

# **Bear Creek Bridge**

## **Documentation of Historic Bridge No. K0491**

Platte County, Missouri

Route 45

MODOT Safe & Sound Design-Build Project No. J5B0800



November 2009



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Report Preparers:

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Submitted to:

State Historic Preservation Office  
Missouri Department of Natural Resources

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

Pete K. Rahn, Director  
Missouri Department of Transportation

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## **Introduction**

The Missouri Department of Transportation's Safe & Sound Bridge Improvement Program proposes to improve 802 of the state's most worn-out and obsolete bridges by October of 2013. 554 of these structures will be replaced under a single Design-Build contract. Five of the bridges to be replaced have been determined eligible for listing on the National Register of Historic Places (NRHP), and the proposed work will have an "adverse effect" on the historic structures. The Bear Creek Bridge (K0491) is the first of the historic bridges slated for replacement. It is NRHP eligible under Criterion C in the area of Engineering.

In consultation with the Missouri State Historic Preservation Office and the National Advisory Council on Historic Preservation, a Memorandum of Agreement (MOA) for mitigation of the adverse effect was developed and signed on July 15, 2009. The MOA calls for documentation of the five historic bridges with archival photographs and a historic narrative. This documentation is submitted to fulfill the MOA requirements for the historic Bear Creek Bridge No. K0491.

HISTORIC DOCUMENTATION  
BRIDGE K-491  
BEAR CREEK BRIDGE

I. Introduction

Location: Highway Bridge carrying Missouri State Route 45 over Bear Creek, approximately three miles northwest of Weston, Missouri.

Construction Dates: 1936-1937

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

Present Use: Highway bridge to be replaced or rehabilitated; project to begin in 2010

Significance: The plans for the Bear Creek Bridge, project #FAP-791 (A), were drawn by engineers of the Missouri State Highway Department in March of 1936 according to standard specifications that were published by the American Association of State Highway Officials (AASHO) in 1935. Although the bridge was constructed according to standard specifications, it was unique at the time that it was constructed due to the length of its girders. Although longer steel beam bridges had been constructed in other parts of the country, the Bear Creek crossing is significant because its 100-foot span length represented one of the earliest long-span beam bridges to be constructed in the State of Missouri during the 1930s.

Historian: Jane M. Lee, Historic Preservation Section, Design Division, Missouri Department of Transportation, October 2009.

## II. History of Bridge K-491

### A. Introduction

Missouri Bridge K-491 carries Route 45 over Bear Creek, approximately three miles northwest of the town of Weston in Platte County, Missouri. The bridge consists of a single 100' steel plate through girder main span with identical 30' steel I- beam approach spans at each end. The plans for the Bear Creek Bridge, project #FAP-791(A)<sup>1</sup>, were drawn by engineers of the Missouri State Highway Department in March of 1936 according to standard specifications that were published by the American Association of State Highway Officials (AASHO).<sup>2</sup> Although the bridge was constructed according to standard specifications, it was unique at the time that it was constructed due to the length of its girders. Although longer steel beam bridges had been constructed in other parts of the country, the Bear Creek crossing is significant because its 100-foot span length represented one of the earliest long-span beam bridges to be constructed in the State of Missouri during the 1930s.

The Bear Creek Bridge was constructed as a part of Route 45, which was designated by the Missouri State Highway Commission as a traffic relief (TR) highway for travel between Kansas City and St. Joseph. Route 45TR was originally described as, "...connecting Route 52A, Buchanan-Platte County Line, through or near Weston, intersecting Route 92, between Platte City and Leavenworth, and connecting with Route 59, at or near Parkville, Missouri..."<sup>3</sup> The connection between Route 45TR, the Bear Creek Bridge and the town of Weston has historical roots that extend back to the early days of the Platte Purchase.

### B. Weston History

Weston was one of the earliest established town sites within the Platte Purchase. The Platte Purchase, which consisted of a six-county area (Andrew, Atchison, Buchanan, Holt, Nodaway and Platte), was acquired by the state of Missouri from the Iowa, Sac, and Fox tribes in 1836.<sup>4</sup> In 1837, a recently discharged Dragoon from Fort Leavenworth, Joseph Moore, reportedly bought a claim of land across the Missouri River from the Fort from an "Indian trader named McPherson's for a barrel of whiskey"<sup>5</sup>. Moore built a cabin

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<sup>1</sup> Missouri State Highway Department, "Bridge Over C.B. & Q. R.R., State Road From Weston to Buchanan County Line, Project No. WPGH 791B (R45TR)," April 1936, Bridge No. K-698 [bridge construction drawings, seven sheets], Bridge Division, Missouri Department of Transportation, Jefferson City.

<sup>2</sup> American Association of State Highway Officials (AASHO), *Standard Specifications for Highway Bridges Adopted by the AASHO, Second Edition* (Washington, D.C.: AASHO, 1935).

<sup>3</sup> Missouri State Highway Commission, "Minutes of a Special Meeting of the State Highway Commission, Held at the Mayfair Hotel, St. Louis, Missouri," 2 July 1929, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>4</sup> E.W. Howe, "A Bit of Weston, Missouri, History," *Missouri Historical Review* 47(1): 29-36.

on the land, hired Tom E. Weston, another Dragoon from Ft. Leavenworth, and began to survey the town site. According to a written account by Tom Weston, the town was named Weston because it represented, “the farthestmost town west in trade” at the time.<sup>6</sup>

Although Moore and Weston are credited with the establishment of the town site, it wasn't until two of Weston's most notable historical figures, cousins Bela M. Hughes and Ben Holladay, arrived at Weston during the winter of 1838-1839 that the town truly began to flourish.<sup>7</sup> Hughes, a young lawyer from Kentucky, reportedly bought a half interest in Moore's claim, and was said to have single-handedly maintained order at the town. Holladay established a number of businesses in Weston, including a dram shop, a tavern, a store, and later, the International Hotel.<sup>8</sup> In 1841, Holladay became the first postmaster for Weston, and he and his brother, David, established the Holladay Distillery in 1856.<sup>9</sup> Holladay's business acumen was undoubtedly developed during his early years at Weston, and his work outfitting wagon-bound emigrants heading westward ultimately led to his most notable role as one of the country's transportation moguls during the mid-to-late 19<sup>th</sup> century.<sup>10</sup> Hughes and Holladay were able to use their influence to attract settlers to Weston from their home state of Kentucky, as well as Louisiana, Tennessee and Virginia.<sup>11</sup>

Weston's position opposite of Fort Leavenworth and adjacent to a natural harbor of the Missouri River was ideal for the town's early economic and commercial growth. Initially, Weston supported a small but diverse agricultural base in order to supply food and other products to the military installation at Fort Leavenworth. Because of its advantageous location, Weston became a primary point of export for the agricultural regions of northern Platte County during the steamboat era of the early-to-mid 19<sup>th</sup>

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<sup>5</sup> Bertha I. Bless, *Weston—Queen of the Platte Purchase: Historical data about a town that rose to fame in 13 years and was forgotten for nearly 50 years* (Weston, MO: The Weston Chronicle, 1969), 9.

<sup>6</sup> *Ibid.* There are a number of accounts of the settlement of Weston, but all are in agreement that Joseph Moore was the first individual to set up residence at the town. Weston native and journalist, Bertha Bless, recounts the stories of Moore's deal with McPherson and Tom Weston's letter in her book, *Weston—Queen of the Platte Purchase*.

<sup>7</sup> United States Bureau of the Census, “1840 Population Census: Platte County, Missouri,” microfilm copy available from Missouri State Archives, Jefferson City, MO; W.M. Paxton, *Annals of Platte County, Missouri* (Kansas City, MO: Hudson-Kimberly Publishing Co., 1897), 24; Platte County Historical Society, *History of Platte County, Missouri: A Proud Legacy* (Platte City, MO: Platte County Historical Society, 2006), 24.

<sup>8</sup> Paxton, 23, 27; Bless, 9-10; Howe, 34.

<sup>9</sup> Frederick, J.V., *Ben Holladay: The Stagecoach King* (Glendale, CA: A.H. Clark Co. 1940), 23; Stephen J. Raiche, “McCormick Distillery,” National Register of Historic Places Nomination, U.S. Department of the Interior, National Park Service, 1973, *passim*.

<sup>10</sup> Frederick, *passim*.

<sup>11</sup> Miller, Sandra, *Memories of Weston, Volume I* (Weston, MO: The Weston Chronicle, 1993), *passim*; “1850 Population Census: Platte County, Missouri,” microfilm copy available from Missouri State Archives, Jefferson City, MO.

century.<sup>12</sup> Weston was a principal stop for steamboats on the Missouri, particularly those traveling downriver to Glasgow and on to the Mississippi at St. Louis. Trade and export at Weston led to the development of several early roads, which were built to transport a variety of products from locations such as Liberty, Plattsburg and Beverly to the port of Weston.<sup>13</sup> The town became also a popular outfitting point for scores of Mormons and other wagon-bound settlers heading west for the Santa Fe, California and Oregon Trails.<sup>14</sup>

Although a variety of Platte County's agricultural products were exported from Weston's port, by far the most profitable agricultural product to be cultivated and shipped from Weston during the mid-nineteenth century was hemp. According to the 1850 Agricultural Census, Platte County led the state in hemp production, and was responsible for more than 25% of Missouri's overall dew-rotted hemp yield. A contemporary source also maintained that the port of Weston shipped more hemp than any other port in the state in 1850.<sup>15</sup> Since the work associated with the cultivation, harvesting and processing of hemp were exceptionally arduous tasks, Platte County's hemp industry was supported by the use of slave labor:

From the first settlement of the county, hemp was the staple product. We became wealthy by its culture. No soil on earth, whether timber or prairie, is better adapted to hemp than Platte County. After a few years, the South looked more to Missouri than to Kentucky for a supply of hemp for bagging and rope. Platte, for several years prior to the war, was the banner country of the world. But no machinery ever invented superseded the hand-break in cleaning it; and that was such an arduous labor that the abolition of slavery put an end to the culture of hemp. Negroes were, therefore, in demand, and stout men sold readily for \$1,200 to \$1,400.<sup>16</sup>

On the eve of the Civil War, Platte County's economic dependence on slavery prompted a political schism that would play a role in Weston's eventual decline. On May 30, 1854, the United States Congress passed the Kansas-Nebraska Act, which opened the two new territories to settlement and effectively nullified the Missouri Compromise by allowing settlers to determine the issue of slavery according to "popular sovereignty."<sup>17</sup> The

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<sup>12</sup> Platte County Historical Society, 12-13; Stephen J. Raiche, "Weston Historic District," National Register of Historic Places Nomination, U.S. Department of the Interior, National Park Service, 1982, section 8:2; Thomas Gubbels, "Brief General History of Platte County, Missouri," 2, as held in the Historic Preservation Section, Missouri Department of Transportation, Jefferson City, MO.

<sup>13</sup> Paxton, 51, 99, 118, 464.

<sup>14</sup> Howe, 31; Raiche, "Weston Historic District," 8:2; Bless, 20.

<sup>15</sup> Liberty Tribune, (Liberty, Missouri), February 18, 1859.

<sup>16</sup> Paxton, 37.

<sup>17</sup> An Act to Organize the Territories of Nebraska and Kansas. Statutes at Large. 30 May 1854. Vol. 10, 277.

majority of Platte Countians and Weston residents supported the election of slavery in Kansas Territory, and once the territory was opened, a number of Westonites immediately crossed the Missouri River in order to establish the largely pro-slavery “squatter” settlement of Leavenworth.

On June 13, 1854, the Leavenworth Company was officially formed at Weston by a group of 34 prominent citizens from the town.<sup>18</sup> As famous newspaperman, E.W. Howe, wrote, “In the memorable excitement following the opening of Kansas, Weston was lost sight of, and Leavenworth began to attract attention<sup>19</sup>.” The establishment of Leavenworth undoubtedly distracted attention from Weston, and it also served to lessen the population of the community. Perhaps even more importantly, the establishment of “squatter settlements” such as Leavenworth and Atchison served to reinforce political divisions that were brewing between the pro-slavery majority and abolitionist minority in Platte County.

