STATE HIGHWAY 79 AT RED RIVER BRIDGE
State Highway 79 over Red River
Jefferson County
Oklahoma

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD
STATE HIGHWAY 79 AT RED RIVER BRIDGE

Location: Carries State Highway (SH) 79 over the Red River, approximately 6 miles southwest of Waurika, Oklahoma, in Jefferson County, Oklahoma, and Clay County, Texas. UTM: 14/583488E/3777185N.

Present Owner: Oklahoma Department of Transportation (ODOT) and Texas Department of Transportation (TxDOT).

ODOT Structure Number: 3416 0050 X
TxDOT Structure Number: 030390028201005

Present Use: Vehicular traffic.

Significance: The bridge carries SH 79 over the Red River between Jefferson County, Oklahoma, and Clay County, Texas. Constructed in 1939, it has 21 identical Camelback pony truss main spans, each with a length of 100 feet, and an overall structure length of 2,255 feet. The structure length and overall magnitude of the SH 79 at Red River Bridge represent a large project completed under the auspices of the Oklahoma Highway Commission (OHC), indicating a significant commitment of funding and comparatively great technical achievement compared to other bridges of its type and period of construction in Oklahoma.[1] While the Camelback pony truss was a relatively common bridge type in Oklahoma during the 1920s and 1930s, it is considered a rare bridge type in Texas. The SH 79 at Red River Bridge is one of only four remaining examples of a bridge with Camelback pony truss main spans in Texas.[2]

The bridge is also significant for facilitating major regional economic development in southwest and south-central Oklahoma and in northwest Texas, as it provided a free, all-weather connection between major oil-producing and agricultural areas in central Oklahoma and the Wichita Falls area in Texas.[3]

The SH 79 at Red River Bridge was determined eligible for the National Register of Historic Places (NRHP) in 1993 by ODOT. TxDOT nominated the bridge for listing in the NRHP under *Criterion A* for significance in the area of Transportation (specifically relating to its ties to regional economic

[1] Joseph E. King, *Spans of Time; Oklahoma Historic Highway Bridges* (Oklahoma City, Oklahoma: Center for Historic Preservation & Technology Texas Tech University, 1993), 24, 42–43; Anna Marie Eddings, "Oklahoma Historic Bridge Survey Phase 1; A Re-Evaluation of Spans of Time: Oklahoma Historic Highway Bridges" (Oklahoma Department of Transportation, May 2007), 2.

[2] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 1996, 8–5, National Register #96001518.

[3] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–5; King, *Spans of Time; Oklahoma Historic Highway Bridges*, 43.

development) and under *Criterion C* for significance in the area of Engineering. The bridge was listed in the NRHP on December 20, 1996.

Project Information: Historic American Engineering Record (HAER) Level II-equivalent documentation was performed in June 2015. Timothy Smith and Lydia Woods, Cultural Resources Specialists, conducted the on-site recordation and compiled the historical information. During the on-site recordation, Smith and Woods photographed the structure and noted observations on existing conditions. This documentation was prepared as mitigation for demolition and removal of the current bridge.

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Part I. Historical Information

A. Physical History:

1. Date of Construction: 1939.

2. Bridge Designer: Oklahoma Highway Commission.

3. Builder/Contractor/Supplier: The bridge was fabricated by the Virginia Bridge & Iron Company of Roanoke, Virginia. Brooks and Dahlgren, Inc. of Oklahoma City served as the construction contractors.

4. Original Plans: TxDOT maintains a digital version of the original construction plan set on its internal *Crossroads* website. The TxDOT plan set is revised to October 31, 1938, just after the project's Plans, Specifications, and Estimates (PS&E) set had been approved by the U.S. Bureau of Public Roads (BPR). The TxDOT plan set does not incorporate changes made during project construction.

ODOT's Planning and Research Division in Oklahoma City retains a copy of the original construction plan set, revised to May 13, 1939, near the midpoint of project construction. This version likely incorporates as-built modifications to the original design.

5. Alterations and Additions: There have been several erosion control projects to stabilize the meandering river banks through installation of timber pilings, steel and timber jetties, and stone riprap under and adjacent to the bridge.[4] These projects took place between 1956 and 1986. The bridge's steel members have been periodically cleaned and repainted.[5] Otherwise, the bridge has received no appreciable alterations since its original 1939 construction.

B. Historical Context: The SH 79 at Red River Bridge spans the Red River between Jefferson County, Oklahoma, and Clay County, Texas. The nearest communities to the bridge are Waurika, Oklahoma, located approximately 6 miles northeast, and Byers, Texas, located approximately 7 miles southwest. The bridge is located in the Central Great Plains ecological region, also known as the Rolling Plains in Texas or the Redbed Plains in Oklahoma. The region was once characterized by native tallgrass prairie and scattered trees along streams, but has been largely replaced by cropland or mesquite-shortgrass prairie. Silty alluvial sands and gravel, underlain by red shale and sandstone, are in the immediate vicinity of the Red River's wide and meandering channel.[6]

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[4] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 7–1.

