cap beams measure 17'-2" x 2'-9" x 2'-6". Bearing plates at the ends of the cap beams are double steel plates. Bent steel bars extend into the girders from the bearing plates.

Bent No. 9 at the south end of the bridge is an open abutment set on two rectangular footings 8'-6" x 4'-6" x 2'-6". Two columns have basal measurements of 6'-6" x 2'-6", and have a front batter of 3" per foot with a total rise of 16'-2". The connecting cap beam is 3' high x 2'-6" wide, with a winged backwall 43'-4" long x 1' wide. The south end of the continuous girder rests on two multilayered plate bearings consisting of upper and lower ½"-thick steel bearing plates and a middle plate of 16-gauge copper. Bent steel bars extend into the girders from the bearing plates.

The two reinforced concrete deck girder approach spans at the bridge's north end are each 35' long as measured from the outer faces of the end floor beams, or 38'-7" long as measured from the centers of the bearing plates. Two parallel girders at each span are 1'-5" wide and are centered 13'-8" apart. Approximately 7'-1" of the girder ends are arced to a theoretical radius of 9'. The girders measure 2'-7" high at their mid-points where they are braced by a transverse crossbeam 10" wide. Outer cantilevers 3'-5-½" long x 10" wide occur 5'-5" to either side of the crossbeam to support the edges of the bridge deck, while double cantilevers occur above Bent No. 2. Reinforced concrete floor beams at Bent No. 2 between the girder spans are each 10" wide, separated by a 2" expansion joint layered with bituminous felt.

The three-span, reinforced concrete continuous girder at the bridge's south end has a total length of 128'-7". Each span is 40' long as measured from the outer edges of the bearing plates. The continuous girder, lacking expansion joints, has two parallel girders each 1'-8" wide and centered 13'-8" apart. Approximately 7'-1" of the girder ends are arced to a theoretical radius of 9'. The girders measure 2'-4" high at the midpoints, and are connected at approximate 12' intervals by 10"-wide crossbeams that end in outer cantilevers. Reinforced concrete floor beams occur at the girder ends.

The three open spandrel arch spans of the Pomme de Terre River Bridge are of different lengths. In this respect the bridge differs from other arch spans designed by the Missouri State Highway Department. Typically, Missouri's open spandrel arch bridges featured symmetrical spans of equal lengths.[2] As measured from the inner faces of the piers, the north arch span (labeled as "Span C") is 122'-6" long, the center span ("Span D") is 100' long, and the south arch span ("Span E") is 77'-6" long. The springing line of the arches is at an elevation of 1114.5'. Because of the 4.9 percent roadway grade, the arch spans decrease in height from north to south. From the springing line to the arch crown, the rise of Span C is over 31'-9" high, Span D has a rise of over 26'-2", and Span E has a rise of over 21'-10". While the spandrel bents are spaced symmetrically along the arch ribs at 10' intervals, the number of bents varies at each span. Span C has ten spandrel bents, Span D has eight spandrel bents, and Span E has six spandrel bents. All of the arch ribs have a horizontal width of 5', with 4" beveled edges, but the vertical dimensions of the ribs differ at each span. The arch ribs of Span C are 3'-2-¼" high at the springing line and gradually taper to 1'-8" at the arch crown. The ribs of Span D narrow from 2'-10" to 1'-6". At Span E, the ribs are 2'-4-½" high at the springing line, and taper to 1'-3" at the arch crown. Tie beams between the arch ribs occur at alternating points along each span.

Above the arch ribs, the spandrel bents supporting the bridge deck each consist of two columns centered 12' apart and measuring 3'-6" x 1'-3", with the heights of the columns dependent on their placement along the ribs. Column heights range from 22'-10" to 2'-1". Only the first spandrel bent at Span C has a connecting tie beam between the columns. The columns are tied in to cap beams 22' long x 1'-3" wide x 1'-4" high.

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[2] David C. Austin, "Sac River Bridge, Spanning the Sac River at U.S. Route 160, Ash Grove vicinity, Greene County, Missouri, HAER No. MO-110," Historic American Engineering Record, National Park Service, Washington, D.C., 2005, 13-14.

The bridge deck consists of a reinforced concrete slab generally 10-½"-thick at centerline and 23' wide. The slab thickens to over 11" across the continuous girder in order to maintain a vertical curve across that end of the structure. At the piers and at intermediate spandrel bents, three layers of tarpaper beneath the bridge deck act as horizontal bearings for expansion joints that are layered with bituminous felt. Concrete curbs along the length of the bridge are 10" high and 1'-6" wide, with 5'-long drainage holes. Concrete balustrades on the curbs consist of a beveled lower rail 8" high and 10" wide, 4" x 4" balusters 1'-4" high, and a beveled upper rail 6" high and 10" wide. Subposts placed above the spandrel bents on the arch spans and above the cantilever crossbeams on the girder spans are 1'-4" x 6". Larger balustrade posts above the bents and abutments are 2'-6" x 1'-6" x 2'-5" with beveled copings. The balustrade posts above the four piers are 4'-6" x 1'-6" x 2'-9" with beveled copings, and help emphasize the decorative fluting of the pier columns. The two-lane roadway between the curbs and balustrades has a width of 20'. As part of the bridge construction, the ground line beneath the three arch spans was leveled to an elevation just below that of the arch springing line.

History of the Pomme de Terre River Bridge

The Pomme de Terre River Bridge (Bridge No. H-636) spans the Pomme de Terre River at U.S. Route 65 in northeast Greene County, approximately 120 feet south of the Dallas County line. Designed by the Bureau of Bridges of the Missouri State Highway Department and constructed by M.E. Gillioz in 1928-1929, the Pomme de Terre River Bridge is a three-span, reinforced concrete, two-ribbed, open spandrel arch structure, with deck girder and continuous girder approach spans, carried on reinforced concrete abutments, bents and piers. It is significant as an example of an asymmetrical, multiple-span, open spandrel arch bridge, and demonstrates the historic application of reinforced-concrete technology to major bridge construction.[3]

The Pomme de Terre River Bridge was constructed as a segment of U.S. Route 65, an interstate highway linking Missouri with Iowa and Arkansas. Construction of the highway began in the 1920s under the auspices of the Missouri State Highway Department and the Missouri State Highway Commission. As one of the largest rivers in the western Ozarks, the Pomme de Terre River drains an area upstream from the bridge site encompassing approximately seventy-six square miles. The river's volatile nature was evidenced by frequent and rapid rises of water levels, a crooked channel, shifting gravel bars, accumulations of driftwood, and bank instability. The new highway required a substantial crossing both to elevate the roadway above potential high waters, and to reach a rock bluff on the north side some fifty feet above the river bed.[4]

On September 1, 1926, E. R. Scrafford completed a survey of the bridge site for the highway department. In his report, Scrafford noted an existing bridge located immediately west (downstream) of the proposed bridge site. The Wrought Iron Bridge Company of Canton, Ohio, had erected it in 1898 for Greene County. It had a steel through-truss superstructure built on

[3] Clayton B. Fraser, "HAER Inventory Data Sheet, Pomme de Terre River Bridge (No. H-636)," Missouri Historic Bridge Inventory, 5 Vols., Missouri Department of Transportation, Project No. NBIH(6), Fraserdesign, Inc., Loveland, Colorado, 1996, 5: n.p.

[4] Missouri State Highway Department, "Bridge Report," September 1, 1926. Microfiche. Bridge No. H-636 Correspondence File, Bridge Division, Missouri Department of Transportation, Jefferson City.

stone abutments and skewed cylindrical piers, and although in fair condition had a narrow roadway width of 14'. After examining the river conditions and the surrounding topography, Scrafford recommended a structure 300' long composed of concrete arches and built on a grade to reach the high, north bluff. He expected that using the river sand and gravel as concrete aggregates would save a "long haul" of materials during construction.[5]

During January 1927, the staff of the highway department's Division No. 8, headquartered in Springfield under Division Engineer H. P. Mobberly, forwarded survey information on the bridge site to the Bureau of Bridges in Jefferson City, overseen by Leif Sverdrup, Assistant to the Chief Engineer. Preliminary information included Scrafford's bridge survey report, blueprints of cross-sections, plan and profile sheets, and soundings of the riverbed indicating the depths to bedrock. In early February, the bridge engineers requested more specific information on the contours of the exposed rock on the north side of the river in order to "intelligently design the structure" at that end. They hoped to place the north abutment against a vertical face of the rock which would considerably reduce its costs. Mobberly's office quickly submitted the requested information which allowed the Bureau of Bridges to proceed with the design.[6]

Another year elapsed, however, before the bridge engineers began working on their design. The fourteen sheets detailing the design plans of Bridge No. H-636 were drawn, traced and checked from January through July 1928. Bridge Engineer N. R. Sack affixed his signature to the bridge plans on July 24, 1928. The bridge would be constructed as part of Federal Aid Project No. 286-B, comprising 3.6 miles of U.S. Route 65 in Greene County beginning at the Dallas County line. After the bid opening on August 10, on August 14 the Missouri State Highway Commission met to consider the bids and award the contract. The Stigall Construction Company of Springfield had submitted the lowest bid, but the Commission rejected it on various technicalities and instead awarded the construction contract to the second-lowest bidder, M.E. Gillioz of Monett, Missouri. M.E. Gillioz also received the contracts for four adjoining projects along Route 65 in Dallas County totaling 18.7 miles, extending from the Greene County line to north of Buffalo.[7]

Several weeks after the letting, Assistant Bridge Engineer Vaughn W. Enslow and Project Engineer N. H. Bass, accompanied by another man named Whipple, made the first on-site inspection of the bridge construction. There was little to inspect, as the excavations had just started on Abutment No. 1, Bent No. 2, and Pier No. 3. Nevertheless, Enslow expected that a total redesign of Abutment No. 1 would be necessary. The west end of the abutment footprint

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[5] *Ibid*.

[6] H. P. Mobberly to L. J. Sverdrup, January 15, 1927; L. J. Sverdrup to H. P. Mobberly, January 21, 1927; H. P. Mobberly to L. J. Sverdrup, January 24, 1927; H. P. Mobberly to L. J. Sverdrup, January 27, 1927; L. J. Sverdrup to H. P. Mobberly, February 4, 1927; H. P. Mobberly to L. J. Sverdrup, February 14, 1927; L. J. Sverdrup to H. P. Mobberly, February 16, 1927, in Bridge No. H-636 Correspondence File.

[7] Missouri State Highway Department, "Bridge Over Pomme de Terre River."; "Award of Contract, Projects 307-A, 307-B, 307-C, 307-D, Dallas County, and Project 286-B, U.S. 65, Greene County," in Minutes of Proceedings of Missouri State Highway Commission, 1919-present, Secretary's Office, Missouri State Highway Commission, Jefferson City, Missouri.

fell onto the existing road, and on the east end the rock ledge made a considerable drop. Enslow proposed to turn back the wings of the abutment backwall for 15' to form a U-shape, but questioned whether there was sufficient room on the west side. A redesign could also mean a larger, deeper footing. Enslow instructed Bass to prepare sketches of the rock ledge and forward them along with other relevant information to the Bureau of Bridges.[8]

In a subsequent visit on September 21, Bridge Inspector D. C. Wolfe found the work crew excavating at all four of the pier locations. At two of the piers, they encountered bedrock near the expected elevations. They had completed the excavations at Bent No. 2. However, its west footing would be poured about four to six feet higher than planned, and the column height reduced accordingly. The contractor had also jumped ahead on the construction of the centering that would temporarily support the arch spans during construction. Already the bow pieces for the centering for the longest span had been cut and nailed together, although Gillioz would still have to submit sketches of the centering plans for approval before it could be erected. Also, the workers had extracted sand and gravel from the Pomme de Terre to use as concrete aggregates, but the sand contained too much iron to use. Therefore, they planned to "roll" small pieces of gravel to obtain a "rolled sand." Gillioz also had as much as ten tons of Celite to use as a concrete additive in the above-ground construction. As for the problematic north abutment, Project Engineer Bass had yet to submit the sketches and elevations of the rock at that location so the abutment could be redesigned.[9]

Bass finally sent a sketch of the contours at Abutment No. 1 to Sack's bridge office on October 1, and Alfred Moret of M.E. Gillioz sent a sketch of his centering plans to Sack on October 5. Meanwhile at Pier No. 6, bedrock had been encountered nearly two feet higher than expected, and the bridge office consequently provided blueprints for a redesign of the footing at the higher elevation. However, the rock proved to be a soft cottonrock, so the excavations were taken down to the planned elevation after all. When Inspector Wolfe returned on October 10, he reported: "Very little progress has been made on this job since the last inspection." The plan to make rolled sand from pea gravel did not succeed, and "Kaw River" sand had to be shipped in. The first concrete pouring had been made for the footing and lower section of Pier No. 3, but Wolfe reported, "The lines on this form were not good." He noted a "bad bulge" at the base of the east pilaster, while the west pilaster had been cast against the rock abutment of the old bridge. The existing roadway there threatened to slide into the excavation, so the work at Pier No. 3 in building the forms and placing the concrete was "rushed considerably." Wolfe and Bass discussed the concrete itself. They considered adding additional sand where construction required "low slump" concrete, but then questioned the economy of using more of the relatively expensive Kaw River sand. Wolfe instructed Bass to prepare at least three concrete test cylinders from each major pouring. The highway department's Materials Laboratory in Jefferson City would subsequently test the concrete samples to ensure they met the required strength.[10]

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[8] V. W. Enslow, "Inspection Report," September 8, 1928, Bridge No. H-636 Correspondence File.

[9] D. C. Wolfe, "Inspection Report," September 21, 1928, Bridge No. H-636 Correspondence File.

[10] N. H. Bass to N. R. Sack, October 1, 1928; A. Moret to N. R. Sack, October 5, 1928; H. P. Mobberly to N. R. Sack, October 9, 1928; N. R. Sack to H. P. Mobberly, October 10, 1928; D. C. Wolfe, "Inspection Report," October

During the latter part of October 1928, the Bureau of Bridges and M.E. Gillioz collaborated on finalizing the plans for the centering that would support the arch ribs. Sack's engineers found the first sketch submitted by Moret to be incomplete, and returned it with their suggestions. They needed fuller details such as the elevations and dimensions of the studs, bracing, and the wedges that would form the ribs' curvature. They also needed data on the proposed camber for each arch, and the methods proposed to counteract any settlement or deflection of the ribs. It would be crucial that the centering be solidly well-built and in conformity with the desired dimensions. Gillioz instructed Moret to meet with Sack one-on-one, and Moret provided the revised sketches on October 22. In a follow-up letter dated October 27, Sack found the centering plans satisfactory overall, but suggested further changes. In the wake of the collapse of the centering for another arch span, he emphasized that the contractor retained full responsibility for the centering; the bridge office offered its oversight only as a means to assist M.E. Gillioz in the successful erection of the structure.[11]

Despite the careful attention paid to the plans for the centering, Gillioz's work crews proceeded with its placement prior to final approval from the bridge office. In an inspection of the job on October 24, D. C. Wolfe found the centering for the south arch span was almost completely erected, and the centering for the center span was nearly halfway complete. Wolfe apparently had no concerns, writing, "The type of centering being used is very easy and quick to erect, it requiring only four days to complete span 5." To ensure the arch ribs obtained their proper heights and curvatures, Wolfe instructed Bass to double-check the elevations of the lagging against the elevations on the plans, allowing no more than ½" difference. The four piers for the arch spans had all been completed up to the springing line, and the excavations finished at the south bents where bedrock occurred up to 1-½' higher than expected; the bent columns would be shortened accordingly. It was also decided to use a combination of the Kaw River sand and a very coarse, local sand in future concrete mixtures. Wolfe noted that in this regard the addition of the Celite would be "of great advantage."[12]

In early November, Sack instructed Bass to prepare concrete test cylinders as often as practical, or at the minimum from each span or bent. The concrete mixtures had to be of a consistent quality. Bass was to make the test cylinders in sets of three, each from a separate concrete batch. He also needed to run regular slump tests. Bass needed to accurately calibrate the water tank on the concrete mixer. He was advised to consult with the Division Testing Engineer as to the concrete's optimum moisture content and to dry out some specimens. He was also to check the condition of the aggregate against a sample that Sack had sent to him. Bass was to make note of any concrete admixture and its percentage by weight. Finally, Bass needed

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10, 1928; See "Concrete Cylinder Identification Blanks" and "Report of Tests on Concrete Cylinders," October 10, 1928, ff., Bridge No. H-636 Correspondence File.

[11] N. R. Sack to M. E. Gillioz, October 16, 1928; M. E. Gillioz to Alfred Moret, October 18, 1928; A. Moret to N. R. Sack, October 22, 1928; N. R. Sack to A. Moret, October 27, 1928, Bridge No. H-636 Correspondence File. Around the beginning of October, the centering for an arch span over the Osage River at Osceola had collapsed, injuring fourteen workers. *Springfield Leader*, October 5, 1928.

[12] D. C. Wolfe, "Inspection Report," October 24, 1928, Bridge No. H-636 Correspondence File.

to frequently check on the bulking of the sand. Thereafter, Bass regularly prepared concrete test cylinders from the same concrete batches used in the bridge construction, and shipped them to the Materials Laboratory for testing as to strength. Up to early November, Gillioz's construction crew used 65 percent Kaw River sand and 35 percent local sand to comprise the fine aggregate, and utilized Pomme de Terre River gravels as the coarse aggregate. They routinely added three pounds of Celite with each sack of cement. After about mid-November, they reversed the sand mixture to 65 percent local sand (a coarse sand evidently taken from the river) and 35 % Kaw River sand, a ratio they maintained through the remainder of the project.[13]

Wolfe's inspection on November 5, 1928, revealed "excellent progress" on the bridge, although Gillioz had not yet started the adjacent road work. The footings for the south bents and abutment had all been poured. Most of the centering for the three arch spans was in place. On the day of Wolfe's visit, workmen poured the first blocks of the arch ribs of the south span. These first blocks extended from a keyed construction joint at the arch butts up to the point of the first spandrel bents nearest the piers. Wolfe noted, "The falsework and centering was examined closely, but nothing could be noted which would in any way cause excessive deflection or failure." From elevations taken along the lagging, Wolfe and Bass determined that the first pours for the arch lowered the centering by 1/8". Bass would continue to monitor the elevations of the ribs after each pouring, after removing the centering, after placing the spandrel bents and bridge deck, and with the changing temperatures as winter approached.[14]

Gillioz completed the ribs of the south span within the week. The centering under the crown settled only 5/8". When Wolfe returned on Friday, November 9, his critical eye revealed some small honeycombs on the sides of the rib caused by insufficient spading of the concrete. The workers poured the concrete through a chute directly into the forms, and Wolfe believed the method delivered it too rapidly to be properly worked. He directed that thereafter the concrete be delivered into a hopper and carried in hand-carts to the forms where it could be thoroughly worked into place. Wolfe also noticed that the key sections of the arch ribs (the last segments to be poured) had slumped down, probably because of the premature removal of the forms over the extrados. A resulting bump (or bumps) had to chipped off and the surface refinished with grout. He also observed that the two sides of the west rib were not of the same thickness, and admonished that care be taken to obtain the proper thickness at all points. Otherwise, the reinforcing steel had been placed for the center span and it was ready for the concrete.[15]

Two weeks later on November 22, Wolfe found the ribs on the remaining two spans had been completed. He rated the lines and finish of the new concrete as "exceptionally good." The tops of the tie beams between the ribs had a more rounded finish, but still did not "look bad" and were deemed acceptable. Wolfe thought that carting in the concrete to the forms, while a slower process, had allowed for its more careful placement. The centering held up well. Across the

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[13] N. R. Sack to N. H. Bass, November 8, 1928; "Identification and Concrete Mix Information Blanks," November 5, 1928, ff., Bridge No. H-636 Correspondence File.

[14] D. C. Wolfe, "Inspection Report," November 5, 1928, Bridge No. H-636 Correspondence File.

[15] D. C. Wolfe, "Inspection Report," November 9, 1928, Bridge No. H-636 Correspondence File.

crowns of the three spans, it had settled only about 1". Elsewhere, the workers had started forming up the columns on Bent Nos. 7 and 8.[16]

By mid-December, with all of the arch ribs completed, the centering was struck on the south and middle spans. In inspecting the work with Bridge Engineer Sack, Wolfe reported the lines of the ribs were "very good" with only minor honeycombing found. Work started next on the spandrel bent columns of the south span, while the south bents and abutment were also finished. During the construction of Bent No. 7, however, the form for the east column broke apart and it had to be re-poured. With the bents complete, the south half of the continuous girder span was built, but either a shortage or the misplacement of the reinforcing steel caused a week's delay in building the north half. Gillioz had resumed using the chute to deliver the concrete, a method which required a wet mixture. Wolfe suggested steepening the chute and using a drier mix. Meanwhile, other crews grading the new roadway in south Dallas County were reportedly progressing rapidly toward Greene County.[17]

Construction continued at a quick pace in the final weeks of December 1928. The workers laid the floor slab across the continuous girder span and the south arch span, and began forming the curbs. Wolfe reported that those sections of the bridge deck turned out in good shape except for a high spot above Pier No. 6 that had to be rubbed down to the right elevation. The workers also finished the spandrel bents on the center arch span and began forming up the deck there while building up the columns on Pier No. 4. The concrete chute had been steepened to a 30-degree angle for pouring a drier concrete, but the varied moisture content of the aggregates caused inconsistencies in the mixes. In the meantime, the Pomme de Terre River rose up eight feet and washed out part of the centering under the north arch span. However, the wedging under the ribs had already been removed and the flooding did no other damage. Warmer temperatures had in fact caused the ribs to rise slightly.[18]

During the first weeks of January 1929, work on the structure continued to progress from south to north. The work crews completed two-thirds of the deck of the center span and the spandrel bents of the north span where they placed the reinforcing steel for the middle one-third of the deck. The workers also completed Pier No. 3 up to the tie beam, poured the footings on Bent No. 2, and began forming up its columns. Those footings had to be taken several feet deeper than planned to reach suitable bedrock. In placing Bent No. 2, Bass allowed the use of a concrete mixer that lacked a water tank and a timing mechanism. Instead, the water was measured in a bucket, and a man timed the duration of the mixing. During his inspection on January 22, Wolfe watched them pour a section of floor on the north arch span. The concrete had a good consistency and the workers thoroughly spaded it into the forms. To protect the wet concrete from freezing, they covered it with tarpaulins and fired oil drums underneath. After five hours the concrete still retained a temperature of 60 degrees. On the following day they

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[16] D. C. Wolfe, "Inspection Report," November 22, 1928, Bridge No. H-636 Correspondence File.