Not long after the establishment of Leavenworth by Westonites, settlers from the northeastern U.S. also began to push into the Kansas Territory, bringing abolitionist ideals along with them. Almost immediately, pro-slavery and abolitionist factions began to spring up on both sides of the Missouri River, and the border communities of Weston and Leavenworth were significantly affected by the agitation.<sup>20</sup> Conflicts broke out in the streets of each town long before the official start of the Civil War, and “Bleeding Kansas” only served to incite greater contention among the neighbors. When Kansas was finally admitted to the Union as a free state on January 29, 1861, guerilla warfare broke out on both sides of the Missouri River. By the start of the Civil War, Weston had already been set upon a path of inevitable decline.<sup>21</sup>

In the meantime, the residents of Weston made another decision that would ultimately spell disaster for the economic growth of the town. In 1852, proponents of a Weston to St. Louis Railroad began to promote the necessity of a rail connection for the city’s future vitality.<sup>22</sup> However, the Weston and St. Louis Railroad would have required a substantial bond subscription by the people of Platte County, and many of Weston’s citizens could not be convinced that rail transport would soon eclipse river transport as the main means of agricultural export. Many citizens of Weston were also fearful that the railroad would provide their slaves with an efficient means of escape from bondage.<sup>23</sup>

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<sup>18</sup> Moore, H. Miles, *Early History of Leavenworth City and County* (Leavenworth, KS: Sam’l Dodsworth Book Co., 1906), 19.

<sup>19</sup> Howe, 31.

<sup>20</sup> Moore, 83, 89; Platte County Historical Society, 17-18.

<sup>21</sup> Paxton, 178; Raiche, “Weston Historic District,” 8:3; Platte County Historical Society, 12-13.

<sup>22</sup> “Weston and St. Louis Railroad,” *Liberty (MO) Tribune*, 17 September 1852; “Railroad from Kansas to St. Joseph,” *Liberty (MO) Tribune*, 12 November 1852.

<sup>23</sup> Howe, 31-32; Raiche, “Weston Historic District,” 8:3-4.

At the same time, St. Joseph was a burgeoning settlement that was beginning to attract residents and businesses from Weston and other communities in Platte County. The residents of the fledgling town of St. Joe realized the benefit that the railroad could bring to their community, and when Platte County finally attracted a railroad, it connected at St. Joe rather than Weston.<sup>24</sup>

Once the Civil War ended, Weston had surpassed a point of no return. With the emancipation of slaves, Weston lost the labor base for its hemp economy. The railroad bypassed Weston in favor of a connection at St. Joseph, and even when Weston did secure its own rail line, the Weston and Atchison in 1859, it was essentially only a local connection that reduced the town to a minor stop along the way to Kansas City during the 1860s.<sup>25</sup> Many of Weston's citizens and entrepreneurs abandoned the town and relocated at Leavenworth or St. Joseph. To add insult to injury, Weston was also afflicted by a number of fires and floods during the mid to late 19<sup>th</sup> century. A flood in 1881 dealt Weston another devastating blow when the Missouri River shifted into an old channel two miles to the west of the town.<sup>26</sup>

At the turn of the century, Weston was only a shadow of its former self. Between 1850 and 1900, the population of the town decreased by nearly one half.<sup>27</sup> The only industry that continued to keep Weston's remaining residents financially afloat was agriculture, particularly tobacco. Although hemp was Weston's primary cash crop during the early to mid nineteenth century, tobacco had been grown in Weston since the 1840s.<sup>28</sup> However, unlike the hemp industry, Weston's tobacco market had a much more enduring history with the town. Weston particularly profited from the cultivation and marketing of white burley tobacco, which grew in popularity in the years following the Civil War.<sup>29</sup> Weston was home to several tobacco barns, and until 2001, the town featured the only active tobacco market west of the Mississippi River. Although the tobacco industry prevented Weston from becoming a ghost town, it never again achieved its antebellum prominence.

### C. Route 45TR History

After Weston's prominence was lost to cities such as St. Joseph, Leavenworth, and Kansas City near the turn of the 20<sup>th</sup> century, the old town had trouble attaining an

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<sup>24</sup> Howe, 31-32; Platte County Historical Society, 18; Raiche, "Weston Historic District," 8:3.

<sup>25</sup> Howe, 31-32; Raiche, "Weston Historic District," 8:4.

<sup>26</sup> Platte County Historical Society, 18.

<sup>27</sup> United States Bureau of the Census, 1850-1900 "Population Census: Platte County, Missouri," microfilm copy available from Missouri State Archives, Jefferson City, MO

<sup>28</sup> Platte County Historical Society, 75-81; Bless, 17-19; Raiche, "Weston Historic District," 8:1.

<sup>29</sup> Platte County Historical Society, 75-81; Miller, Sandra, "Weston History," (Weston, MO: Weston Visitor Center, 1993, accessed 22 October 2009); available from [http://www.westonmo.com/history/weston\\_history.html](http://www.westonmo.com/history/weston_history.html); Internet.

effective, reliable and direct mode of transportation. Once the Missouri River flooded and shifted west of Weston in 1881, the town was cut off from its most direct form of shipping. Furthermore, river traffic had decreased substantially in favor of rail shipping, and Weston had missed out on the opportunity to attract a railhead during the 1850s. When the prospect of good roads was presented in Platte County during the early twentieth century, Weston lost out yet again.

Although Weston was connected to surrounding towns such as Liberty, Plattsburg and Beverly via early state roads, the condition of these crude, graded earth roads was often unreliable. With Weston's economic dependence on the industries of agriculture and automobile tourism during the early 20<sup>th</sup> century, the condition of local roads was critical for the community's survival.<sup>30</sup> Even though Weston's residents largely agreed that an all-weather highway would benefit both the town's agricultural and commercial development, they could not reach consensus regarding the best location for the highway. In an article printed in the July 18, 1928 edition of the *Weston Chronicle*, one Westonite explained the dispute:

When the auto was introduced to Weston, one group fought the road because it was not being built past their farms; when another route was planned, the first group fought it because they had been thwarted. As a result, the road-building program passed Weston up—because we couldn't agree on one road, and the farmers of this locality must depend on the weather being favorable when the market is "right." The thousands of dollars lost to farmers in this community in the last ten years by being unable to truck to markets on certain days when prices were commanding would more than pay for any one stretch of road in and out of Weston.<sup>31</sup>

At the same time that the farmers were disputing the location of the proposed highway, local businessmen voiced concerns that the route would take business out of Weston rather than promote its growth. Ultimately, the disputes regarding the highway's location and its commercial impact for Weston prevented the town from acquiring an all-weather connection to Missouri's burgeoning highway system. The Missouri State Highway Commission became irritated with the community's inability to collaborate, and eventually refused to hear petitions regarding the Weston's highway connection until the locals could reach agreement.<sup>32</sup>

Throughout the first two decades of the 20<sup>th</sup> century, Weston was often left almost completely stranded for days at a time when weather conditions were poor.<sup>33</sup> Incarcerated

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<sup>30</sup> "Shall Weston Be Ignored?" *The Weston (MO) Chronicle*, 9 December 1927; "What Hundreds Would Say," *The Weston (MO) Chronicle*, 11 May 1928.

<sup>31</sup> "What Will Become of Weston?" *The Weston (MO) Chronicle*, 18 July 1928.

<sup>32</sup> *Ibid.*; "Road Commission Favorable to Weston Outlet," *The Weston (MO) Chronicle*, 15 March 1929.

crews from the Federal Penitentiary at Leavenworth, Kansas, were often put to work repairing major roads in the local area, including the heavily-trafficked “Beverly Road,” which connected Leavenworth with Weston and Beverly.<sup>34</sup> However, despite the best efforts of the locals, the road was often impassable due to mudslides and washouts. Even under the best of circumstances, the surrounding roads were dusty and rutted.

By the late 1920s, the residents of Weston had grown weary of their road predicament. Editorials began to appear in the *Weston Chronicle* detailing the need for good roads and calling for a general consensus among Weston’s residents that acquiring an all-weather route would be a benefit for the greater good of the community. The tone of the editorials ranged from outrage that Weston was being ignored or slighted by Platte County and the State Highway Commission to a sense that the citizens of Weston had brought strife upon themselves by acting selfishly and irresponsibly when opportunity was presented to the community in the past.

Most likely, Weston’s isolation from the highway system was due to a combination of factors that all stem from its economic decline during the mid-19<sup>th</sup> century. Early on, the more prosperous communities surrounding Weston—such as Parkville and Platte City—were able to form influential Special Road Districts in order to maintain their roads and raise capital to acquire matching state funds for highway connections. In addition, the larger population centers were the first areas to be connected via highways since they were the most heavily trafficked, and they provided the most revenue from gas taxes and tourism dollars. Therefore, smaller cities such as Weston were not high on the priority list for highway construction during the early years. The discord among Weston’s residents only served to put the town further down on the list of the Highway Commission’s priorities. The indifference of the Highway Commission to Weston’s plight was palpable. The minutes of the December 11, 1923 meeting of the Highway Commission recall that, “Julius Rumpel of Weston, stated that his town had been discriminated against since it was not on the highway system. He was advised by the Chairman to secure relief from the Legislature.”<sup>35</sup>

Despite their discouragement, Weston’s residents pressed on in their efforts to secure a highway connection throughout the late 1920s. Finally, on July 12, 1929, promising

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<sup>33</sup> “Oil Roads Coming!” *The Weston (MO) Chronicle*, 22 June 1928; “Road Commission Favorable to Weston Outlet,” *The Weston (MO) Chronicle*, 15 March 1929; “Unusual Rainfall,” *The Weston (MO) Chronicle*, 26 April 1929; “Blast Causes Bluff Road Cave,” *The Weston (MO) Chronicle*, 26 April 1929.

<sup>34</sup> “Improvements to the Weston to Beverly Road,” *The Weston (MO) Chronicle*, 28 November 1928; “Beverly Road Repair Work,” *The Weston (MO) Chronicle*, 31 May 1929; Platte County, Platte County Road Records, “County to consult with Leavenworth regarding repairs to Bluff Rd,” Book G, 1929-1932: 1-302, Microfilm Roll No. C21965. Missouri State Archives, Missouri State Information Center, Jefferson City.

<sup>35</sup> Missouri State Highway Commission, “Platte County,” 11 December 1923, Minutes of Proceedings of the Missouri State Highway Commission, Missouri State Highway Commission Secretary’s Office, Jefferson City.

news was printed in the *Weston Chronicle*: “Weston Designated as Road Center.”<sup>36</sup> Weston was one of the many communities that would be affected by the passage of Missouri’s 1928 constitutional amendment, known as Proposition No. 3. Proposition No. 3, a \$75,000,000 bond amendment, provided for 300 miles of additional state roads, including traffic relief routes in the St. Louis and Kansas City metropolitan areas, new connection roads for state parks, and the construction of approximately 7,000 miles of supplementary farm-to-market roads.<sup>37</sup> The designation of the 300-mile system of state roads provided for by Proposition No. 3 was carried out during a special meeting of the State Highway Commission on July 2, 1929. Weston’s connection to the highway system was described as follows:

Upon motion of Mr. McGrew, seconded by Mr. Brownlee, a road was added to the system connection Route 52-A, Buchanan—Platte County line, through or near Weston, intersecting Route 92, between Platte City and Leavenworth, and connecting with Route 59, at or near Parkville. The above was approved by Mr. Buehler.<sup>38</sup>

The *Weston Chronicle* reported that the highway would follow a portion of the old Beverly Road along the bluff to Parkville, which had been consistently problematic for travelers given the propensity of the bluff to wash over the road during periods of rainy weather. As recently as the spring before the Weston outlet had been announced by the Highway Commission, the Beverly Road was rendered completely impassable after a crew from the Leavenworth Penitentiary accidentally undermined the road as they were blasting the bluff for riprap work near Leavenworth. The blast, combined with heavy rainfall, caused the road to be completely washed out from April until the end of July 1929. Although Weston’s residents were rightfully anxious about the location of the highway along the Beverly Road alignment, they were reassured that the bluff would pose no real obstacle for the engineers of the Highway Department.<sup>39</sup>

With a renewed sense of optimism, Weston’s residents began to look toward the future of their town, and news articles from the late 1920s demonstrate that the town was united behind the need for the local highway connection. Officials from Weston and Platte County knew that they could not afford to deal with any dissension among the residents regarding the location of the route if the highway was going to be given early consideration by the Commission. Once the route had been chosen, right of way would need to be secured as effortlessly as possible. Therefore, many of Platte County’s most

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<sup>36</sup> “Weston Designated as Road Center,” *The Weston (MO) Chronicle*, 12 July 1929.

<sup>37</sup> Lloyd C. Stark, “The \$75,000,000 State Road Bond Issue,” *Missouri* (October 1928), 12, 27.