[5] Texas Highway Department, "Record of State Control Numbers, Sections and Jobs: Red River Bridges and Overflow Section at Oklahoma State Line, Clay County, Highway 79" (Texas Highway Department, n.d.), CSJ Logs, Texas Department of Transportation, Environmental Affairs Division.

[6] Charles Robert Goins, James H. Anderson, and David L. Boren, *Historical Atlas of Oklahoma* (Norman, Okla.: University of Oklahoma Press, 2006), 5, 9; Elizabeth Cruce Alvarez, ed., *Texas Almanac 2012-2013* (Denton, Tex.: Texas State Historical Association, 2012), 69–74.

The region surrounding the present SH 79 at Red River Bridge was sparsely settled until the late 1800s and early 1900s. The bridge is located very close to the 98th Meridian. On the north side of the Red River, the 98th Meridian formed the post-Civil War boundary between the Chickasaw Nation to the east and the federally administered Kiowa-Comanche-Apache Indian Reservation to the west. South of the Red River in Texas, Clay County was established in 1857 as the line of settlement moved steadily westward across Texas. The county had 109 residents in 1860, but was depopulated during the Civil War and reorganized in 1873.[7]

Crossing the Red River was often challenging, with floods frequently swelling the channel and silty mud forming quicksands. Native Americans and early European explorers and traders crossed using natural fords along the rivercourse. A ford located about 25 miles downstream from the present SH 79 bridge developed into the crossing for the Chisholm Trail from the late 1860s through the 1880s. The Chisholm Trail served as the most well-known cattle trail of the period, with South Texas cattle herds driven northward on the open range to transcontinental railheads in Kansas. While it was well downstream of present-day SH 79, the Chisholm Trail helped to open up trade and commerce across the Red River in the region.

Permanent settlement in the area blossomed between 1880 and 1910 with the construction of major rail lines. The Fort Worth and Denver City Railway laid track southeast-to-northwest through Clay County in 1882, providing a long-haul railroad line linking area farmers and ranchers to national markets.[8] In 1892 the Chicago, Rock Island and Pacific Railway constructed its north-south line roughly following the old Chisholm Trail from Montague County, Texas, into present-day Jefferson County, Oklahoma, with construction of a bridge over the Red River near present-day US 81.[9] Closer to today's SH 79, the Wichita Falls and Oklahoma Railway constructed a short line from Wichita Falls northeast to Byers in northern Clay County in 1904, presaging the eventual alignment of SH 79.[10] Clay County's population jumped to 5,045 in 1880 and further increased to 9,231 residents in 1900 and 17,043 in 1910.[11] The county's economy was focused on corn and cotton cultivation as well as cattle ranching.[12]

North of the Red River, agricultural development jumpstarted soon after the turn of the century, with growing pressure by non-Native American farmers, ranchers, and speculators to open remaining Indian Territory land for settlement. In 1901 the Kiowa-Comanche-Apache Reservation was opened for non-

[7] Clark Wheeler, "Clay County," *The Handbook of Texas*, June 12, 2010, https://tshaonline.org/handbook/online/articles/hcc12.

[8] Charles P. Zlatkovich, *Texas Railroads: A Record of Construction and Abandonment* (Austin, Texas: Bureau of Business Research at the University of Texas at Austin, 1980), 16.

[9] Zlatkovich, *Texas Railroads: A Record of Construction and Abandonment*, 17–18; Larry O'Dell, "Jefferson County," *Encyclopedia of Oklahoma History and Culture*, 2009, http://www.okhistory.org/publications/enc/entry.php?entry=JE001.

[10] Wheeler, "Clay County."

[11] *Texas Almanac and State Industrial Guide 1968-1969* (A.H. Belo Corp., 1967), 169.

[12] Wheeler, "Clay County."

Native American settlement through a lottery system. Under the Dawes Commission, communal Chickasaw Nation lands were converted to private ownership through allotment to individual tribal members in the early 1900s, with many allotments sold or lost to non-Native Americans in succeeding years.[13] Soon after the opening of reservation lands, town lots were sold for Waurika, a flag station on the Chicago, Rock Island and Pacific Railway located about 20 miles north of the railroad's Red River crossing. By 1902 the Enid and Anadarko Railway built a branch line connecting the new town with Lawton and Fort Sill, southwest Oklahoma's trade and commercial center. The town had 2,928 residents in 1910, serving a growing agricultural region.[14] Jefferson County was established in 1907 with Oklahoma's statehood. At that time nearly half of the county's land was already under cultivation. Like nearby Clay County in Texas, Jefferson County's economy was based on cotton and corn production, as well as cattle ranching. Jefferson County had 13,439 residents in 1907, quickly rising to 17,430 in 1910.[15]