[17] D. C. Wolfe, "Inspection Report," December 12, 1928; "Identification and Concrete Mix Information Blanks," November 23-24, December 10, 18, 1928, Bridge No. H-636 Correspondence File; *Springfield Leader*, December 16, 1928.

[18] D. C. Wolfe, "Inspection Report," December 27, 1928, Bridge No. H-636 Correspondence File.

would straight-edge the top surface and cover it with straw while it cured. On other completed sections of the deck, however, Wolfe found considerable pitting. As Bass explained it, the pits were caused by wet concrete that dripped from the carts and froze to the deck, and when removed, small parts of the deck came up as well. Wolfe cautioned the workers against crossing new sections of the floor in the future until the concrete had thoroughly cured. In other places, tie rods used on the forms became embedded in the concrete and were broken off flush with the surface. Wolfe ordered them to be cut with a torch for at least an inch below the surface, and the holes filled with grout. He also reported that seven of the last nine concrete test cylinders did not meet the required strengths, likely because of the cold temperatures and the wet mixtures used in the chuting system. On average, he noted, the concrete strengths being obtained in the Pomme de Terre Bridge project were less than those on similar jobs.[19]

The highway department's Engineer of Construction, D. B. Levi, who routinely received the inspection reports, reacted strongly to Wolfe's report of January 22. In a letter to Division Engineer Mobberly, Levi objected to the use of the concrete mixer without a water tank or timer. His office "had a very hard battle to fight" in getting contractors to properly equip their small mixers with those features. The method used on the Pomme de Terre Bridge project had been obsolete for over a year, and Levi insisted that it not be allowed again in the future for it "brings up the old fight again." "Contractors," he wrote, "seemingly rejoice in calling attention to things that we, as employees of the Highway Department, allow one contractor to do and not the other." Levi was also disappointed in the damage to the bridge deck, "for we feel that our supervision is not so good or we would never have permitted the contractor to use methods which would damage the surface of a partly cured concrete floor." Levi expressed his further disappointment in the low strengths of the concrete and declared that "more attention should be given this work."[20] Subsequently, the bridge office prepared a graph comparing the concrete strengths obtained at the Pomme de Terre Bridge against those from three other similar bridge projects. An accompanying letter to Bass explained tactfully, ". . . the variation in strengths of concrete on the different jobs does not necessarily mean that one job is superior to the other in regard to the engineer's supervision of the concrete work, since there are many variables such as the quality of the materials with which they are working, curing temperatures, etc." However, the bridge office hoped that the comparisons would "tend to stimulate your [Bass's] interest in obtaining the best possible control of concrete construction."[21]

Evidently little work was accomplished during February, probably because of winter weather, but in early March, Wolfe reported the bridge was 84 percent complete. Gillioz had yet to start on the roadwork for the project, but both Wolfe and Bass expected that it would be done well ahead of the August 30 deadline. Near the end of March, Wolfe found the bridge 98 percent complete; remaining work consisted of placing the last two sections of the balustrades. About a dozen men worked at rubbing the concrete to give it a smooth, uniform surface. "The rubbing work is very good," Wolfe wrote, "giving it a very pleasing appearance." The falsework under

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[19] D. C. Wolfe, "Inspection Report," January 22, 1929, Bridge No. H-636 Correspondence File.

[20] D. B. Levi to H. P. Mobberly, February 16, 1929, Bridge No. H-636 Correspondence File.

[21] N. R. Sack to N. H. Bass, March 3, 1929, Bridge No. H-636 Correspondence File.

the second deck girder span gave "quite a little trouble" in settling during the construction and the span had to be jacked up to the correct position. A check of the expansion joints across the bridge showed that all but one worked properly. At one joint, the bridge expansion had squeezed out half the bituminous felt. Wolfe reported, "The expansion on the arch spans seems to centralize itself at certain points, probably where the least resistance is found." Some final detail work would be done on the expansion joints, and the metal bearing plates cleaned and painted. Wolfe also noticed that the coping of the posts at Pier No. 6 had been built on a horizontal plane and not parallel to the grade as stipulated on the plans. It gave the work there a "bad appearance." The upper railings stood too high to properly meet some of the other main posts as intended, but that did not seem to be a serious detraction. Elsewhere on the project, Gillioz had been building some small culverts ahead of the road grading work, and they would soon begin leveling the floodplain underneath the three arch spans. The contractor was also responsible for removing the old truss span. It would be match-marked, disassembled and stored on the right of way until the Greene County Court secured funds for its relocation.[22]

In an inspection report from May 1, 1929, Wolfe declared that the completed bridge "is a very good job. Several errors were made in forming and in giving elevations during construction, but none of these were serious and were all taken care of as the work progressed." Wolfe and Bass went over the last details in cleaning up the job, but they delayed the final inspection and formal acceptance of the structure until Gillioz completed the road grading work later that summer.[23] Unusually heavy rains during May undoubtedly interrupted the grading. The Pomme de Terre River reportedly rose twelve feet over the highway and kept it closed through most of the month.[24] John I. Quinn inspected the bridge in mid-June for the federal Bureau of Public Roads and wrote, "A very fine piece of construction has been achieved on this bridge." He noted ongoing work on the approach fills and the river channel. The *Springfield Leader* reported on June 19, 1929, that all the work on Route 65 for Project 286-B was then 90 percent complete.[25]

The contract with M.E. Gillioz provided for an initial graded earth roadway 30 feet wide. Under a subsequent contract completed in 1930, Route 65 was widened to 32 feet and provided with a concrete pavement 20 feet wide, for two 10-foot driving lanes and 6-foot shoulders. John Quinn and C. T. McGinley of the Bureau of Public Roads examined the Pomme de Terre River Bridge in May 1931, about two years after its completion. They reported that in general the structure was in excellent condition. However, fine cracks had developed in nearly all of the arch ribs at the springing line, probably caused by temperature-induced expansion and

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[22] D. C. Wolfe, "Progress Report," March 7, 1929; D. C. Wolfe, "Inspection Report," March 27, 1929, Bridge No. H-636 Correspondence File.

[23] D. C. Wolfe, "Project Progress Report," May 1, 1929, Bridge No. H-636 Correspondence File.

[24] *Springfield Leader*, "May 7, 13, 18, 1929.

[25] John I. Quinn, "Report on Construction (Bridge Only)," June 18, 1929, Bureau of Public Roads, United States Department of Agriculture, Bridge No. H-636 Correspondence File; Sprinfield Leader, June 19, 1929.

contraction movements. They also noted a vertical crack on the cap beam of Bent No. 8. They did not believe the cracks represented serious structural defects.[26]

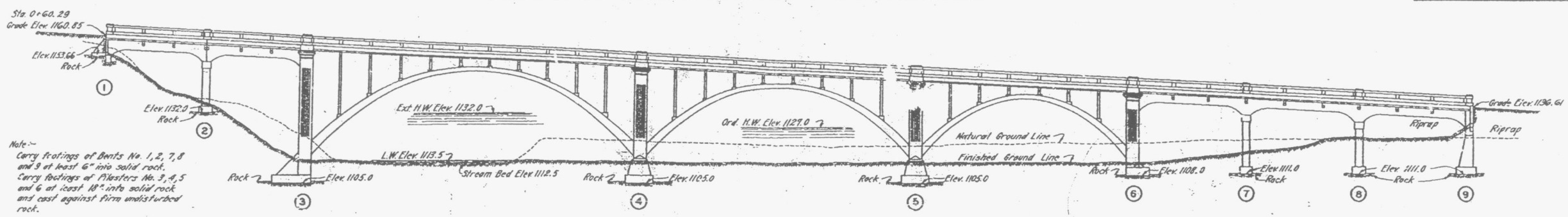
The Pomme de Terre River Bridge carried traffic on U.S. Route 65 for fifty years until it was closed in 1979. A continuous four-span, welded plate girder structure had meanwhile been erected immediately to the east of it in 1967-1968, along with a new 2.4-mile segment of a two-lane highway. Until it closed, Bridge No. H-636 carried the southbound traffic for the short stretch of four-lane highway at the Greene-Dallas county line. Bridge No. H-636 will be demolished in 2008 as Route 65 is expanded to a divided four-lane expressway.[27]

[26] Missouri Department of Transportation, Route 65 Construction History [map], Design Division, Missouri Department of Transportation, Jefferson City; John I. Quinn and C. T. McGinley, untitled report, May 20, 1931, Bridge No. H-636 Correspondence File.

[27] Fraser, "HAER Inventory Data Sheet"; Missouri State Highway Commission, "Plan and Profile of Proposed State Road, Dallas County-Greene County, Route 65, Project Section 39(4) and Project Section 30(6). Microfiche. Design Division, Missouri Department of Transportation, Jefferson City. The project history map of Route 65 labeled Bridge No. H-636 as "defective."

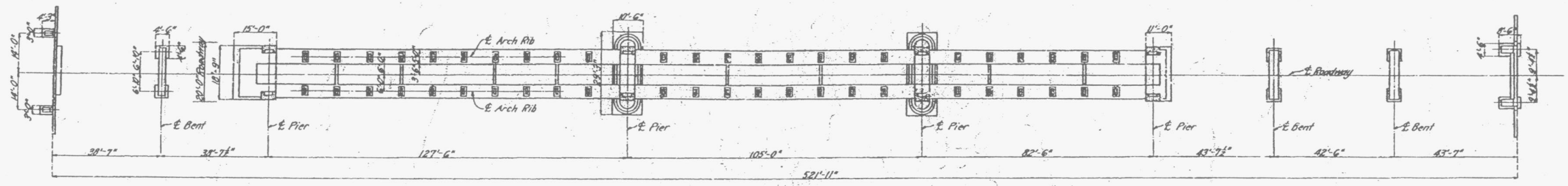
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286-B (US 65)	1928	1	14



Note:-
Carry footings of Bents No. 1, 2, 7, 8 and 9 at least 6" into solid rock. Carry footings of Pilasters No. 3, 4, 5 and 6 at least 18" into solid rock and cast against firm undisturbed rock.

GENERAL ELEVATION



PLAN

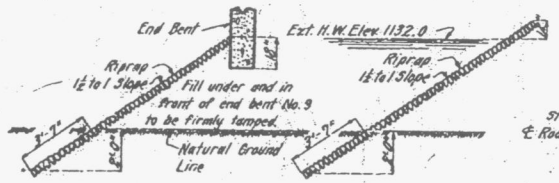
ESTIMATED QUANTITIES

ITEM	CONCRETE CU. YDS. 1:2:3 mix	1:3:6 mix	1:2:4 mix	REINF. STEEL LBS.
Handrail	51.0			
Deck Girder Spans		262.8		
Slab and Cobbs on Arch		237.9		
Girder Bents			97.6	
Arch Rings			237.9	
Pilasters, Wing Construction Joint at Top of Ring			122.1	
[illegible]			316.2	
Spandrel Bents			19.9	
Totals	51.0	500.8	865.9	125300
Fabricated Structural Steel-Bearing Plates		2980 Lbs.		
Excavation		1940 Cu. Yds.		

GENERAL NOTES:-

Concrete mixes to be as follows:-
All handrails 1:2:3. All deck girders 1:2:3½. Slab and curbs over arch rings 1:2½.
All girder bents, arch rings, piers, pilasters and spandrel bents 1:2½.
Exposed edges to be beveled 1" where no other beveling is specified. Exposed surfaces to be rubbed to a smooth and uniform appearance. No plastering permitted.
Arch rings to be poured in radial blocks in the order indicated on the detail drawings.
Corresponding sections in both ribs of span shall be poured at the same time.
The centering shall not be removed until the concrete in the ribs has been in place at least 21 days. Nor until concrete in adjacent span has been in place 14 days.
The contractor shall submit details of proposed centering to the Missouri State Highway Department for approval before work is begun.
Any camber placed on the deck girders must not appear in the finished surface of the roadway slab, or in the handrail.
Columns over arch shall not be cast until after wedges under ring have been released.
Shoring under deck girders to be removed before handrail is placed.
Provision must be made in the arch centering to be by loading equal parts of the ring simultaneously in removing centering.
Horizontal expansion joints in concrete superstructures to consist of 3 layers of tar paper applied on smoothly finished surfaces.
Where bituminous felt is used in expansion or partition joints in concrete, place felt in vertical joint securely to one face of concrete with copper nails.
Two name plates, type "A" as shown on Std. 3816 to be furnished and placed by the contractor. Cost of name plates to be included in price bid for other items.

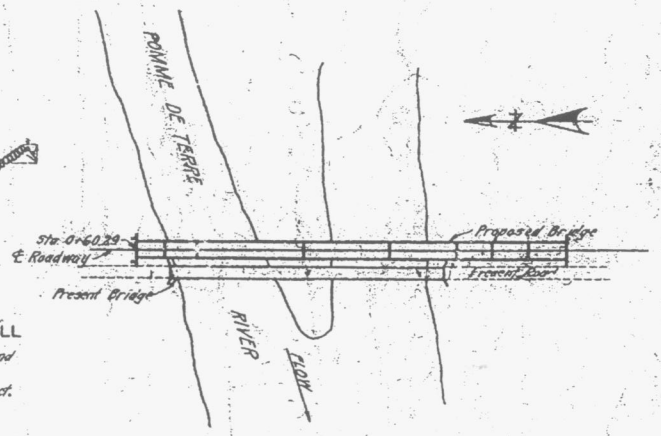
B.M. Elev. 1125.80 N. & W. in 36" Walnut 39' Lt. Sta. 5+25.



FRONT OF END BENT NO. 9 SIDE SLOPES OF FILL

Riprap fill at south end of bridge as shown in sketches. Extend riprap 50'-0" back of end bent No. 9.
Approximately 140 sq. yds. of riprap work included in road contract.

RIPRAP SKETCHES



LOCATION SKETCH

INDEX OF SHEETS

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286 B (U.S. 65) STA. 0+60.29, FINISHED
GREENE COUNTY

Drawn July 1928 By A.F.K.
Traced July 1928 By H.C.C.
Checked July 1928 By A.L.G.

SUBMITTED BY [signature] BRIDGE ENGINEER DATE 7/24/28
APPROVED BY [signature] CHIEF ENGINEER DATE

STD. SHEET 1147

F.A.

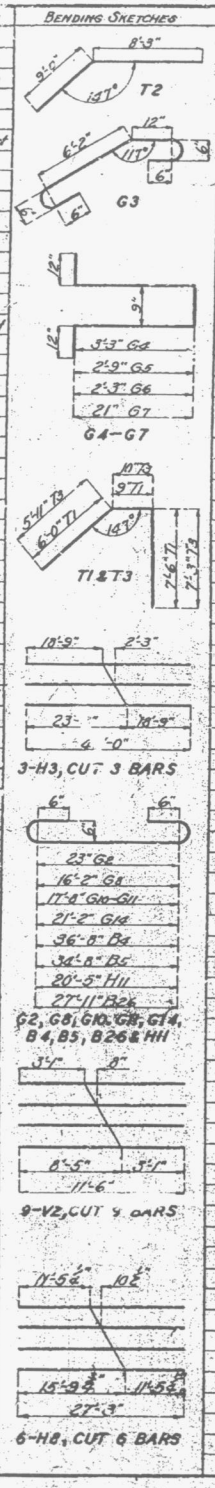
FED.ROAD DIST. NO.	STATE	FED.AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286B U.S.65	19	91	

MISSOURI STATE HIGHWAY DEPARTMENT

BILL OF REINFORCING STEEL

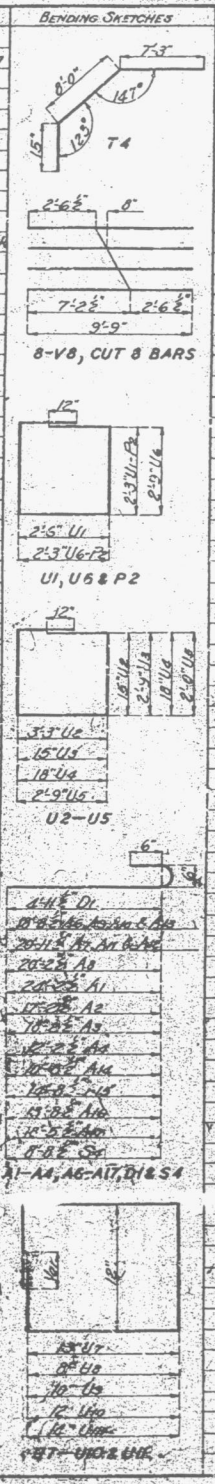
No.	Size	Length	Mark	Location
Abut. Nos. 1 & 9				
12	⅝"	6'-3"	D1	Footing
12	⅝"	9'-3"	F1	Column
6	⅝"	17'-3"	G1	Beam
16	⅝"	4'-6"	G2	"
6	⅝"	9'-9"	G3	Counterfort
2	⅝"	9'-3"	G4	"
2	⅝"	8'-3"	G5	"
2	⅝"	7'-3"	G6	"
2	⅝"	6'-3"	G7	"
5	⅝"	18'-0"	H1	Beam
2	⅝"	23'-9"	H2	Wing
3	⅝"	42'-0"	H3	Wing
1	⅝"	17'-6"	H4	Beam
10	⅝"	6'-0"	H5	Counterfort
6	⅝"	17'-6"	H6	Wing
2	⅝"	16'-9"	H7	"
6	⅝"	27'-3"	H8	"
4	⅝"	21'-0"	H9	Beam
6	⅝"	21'-0"	H10	"
13	⅝"	23'-0"	H11	"
4	⅝"	14'-3"	T1	Wing
6	⅝"	17'-3"	T2	"
4	⅝"	14'-0"	T3	Wing
6	⅝"	16'-6"	T4	"
3	⅝"	21'-0"	T5	Beam
13	⅝"	11'-0"	U6	"
2	⅝"	10'-6"	V1	Beam
3	⅝"	11'-6"	V2	Wing
6	⅝"	9'-6"	V3	Beam
11	⅝"	8'-3"	V5	"
4	⅝"	5'-9"	V6	Counterfort
8	⅝"	2'-0"	V7	Wing Wall
8	⅝"	9'-9"	V8	Wing
10	⅝"	8'-6"	V9	Beam
12	⅝"	22'-0"	V10	Column
Bents No. 2, 7 & 8.				
28	⅝"	6'-3"	D1	Footing
24	⅝"	9'-3"	F1	Haunch
18	1"	18'-9"	G8	Beam
6	1"	16'-9"	G9	"
8	⅝"	7'-0"	P1	Column
58	⅝"	10'-0"	P2	"
8	⅝"	18'-9"	P3	"
8	⅝"	17'-3"	P4	"
48	⅝"	10'-6"	U1	Beam
Piers No. 4 & 5.				
64	⅝"	4'-6"	A5	Pier
20	⅝"	20'-0"	A6	"
20	⅝"	22'-3"	A7	"
18	⅝"	21'-6"	A8	"
18	⅝"	20'-0"	A9	"
18	⅝"	22'-3"	A10	"
20	⅝"	22'-3"	A12	"
20	⅝"	20'-0"	A13	"
52	⅝"	3'-0"	D2	Footing
28	1"	7'-6"	F2	Haunch
16	1"	7'-3"	F5	"
16	1"	8'-3"	F6	"
34	1"	20'-3"	G11	Beam
4	1"	18'-6"	G12	"
20	⅝"	6'-0"	L1	Cap
20	⅝"	5'-3"	L2	"
116	⅝"	7'-3"	P5	Column
58	⅝"	12'-6"	P6	"