<sup>38</sup> Missouri State Highway Commission, “Minutes of a Special Meeting of the State Highway Commission, Held at the Mayfair Hotel, St. Louis, Missouri,” 2 July 1929, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>39</sup> “Unusual Rainfall,” *The Weston (MO) Chronicle*, 26 April 1929; “Blast Causes Bluff Road Cave,” *The Weston (MO) Chronicle*, 26 April 1929; “Weston Designated as Road Center,” *The Weston (MO) Chronicle*, 12 July 1929.

prominent figures began to boost for Weston's highway connection in order to try to influence the Highway Commission to fund the Kansas City system of traffic relief routes ahead of the St. Louis system. For instance, a special publication of the Weston Chronicle, which was produced in honor of the town's 1929 Corn Husking Contest, describes the efforts of Representative Elbert Randolph McCormick of Platte County:

Weston in particular owes a debt of gratitude to Representative McCormick, for early in his career in the House of Representatives, he espoused what seemed the lost cause of Weston...He favored justly and honestly a state road up the bluff—the logically short line between St. Joseph and Kansas City, and recently secured assurance that the first lap of the designated relief road between those two points would be begun at Weston and be worked south to connect with Highway 92. The route will be known as No. 45 under the traffic relief system of hard surfaced roads. To expedite the work on this road it is essential that there be no dissention as to which route shall be used.<sup>40</sup>

Despite all efforts to secure early consideration for Weston's highway connection by the Highway Commission, only one million dollars would be distributed for traffic relief routes per annum between 1930 and 1934 for both the St. Louis and Kansas City areas.<sup>41</sup> That meant that there was no guarantee that Weston's highway connection would be constructed quickly, especially since only a portion of the newly proposed highway followed existing roads and construction of the route would require miles of new right of way acquisitions. Although the segment of Highway 45 that stretched from Weston to Highway 92—roughly following the old Beverly Road alignment—was graded as early as 1931, the vast majority of the route would require years of design work and right of way acquisitions before completion.<sup>42</sup>

In order to expedite the construction of Route 45 from Weston to the Buchanan County line, the Platte County court agreed to pay fifty percent of the right of way cost.<sup>43</sup> The court requested that the Highway Commission pay the cost of acquiring necessary right of way from refund money that was owed to Platte County from the construction of

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<sup>40</sup> "Special Edition of the Weston Chronicle, Platte County, Missouri, Published in Honor of the National Corn Husking Contest in the Interest of Platte County's Resources, Advantages and Development," *Weston (MO) Chronicle*, 15 November 1929.

<sup>41</sup> "Weston's Road Predicament to Have Early Consideration," *Weston (MO) Chronicle*, 16 August 1929.

<sup>42</sup> Missouri State Highway Commission, "Plan and Profile of Proposed State Road, Federal Aid Project, Platte County, 45TR" 1931, Microfiche copy available from Design Division, Missouri Department of Transportation General Headquarters, Jefferson City, MO.

<sup>43</sup> Platte County Road Records, "County to pay 1/2 cost of 45TR, not to exceed \$3000," Book G, 1929-1932: 1-302, Microfilm Roll No. C21965. Missouri State Archives, Missouri State Information Center, Jefferson City.

previous highway projects, and the Highway Commission agreed.<sup>44</sup> In addition to the county court's contribution, subscriptions were collected from interested Platte County residents in order to pay damages resulting from the condemnation of right of way parcels. All of the money collected for the purpose of acquiring right of way was eventually set aside into a special fund by the Platte County Treasurer, and withdrawals were prohibited from the fund without authorization of the County Court.<sup>45</sup> Finally, funding was secured, right of way was acquired, and detail plans for Route 45 from Weston to the Buchanan County line were finalized during the summer of 1936.<sup>46</sup>

The call for bids on the construction work for Route 45TR from Weston to the Buchanan County line was printed in the June 19, 1936 edition of the *Weston Chronicle*.<sup>47</sup> The contract for the highway work was awarded to the Mike Haase Construction Company of Kansas City, and the Oscar Schmidt Company of St. Joseph was contracted to do all culvert and bridge work for the project.<sup>48</sup> On August 21, 1936, the *Weston Chronicle* reported that work had finally been started on the project, and that once the work was well under way, nearly one hundred men would be employed for the work. The completion date for the project was set for June 1, 1937.<sup>49</sup>

Interestingly, the first stretch of Route 45 to be constructed also became something of a proving ground for a variety of experimental paving technologies that were being tested by the Materials Division of the Highway Department. The December 12, 1935, *Jefferson City Post-Tribune* reported that, "Experimental sections have been built on ten miles of state highway 45 near Weston in Platte County, where more than 30 combinations of materials and two construction methods have been tested..."<sup>50</sup> The most notable method that was tested on Weston's stretch of Route 45 was referred to as an "up side down" method of road building in which the road bed was graded, the soil was

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<sup>44</sup> Missouri State Highway Commission, "Matter of Purchase of Right-of-Way, Route 45TR, Platte County, Out of Refund Credit," 12 November 1935, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>45</sup> Platte County Road Records, "Special fund for 45TR R/W established by County Treasurer," Book G, 1929-1936: 302-End, Microfilm Roll No. C21966. Missouri State Archives, Missouri State Information Center, Jefferson City.

<sup>46</sup> Missouri State Highway Commission, "Approval of 45TR Detail Plans," 12 May 1936, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>47</sup> "State Road Work, Notice to Contractors," *The Weston (MO) Chronicle*, 19 June 1936.

<sup>48</sup> "Kansas City Man Low Bidder on Highway Contract," *The Weston (MO) Chronicle*, 3 July 1936; "Work Started on Extension of 45TR," *The Weston (MO) Chronicle*, 21 August 1936; Missouri State Highway Department, "Tabulation of Bids Received, 45TR, Platte County, Project No. F.A. 791-A," 25 June 1936, Microfiche copy available from Design Division, Missouri Department of Transportation General Headquarters, Jefferson City, MO.

<sup>49</sup> "Work Started on Extension of 45TR," *The Weston (MO) Chronicle*, 21 August 1936.

<sup>50</sup> "New Method of Road Building Under Scrutiny," *Jefferson City (MO) Post-Tribune*, 12 December 1935.

loosened to a depth of six inches, and oil was simultaneously injected at the bottom of the loosened soil. After the oil has been injected into the soil, traffic packs the surface, forcing the oil to the surface where it forms a five or six inch thick watertight foundation within approximately three weeks. The process was said to lend stability to the subsoil, and serve as a stable foundation for the placement of a “bound surface.”<sup>51</sup>

Experimental construction materials and techniques were not the only innovative technologies that were put to use in the construction of Route 45TR. Two of the bridges that were built on the stretch of Route 45 from Weston to the Buchanan County line are historically significant due to the unprecedented length of their spans for the time and location at which they were constructed. Although the Route 45 alignment through the Weston area followed segments of old state roads, the Missouri State Highway Department employed a variety of new road-building solutions to improve the travelway.

#### D. Bear Creek Bridge Construction

The Weston Chronicle reported that three bridges were to be built as part of the construction of 45TR:

The first is a triple-span on the Baker farm.<sup>52</sup> The next will be over Bear Creek, three hundred feet south of the present bridge and the third is an overhead where the Platte Valley Road crosses the railroad.<sup>53</sup>

Little is known about the old Bear Creek Bridge other than its location just north of K-491.<sup>54</sup> More than likely, the original Bear Creek Bridge was located on an old road alignment that was bypassed by Route 45, as there are no records of a bridge in the vicinity of K0491 in the MoDOT Bridge Division inventory files. However, the “new” Bear Creek Bridge was undoubtedly a vast improvement over the old

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<sup>51</sup> *Ibid.*

<sup>52</sup> According to project history maps for Route 45TR in Platte County, it appears that the crossing that is referred to as the, “triple span on the Baker Farm,” is a triple-span box culvert (J-559) that was built over Pedee Creek near Weston. Although the Bear Creek Bridge and the Bear Creek Bridge were both determined to be eligible for listing on the National Register of Historic Places by the Missouri Historic Bridge Inventory, the Pedee Creek culvert was not considered to be historic. Missouri State Highway Department, 1936. “Plan and Profile of Proposed State Road, Federal Aid Project, Platte County, 45TR (Proj. No. 791A-2)”, Microfiche copy available from Design Division, Missouri Department of Transportation General Headquarters, Jefferson City, MO; Clayton B. Fraser, “HAER Inventory Data Sheet, Bear Creek Bridge” and “HAER Inventory Data Sheet, “Bear Creek Bridge,” Missouri Historic Bridge Inventory, 5 Vols., Missouri Department of Transportation, Project No. NBIH (6) (Loveland, Colorado: Fraserdesign, Inc., 1996).

<sup>53</sup> “Work Started on Extension of 45TR,” *The Weston (MO) Chronicle*, 21 August 1936.

<sup>54</sup> The August 21, 1936 edition of the Weston Chronicle states that the old bridge was located approximately 300 feet north of the new bridge (K-491), but the bridge plans for K-491 state that the old bridge is located approximately 600 feet upstream from the new bridge. In either case, the old bridge was located north of K-491, and north of the present Route 45 alignment.

crossing. For instance, the July 26, 1929 edition of the Weston Chronicle recounts a scary incident on the old Bear Creek Bridge:

E.M. Swan, a truck driver from Atchison, escaped death by a fraction when his truck, containing ninety bushels of wheat went through the bridge over Bear Creek...The fall was twenty-five feet and whether he jumped out of the cab or was thrown out, Mr. Swan was never able to explain, but it was a lucky thing he was not in the cab for it was utterly smashed...The bridge has been repaired and is open to travel.<sup>55</sup>

The old Bear Creek Bridge was evidently already stressed by the demands of everyday traffic and freight, which would have undoubtedly increased with the construction of Route 45. Therefore, the old bridge was removed by the Highway Department and the Route 45 alignment, with its new and improved Bear Creek Bridge, was located south of the old crossing.

The plans for the construction of the Bear Creek Bridge were derived from standard specifications for highway bridges that were published by the American Association of State Highway Officials (AASHO) in 1935.<sup>56</sup> The Bear Creek Bridge represented a variation on the standard specs for steel plate through girder bridges, which were adapted by the Missouri Highway Department Bureau of Bridges in 1936 in order to span the banks of the Bear Creek. Despite being based upon standard specs, the construction of the crossing still represented a technological innovation for the time that it was built. Its 100' long main span was one of the longest steel plate through girder spans to be built by the Missouri State Highway Department to date. Clayton Fraser explains:

Through the 1930s and 1940s, the Missouri State Highway Department designed and Built progressively longer steel beam bridges, using both rolled and plate girders in through and deck configurations. This culminated at the end of the decade with spans around 150 feet. Other long girders had been built elsewhere in the country, but for Missouri, this represented a noteworthy technological feat. With its 115-foot through girder span and 1936 construction date, the Weston Viaduct is noteworthy as one of the earliest of these long-span beam bridges.<sup>57</sup>

The Bear Creek Bridge is also notable due to the timing of its construction. Although the construction of Highway 45 was long-awaited by Platte County residents, the project couldn't have come at a better time for men in the area that were seeking employment. The construction of Route 45 coincided with the height of the Great Depression. The

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<sup>55</sup> "Truck, Driver and Ninty Bushels of Wheat Thru Bridge, Man Badly Bruised in Twenty-Five Foot Fall into Bear Creek," Weston (MO) Chronicle, 26 July 1929.

<sup>56</sup> AASHO, 1935.

<sup>57</sup> Clayton B. Fraser, "HAER Inventory Data Sheet, Weston Viaduct," Missouri Historic Bridge Inventory, 5 Vols., Missouri Department of Transportation, Project No. NBIH (6) (Loveland, Colorado: Fraserdesign, Inc., 1996).

May 14, 1937 edition of the Weston Chronicle reported that there were twenty-five men from the National Reemployment Service of Platte County that had found work with the Oscar Schmidt Construction Company, and were working on the bridges and culverts of Route 45, which included the Bear Creek Bridge and Weston Viaduct projects.<sup>58</sup> Workers on the Route 45 project were paid 65 cents per hour for skilled labor positions, 45 cents per hour for intermediate labor positions, and 35 cents per hour for unskilled labor positions.<sup>59</sup>

Project FAP-791(A), including the Bear Creek Bridge, was completed in August of 1937 at a total cost of \$70,542.76.<sup>60</sup> By the time it was completed, the cost of the project had overrun the original contract estimate by \$2833.12.<sup>61</sup> No explanation for the overrun is provided, however, a similar overrun occurred with the construction of the Weston Viaduct, located less than  $\frac{3}{4}$  of a mile west of Bear Creek. The explanation for the overrun expense of the Weston Viaduct was a lack of special concrete protection during construction, as well as slides during the construction of the bridge's fills.<sup>62</sup> Given the similar construction methods and geographical proximity of the bridges, it is possible that the same difficulties were encountered during the construction of both the Bear Creek Bridge and the Weston Viaduct. At the time that they were designed and constructed, both bridges possessed exceptionally lengthy main spans. Therefore, it is quite possible that the overruns that occurred with both bridges were due to the challenges of building two crossings of such unprecedented length.

Since its completion in 1937, the Bear Creek Bridge has functioned in place with only minor repairs. Today, the bridge carries more than 6900 vehicles a day over the tracks of the Burlington Northern Railroad, and the stresses of high traffic volume and heavy loads have taken a toll on the 70-plus year old bridge. Due to the poor condition of the bridge, the Missouri Department of Transportation will replace the Bear Creek Bridge with a new structure as part of the Department's "Safe and Sound" bridge improvement program. The new bridge is scheduled for completion in late 2010.

### III. Construction Contractors: Mike Haase Company and Oscar H. Schmidt Inc.

The excavation and grading work for the 45TR project between Weston and the Buchanan County line was awarded to the Mike Haase Company of Kansas City, Missouri. Oscar Schmidt Inc. of St. Joseph, Missouri, was the company contracted to

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<sup>58</sup> "Re-Employment Service puts men to work on 45TR," *The Weston (MO) Chronicle*, 14 May 1937.

<sup>59</sup> "State Road Work, Notice to Contractors," *The Weston (MO) Chronicle*, 19 June 1936.

<sup>60</sup> Missouri State Highway Commission, "Final Audits of Completed Projects Prior to August, 1937, Meeting," 10 August 1937, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>61</sup> *Ibid.*

<sup>62</sup> Missouri State Highway Commission, "Final Audits of Completed Projects Prior to September, 1937, Meeting," 14 September 1937, Minutes of Proceedings of the Missouri State Highway Commission.

construct three proposed crossings along the route: the Bear Creek Bridge (K-698), the Bear Creek Bridge (K-491) and the Baker Farm triple-span box culvert (J-559). Both Mike Haase and Oscar Schmidt had been previously contracted by the Missouri State Highway Department for a variety of other construction projects throughout northern Missouri.

Historical records indicate that Mike Haase was an Illinois native, who married and moved to northern Missouri sometime during the first decade of the 20<sup>th</sup> century. By 1910, 30 year old Mike Haase, his wife and their infant son are living in their own home on Locust Street in Kansas City.<sup>63</sup> In the 1910 census for Platte County, Haase's occupation is listed as a teamster, but by 1924, Haase had apparently made the transition from teaming to construction, as the Missouri State Highway Commission awarded him contracts for grading and excavation work in Grundy, Henry, Mercer and Worth Counties.<sup>64</sup> Unfortunately, archival research yielded only limited information regarding the operation of the Mike Haase Company. It appears as though Haase's company remained relatively small in scale despite steadily securing contracts for excavation and grading work by the Highway Department throughout the twenties and thirties. The company never officially incorporated within the State of Missouri, and its contracts remained limited to grading and excavation work, mainly focused within the northeastern most region of the state.

In contrast, the business of Oscar H. Schmidt, Inc. appears to have been larger and more diversified construction enterprise than Mike Haase's company. Schmidt was a first-generation Missouri native, who was trained in the area of civil engineering.<sup>65</sup> By 1920, Schmidt had established his career as a construction contractor, and his company had been awarded its first contract by the MSHC in 1923.<sup>66</sup> Although Oscar Schmidt's business ventures included his general contracting company and a concrete products company, the Oscar Schmidt Company's specialty appears to have been bridge building.<sup>67</sup> In the 1940 St. Joseph City Directory, Oscar Schmidt, Inc. was listed under the heading, "bridge builders."<sup>68</sup>

Oscar Schmidt's construction contracting company was officially incorporated in the State of Missouri in 1930 with three shareholders: Oscar Schmidt, Isabelle Schmidt,

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<sup>63</sup> United States Bureau of the Census, "1910 Population Census: Jackson County, Missouri,"

<sup>64</sup> Missouri State Highway Commission, 8 April 1924, 10 June 1924, 10 July 1924, 14 October 1924, 4 December 1924, 23 January 1925, 10 February 1925, 13 October 1925, Minutes of Proceedings of the Missouri State Highway Commission.

<sup>65</sup> United States Bureau of the Census, "1910 Population Census: Buchanan County, Missouri,"

<sup>66</sup> United States Bureau of the Census, "1920 Population Census: Buchanan County, Missouri,"

<sup>67</sup> R.L. Polk and Company, 1936-1940 "City Directory of Kansas City, Missouri," R.L. Polk and Company: Kansas City, MO.

<sup>68</sup> *Ibid.*

and Verna Hanks.<sup>69</sup> Oscar served as the company's president, his wife, Isabelle, served as the vice-president, and Ms. Verna Hanks was the company's bookkeeper.<sup>70</sup> In later years, Ms. Hanks was replaced by Oscar and Isabelle's son, Richard, who joined the board of directors as the company's secretary. Oscar Schmidt, Inc. continued in operation until January of 1952, less than one year after Oscar passed away.<sup>71</sup>

Prior to their collaboration on the Bear Creek Bridge, Mike Haase and Oscar Schmidt had worked together on at least one other contract for the Missouri Highway Department. In January of 1934, Haase and Schmidt were awarded a contract for construction work on Route 13 in Daviess County.<sup>72</sup> Given the smaller size of both Haase and Schmidt's companies, it was likely a profitable venture to collaborate on larger projects that might otherwise have been beyond the individual capabilities of their firms. In the case of Route 45TR, the companies of Mike Haase and Oscar Schmidt were put to work doing what they each did best: Haase handled the road grading and excavation, while Schmidt built the culverts and bridges.

#### IV. Physical Description of Bridge K-491

Bridge No. K0491 spanning Bear Creek at Route 45 consists of a 100' steel plate through girder main span with identical 30' steel I- beam approach spans at each end. The superstructure is carried on four wooden pile bents. The superstructure and substructure have a right-advance skew of 35 degrees. The total length of the bridge is over 160'. It has a curb-to-curb roadway width of 22' on a level grade at 797.2' above mean sea level.

The substructure consists of four bents numbered 1 through 4 from west to east, of multiple creosoted timber pilings with reinforced concrete bent caps and wooden pile caps. Bents No. 2 and No. 3 supporting the ends of the main span each consist of eleven 50' creosoted timber piles with reinforced concrete bent caps. The caps support the main span on two fixed cast steel bearings at Bent No. 2, and on two cast steel rocker bearings at Bent No. 3. A concrete step on each bent also supports two fixed bearings that support one end of each I-beam approach span. Bents No. 1 and No. 4 supporting the west end of the western I-beam span and the eastern end of the eastern I-beam span consist of six 20' creosoted timber piles with a 12" x 12" wooden pile cap. These are bolted to horizontal 6" x 6" wooden backing supports and 4" x 12" backing planks that form the

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<sup>69</sup> Oscar Schmidt, Inc., "Articles of Agreement," 1930, as held by the Corporations Office, Missouri Secretary of State, Jefferson City, MO.

<sup>70</sup> *Ibid.*; R.L. Polk and Company, 1936-1940 "City Directory of Saint Joseph, Missouri," R.L. Polk and Company: Kansas City, MO; United States Bureau of the Census, "1930 Population Census: Buchanan County, Missouri."

<sup>71</sup> Oscar Schmidt, Inc., "Articles of Voluntary Dissolution," 1952, as held by the Corporations Office, Missouri Secretary of State, Jefferson City, MO.

<sup>72</sup> "Low Bidders on Roadways Made Public," 21 January 1931, *The Sunday News and Tribune* (Jefferson City, MO).

abutments when filled with earth. The pile caps support the ends of the approach spans at two bearing points with two interfacing steel bearing plates and 12" drift pins.

The main span consists of two 100' steel plate girders measuring 7' high with 16" flanges. Each girder is constructed in two 50' sections and field spliced. They are built up 81" web plates with two 7" x 4" angles and overlapping 16" cover plates along both the top and bottom. The ends are six 6" x 4" angles with fillers, and the eighteen stiffeners are single 6" x 4" angles. The field splice is two splice plates with two 6" x 4" angles. The two plate girders are connected by eleven perpendicular 24" wide-flange floor beams and two diagonal end beams. The entire span is cambered upward from the ends toward the center by two full inches.

Each 30' approach span consists of four 24" wide-flange I-beam stringers. Sway bracing between the stringers consists of two runs of crisscrossed 3" angles. The diagonal end runs are 12" steel channel. Railings are composed of two horizontal 6" steel channels on four 5" I-beam verticals. Curb outlets with 3' x 5" openings are centered between the vertical rail posts.

The steel reinforced concrete bridge deck is 8" thick and 23' wide outside-to-outside. Expansion joints are located at Bents No. 1, 3 and 4.

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**Bear Creek Bridge (Bridge No. K0491)  
Route 45, Platte County, Missouri**

Photographer: Randall Dawdy, Missouri Department of Transportation

Date: March 5, 2008

Location of Negatives: Missouri State Historic Preservation Office

**Photo Index:**

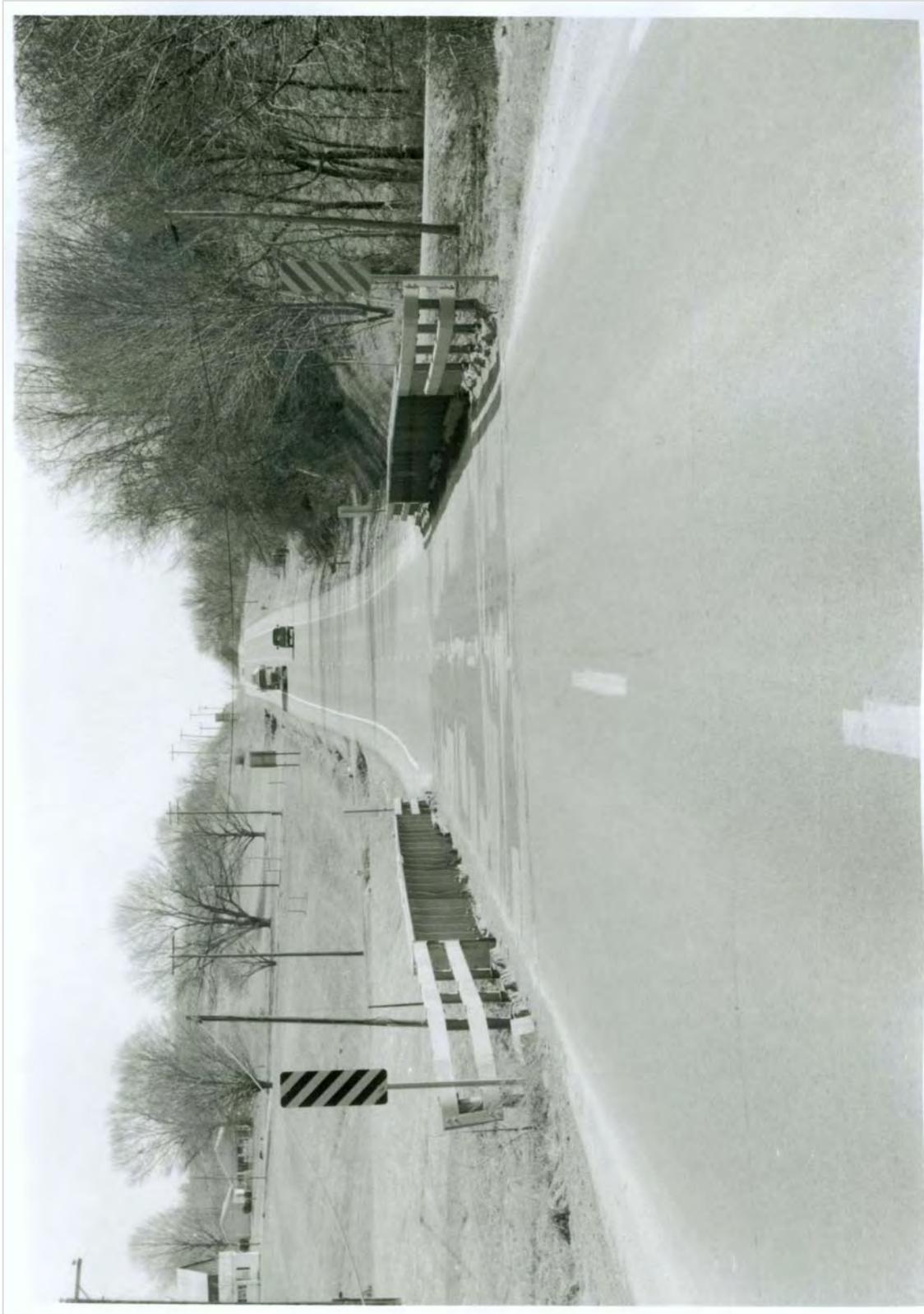
- #1 of 19. Bridge K0491. North side. View to southeast.
- #2 of 19. Bridge K0491. North side. View to east.
- #3 of 19. Bridge K0491. West approach. View to east.
- #4 of 19. Bridge K0491. South side. View to northeast.
- #5 of 19. Bridge K0491. West approach span. View to northeast.
- #6 of 19. Bridge K0491. Detail at Bent 2. View to northeast.
- #7 of 19. Bridge K0491. West approach span. View to north.
- #8 of 19. Bridge K0491. West abutment and subdeck. View to west.
- #9 of 19. Bridge K0491. Bent 2. View to west.
- #10 of 19. Bridge K0491. Detail at Bent 2. View to west.
- #11 of 19. Bridge K0491. South side. View to north.
- #12 of 19. Bridge K0491. Detail at Bent 3. View to north.
- #13 of 19. Bridge K0491. Rocker bearing at Bent 3. View to north.
- #14 of 19. Bridge K0491. East approach span. View to north.
- #15 of 19. Bridge K0491. South side. View to northwest.
- #16 of 19. Bridge K0491. South side. View to west.
- #17 of 19. Bridge K0491. South through girder. View to west.
- #18 of 19. Bridge K0491. Southeast endpost. View to southwest.
- #19 of 19. Bridge K0491. East approach. View to west.