Bending Sketches



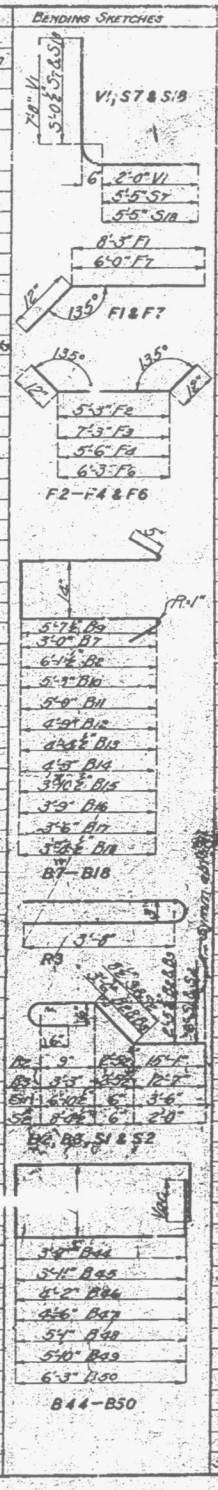
No.	Size	Length	Mark	Location
Piers Nos. 4 & 5 (Continued)				
32	1"	29'-0"	P10	Column
32	1"	10'-3"	P11	"
32	1"	24'-6"	P12	"
32	1"	9'-0"	P13	"
30	⅝"	7'-0"	U4	Beam
38	⅝"	10'-6"	U5	"
Pier No. 3.				
10	⅝"	25'-6"	A1	Shrew Back
10	⅝"	18'-6"	A2	"
10	⅝"	13'-6"	A3	"
10	⅝"	13'-6"	A4	"
12	⅝"	6'-6"	A5	"
12	⅝"	3'-0"	D2	Footing
8	⅝"	7'-3"	F2	Haunch
8	⅝"	9'-3"	F3	"
12	1"	7'-6"	F4	"
30	⅝"	20'-3"	G10	Beam
6	1"	20'-3"	G11	"
8	⅝"	6'-0"	L1	Cap
10	⅝"	7'-3"	L2	"
60	⅝"	7'-3"	P5	Column
30	⅝"	12'-6"	P6	"
24	1"	34'-9"	P7	"
3	1"	28'-9"	P8	"
32	1"	10'-3"	P9	"
21	⅝"	10'-0"	U2	Beam
20	⅝"	9'-0"	U3	"
15	⅝"	7'-0"	U4	"
8	⅝"	7'-0"	F3	Tie Beam
Pier No. 6.				
12	⅝"	4'-6"	A5	Shrew Back
10	⅝"	12'-0"	A14	"
10	⅝"	16'-0"	A15	"
10	⅝"	15'-0"	A16	"
10	⅝"	15'-9"	A17	"
12	⅝"	43'-0"	D2	Footing
8	⅝"	7'-3"	F2	Haunch
8	⅝"	9'-3"	F3	"
30	⅝"	20'-3"	G10	Beam
8	⅝"	5'-9"	L1	Cap
10	⅝"	7'-3"	L2	"
28	⅝"	7'-3"	P5	Column
14	⅝"	12'-6"	P6	"
25	1"	20'-6"	P10	"
8	1"	14'-6"	P15	"
32	1"	9'-3"	P16	"
21	⅝"	10'-0"	U2	Beam
20	⅝"	9'-0"	U3	"
Spandrel Bents				
16	⅝"	7'-0"	F7	Haunch
96	⅝"	[illegible]		Rail
120	⅝"	23'-9"	G13	"
124	⅝"	12'-0"	G15	"
16	⅝"	29'-9"	P17	Column
8	⅝"	40'-3"	P18	"
16	⅝"	14'-9"	P19	"
8	⅝"	19'-6"	P20	"
16	⅝"	8'-3"	P21	"
16	⅝"	8'-0"	P22	"
8	⅝"	16'-6"	P23	"
16	⅝"	12'-0"	P24	"
8	⅝"	32'-6"	P25	"
16	⅝"	26'-9"	P26	"
16	⅝"	26'-0"	P27	"

Bending Sketches



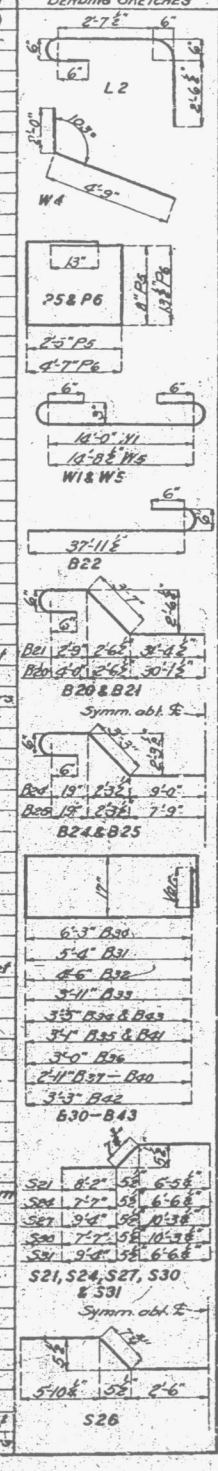
No.	Size	Length	Mark	Location
Spandrel Bents (Continued)				
16	⅝"	16'-0"	P28	Column
8	⅝"	20'-3"	P29	"
16	⅝"	6'-6"	P30	"
16	⅝"	8'-0"	P31	"
8	⅝"	17'-0"	P32	"
16	⅝"	13'-6"	P33	"
16	⅝"	20'-6"	P34	"
16	⅝"	19'-0"	P35	"
8	⅝"	22'-0"	P36	"
16	⅝"	8'-3"	P37	"
16	⅝"	7'-9"	P38	"
8	⅝"	18'-9"	P39	"
16	⅝"	16'-3"	P40	"
408	⅝"	5'-0"	U7	Beam
48	⅝"	4'-3"	U8	Brackets
48	⅝"	4'-6"	U9	"
48	⅝"	5'-0"	U10	"
48	⅝"	5'-3"	U11	"
35' Deck Girder				
56	⅝"	19'-9"	B1	Girder
8	1⅛"	41'-3"	B2	"
8	1⅛"	41'-3"	B3	"
16	1⅛"	39'-3"	B4	"
16	1⅛"	37'-3"	B5	"
24	⅝"	10'-6"	B6	"
100	⅝"	11'-6"	B7	"
8	⅝"	14'-9"	B8	"
8	⅝"	13'-9"	B9	"
8	⅝"	13'-0"	B10	"
8	⅝"	12'-6"	B11	"
8	⅝"	12'-0"	B12	"
8	⅝"	11'-3"	B13	"
8	⅝"	11'-0"	B14	"
8	⅝"	10'-3"	B15	"
8	⅝"	10'-0"	B16	"
8	⅝"	9'-6"	B17	"
8	⅝"	9'-3"	B18	"
12	⅝"	20'-6"	C1	Curb
48	⅝"	13'-6"	C2	"
16	⅝"	19'-6"	R1	Rail
72	⅝"	9"	R12	"
24	⅝"	7'-3"	R13	Sidepost
16	⅝"	3'-3"	R14	Foot
720	⅝"	18"	R15	Balusters
4	⅝"	2'-3"	R16	Rail
4	⅝"	2'-3"	R17	Post
16	⅝"	13'-6"	R18	Rail
56	⅝"	28'-3"	S1	Slab
55	⅝"	29'-9"	S2	"
541	⅝"	18'-0"	S3	"
108	⅝"	10'-0"	S4	"
16	⅝"	39'-9"	S5	"
24	⅝"	9'-3"	W1	Web
12	⅝"	35'-9"	W2	"
20	⅝"	14'-9"	W3	"
12	⅝"	5'-3"	W4	"
84	⅝"	6'-9"	W5	Bracket
20' Deck Girders				
8	1⅛"	33'-0"	B20	Girder
12	1⅛"	35'-0"	B21	"
20	1⅛"	39'-3"	B22	"
12	⅝"	31'-0"	B23	"
8	1"	30'-3"	B24	"

Bending Sketches

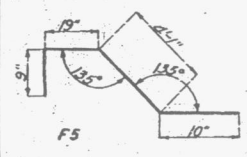


No.	Size	Length	Mark	Location
40' Deck Girder (Continued)				
12	1"	27'-9"	B25	Girder
12	1"	30'-6"	B26	"
4	1"	30'-9"	B27	"
3	1"	35'-0"	B28	"
36	⅝"	10'-6"	B29	"
4	⅝"	16'-3"	B30	"
4	⅝"	14'-6"	B31	"
4	⅝"	12'-9"	B32	"
4	⅝"	11'-9"	B33	"
1	⅝"	10'-9"	B34	"
4	⅝"	10'-0"	B35	"
4	⅝"	9'-9"	B36	"
4	⅝"	9'-6"	B37	"
4	⅝"	9'-6"	B38	"
180	⅝"	9'-6"	B39	"
8	⅝"	9'-6"	B40	"
8	⅝"	10'-0"	B41	"
8	⅝"	10'-3"	B42	"
8	⅝"	10'-6"	B43	"
8	⅝"	11'-0"	B44	"
8	⅝"	11'-6"	B45	"
8	⅝"	12'-0"	B46	"
8	⅝"	12'-9"	B47	"
8	⅝"	14'-0"	B48	"
8	⅝"	15'-6"	B49	"
12	⅝"	16'-3"	B50	"
8	1"	37'-3"	B51	"
72	⅝"	15"	C2	Curb
24	⅝"	34'-0"	C4	"
126	⅝"	9"	R2	Rail
36	⅝"	7'-9"	R3	Sidepost
24	⅝"	3'-5"	R4	Post
1296	⅝"	18"	R5	Balusters
6	⅝"	2'-0"	R6	Rail
48	⅝"	22'-0"	R9	"
93	⅝"	28'-9"	S1	Slab
93	⅝"	28'-9"	S2	"
396	⅝"	19'-0"	S3	"
72	⅝"	9'-3"	S16	"
64	⅝"	7'-0"	S19	"
90	⅝"	23'-6"	S20	"
20	⅝"	16'-6"	W5	Web
54	⅝"	5'-9"	W6	"
30	⅝"	15'-0"	W7	"
32	⅝"	4'-9"	W8	Bracket
Arch Rings				
420	⅞"	4'-6"	A6	Ring
140	⅞"	38'-6"	A18	"
40	⅞"	19'-3"	A19	"
90	⅞"	41'-0"	A20	"
36	⅞"	20'-6"	A21	"
100	⅞"	32'-0"	A22	"
40	⅞"	16'-0"	A23	"
64	⅞"	14'-0"	N1	Side Beam
Slab & Rail over Arch Rings				
216	⅝"	15"	C2	Curb
24	⅝"	21'-6"	C6	"
12	⅝"	22'-3"	C6	"
18	⅝"	33'-6"	C7	"
12	⅝"	32'-9"	C9	"
24	⅝"	4'-9"	C9	"
324	⅝"	9"	R2	Rail
198	⅝"	7'-9"	R3	Sidepost
3024	⅝"	18"	R5	Balusters

Bending Sketches



No.	Size	Length	Mark	Location
Slab & Rail (Continued)				
28	⅝"	2'-0"	R6	Rail
48	⅝"	21'-6"	R10	"
40	⅝"	32'-9"	R11	"
32	⅝"	4'-3"	R12	"
64	⅝"	6'-0"	R13	"
40	⅝"	15'-3"	S21	Slab
38	⅝"	13'-0"	S22	"
310	⅝"	12'-3"	S23	"
154	⅝"	14'-9"	S26	"
100	⅝"	12'-6"	S28	"
95	⅝"	18'-0"	S29	"
40	⅝"	20'-3"	S27	"
76	⅝"	13'-6"	S28	"
247	⅝"	22'-3"	S29	"
160	⅝"	18'-6"	S30	"
40	⅝"	16'-6"	S31	"



Note:-R6 to be a plain smooth bar. Bars in above units to be billed and tagged separately. Dimensions are along ℄ of bar and are for computed lengths.

BEARING PLATES AND ANCHOR BOLTS REQUIRED

12- Plates 15" × ⅝" × 2'-3"
2- " 2'-6½" × ⅝" × 2'-3" } Plane to ⅛" thickness.
6- " 2'-2" × ⅝" × 2'-6" } Plane to ⅛" thickness.
8- " 15" × ⅝" × 2'-6" } Plane to ⅛" thickness.
4-Copper Rts. 15" × 2'-3" × 16 Gauge.
4- " " 15" × 2' " × 16 Gauge.
40-1"ø Bolts 18" long Hex. Nuts.
16- Washers.
24-Bars 2½" × ⅝" × 2'-6"
8- " 2½" × ⅝" × 4'-6"

Note:-Weight of steel bearing plates, anchor bolts and copper plates to be paid for as fabricated structural steel.

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286 B (U.S. 65) STA 0+60.29

FINISHED

GREENE COUNTY

DESIGNED BY [illegible] DATE 7/24/28 BRIDGE ENGINEER
APPROVED BY T.H. Cutler DATE CHIEF ENGINEER

STD. SHEET H 6.6

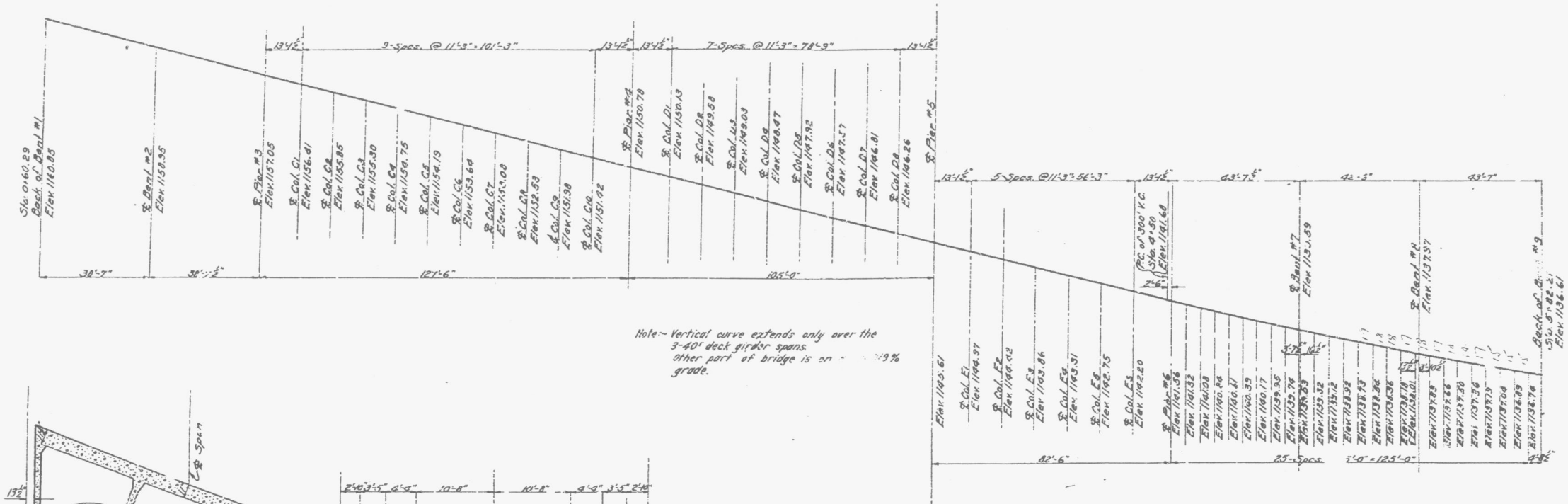
Drawn July 1928 by A.F.K.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

Sheet No. 2 of 12 Sheets.

F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

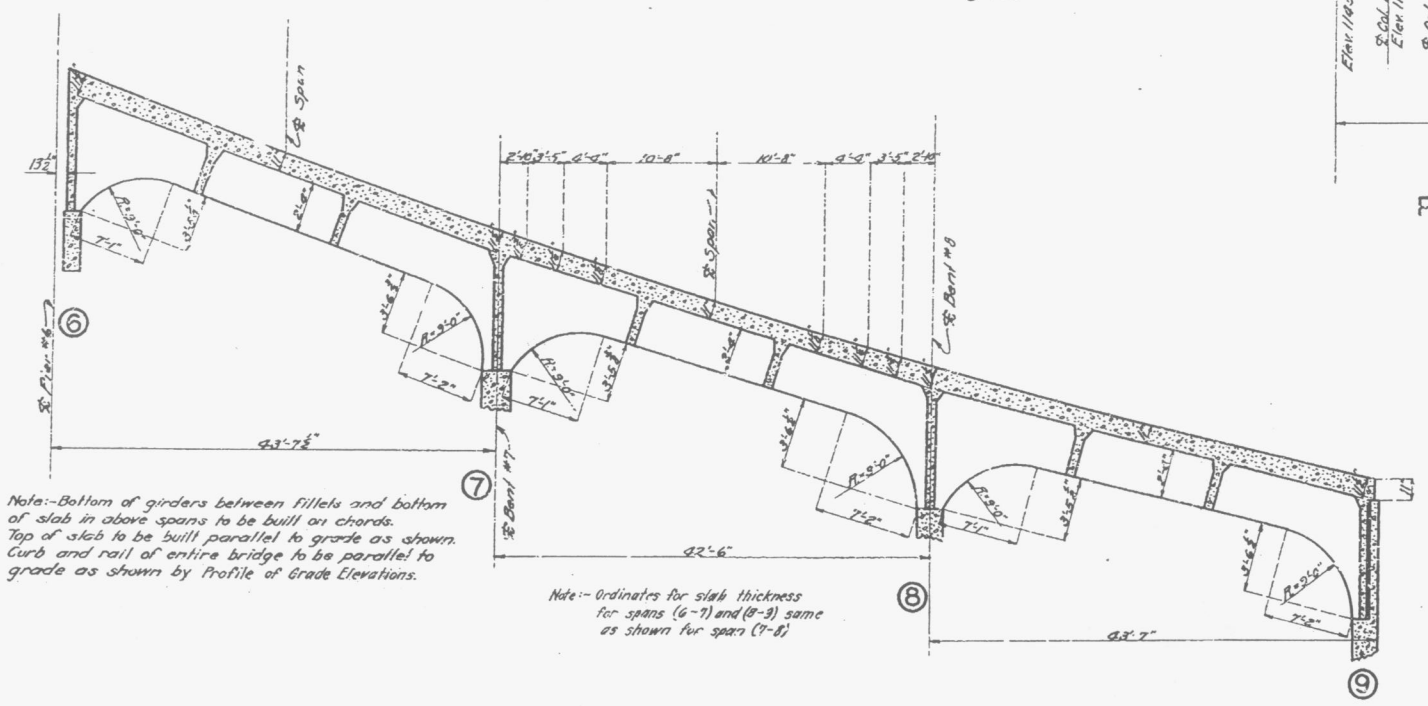
FED.ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO.	286 B U.S. 65	19	3	



Note:- Vertical curve extends only over the 3-40' deck girder spans. Other part of bridge is on - .79% grade.

PROFILE OF GRADE ELEVATIONS

PI [illegible] 6+00
Elev. 1132.00
Back -2.219%
Ahead 2.00%



Note:-Bottom of girders between fillets and bottom of slab in above spans to be built on chords. Top of slab to be built parallel to grade as shown. Curb and rail of entire bridge to be parallel to grade as shown by Profile of Grade Elevations.

Note:- Ordinates for slab thickness for spans (6-7) and (8-9) same as shown for span (7-8)

SKETCH SHOWING METHOD OF INCREASING SLAB THICKNESS TO MAINTAIN VERTICAL CURVE

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 2863 (U.S.65) STA 0+60.29
GREENE COUNTY

SUBMITTED BY M. B. Sack DATE 7/24/28 BRIDGE ENGINEER
APPROVED BY T. H. Beatty DATE CHIEF ENGINEER

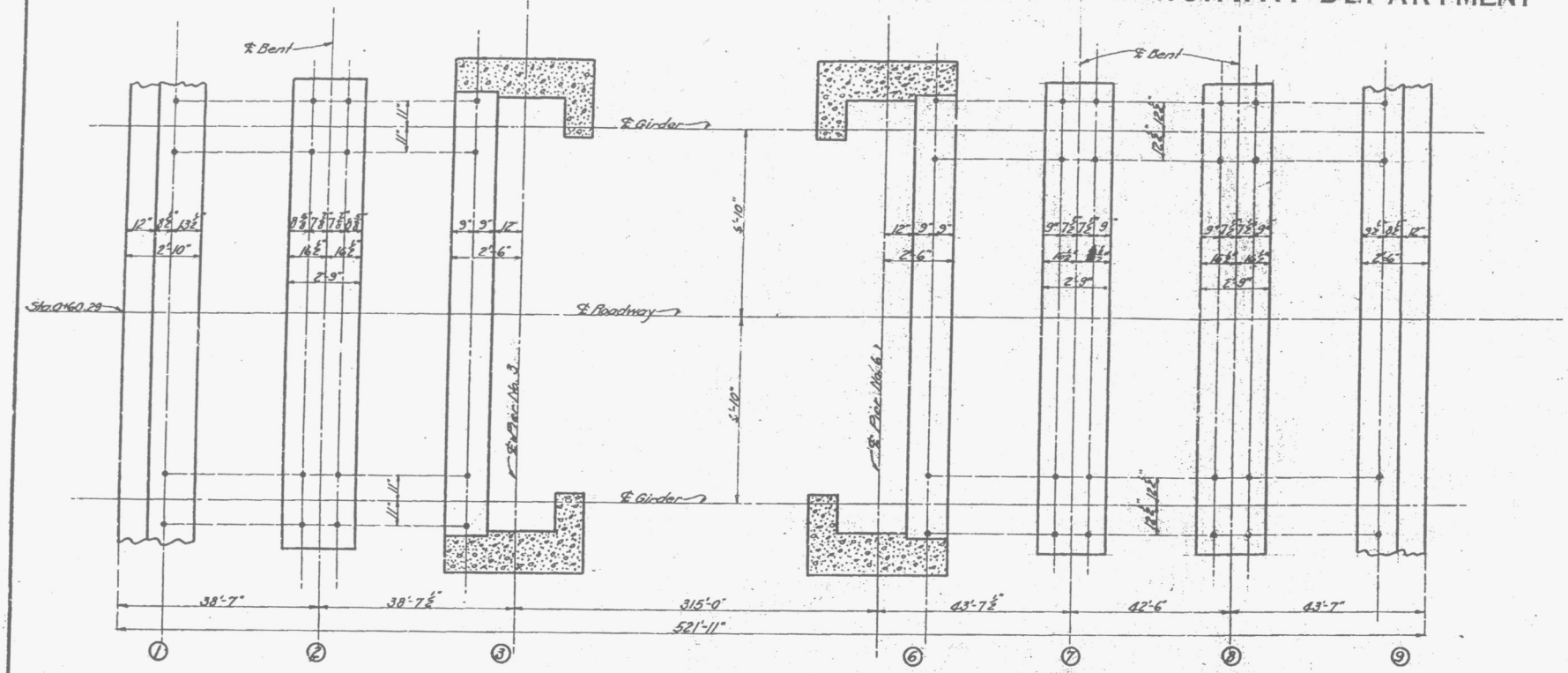
STD. S 815
H-636

Drawn July 1928 by F.W.H.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

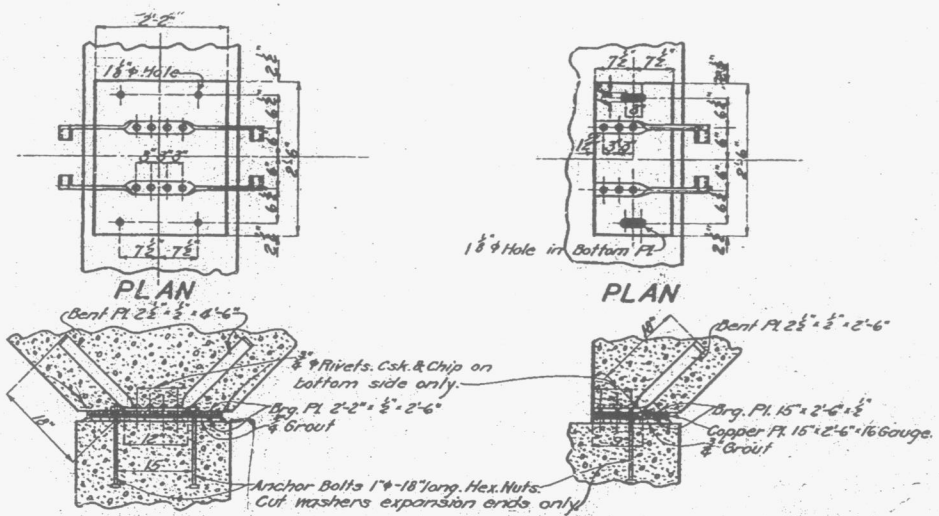
F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AND PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286 B (U.S. 65)	19	33	



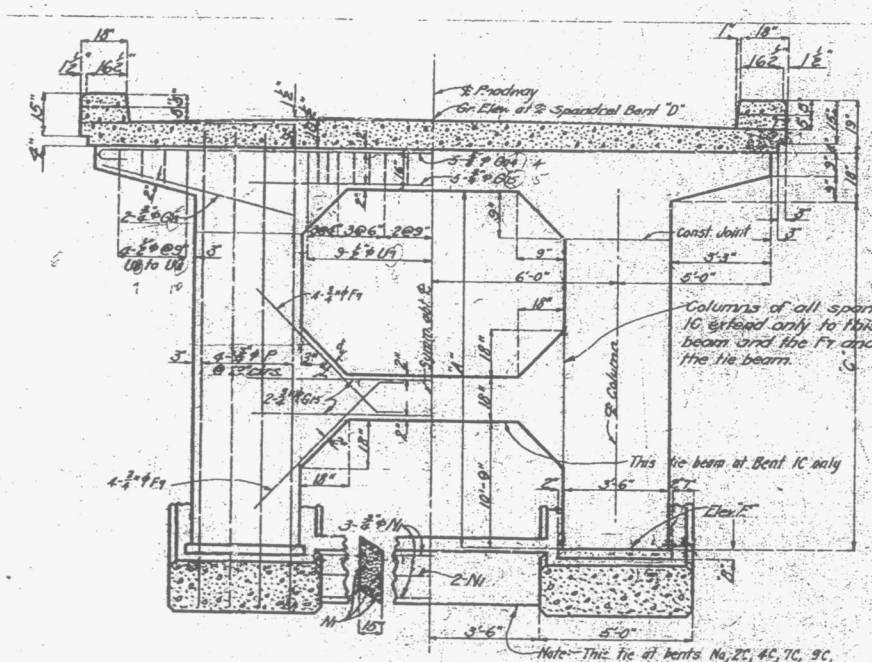
ANCHOR BOLT PLAN



SECTION AT BENTS 7 & 8 SECTION AT PIER 6 & BENT 9

DETAILS OF BEARING PLATES FOR 3—SPAN CONTINUOUS GIRDER

Note :—See Sheet No. 13 for detail of bearing plates used for spans (1-2) and (2-3).



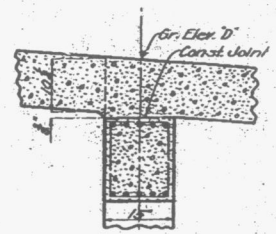
SECTION NEAR SPANDREL BENTS

TABLE OF DIMENSIONS AND BARS FOR SPANDREL BENTS

Bent No.	Dimensions A	B	C	Elevations D	E	P-Bars No.	Mark	L	M	Bending Sketches
				Span 3-4						
1C	22'-10⅜"	15½"	22'-8⅜"	1132.41	1131.29	16	P17	26'-2"		
2C	14'-7⅝"	11⅝"	14'-5⅝"	1133.85	1132.89	8	P18		19'-1¼"	
3C	8'-3⅝"	9⅝"	8'-1⅝"	1135.20	1134.40	16	P19	11'-2"		
4C	4'-9⅝"	4⅞"	4'-7⅝"	1134.95	1134.74	8	P20		6'-8⅝"	
5C	2'-1⅞"	1⅜"	2'-1⅝"	1134.19	1134.32	16	P21	5'-2"		
6C	2'-1"	1⅜"	23"	1133.64	1133.32	16	P22	4'-5"		
7C	3'-1⅛"	4½"	2'-11⅛"	1132.08	1131.74	8	P23		5'-2⅜"	
8C	5'-10⅜"	7½"	5'-8⅜"	1130.33	1129.80	16	P24	8'-5"		
9C	10'-9⅜"	11⅞"	10'-7⅜"	1128.98	1128.99	8	P25		13'-2⅝"	
10C	17'-10⅜"	15½"	17'-8⅜"	1127.42	1131.25	16	P26	21'-2"		
				Span 4-5						
1D	19'-1⅜"	18½"	19'-1⅜"	1130.18	1130.48	16	P27	20'-5"		
2D	9'-11⅜"	9½"	9'-9⅜"	1129.58	1130.36	16	P28	12'-3"		
3D	5'-2⅜"	5½"	5'-0⅜"	1129.55	1129.64	8	P29		9'-1⅜"	
4D	2'-4⅝"	1⅞"	2'-2⅝"	1129.98	1129.56	16	P30	4'-11"		
5D	2'-1⅛"	1⅜"	1'-11⅛"	1129.32	1129.56	16	P31	4'-5"		
6D	3'-6⅜"	3½"	3'-4⅜"	1129.36	1129.61	8	P32		5'-3⅜"	
7D	7'-2⅜"	7½"	7'-0⅜"	1129.80	1130.36	16	P33	9'-11"		
8D	13'-6⅜"	14½"	13'-4⅜"	1129.82	1130.48	16	P34	16'-11"		
				Span 5-6						
1E	12'-7⅜"	13½"	12'-5⅜"	1129.30	1130.11	16	P35	15'-5"		
2E	6'-0⅜"	7½"	5'-10⅜"	1129.68	1130.81	8	P36		7'-8⅜"	
3E	2'-9⅜"	3½"	2'-7⅜"	1129.96	1129.95	16	P37	6'-8"		
4E	2'-2⅜"	2½"	2'-0⅜"	1129.31	1130.85	16	P38	5'-2"		
5E	4'-4⅜"	4½"	4'-2⅜"	1129.75	1130.11	8	P39		6'-4⅜"	
6E	9'-10⅜"	10½"	9'-8⅜"	1129.29	1130.11	16	P40	12'-8"		

Note:—P bars to be placed in spandrel columns so as to allow all arch slab sections to expand up grade.

Note:— For length of P bars see sheet No. 2



SECTION THRU SPANDREL BENTS AT ℄ OF ROADWAY SHOWING HAUNCH ON SLAB TO COMPENSATE FOR GRADE

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286 B (U.S. 65) STA 0+60.29

GREENE COUNTY FINISHED

SUBMITTED BY M. R. Sack DATE 7/24/28 BRIDGE ENGINEER

APPROVED BY T. H. Cutler DATE CHIEF ENGINEER

STR. SHEET NO. H-

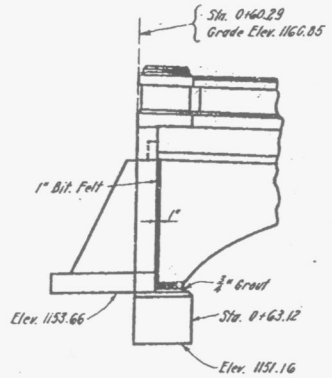
Drawn July 1928 by F.C.L.-C.A.F.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

Sheet No. 4 of 14 Sheets.

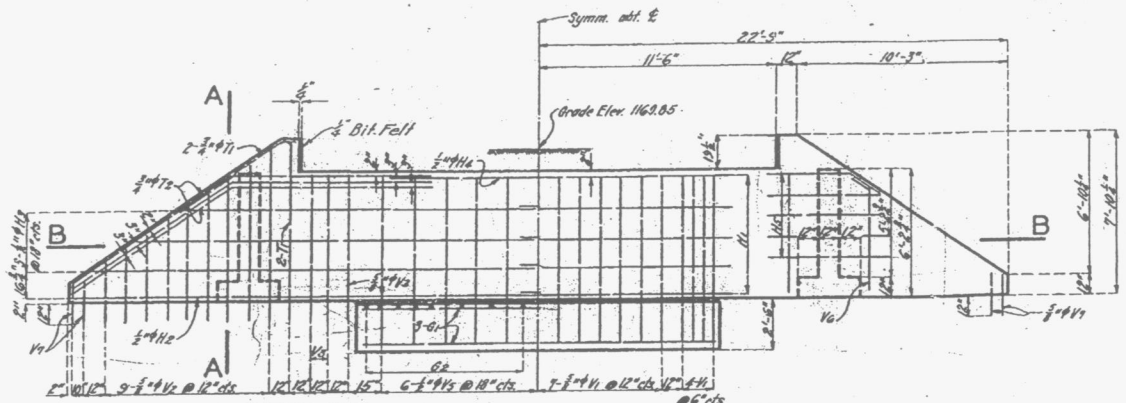
F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

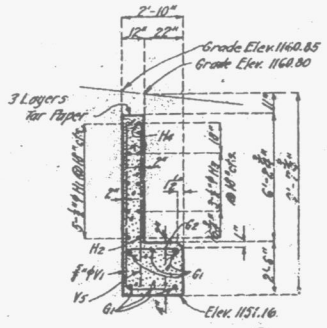
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286 B U.S. 65	192	34	



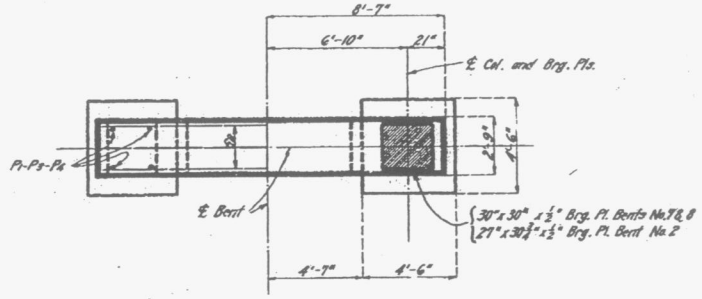
ELEVATION



ELEVATION OF STREAM FACE SHOWING REINFORCING

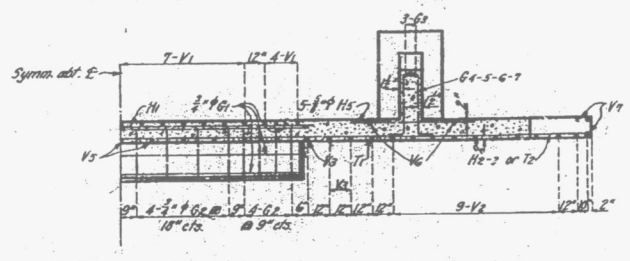


SECTION AT ℄

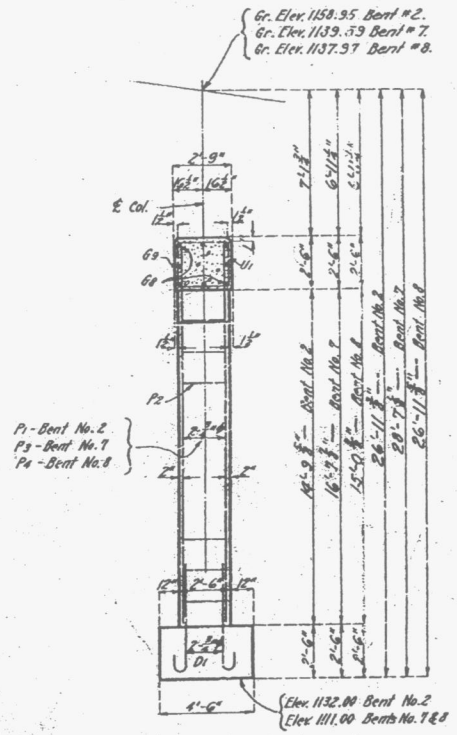


PLAN

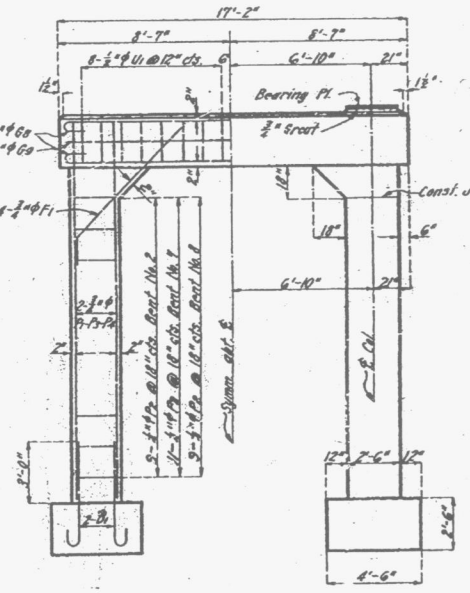
Note:—
Holes for vertical bars to be drilled 12" into solid rock, filled with grout and V1 bars driven into grout.
Top of concrete in abutment, wings and counterfort to be kept at same level throughout pouring.



HALF SECTION B-B

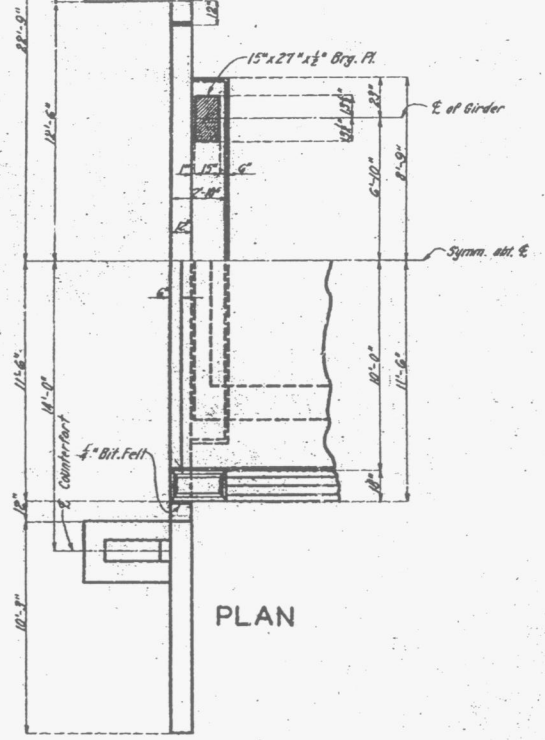


SECTION AT ℄

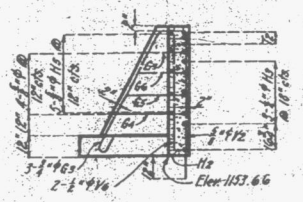


ELEVATION

DETAILS OF BENTS NO. 2, 7 & 8



PLAN



SECTION A-A

DETAILS OF ABUTMENT NO. 1

Note:—
This drawing not to scale, follow dimensions.

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286 B (U.S. 65) STA. 0+60.29

GREENE COUNTY

SUBMITTED BY M. R. Sack DATE 7/24/28 BRIDGE ENGINEER

APPROVED BY T. H. Cutler DATE CHIEF ENGINEER

STD. 58-8

H-636

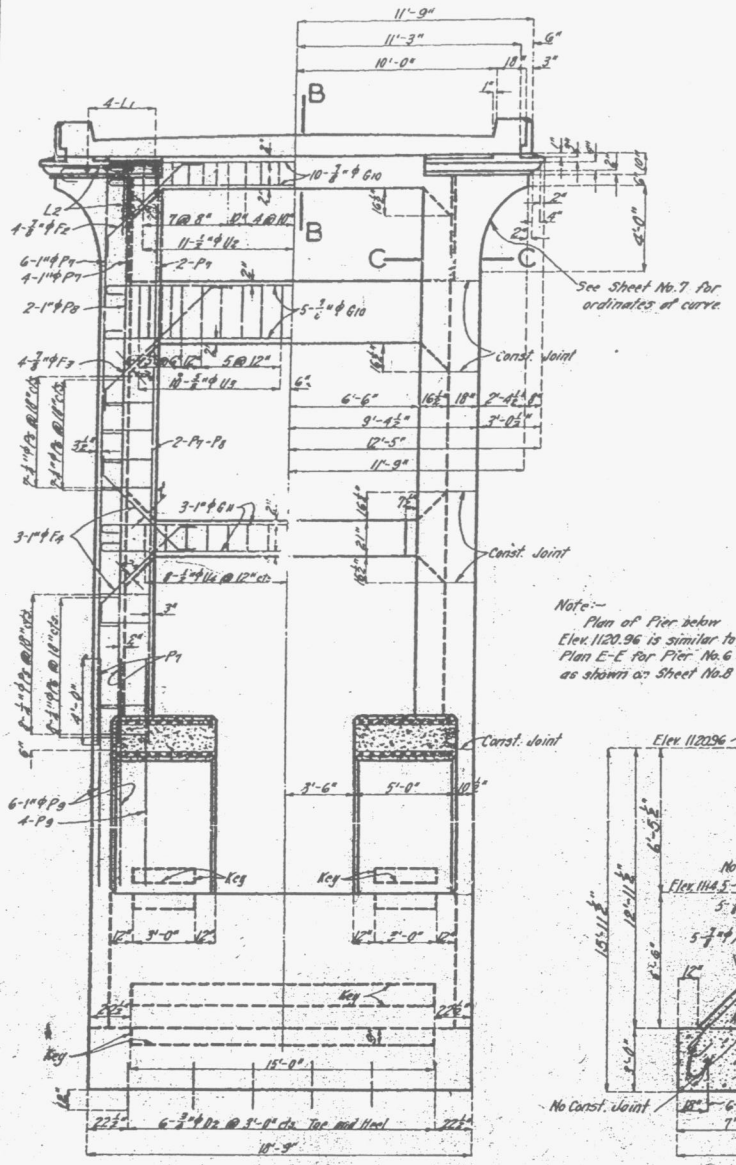
Drawn Feb. 1928 By F.C.L.
Traced Feb. 1928 By H.E.C.
Checked July 1928 By A.L.G.

Sheet No. 8 of 14 Sheets.

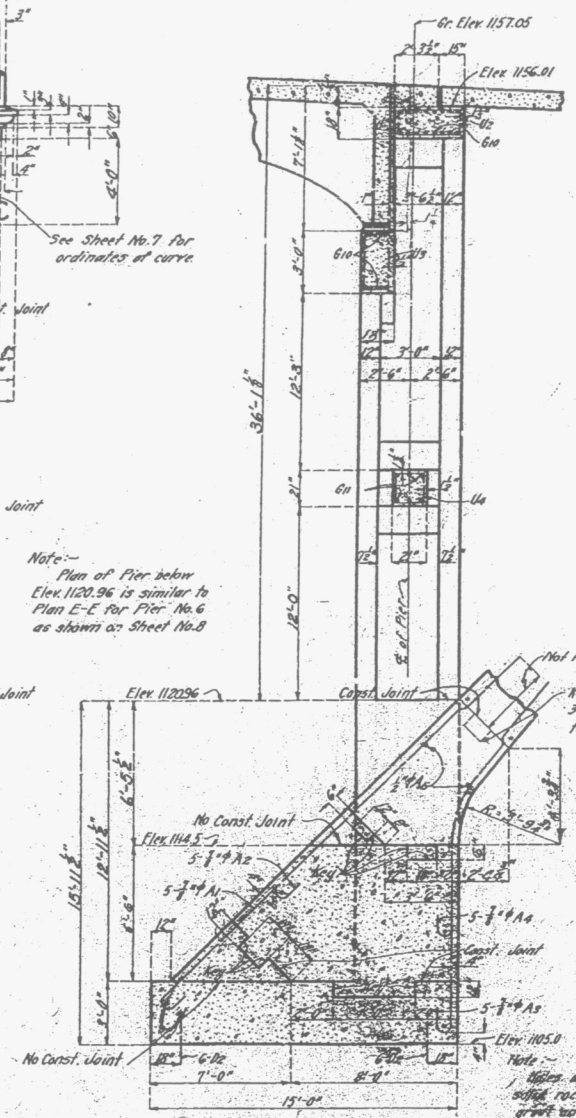
F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286 B U.S. 65	192	35	



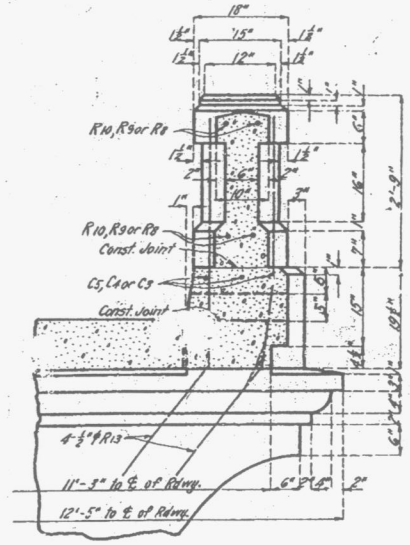
ELEVATION

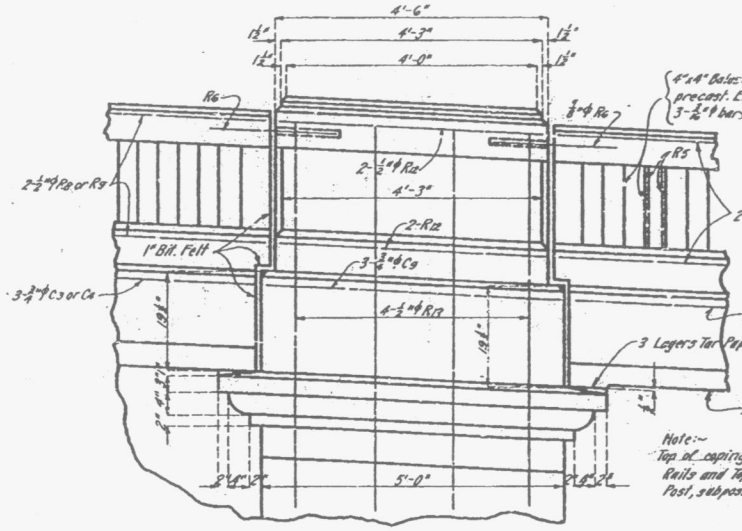


Note:- Plan of Pier below Elev. 1120.96 is similar to Plan E-E for Pier No. 6 as shown on Sheet No. 8

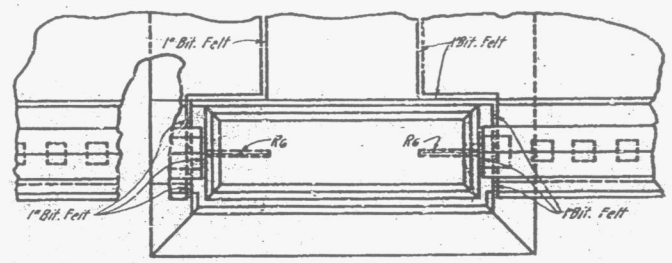
Note:- Holes drilled 12" into solid rock, filled with grout and bars D2 driven in.