#1 of 19. Bridge K0491. North side. View to southeast.



#2 of 19. Bridge K0491. North side. View to east.



#3 of 19. Bridge K0491. West approach. View to east.



#4 of 19. Bridge K0491. South side. View to northeast.



#5 of 19. Bridge K0491. West approach span. View to northeast.



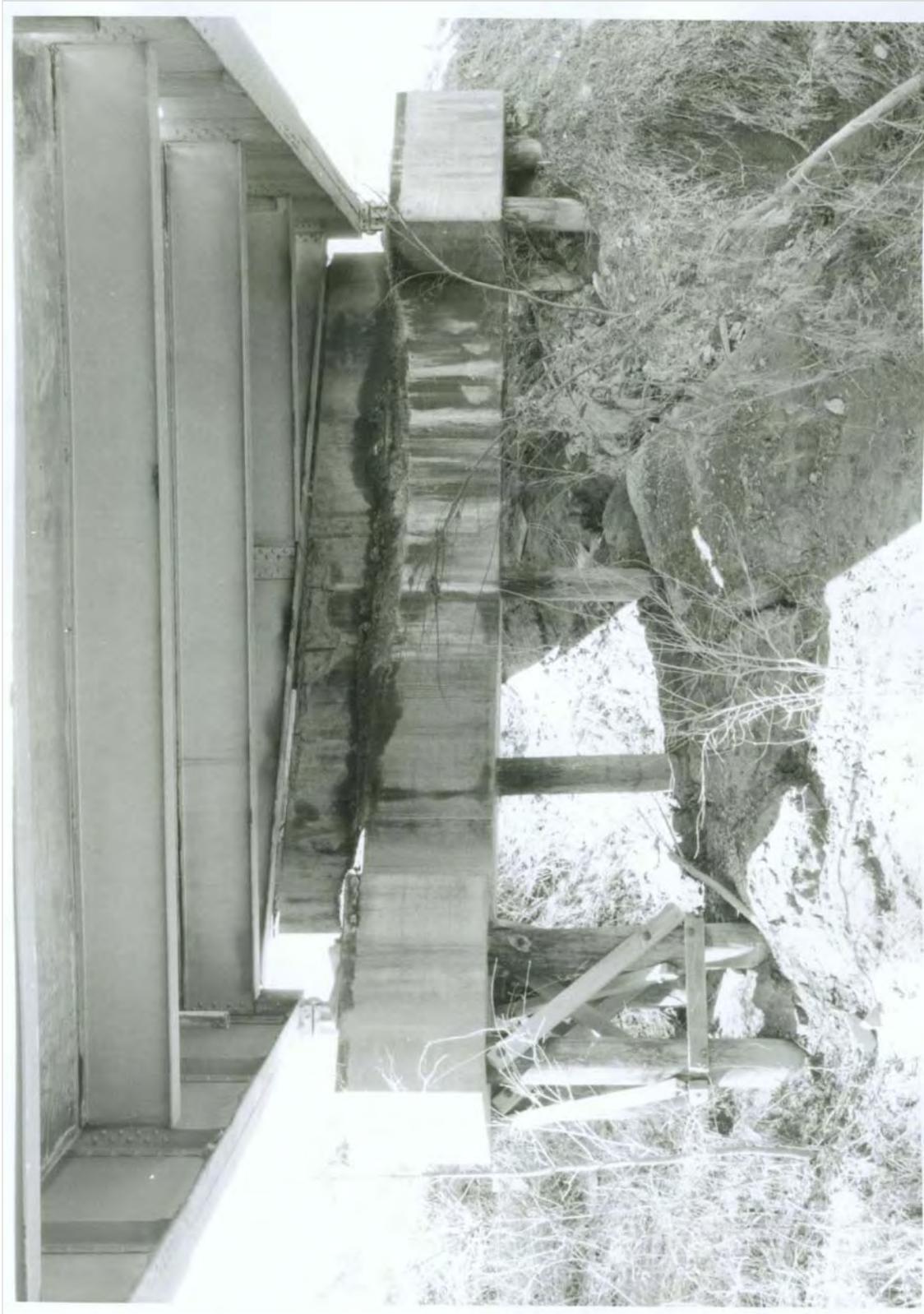
#6 of 19. Bridge K0491. Detail at Bent 2. View to northeast.



#7 of 19. Bridge K0491. West approach span. View to north.



#8 of 19. Bridge K0491. West abutment and subdeck. View to west.



#9 of 19. Bridge K0491. Bent 2. View to west.



#10 of 19. Bridge K0491. Detail at Bent 2. View to west.



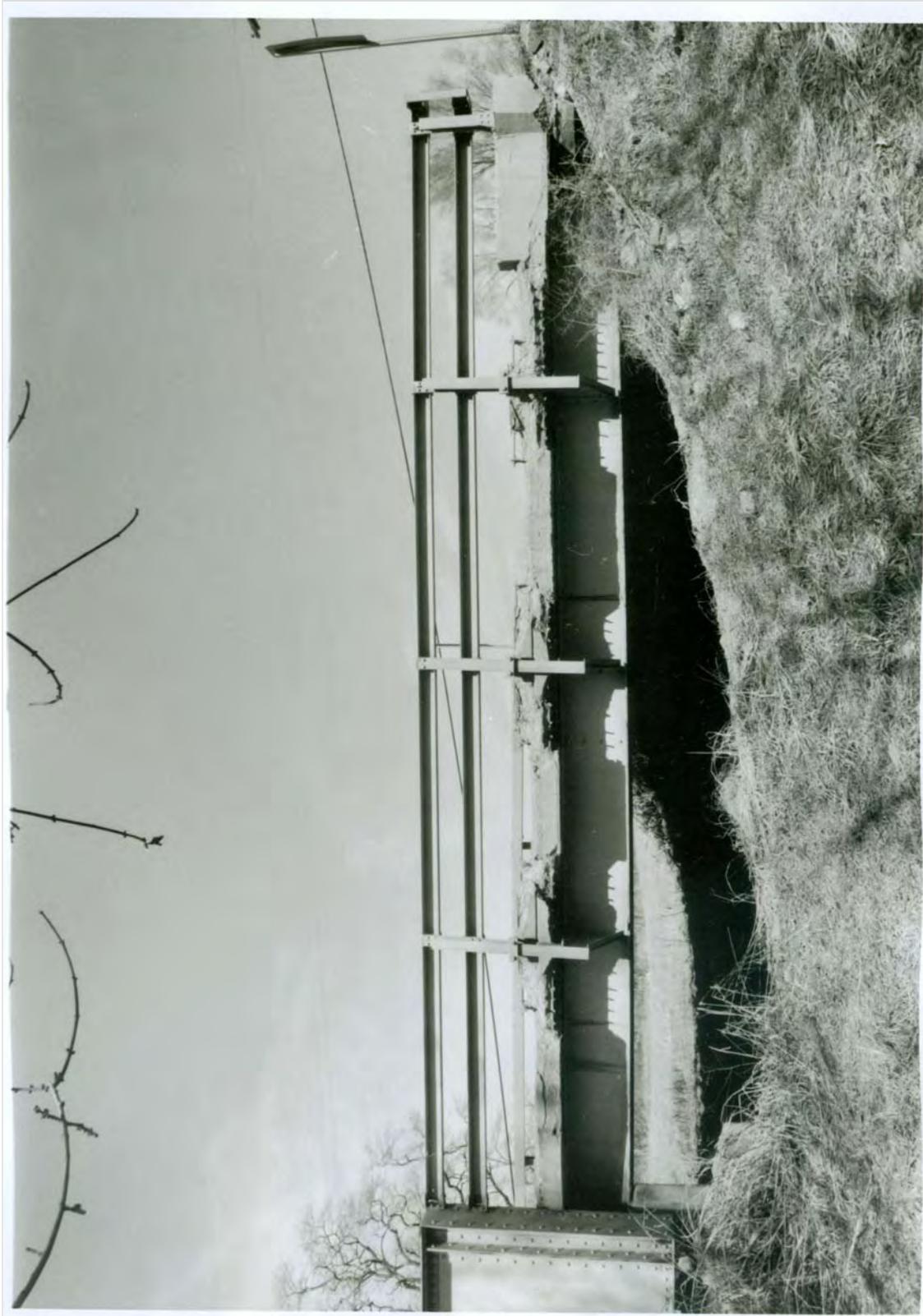
#11 of 19. Bridge K0491. South side. View to north.



#12 of 19. Bridge K0491. Detail at Bent 3. View to north.



#13 of 19. Bridge K0491. Rocker bearing at Bent 3. View to north.



#14 of 19. Bridge K0491. East approach span. View to north.



#15 of 19. Bridge K0491. South side. View to northwest.



#16 of 19. Bridge K0491. South side. View to west.



#17 of 19. Bridge K0491. South through girder. View to west.



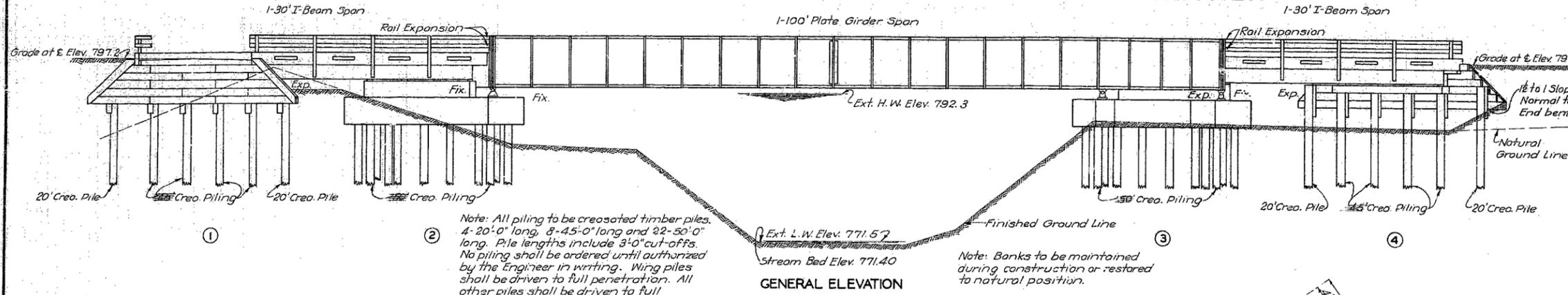
#18 of 19. Bridge K0491. Southeast endpost. View to southwest.



#19 of 19. Bridge K0491. East approach. View to west.

# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAP 791A (R45TR)	1935		



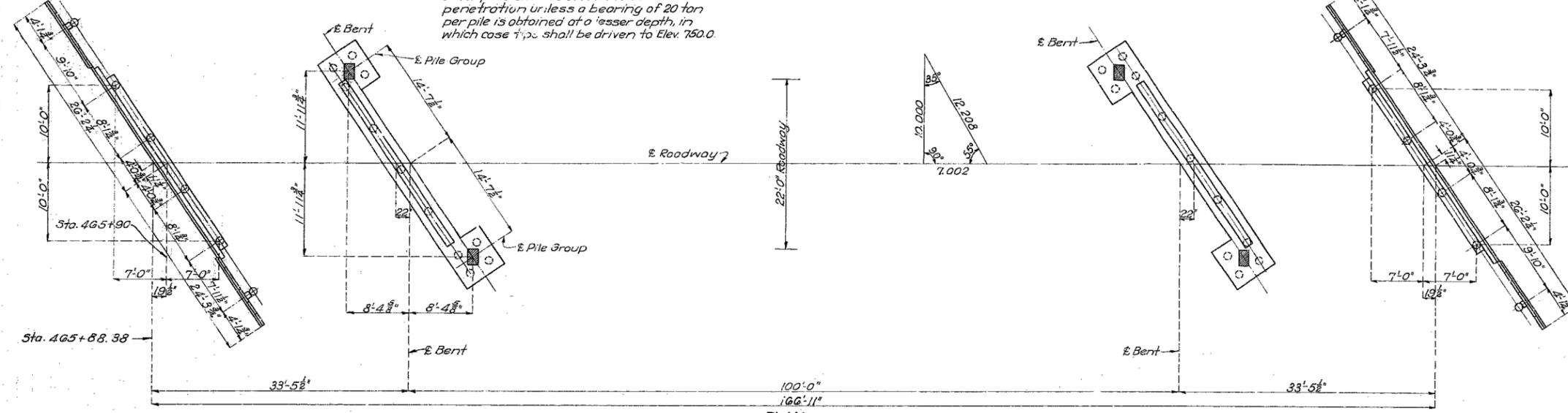
Note: All piling to be creosoted timber piles. 4'-20'-0" long, 8'-45'-0" long and 22'-50'-0" long. Pile lengths include 3'-0" cut-offs. No piling shall be ordered until authorized by the Engineer in writing. Wing piles shall be driven to full penetration. All other piles shall be driven to full penetration unless a bearing of 20 ton per pile is obtained at a lesser depth, in which case they shall be driven to Elev. 750.0.

Note: Banks to be maintained during construction or restored to natural position.

### BILL OF REINFORCING STEEL

No.	Size	Length	Mark	Location
<b>I-Beam Spans</b>				
16	3/8"	32'-0"	C1	Curb
104	3/8"	2'-0"	C2	"
152	3/8"	23'-0"	S1	Slab
62	3/8"	31'-6"	S2	"
8	3/8"	23'-0"	S3	"
176	3/8"	24'-9"	S4	"
<b>Bents No. 2 &amp; 3</b>				
8	3/8"	21'-0"	A1	Gir. Seat
152	3/8"	7'-9"	A2	"
8	3/8"	29'-9"	B1	Beam
12	3/8"	34'-9"	B2	"
48	3/8"	10'-6"	U1	"
48	3/8"	13'-0"	U2	"
52	3/8"	3'-9"	D1	Haunch
4	3/8"	25'-6"	H4	"

Note: See Sheet No. 4 for bar bill for girder span. Dimensions given are along center line of bars and are for computed lengths. Reinforcing bars 3/8" or over in diameter, which are bent to an angle greater than 90°, shall be of structural grade. Bars in above units to be billed and tagged separately.



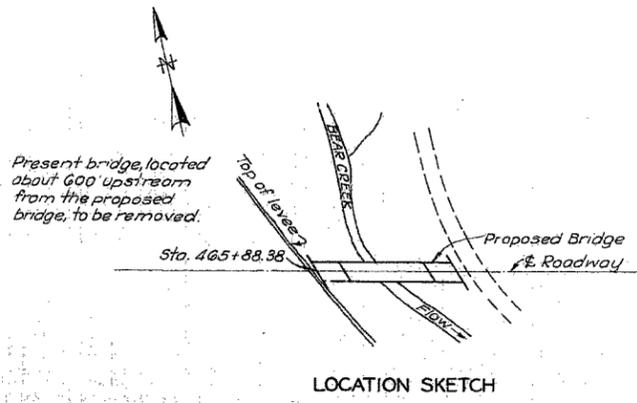
### ESTIMATED QUANTITIES

Item	Superstr.	Substr.	Total	FINAL QUANTITIES
Excavation Class I	Cu. Yds.	80	80	71.5
Concrete Class B	Cu. Yds.	44.8	44.8	44.8
Concrete Class X	Cu. Yds.	94.8	94.8	94.8
Fab. Str. Steel (R. Gir. Span)	Lbs.	104000	104000	97820
Fab. Str. Steel (I-Beam Spans)	Lbs.	32150	32150	31580
Cast Steel	Lbs.	1200	1200	1250
Reinforcing Steel	Lbs.	26670	30220	30290
Creosoted Timber Piles	Lin. Ft.	1438	1438	1664
Creosoted Timber Pile Cut-offs	Lin. Ft.	102	102	200
Creosoted Timber	F. B. M.	2970	2970	2970
Cast Iron Drains	Lbs.	1400	1400	1546
Timber Test Pile	Lin. Ft.		102	102
Special Concrete Prof. (Grp. A)	Cu. Yds.		44.8	44.8

Note: All bridge excavation to be paid for as Class I Bridge Excavation. Levees under West end of bridge shall be excavated to a depth of 3'-0" below bottom of steel within the maximum horizontal limits of 4'-0" outside of curb lines and will be paid for at unit price bid for roadway excavation.

Design Specifications A. A. S. H. O.  
 Loading H-15 A. A. S. H. O. - One lane  
 Structural Steel Stress 16,000 %  
 Reinforcing Steel Stress 16,000 %  
 Concrete Class "B" 650 %  
 Concrete Class "X" 750 %  
 Creosoted Timber 1600 %  
 All concrete shall be proportioned by the weight proportioning method. See Special Provisions.  
 Concrete in slabs and curbs shall be Class "X". All other concrete shall be Class "B".  
 Exposed edges to be beveled 1/4" where no other bevel is noted. Where rubber compound is specified on plans for use in partition and expansion joints, the pre-moulded compound shall be stitched securely to one face of concrete with copper wire.  
 Bar supports and spacers will be required for reinforcing steel in superstructure. See Std. C-110R and Special Provisions.  
 Two name plates, type C, as shown on Std. 5919 to be furnished and placed by contractor. Cost of name plates to be included in price bid for other items.  
 All timber shall be creosoted and shall be either "Dense Longleaf or Shortleaf Structural Square Edge and Sound Southern Yellow Pine" or "Close-grained Select Structural Douglas Fir of the West Coast Region". All timber shall be rough full-sawn except as noted in timber bill for pile caps. Slight variations in sawing shall be in accordance with grading rules. All timber shall be cut to billed length and shaves and shall be bored as shown before treating. All backing planks are billed 6' long and are to be re-cut and fitted in the field. Payment will be based on quantities of material in the finished structure.

**GENERAL NOTES:**  
 Field holes for drift pins shall be field bored 3/8" unless otherwise noted, all other field holes in timber shall be field bored 1/2". When bolts with countersunk heads are indicated on plans, cut washers shall be used under heads. O.G. washers shall be used under heads of all other bolts and under nuts of all bolts. Cost of substructure hardware to be included in price bid for timber in place.  
 I-Beams with fastenings, spacers, handrail, handrail posts with fastenings, cap plate on end bent with fastenings, and plate girder span will be paid for as structural steel.  
 Detail shop drawings shall be submitted to the Missouri State Highway Department in duplicate and shall be approved before steel is fabricated.  
 Cost of metallic edge moulding to be included in price bid for concrete.  
 Paint: Shop, none; Field, contact surfaces of bolted field connections one coat of red lead and surfaces inaccessible after erection three coats of red lead. No other paint to be applied by contractor. Red lead required shall be furnished by the Contractor. See Special Provisions.  
 Rivets for girder span 3/4" holes 1/2" unless otherwise noted. Rivets for I-beam spans 3/4" holes 1/2" except where rivets shall be 5/8" holes 1/2". Field connections for handrail channel shall be 3/4" button head bolts and for connection of rail to posts shall be 3/4" bolts, holes 1/2". All other field connections shall be riveted except as noted.  
 Protection caps to be placed on heads of all piles of pile bents in accordance with Section 23-6 of Standard Specifications issued April 1, 1930.  
 Bridge excavation for Bents No. 2 & 3 to be in accordance with Section I of Standard Specifications issued April 1, 1930. For Bents No. 1 & 4 bridge excavation will be allowed within the horizontal limits shown and noted on these design plans, Sheet No. 2 of 4. This excavation will be computed from existing ground line to bottom end of 6' x 6" backing supports.



LOCATION SKETCH

Drawn Aug. 1935 by S.C.D.  
 Traced Aug. 1935 by G.W.  
 Checked Oct. 1935 by J.E.B.

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

Sheet No. 1 of 4. Changes noted here on FA.

SUBMITTED BY *N.R. Jack* DATE 10/30/35  
 APPROVED BY *T.H. Cutler* DATE 10/30/35  
BRIDGE ENGINEER  
CHIEF ENGINEER

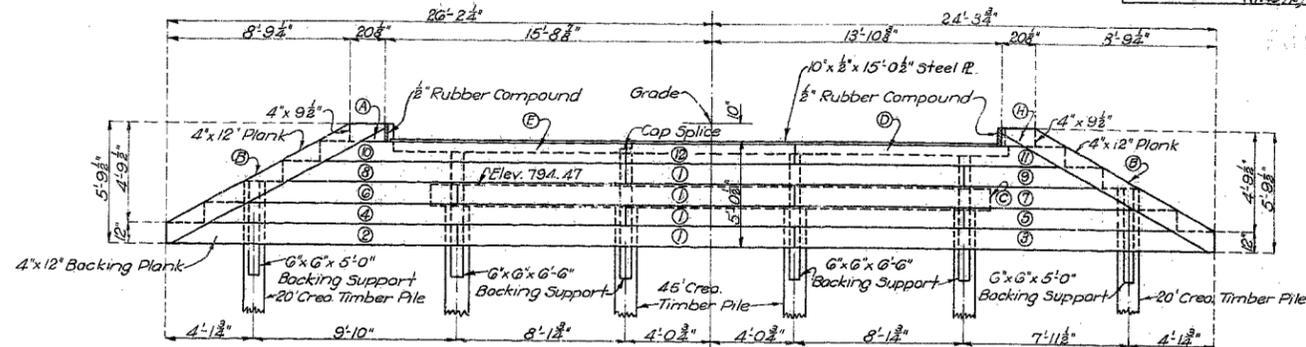
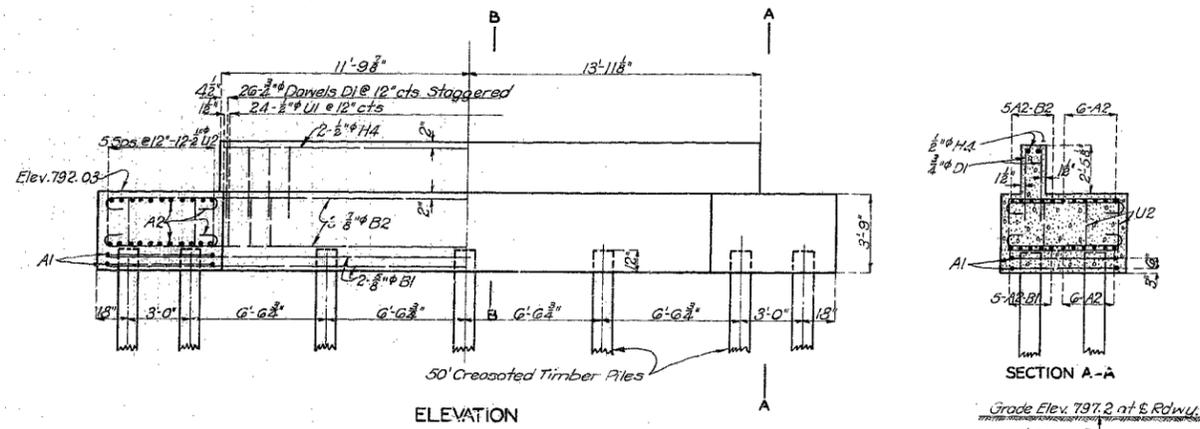
STD. C110R  
 STD. S919  
**K-491**