SECTION AT ℄

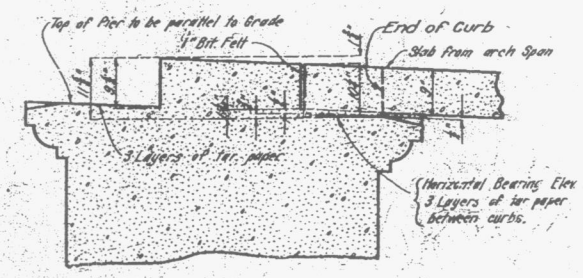




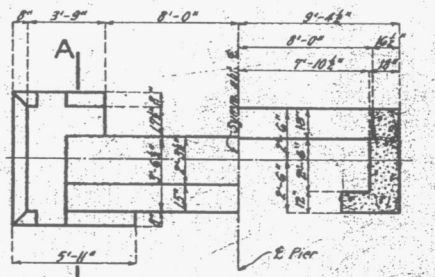
Note:- Top of coping to be built parallel to Grade. Rails and Top of Post to be parallel to Grade. Post, subpost and balusters to be vertical.



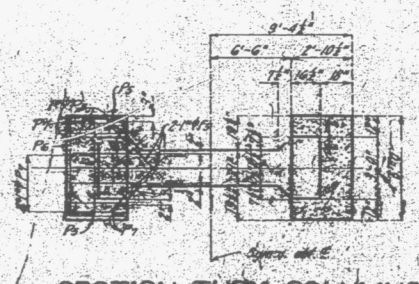
DETAILS OF HANDRAIL POST OVER PIERS NO. 3 & 6



SECTION A-A
At Inside Edge of Curb

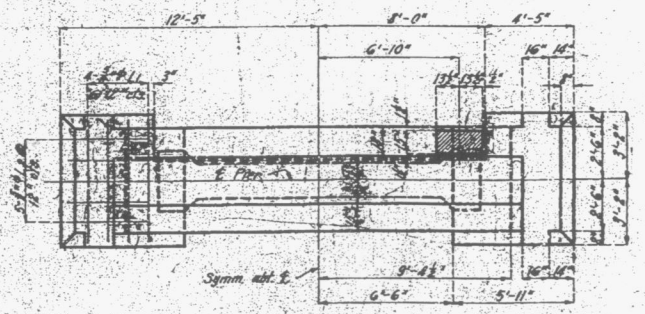


HALF PLAN PIER CAP

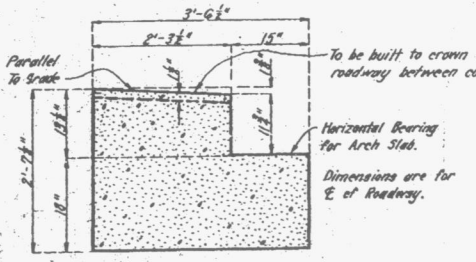


SECTION C-C

SECTION THRU COLUMNS
ABOVE TIE BEAM



PLAN



SECTION B-B
THRU BEAM ONLY

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286 B (U.S.65) STA. 0+60.29

GREENE COUNTY

SUBMITTED BY H. R. Sack DATE 7/24/28
BRIDGE ENGINEER

APPROVED BY T. Kutsky DATE
CHIEF ENGINEER

STRS 818
H-636

Drawn Feb. 1928 By F.C.L.
Traced May 1928 By H.E.C.
Checked July 1928 By A.L.G.

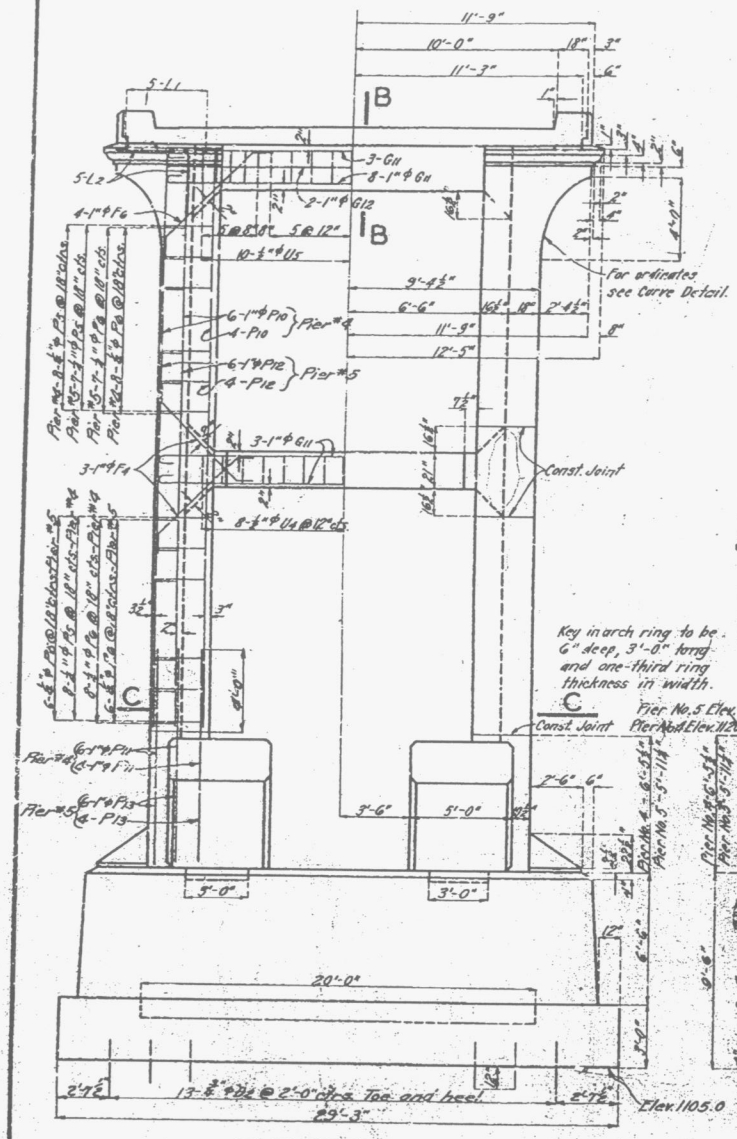
DETAILS OF PIER NO. 3

Sheet No. 6 of 13 Sheets.

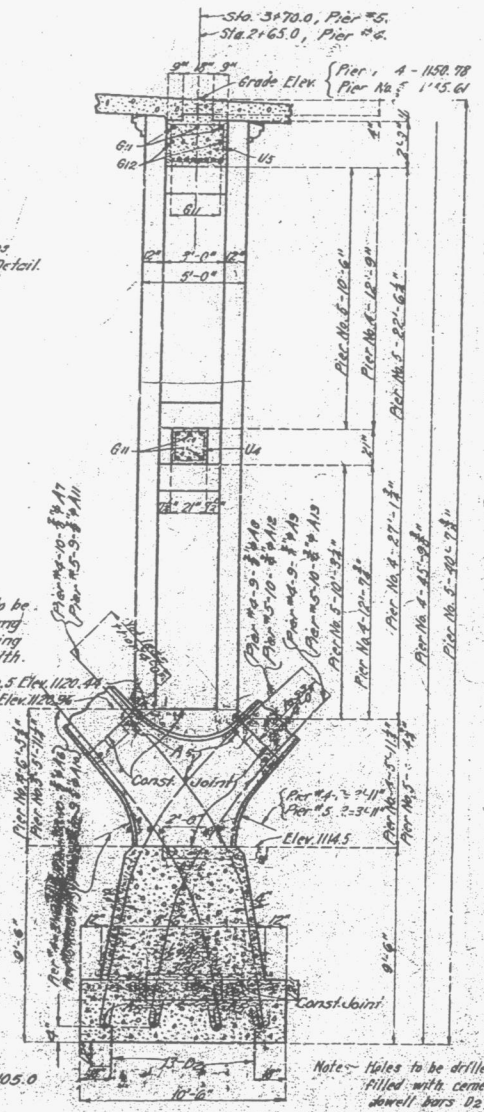
F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

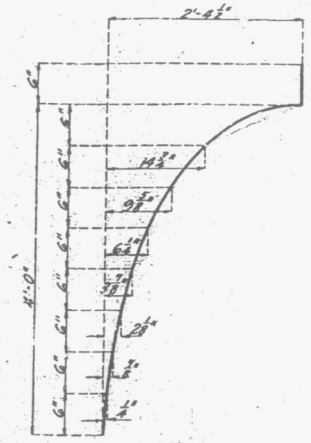
FED.ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286 B US. 65	19	36	



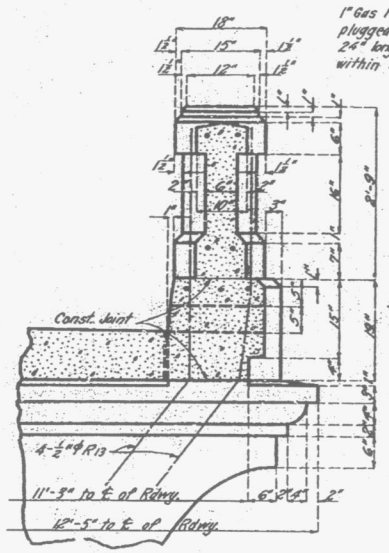
ELEVATION

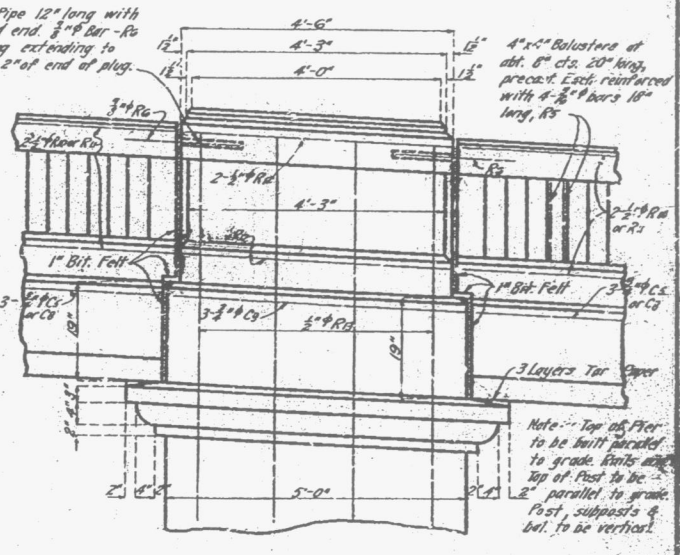


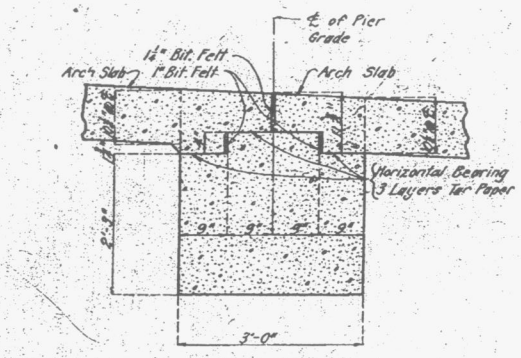
SECTION AT ℄



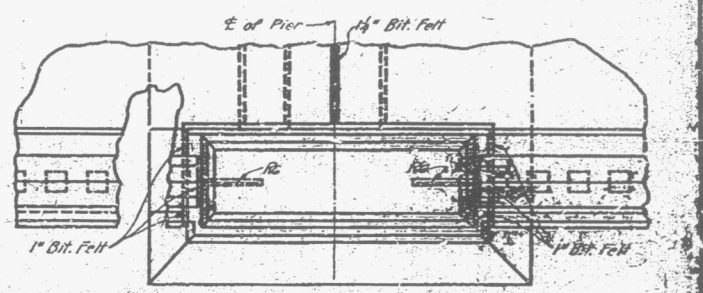
ORDINATES FOR CURVE OF PIER FACE AT TOP



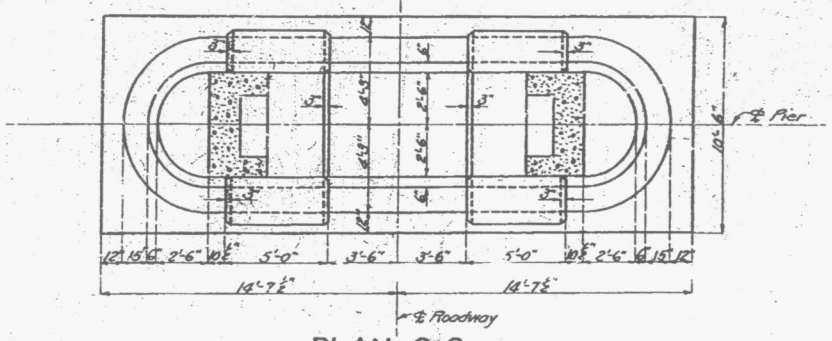




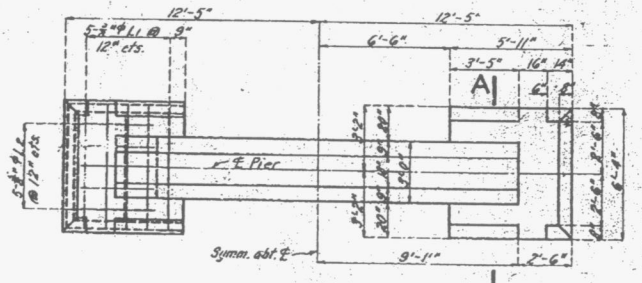
SECTION B - B



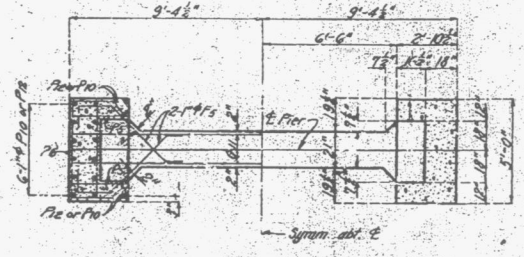
DETAILS OF HANDRAIL POST OVER PIERS NO. 4 & 5



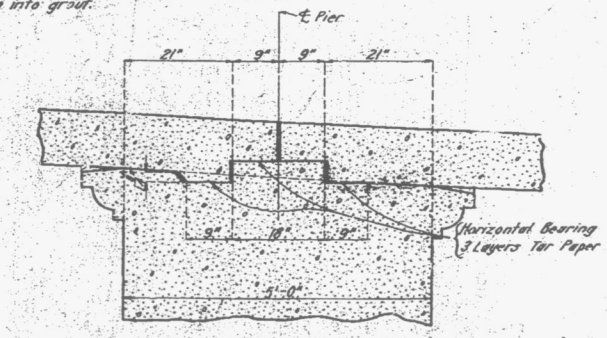
PLAN C-C



PLAN A|



SECTION THRU COLUMNS ABOVE TIE BEAM



SECTION A - A

DETAILS OF PIER NO. 4 & 5

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286 B (U.S. 65) STA 0+60.29

GREENE COUNTY

FINISHED

SUBMITTED BY M. P. Sack BRIDGE ENGINEER DATE 7/29/28

APPROVED BY H. Hutley CHIEF ENGINEER DATE

STD. SPEC. H-636

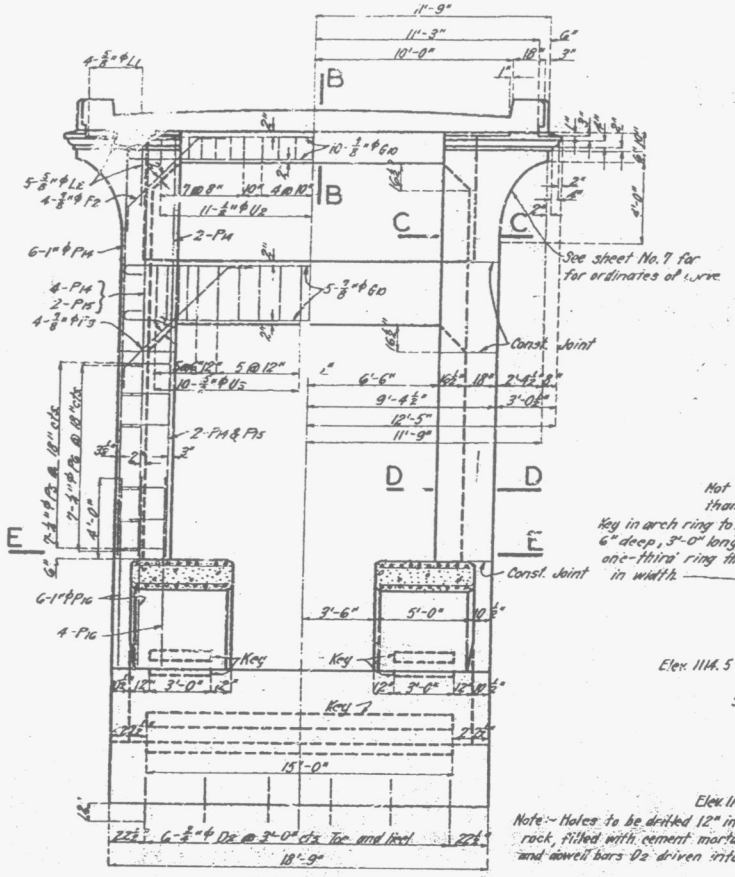
Drawn Jan. 1928 by F.G.L.
Traced July 1928 by H.E.C.
Checked July 1928 by A.L.C.

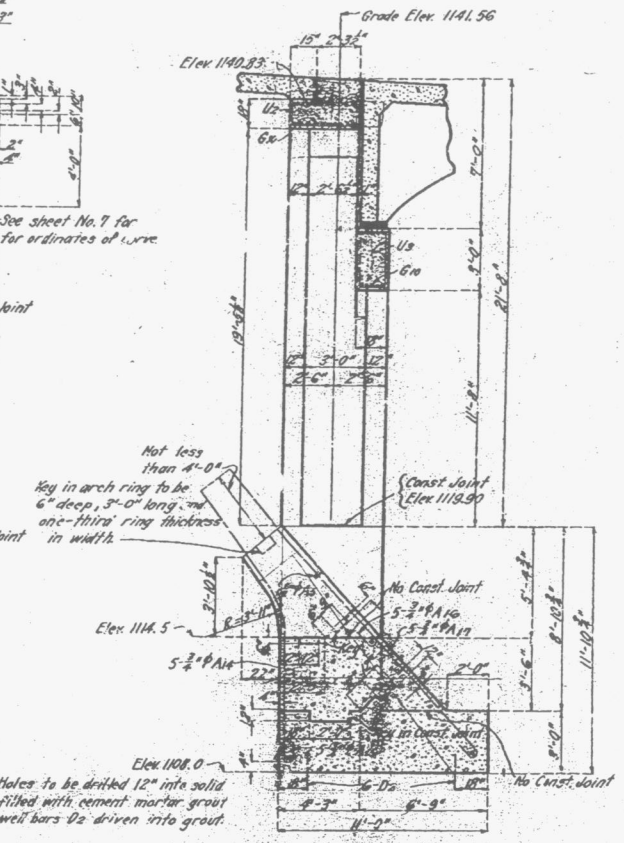
Sheet No. 7 of 11 Sheets

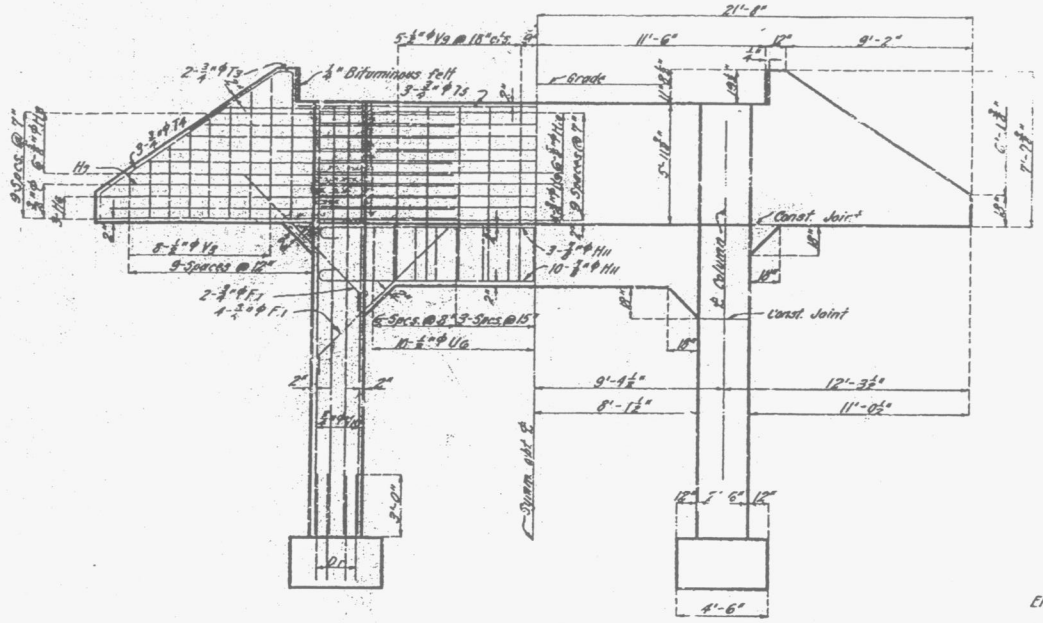
FA

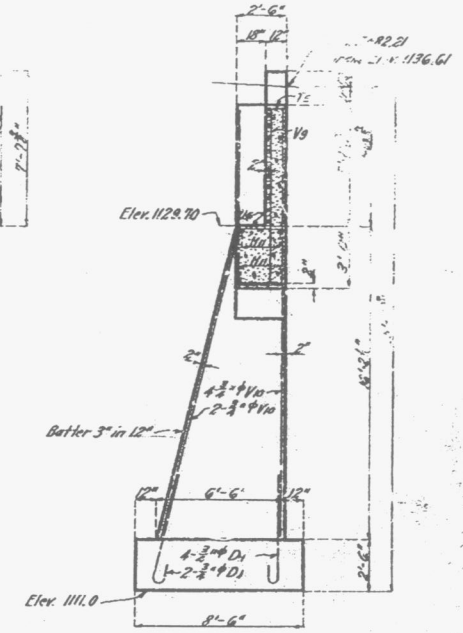
MISSOURI STATE HIGHWAY DEPARTMENT

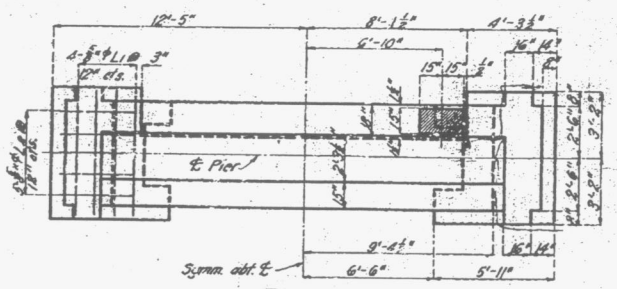
FED. ROAD DIST. NO.	STATE	FED. AID PROJ.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286 B	1929	4 7	