B.M. #3 Elev. 786.73 - Nail in Cor. fence post 70' Lt. Sta. 463+30.  
 B.M. #4 Elev. 794.87 - Spike and washer in S. root 36' Elm 138' Lt. Sta. 467+10.  
**BRIDGE OVER BEAR CREEK**  
 STATE ROAD FROM BUCHANAN CO. LINE TO WESTON  
 ABOUT 2.5 MILES N.W. OF WESTON  
 PROJECT NO. FAP 791A (R45TR) STA. 465+88.38  
**PLATTE COUNTY**

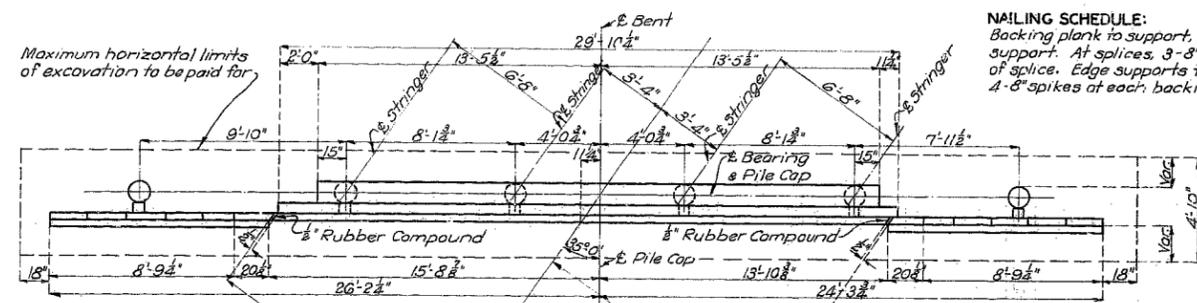
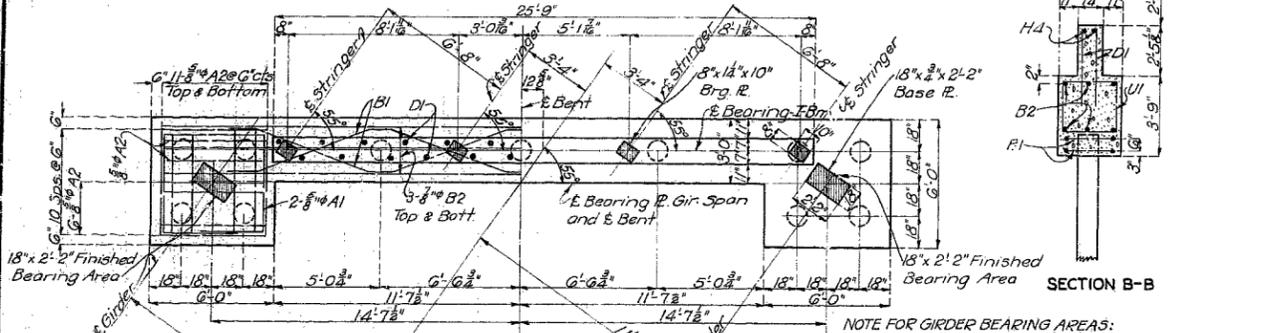
357

# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE MO.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5		FAP 791A (R45TR)	19		



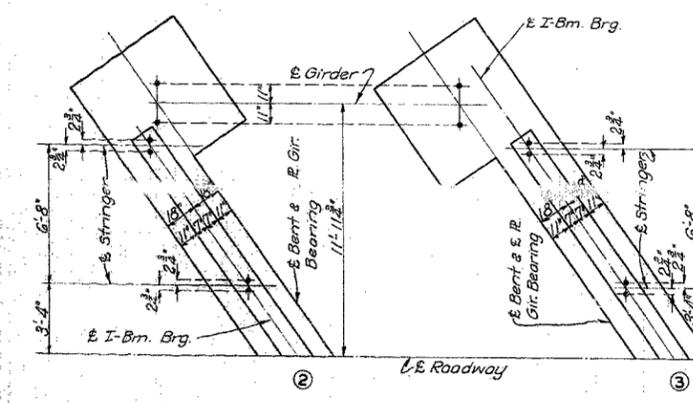
Note: Any irregularity in alignment of piling in end bents to be corrected by facing one surface of the 6\"/>



**NAILING SCHEDULE:**  
Backing plank to support 3-8\"/>

**NOTE FOR GIRDER BEARING AREAS:**  
Areas noted as finished bearing areas on plan of Bents No. 2 and 3 shall be built monolithic with bent cap, to an elevation not lower than 792.04 and shall be finished level of final elevation. The contractor shall grind these areas to horizontal plane surfaces at elevation 792.03 and shall adequately protect these surfaces until shoes are set. Anchor bolts for girder bearings shall be in place when the bent cap is cast. The use of wells is forbidden. Each plate under girder shoes shall be set on a lead sheet 3\"/>

**NOTE: BEARING AREAS FOR I-BEAMS ON BENTS NO. 2 & 3**  
Top of parapet wall for I-Beam bearing plates shall be finished as nearly as possible to within 1/8\"/>

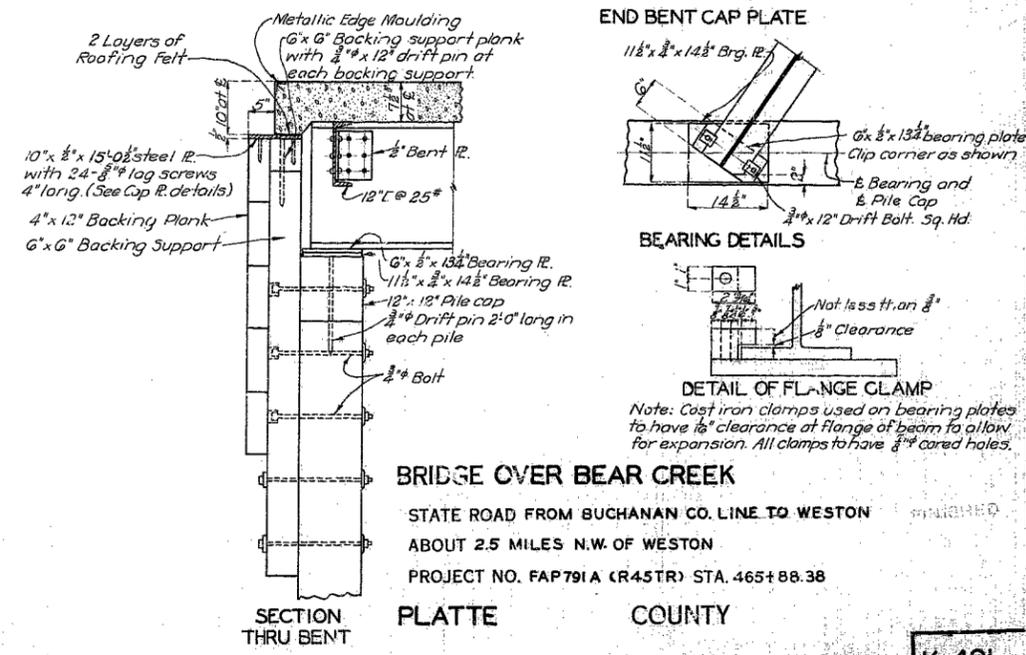


HALF ANCHOR BOLT PLAN

BILL OF TIMBER				FRAMING DIAGRAMS	
PIECE	NO.	SIZE	LENGTH	REMARKS	
Backing Plank	1	3	4x12	16-9 1/2	Cut to length
	2	2	4x12	14-5 1/2	"
	3	2	4x12	20-9	"
	4	2	4x12	20-9 1/2	"
	5	2	4x12	10-9 1/2	"
	6	2	4x12	10-9 1/2	"
	7	2	4x12	17-1 1/2	"
	8	2	4x12	17-1 1/2	"
	9	2	4x12	7-1 1/2	"
	10	2	4x12	15-3 1/2	"
Shoulder Plank	11	2	4x9 1/2	20 1/2	Cut to length & shape
Shoulder Plank	12	2	4x9 1/2	22 1/2	"
Edge Support	13	2	4x12	11-1 1/2	"
Pile Cap	14	2	12x12	26-11	Cut to length
Backing Support Cap	15	2	6x6	18-8 1/2	Cut to length & shape
Backing Support Cap	16	2	6x6	11-7 1/2	"
Backing Plank	17	2	4x12	8-7 1/2	Cut to length
Backing Support	18	4	6x6	5-0	Cut to length & shape
Backing Support	19	3	6x6	6-6	"

\* 525 to exact depth of 1 1/2\"/>

DETAILS OF BENTS NO. 1 & 4



**BRIDGE OVER BEAR CREEK**  
STATE ROAD FROM BUCHANAN CO. LINE TO WESTON  
ABOUT 2.5 MILES N.W. OF WESTON  
PROJECT NO. FAP 791A (R45TR) STA. 465+88.38  
PLATTE COUNTY  
Note: Cast iron clamps used on bearing plates to have 1/8\"/>

Drawn Aug. 1935 by S.C.D.  
Traced Aug. 1935 by G.W.  
Checked Oct. 1935 by J.F.B.

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

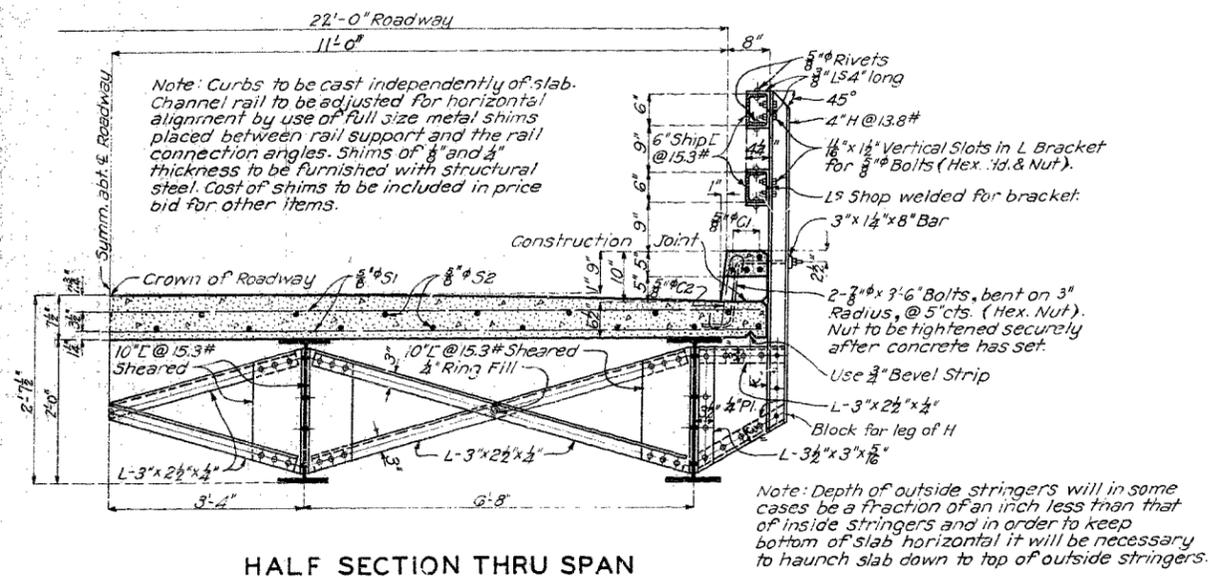
Sheet No. 2 of 4. No Construction changes  
FA

K-491

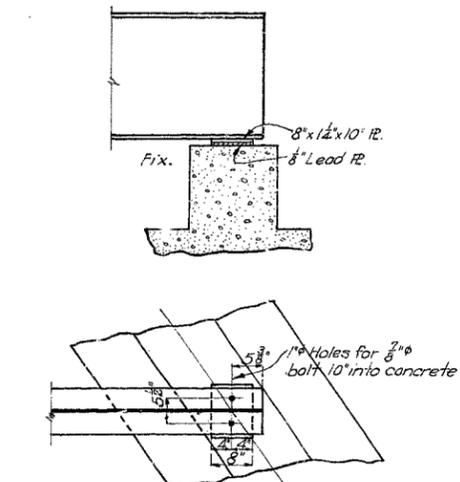
# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	144791A (R-4472)			