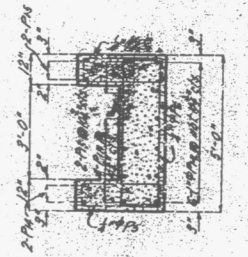


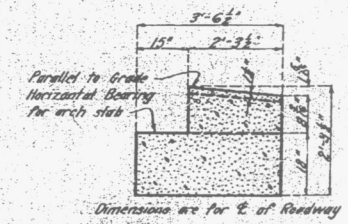


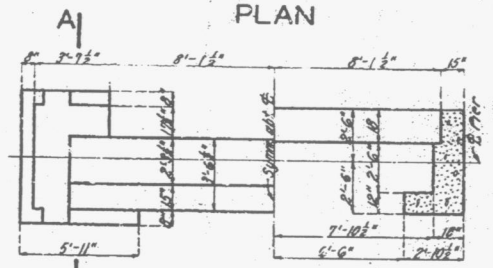


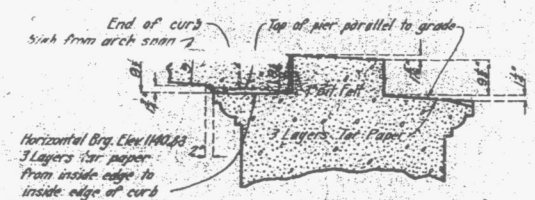


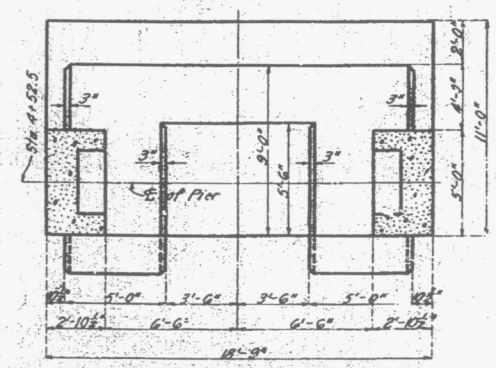




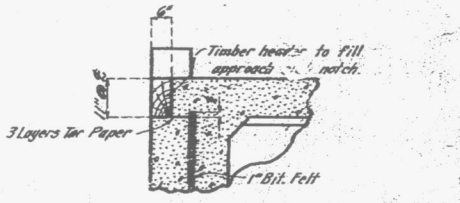








DETAILS OF BENT NO. 9



DETAILS OF NOTCH FOR APPROACH SLAB

DETAILS OF PIER NO. 6

BRIDGE O.E.R POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286B (U.S. 65) STA 0+60.29

GREENE COUNTY

SUBMITTED BY M. R. Lock BRIDGE ENGINEER DATE 7/24/28

APPROVED BY T. H. Cauley CHIEF ENGINEER DATE

STD. SHEET H-620

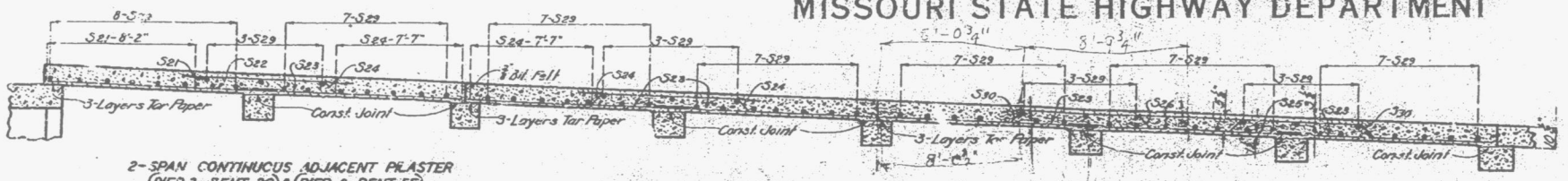
Drawn July 1928 By F.W.K.
Traced July 1928 By H.E.C.
Checked July 1928 By A.L.G.

Sheet No. 3 of 14

F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

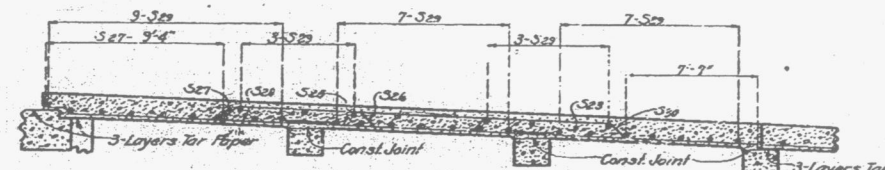
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO	286B (U.S.65)	19	38	



2-SPAN CONTINUOUS ADJACENT PILASTER
(PIER 3-BENT 2C) & (PIER 6-BENT 5E)

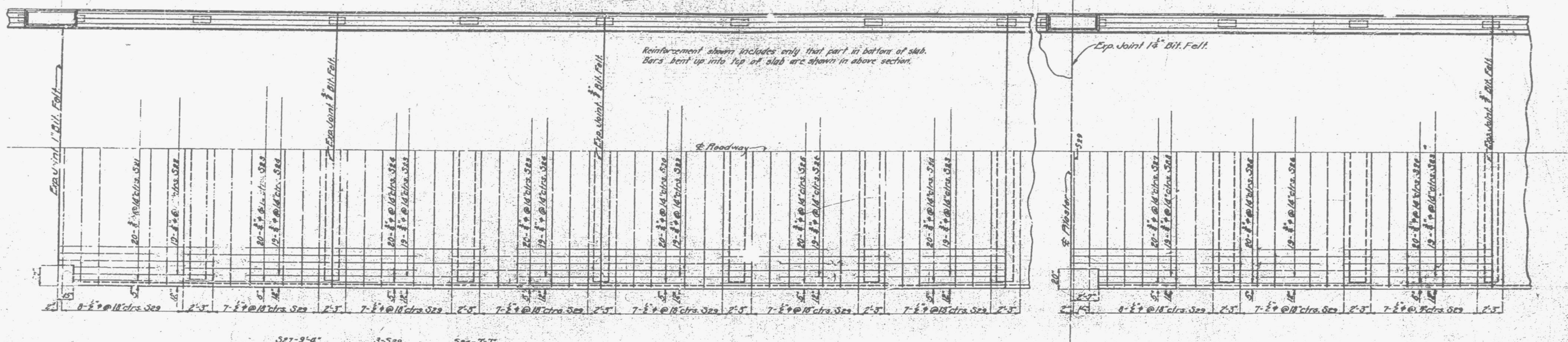
2-INTERMEDIATE SPANS-CONTINUOUS
(BENT 2C-BENT 4C) & (BENT 7C-BENT 9C)

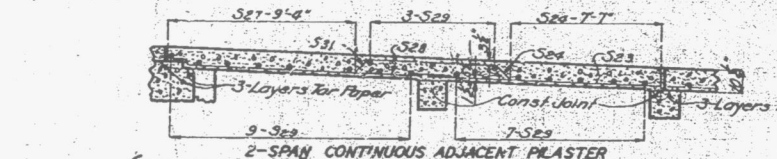
3-INTERMEDIATE SPANS-CONTINUOUS
(BENT 4C-BENT 7C) (BENT 3D-BENT 6D) & (BENT 2E-BENT 5E)



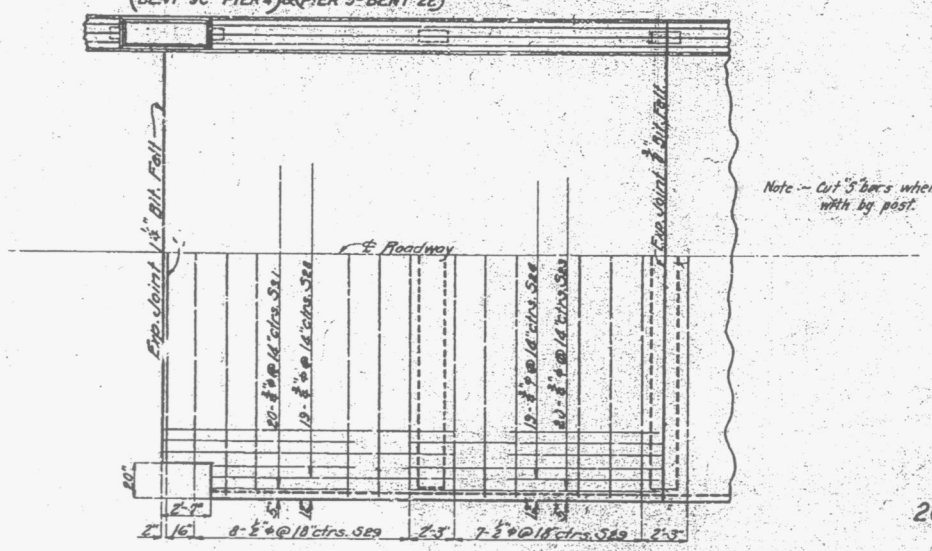
3-SPAN CONTINUOUS ADJACENT PILASTER
(PIER 4-BENT 3D) & (BENT 6D-PIER 5)

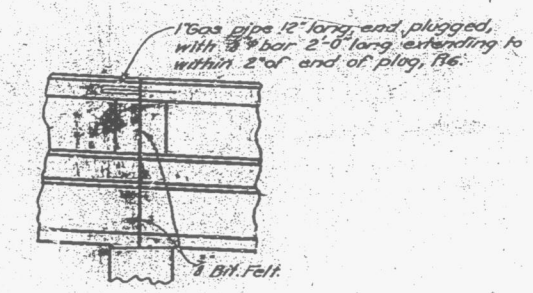
TYPICAL SECTIONS ALONG ℄ ROADWAY





2-SPAN CONTINUOUS ADJACENT PILASTER
(BENT 9C PIER 4) & (PIER 5-BENT 2E)





DETAILS OF EXPANSION JOINT OVER SPANDREL BENTS NO. 2C, 4C, 7C, 9C, 3D, 6D, 2E & 5E

Note—All continuous arch slab sections to expand on up grade ends and at all pilasters. "P" bars in spandrel columns to be placed accordingly. Bearing for expansion ends of slabs consists of three layers of tar paper placed on smoothly finished concrete surface.

PLAN OF TYPICAL SLAB SPANS OVER ARCHES

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286 B (U.S.65) STA 0+60.29

GREENE COUNTY

FINISHED

SUBMITTED BY M. R. Sack DATE 7/14/28 BRIDGE ENGINEER
APPROVED BY T. H. Cutler DATE CHIEF ENGINEER

STD.S 818
H-636

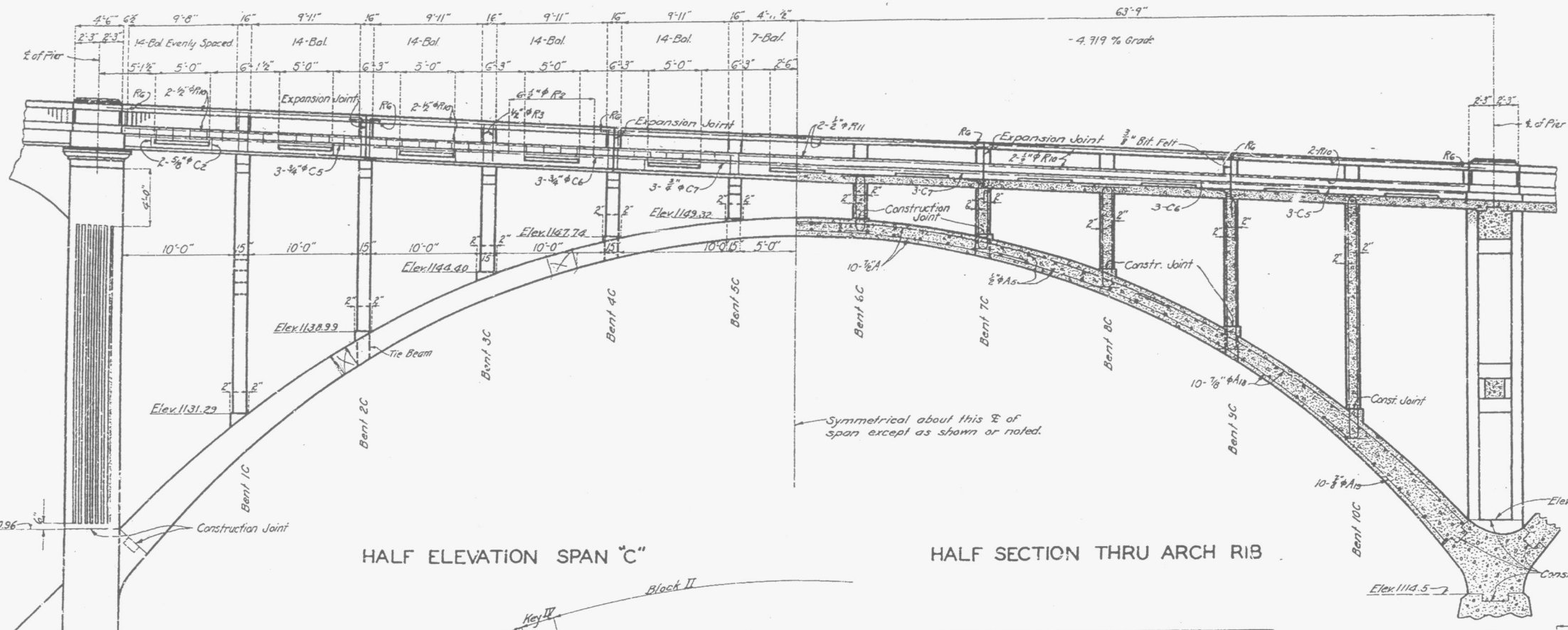
Drawn July 1928 by A.F.K.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

Sheet No. 9 of 14

F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

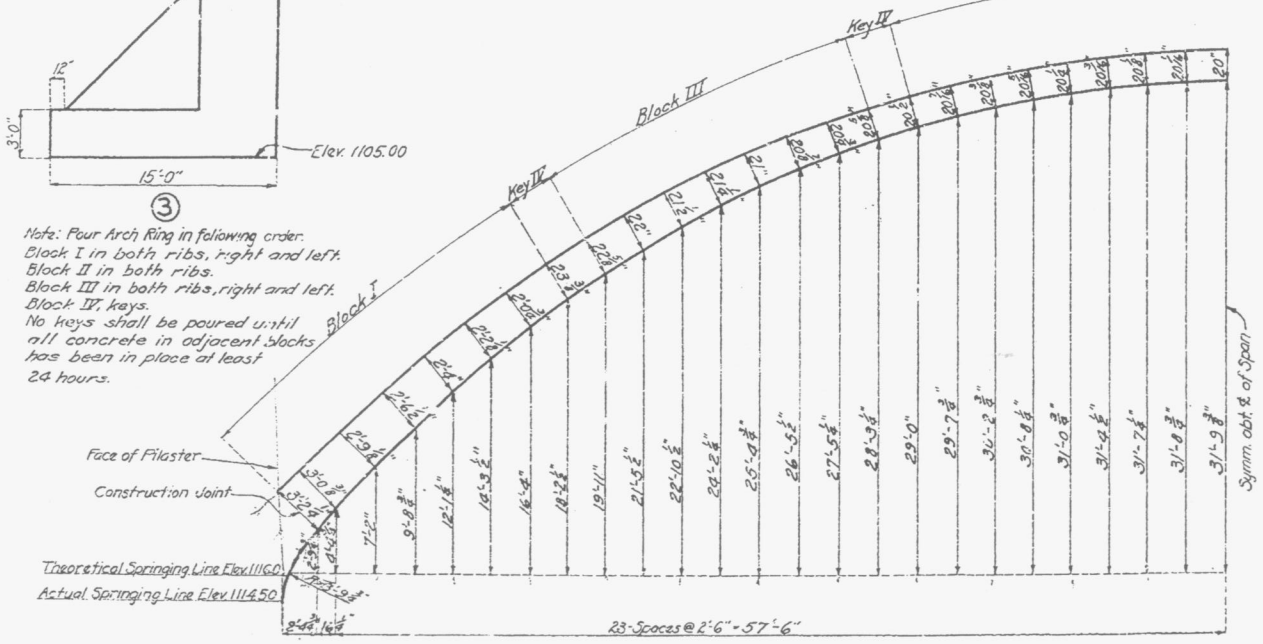
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	MO.			19



HALF ELEVATION SPAN "C"

HALF SECTION THRU ARCH RIB

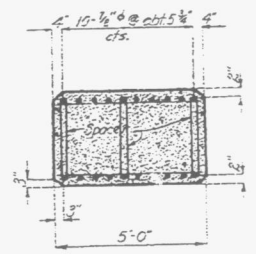
③



Note: Pour Arch Ring in 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 concrete in adjacent blocks has been in place at least 24 hours.

DIMENSIONS OF ARCH RING

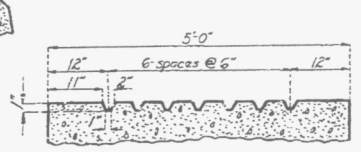
DETAILS OF 122'-6" ARCH



½"ϕ bars As at 2'-6" ctrs. measured horizontally and placed in ring at points where ordinates are shown in sketch, "Dimensions of Arch Ring." Spacers to be placed as shown in sketch above and spaced same as ½"ϕ tie bars. Wire spacers securely to both main and transverse steel.

SECTION THRU RING SHOWING REINFORCING

For reinforcing in pier see Sheet No. 7.

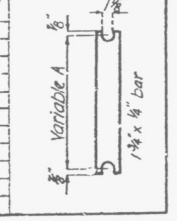


④

PART SECTION THRU PIER SHOWING DETAIL OF FLUTING

TABLE OF BAR SPACERS

NO. OF BARS	DIMENSION A	NO. OF BARS	DIMENSION A
		12	17⅝"
		12	17½"
12	2'-8⅜"	12	17⅜"
12	2'-5⅜"	12	17⅛"
12	2'-2⅜"	12	17"
12	2'-0⅜"	12	16⅞"
12	22⅜"	24	16⅝"
12	21"	24	16⅜"
12	19⅜"	24	16⅛"
12	18⅜"	24	16"
12	18⅛"	6	16"



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

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286B (U.S.65) STA. 0+60.29

GREENE COUNTY

SUBMITTED BY M. R. Sorg BRIDGE ENGINEER DATE 7/24/28

APPROVED BY T. H. Hinsley CHIEF ENGINEER DATE

STD. S 818

H-636

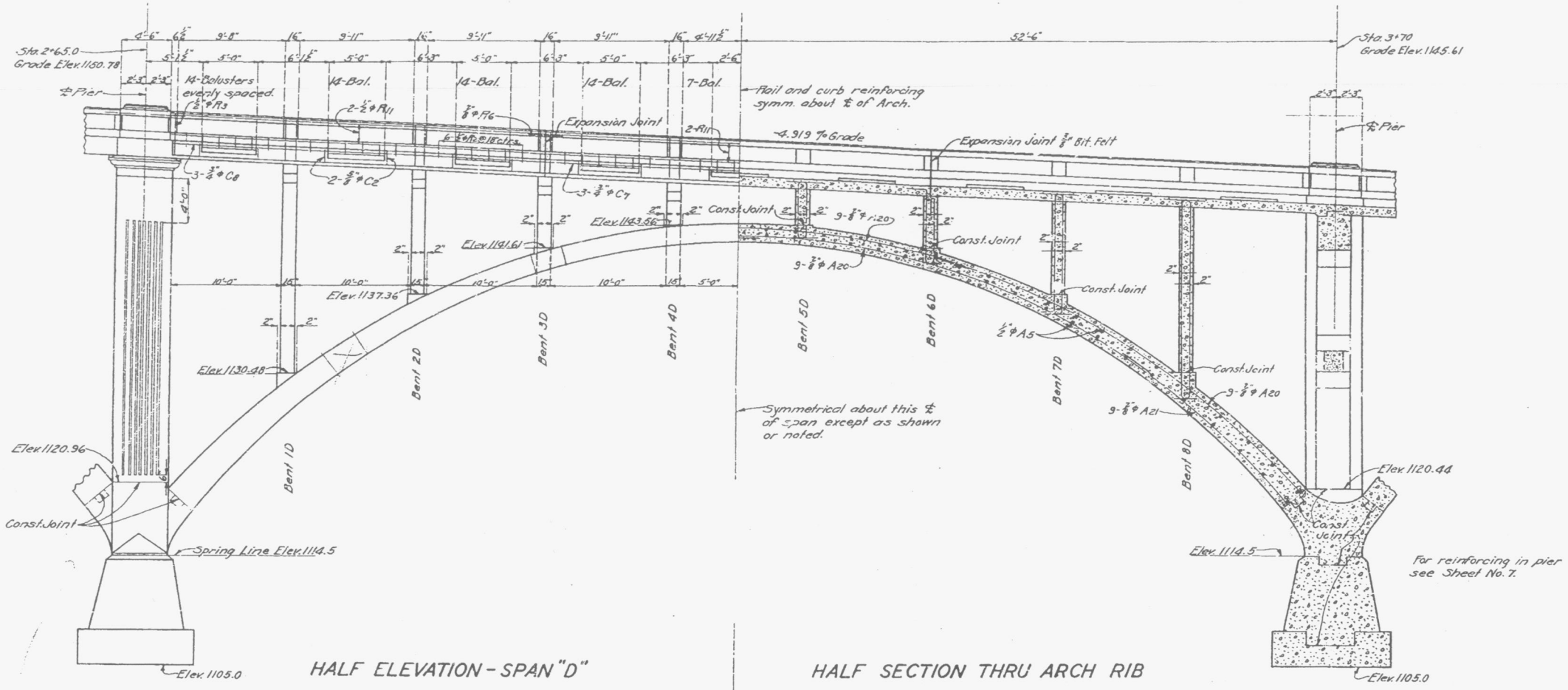
Drawn June 1928 by F.C.L. and F.W.H.
Traced July 1928 by H.W.H. and C.A.F.
Checked July 1928 by A.L.G.

Sheet No. 10 of 19 Sh.

F. A.

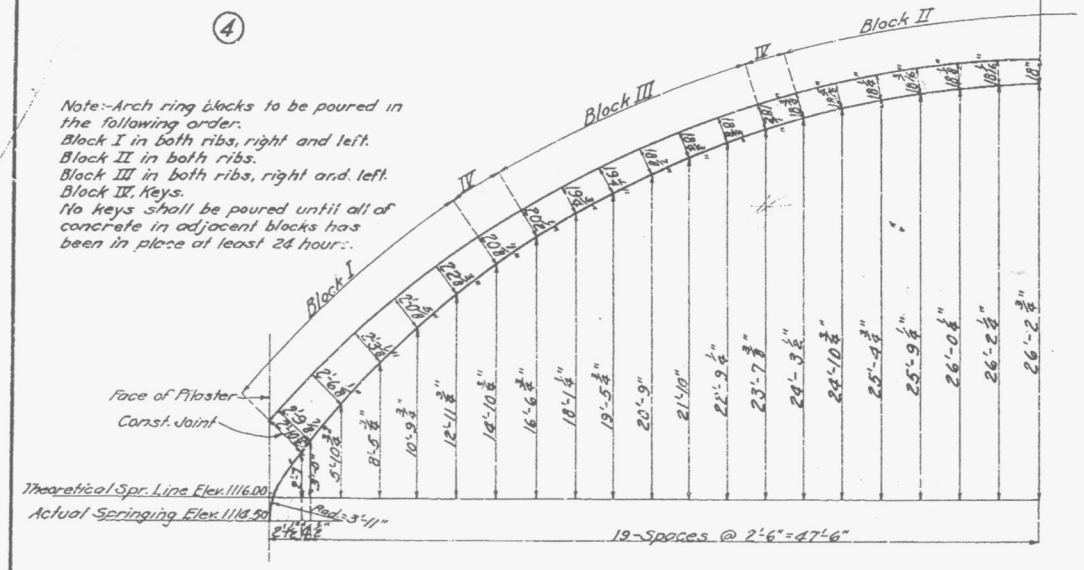
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	286B U.S. 65	19	4/1	



④ HALF ELEVATION - SPAN "D"

⑤ HALF SECTION THRU ARCH RIB

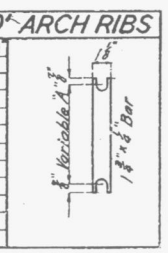


DIMENSIONS OF ARCH RING

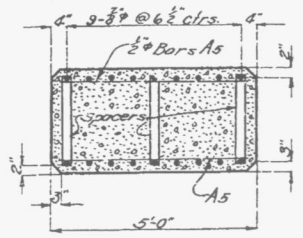
Note:- Arch ring blocks to be poured in the following order.
Block I in both ribs, right and left.
Block II in both ribs.
Block III in both ribs, right and left.
Block IV. Keys.
No keys shall be poured until all of concrete in adjacent blocks has been in place at least 24 hours.

BAR SPACERS FOR 100'-ARCH RIBS

No. of Bars	Dimension A	No. of Bars	Dimension A
12	2'-6 ⅜"	12	14 ⅜"
12	2'-2 ⅜"	12	14 ⅞"
12	23 ⅜"	24	14 ⅜"
12	20 ⅜"	24	14 ⅜"
12	18 ⅜"	24	14 ⅜"
12	17 ½"	6	14 ¼"
12	16 ⅜"		
12	16"		
12	15 ½"		
12	15 ⅜"		
12	15"		



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



½" ℄ bars A5 @ 2'-6" ctrs., measured horizontally, are to be placed in ring at points where ordinates are shown in sketch "Dimensions of Arch Ring."
Spacers to be placed as shown in sketch above and spaced same as ½" ℄ tie bars. Wire spacers securely to both main and transverse steel.

SECTION THRU ARCH RIB SHOWING REINFORCING

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286 B (U.S. 65) STA 0+60.29
GREENE COUNTY

SUBMITTED BY F. R. Sackett DATE 7/24/28 BRIDGE ENGINEER
APPROVED BY T. H. Hunter DATE CHIEF ENGINEER

Engineer

STD. S 818
H-636

DETAILS OF 100' ARCH

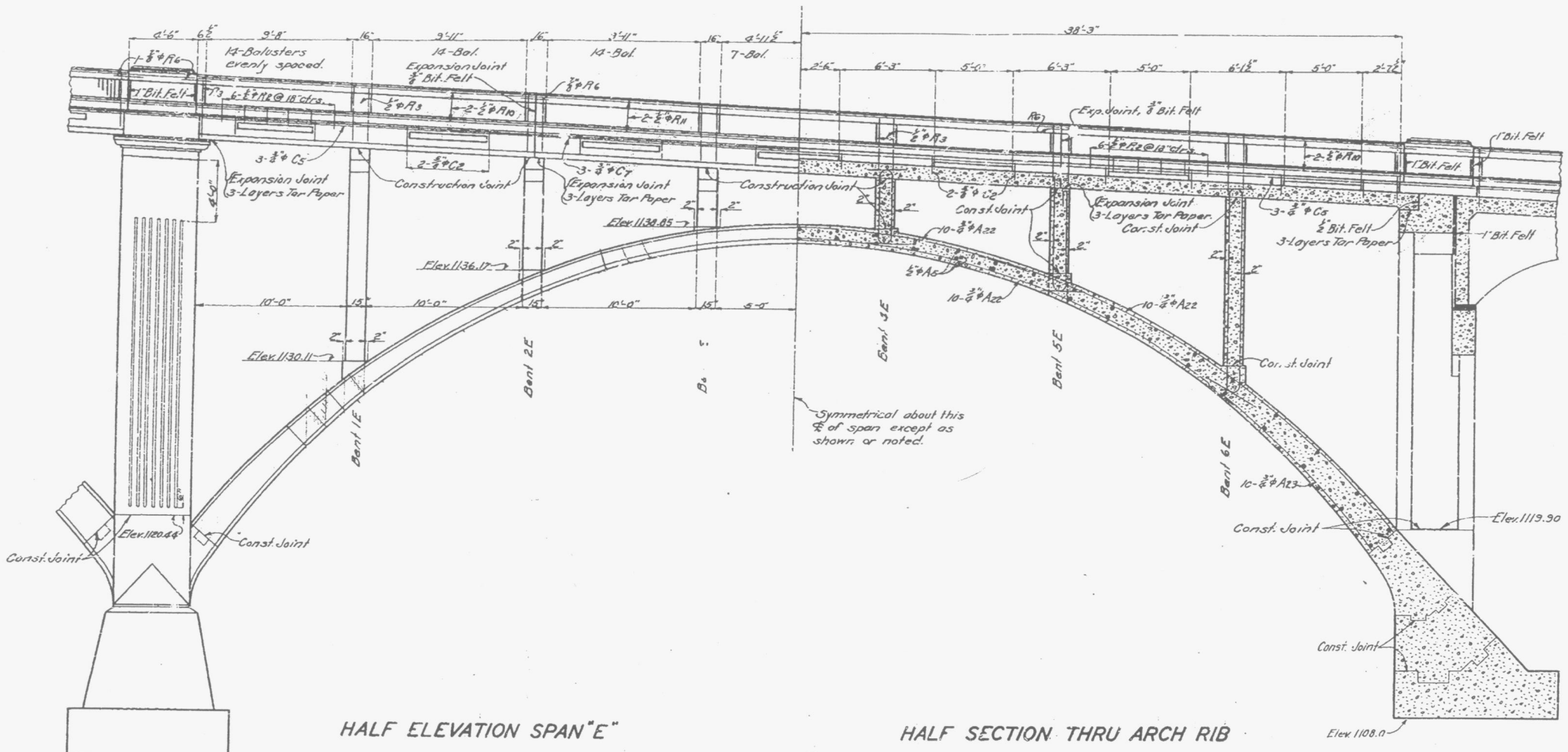
Drawn June 1928 by F.C.L. and F.W.H.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

Sheet No. 11 of 14.

F. A.

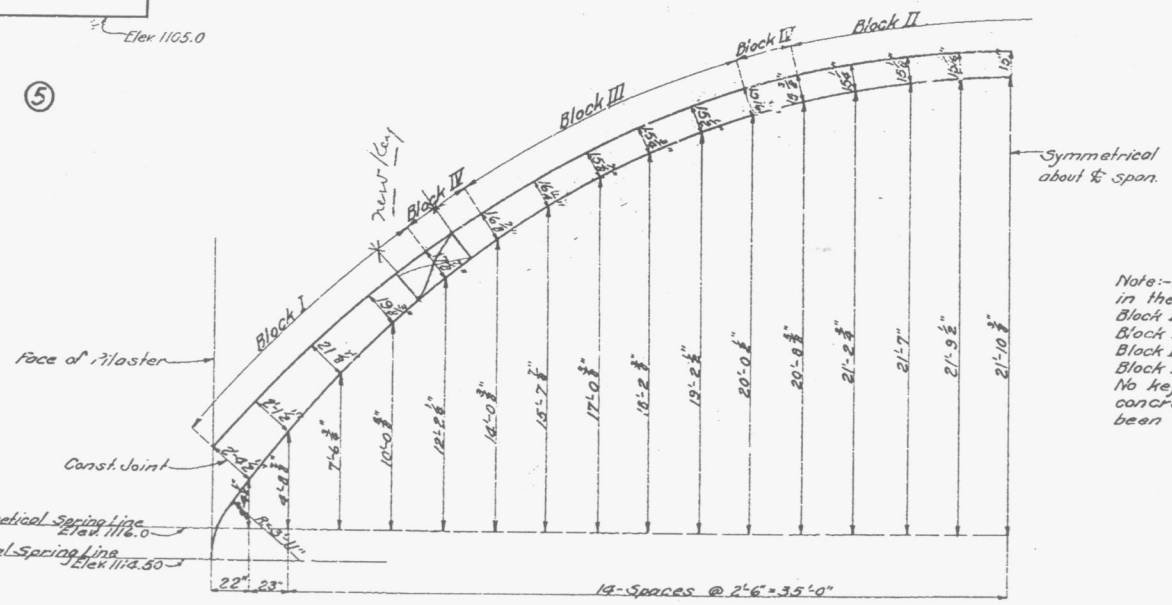
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO.	U.S.65	19	41	



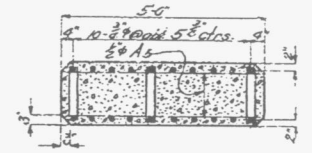
HALF ELEVATION SPAN "E"

HALF SECTION THRU ARCH RIB



DIMENSIONS OF ARCH RING

Note:- Arch ring 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 concrete in adjacent blocks has been in place at least 24 hours.

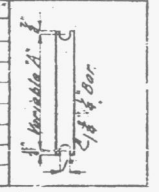


½" Bars A5 @ 2'-6" ctrs. measured horizontally are to be placed in ring at points where ordinates are shown in "Sketch Dimensions of Arch Ring". Spacers to be placed as shown in sketch above and spaced same as ⅝" dia. bars. Wire spacers securely to both main and transverse steel.

SECTION THRU ARCH RIB SHOWING REINFORCING

BAR SPACERS FOR 77.5' ARCH RIBS

No. Bars	Dimension "A"	No. Bars	Dimension "A"
		12	12"
12	21 3/16"	12	11⅞"
12	18 5/16"	24	11 3/16"
12	15 5/16"	12	11½"
12	14 5/16"	24	11⅛"
12	13 5/16"	6	11⅛"
12	12 5/16"		
12	12⅛"		



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

For reinforcing in pier see Sheet No. 8.

⑤ ⑥

Drawn July 1928 by F.W.H.
Traced July 1928 by C.A.F.
Checked July 1928 by A.L.G.

DETAILS OF 77.5' ARCH

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

PROJECT NO. 286 B (U.S.65) STA 0+60.29

GREENE COUNTY

SUBMITTED BY N. R. Lacy DATE 7/24/28 BRIDGE ENGINEER

APPROVED BY T. Hueter DATE CHIEF ENGINEER

STD. S 818

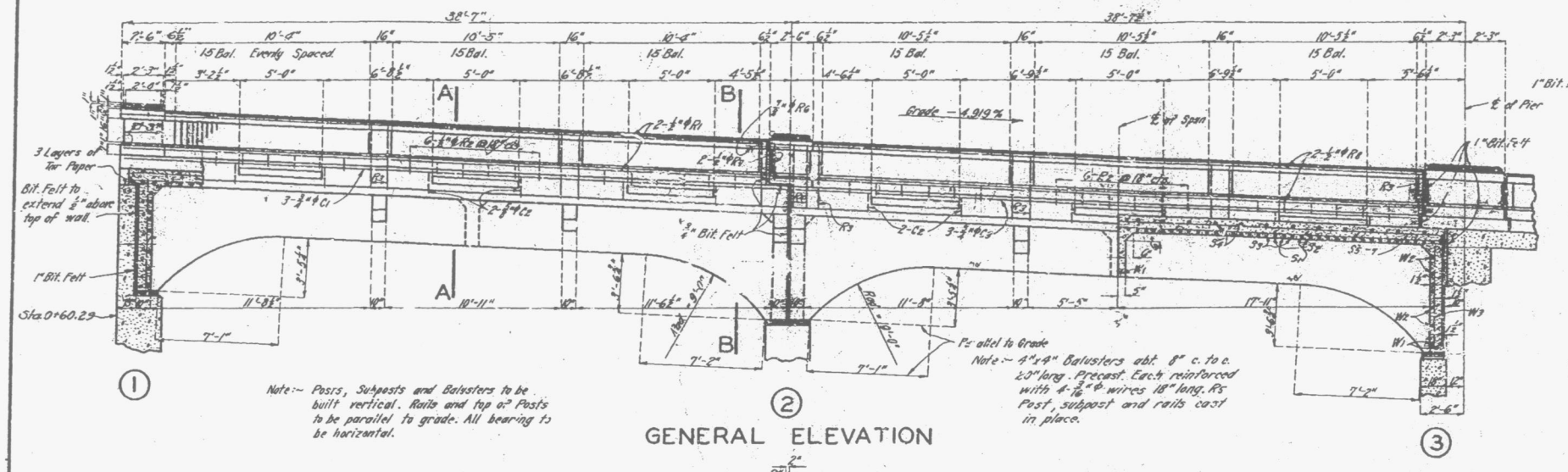
H-636

Sheet No. 12 of 14.

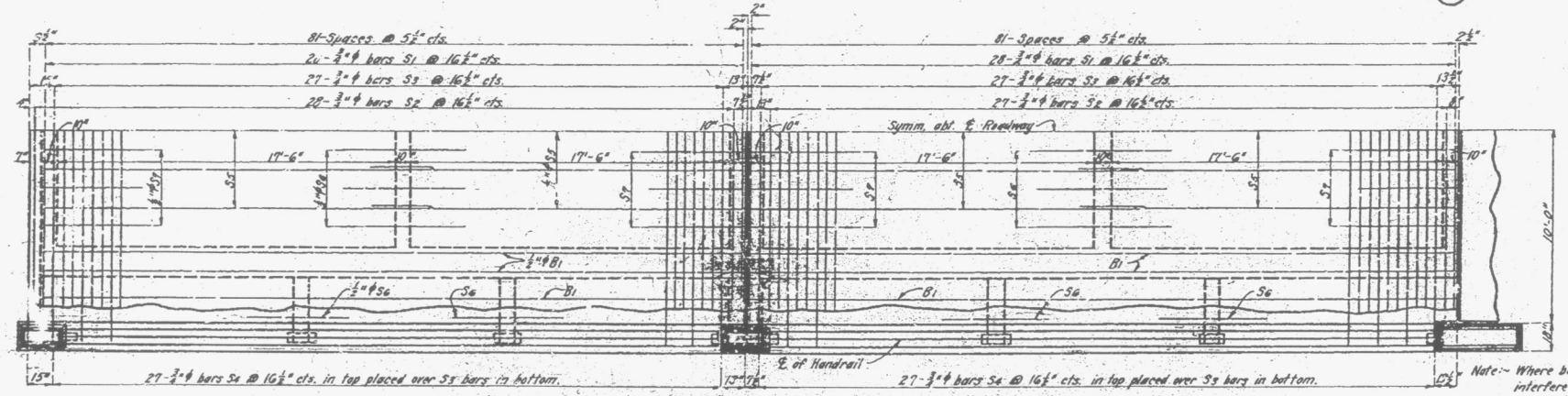
F.A.

MISSOURI STATE HIGHWAY DEPARTMENT

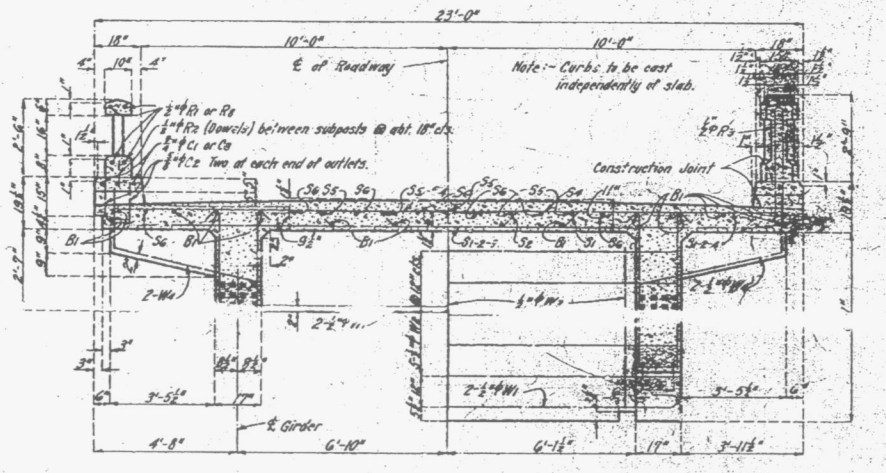
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	208 B U.S.65	192	42	



GENERAL ELEVATION

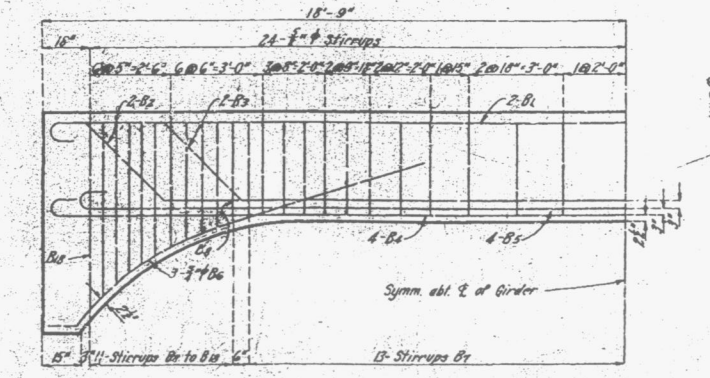


HALF PLAN SHOWING REINFORCEMENT OF SLAB

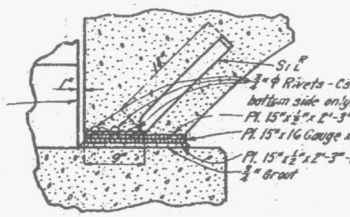


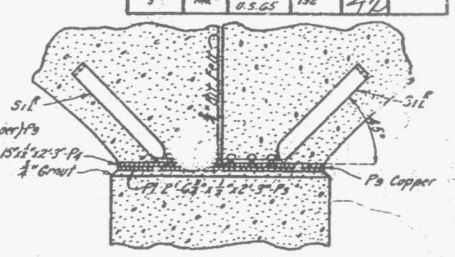
SECTION A-A

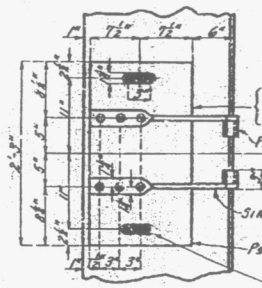
SECTION B-B



GIRDER REINFORCEMENT



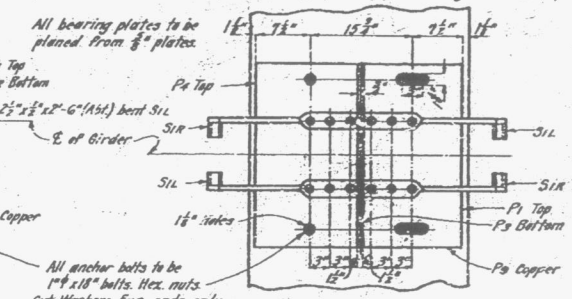




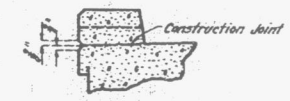
ABUTMENT NO. 1

Note:- Anchor bolt holes to be 1½". Slot top plates only where shown.