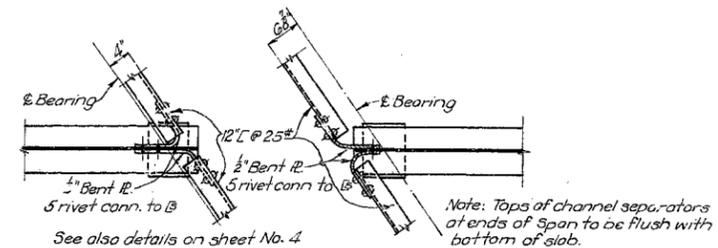
FINAL PLANS



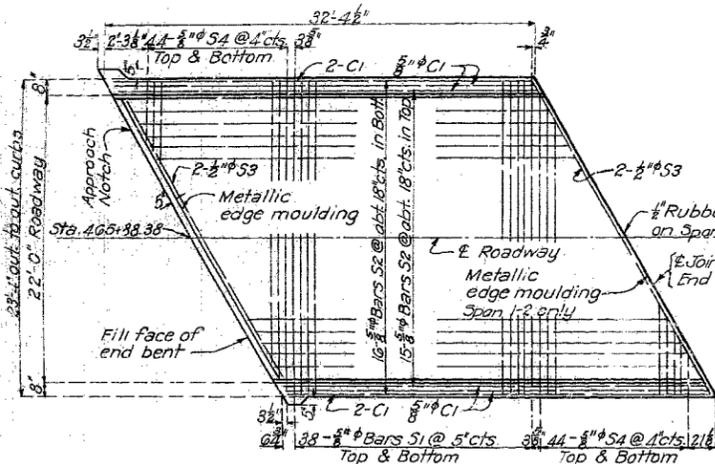
HALF SECTION THRU SPAN



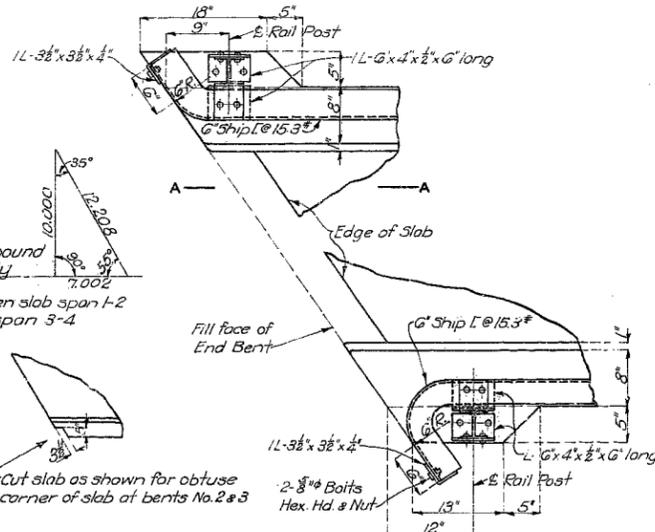
BEARING DETAILS BENTS NO. 2 & 3  
End L separators not shown.



DETAILS OF END CHANNEL SEPARATORS

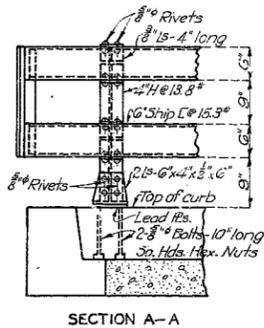


PLAN OF SLAB SHOWING REINFORCEMENT



LOCATION OF RAIL POSTS AT END BENTS

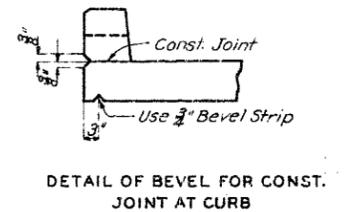
Note: Top of curbs under end handrail posts to be finished to a smooth surface parallel to grade. Not less than one nor more than four soft lead plates of 1/8" thickness shall be used under angles at each end rail post for aligning rail to correct elevation. Plates shall be 5 1/2" x 6" and shall be punched 3/8" on same gages as the angles. No grouting permissible. Cost of lead plates to be included in price bid for other items.



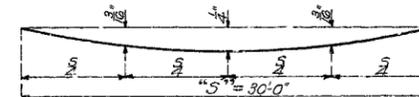
SECTION A-A

METALLIC EDGE MOULDING

Note: Cost of metallic edge moulding will be included in unit bid price for concrete.

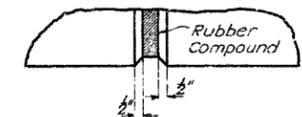


DETAIL OF BEVEL FOR CONST. JOINT AT CURB



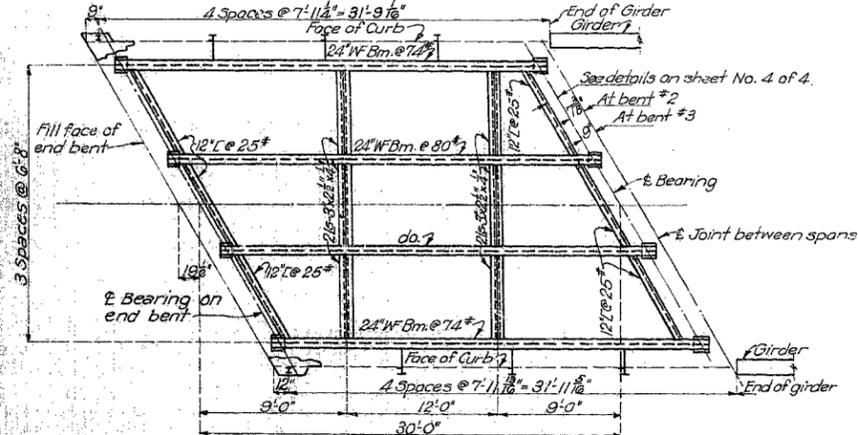
Note: Floor slab to be brought to grade and dead load deflection taken care of by increasing slab thickness. Depth of slab at outside face of curb to be kept uniform and bottom surface of slab warped between curb and outside beam to obtain required thickness at beam. Payment will be allowed for additional concrete required for thickening slab. Additional concrete is included in "Estimated Quantities."

DEFLECTION DIAGRAM

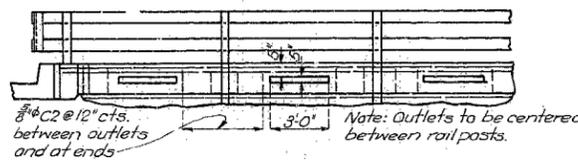


Note: Use bevel as shown for exposed faces of all joints consisting of rubber compound except at top surface of roadway slab. Use metallic edge moulding at top surface of roadway, each side of rubber compound joint.

DETAIL OF BEVEL FOR RUBBER COMPOUND JOINTS



PLAN OF STRINGERS



TYPICAL PART ELEVATION SHOWING CURB OUTLETS

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

Sheet No. 3 of 4.

F.A.N.

construction changes

FINAL PLANS

K-491

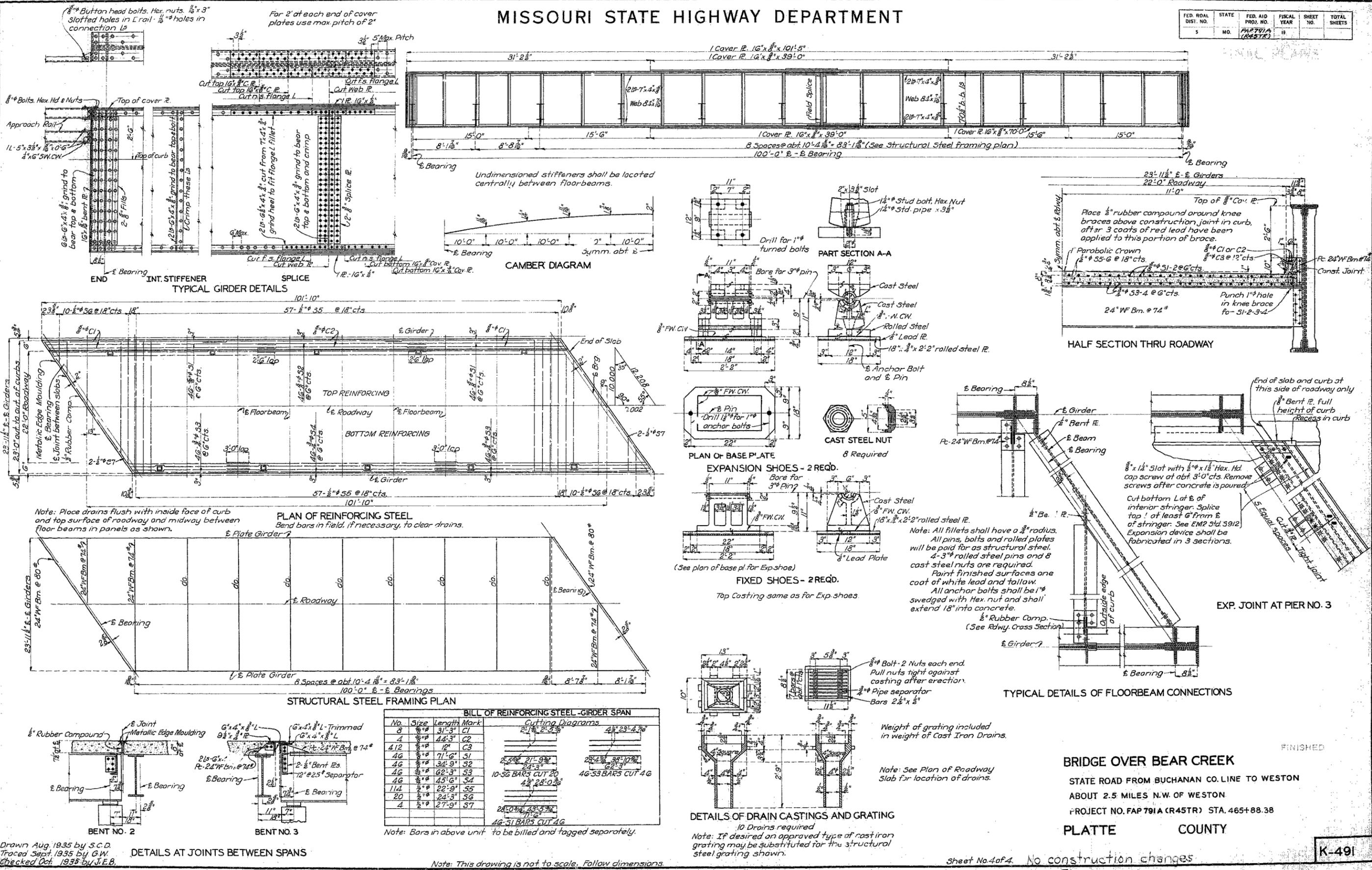
368

Drawn Feb. 1933 By R.J.G.  
Traced Feb. 1933 By R.J.G. Assembled Aug. 1935 By S.C.D.G.W.  
Checked Feb. 1933 By J.G. Checked Oct. 1935 By J.E.B.

BRIDGE OVER BEAR CREEK  
STATE ROAD FROM BUCHANAN CO. LINE TO WESTON  
ABOUT 2.5 MILES N.W. OF WESTON  
PROJECT NO. FAP 791-A (R45TR) STA. 465+88.38  
PLATTE COUNTY

# MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	FAP 791A (R45TR)	44	11	11



**BILL OF REINFORCING STEEL - GIRDER SPAN**

No.	Size	Length	Mark	Cutting Diagrams
6	3/8"	31'-3"	C1	21'-11", 21'-3"
4	3/8"	44'-3"	C2	44'-23", 41'-4"
4	3/8"	12'	C3	
4	3/8"	71'-6"	S1	28'-5 1/2", 21'-9 1/2"
4	3/8"	34'-9"	S2	24'-3"
4	3/8"	62'-3"	S3	10'-5 1/2" BARS CUT 20
4	3/8"	45'-6"	S4	4'-8", 28'-0 1/2"
11	3/8"	22'-9"	S5	
20	3/8"	24'-3"	S6	
4	3/8"	27'-9"	S7	
				28'-0 1/2", 43'-5 1/2"
				11'-6"
				46'-51" BARS CUT 46

Note: Bars in above unit to be billed and tagged separately.

360

Drawn Aug. 1935 by S.C.D.  
Traced Sept. 1935 by G.W.  
Checked Oct. 1935 by J.E.B.

DETAILS AT JOINTS BETWEEN SPANS

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

Sheet No. 4 of 4. No construction changes.

K-491

**BRIDGE OVER BEAR CREEK**  
STATE ROAD FROM BUCHANAN CO. LINE TO WESTON  
ABOUT 2.5 MILES N.W. OF WESTON  
PROJECT NO. FAP 791A (R45TR) STA. 465+88.38  
PLATTE COUNTY