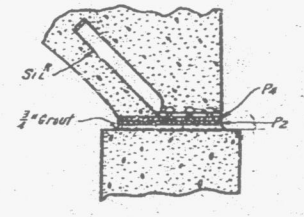
All bearing plates to be planed from ⅜" plates.

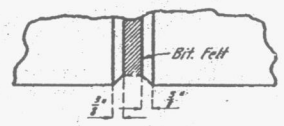


BENT NO. 2



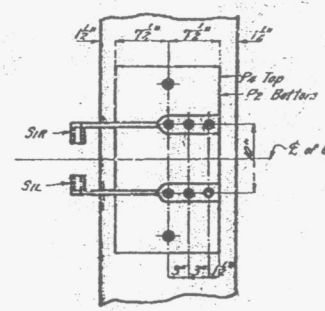
DETAIL OF BEVEL FOR CONSTR. JOINT AT CURB



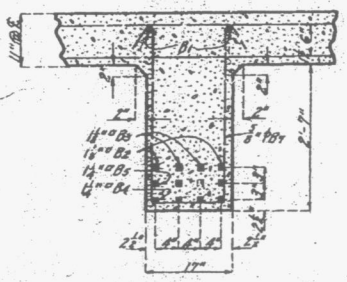


Note:- Use bevel as shown for exposed faces of all joints consisting of bituminous felt except at top surface of roadway slab.

DETAIL OF BEVEL FOR BIT. FELT JOINTS



PIER NO. 3
DETAILS OF BEARING PLATES



DETAIL OF GIRDER AT ℄ OF SPAN

BRIDGE OVER POMME DE TERRE RIVER

STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD

ABOUT 21 MILES NORTHEAST OF SPRINGFIELD

FROM ROUTE 266 B (U.S. 60) STA. 0+60.29

GREENE COUNTY

SUBMITTED BY M. R. Sack DATE 7/24/28 BRIDGE ENGINEER

APPROVED BY T. H. Cutler DATE CHIEF ENGINEER

FILED

STD. S 818

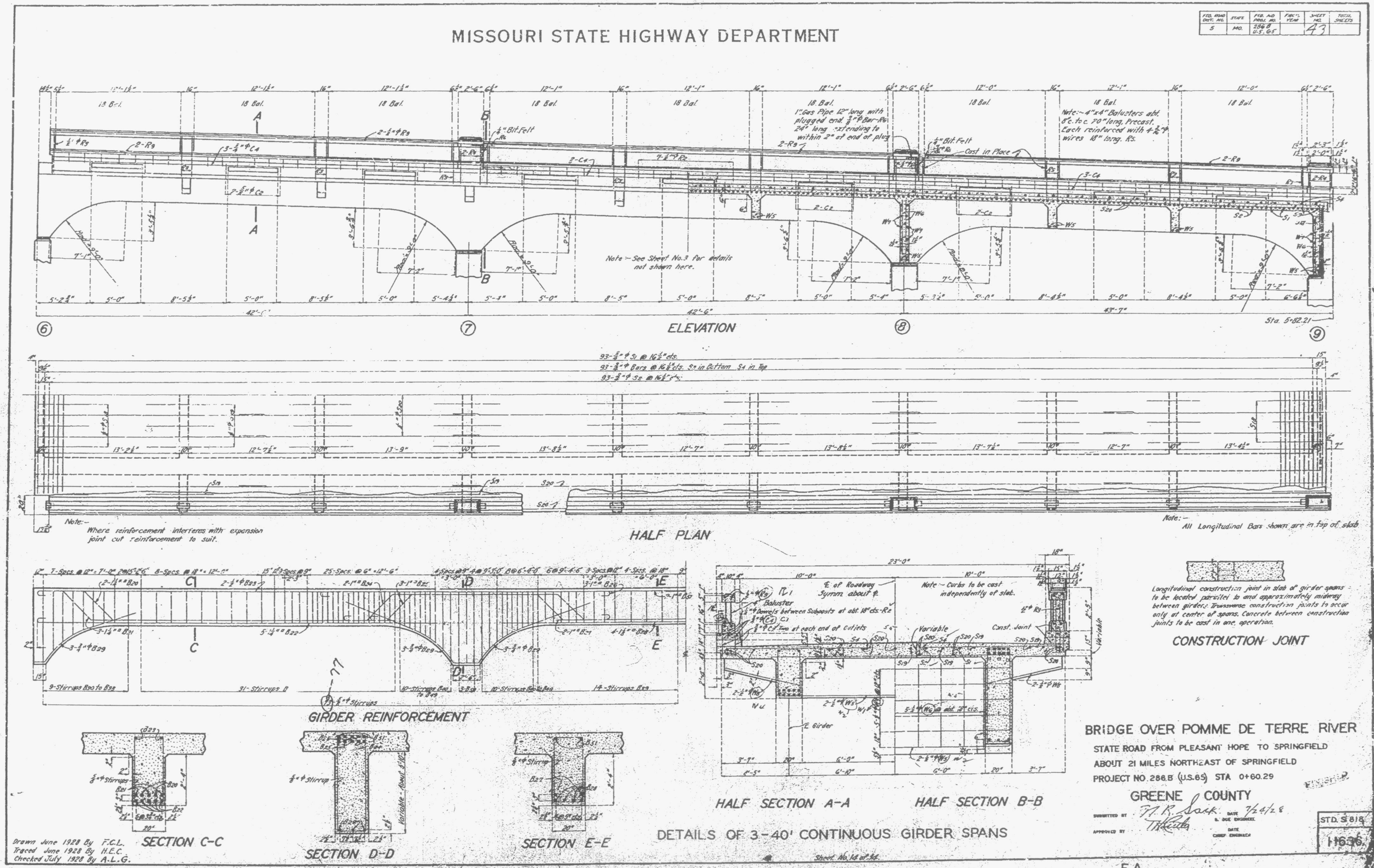
14-626

Drawn Jan. 1928 By F.C.L.
Traced Feb. 1928 By H.E.C.
Checked July 1928 By A.L.G.

DETAILS OF 35'-0" DECK GIRDER SPANS

Sheet No. 13 of 14.

F.A.


MISSOURI STATE HIGHWAY DEPARTMENT
FED. ROAD DIST. NO. 5 | STATE MO. | FED. AID PROJ. NO. 286B U.S. 65 | FISCAL YEAR | SHEET NO. 43 | TOTAL SHEETS
ELEVATION
Note:- See Sheet No.3 for details not shown here.
Note:- 4"x4" Balusters abt. 8" c. to c. 20" long, Precast. Each reinforced with 4-1/4" φ wires 18" long. R5.
1" Gas Pipe 12" long with plugged end. 3/4" φ Bar-R6 24" long extending to within 2" of end of plug
1/4" Bit. Felt
Cast in Place
Sta. 5+82.21
93-5/8" φ S1 @ 16 1/2" cts.
93-3/8" φ Bars @ 16 1/2" cts. S3 in Bottom S4 in Top
93-3/8" φ S2 @ 16 1/2" cts.
HALF PLAN
Note:- Where reinforcement interferes with expansion joint cut reinforcement to suit.
Note:- All Longitudinal Bars shown are in top of slab
GIRDER REINFORCEMENT
HALF SECTION A-A
HALF SECTION B-B
Note - Curbs to be cast independently of slab.
℄ of Roadway Symm about ℄
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
SECTION D-D
SECTION E-E
DETAILS OF 3-40' CONTINUOUS GIRDER SPANS
Drawn June 1928 By F.C.L.
Traced June 1928 By H.E.C.
Checked July 1928 By A.L.G.
BRIDGE OVER POMME DE TERRE RIVER
STATE ROAD FROM PLEASANT HOPE TO SPRINGFIELD
ABOUT 21 MILES NORTHEAST OF SPRINGFIELD
PROJECT NO. 286.B (U.S.65) STA 0+60.29
GREENE COUNTY
SUBMITTED BY
DATE 7/24/28
BR. DGE ENGINEER
APPROVED BY
DATE
CHIEF ENGINEER
STD. S 818
11636
F.A.
Sheet No. 14 of 34

Pomme de Terre River Bridge
Bridge No. H-636
Greene County, U.S Route 65

Photographed: November 2006
Photographer: Randall Dawdy

Index to Photographs:

1. Bridge No. H-636. East profile. View to southwest.
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3. Bridge No. H-636. Deck and roadway. View to south.
4. Bridge No. H-636. Spans A through C. View to northwest.
5. Bridge No. H-636. Spans B through E. View to southwest.
6. Bridge No. H-636. Span C. View to southwest.
7. Bridge No. H-636. Spans C and D. View to northwest.
8. Bridge No. H-636. Span D. View to northwest.
9. Bridge No. H-636. Pier 5. View to northwest.
10. Bridge No. H-636. Pier 5 close up. View to northwest.
11. Bridge No. H-636. Span F. View to west.
12. Bridge No. H-636. East profile. View to northwest.
13. Bridge No. H-636. Span H. View to west.
14. Bridge No. H-636. Southwest balustrade. View to southwest.
15. Bridge No. H-636. Southwest end post. View to west.
16. Bridge No. H-636. Southwest balustrade detail. View to west.
17. Bridge No. H-636. South abutment. View to south.
18. Bridge No. H-636. Pier 6. View to northeast.

19. Bridge No. H-636. Span E. View to northeast.

20. Bridge No. H-636. Pier 5 detail. View to east.

21. Bridge No. H-636. Pier 4. View to east.

22. Bridge No. H-636. Span D detail. View to east.

23. Bridge No. H-636. Span C detail. View to northeast.

24. Bridge No. H-636. Span C. View to northeast.

25. Bridge No. H-636. Spans A through C. View to northeast.

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

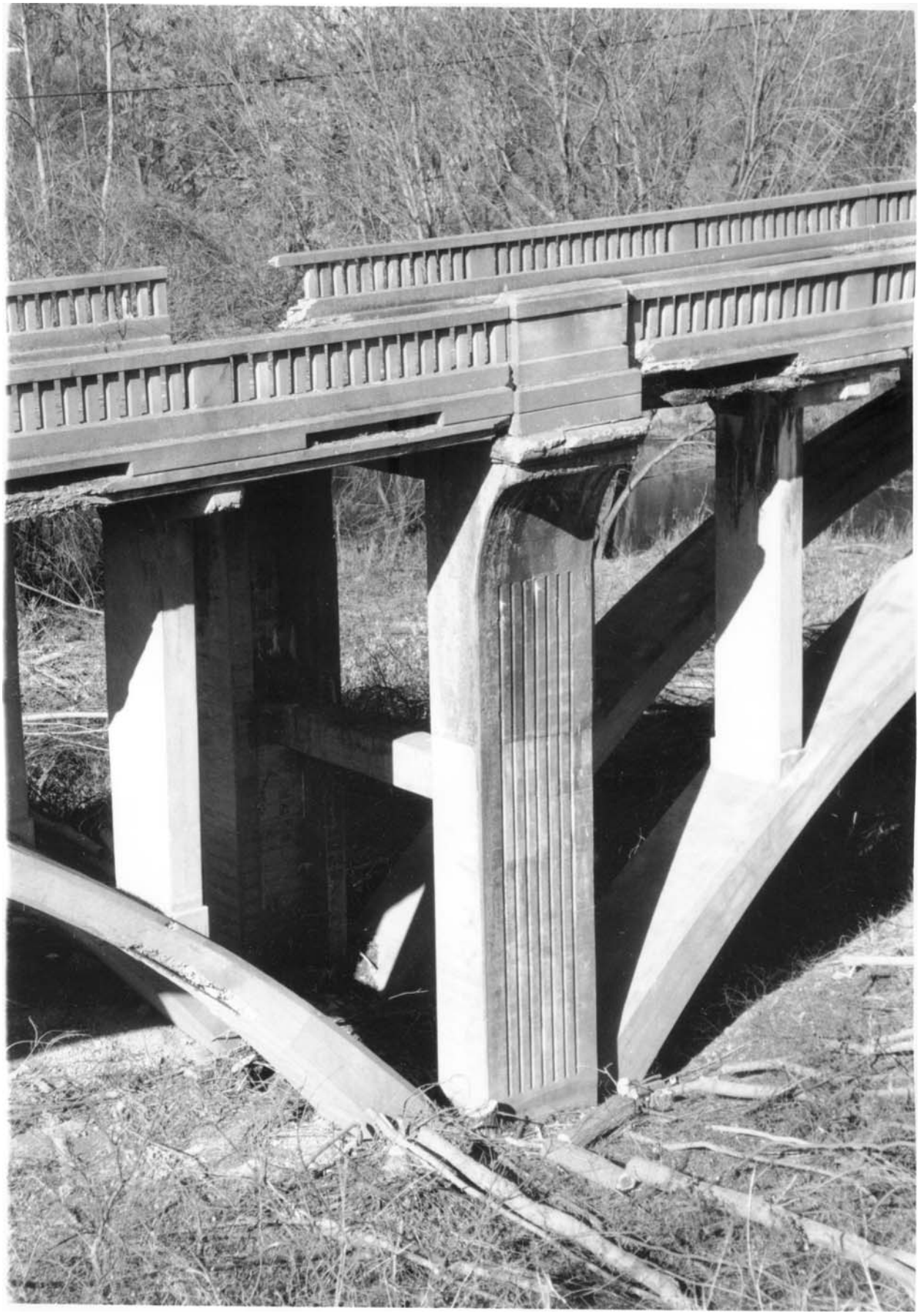
Photograph 6

Photograph 7

Photograph 8

Photograph 9

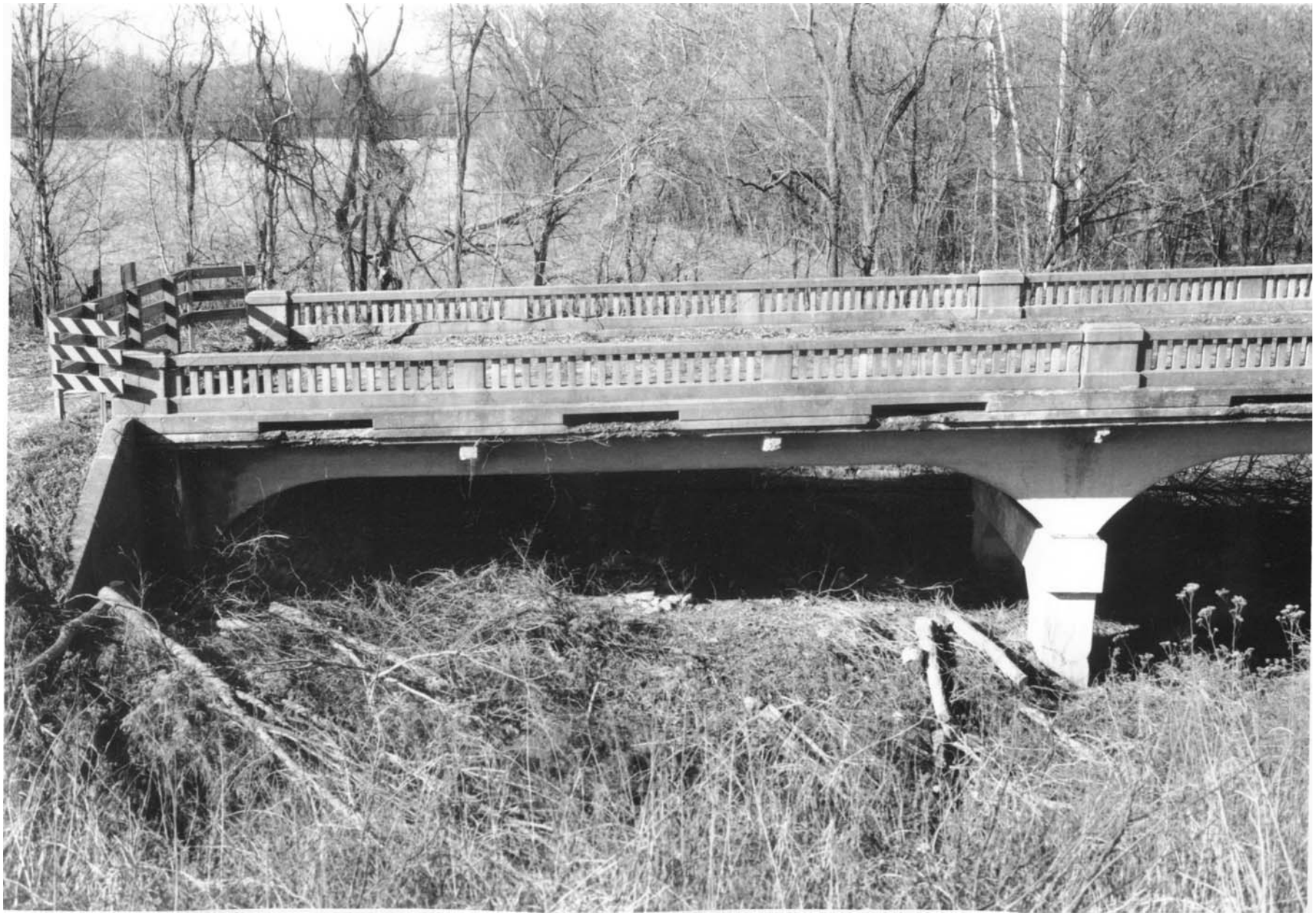
Photograph 10



Photograph 11

Photograph 12

Photograph 13



Photograph 14

Photograph 15

Photograph 16

Photograph 17

Photograph 18

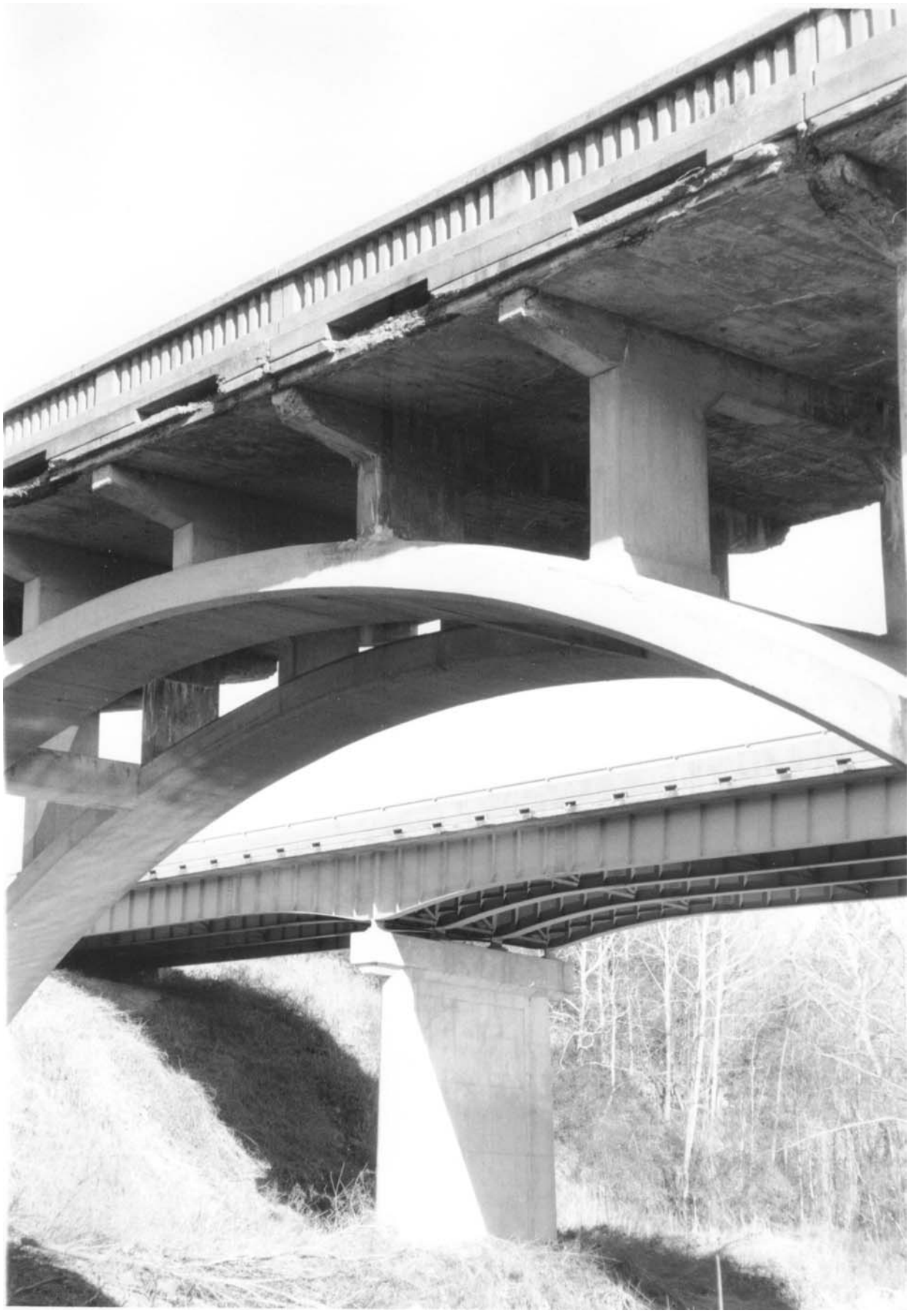
Photograph 19

Photograph 20

Photograph 21

Photograph 22

Photograph 23



Photograph 24

Photograph 25