The discovery of oil and gas at Petrolia in northern Clay County in 1906 further increased development in the area. The relatively small Petrolia Field was the first of many oil fields discovered in northwest Texas. In Oklahoma the Healdton Field was discovered in 1913 in far northeast Jefferson County and neighboring Carter County, becoming the state's most productive oil field a year later. The opening of the massive Electra and Burkburnett oil fields in neighboring Wichita County in the 1910s triggered an economic boom in the region that lasted for two decades. Wichita County's population jumped nearly fivefold between 1910 and 1930 and Wichita Falls became northwest Texas's hub for petroleum-related manufacturing and service industries.[16] Additional oil and gas fields were also discovered in areas north and east of Jefferson County through the 1920s and 1930s, with a corresponding increase in refineries and other related facilities.[17]

In spite of overall regional growth, Clay County's population trended slightly downward in the 1910s, 1920s, and 1930s, as the local Petrolia Field slowly declined in production. The local economies of both Clay County, Texas, and Jefferson County, Oklahoma, were instead increasingly dominated by cotton production and processing.[18] Nonetheless, the petroleum industry continued to drive regional development in northwest Texas and southwest and central Oklahoma.

Sustained expansion of petroleum and agricultural activities led to a need for improved transportation facilities to handle increased commercial and industrial traffic. In 1922 the Wichita Falls and Oklahoma Railway was extended from its original Byers terminus northeastward, crossing the Red River and

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[13] O'Dell, "Jefferson County"; Clara Sue Kidwell, "Allotment," *Encyclopedia of Oklahoma History and Culture*, 2009, http://www.okhistory.org/publications/enc/entry.php?entry=AL011.

[14] Sheridan B. Drowatzky, "Waurika," *Encyclopedia of Oklahoma History and Culture*, 2009, http://www.okhistory.org/publications/enc/entry.php?entry=WA048.

[15] O'Dell, "Jefferson County."

[16] Michael L. Collins, *Tales of Texoma; Episodes in the History of the Red River Border* (Midwestern State University, 2005), 354; Brian Hart, "Wichita County," *The Handbook of Texas*, June 15, 2010, http://www.tshaonline.org/handbook/online/articles/hcw08.

[17] Goins, Anderson, and Boren, *Historical Atlas of Oklahoma*, 28–29.

[18] *Texas Almanac and State Industrial Guide 1968-1969*, 169; O'Dell, "Jefferson County."

terminating at Waurika, where it connected with the main-line Chicago, Rock Island and Pacific Railroad.[19] While additional railroad connections were important freight transportation links, automobile and truck traffic greatly expanded in the early 1900s and brought the need for improved roads and bridges. Spanning the wide Red River channel was an expensive proposition, beyond the financial means of local governments. At the same time, federal and state governments were not involved in roadway bridge construction until the late 1910s and their road-aid programs did not initially focus on large interstate bridges. Instead, early vehicular bridges across the Red River were privately owned and tolled.[20] The Byers Bridge, also known as the 98th Meridian Bridge, connected Byers, Texas, with Hastings, Oklahoma. The privately owned suspension bridge, built in 1914 and reconstructed in 1923 after tornado damage, was located about 6 miles northwest of the present SH 79 at Red River Bridge. A few miles farther west was the Charlie Bridge, a timber structure also built in 1916. A third toll bridge, known as the Ryan Bridge, was located several miles southeast of the SH 79 at Red River Bridge. The Ryan Bridge was a 3,000-foot-long timber trestle bridge constructed in 1927. These three bridges were constructed for local traffic, connecting towns and trade centers on either side of the Red River. Longer-haul traffic across the Red River in the region relied on the Burkburnett-Randlett Bridge about 25 miles west of present-day SH 79, and the Terral-Ringgold Suspension Toll Bridge constructed in 1917 on the Meridian Highway (later US 81) about 20 miles southeast of present-day SH 79.[21] The design of the Red River toll bridges, with their light suspension or wooden trestle spans, reflected the desire to cut costs to a minimum. The bridges were not well-suited for heavier traffic and were subject to damage during Red River flood events.[22]

By the late 1920s public pressure was building in both Oklahoma and Texas to have free interstate bridges, through the purchase of older toll bridges or construction of new structures. As the Red River between Oklahoma and Texas was not considered a navigable waterway by law, the toll bridge operators were not subject to oversight by the federal government. At this time a two-axle automobile was typically charged 75 cents or one dollar to cross the Red River, with higher rates for trucks.[23] As temporary relief against the high toll rates, in 1927 the United States Congress approved a bill to place toll rates on the Red River bridges under the jurisdiction of the War Department. Within a few years Red River toll rates had dropped by 50 percent.[24]

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[19] Zlatkovich, *Texas Railroads: A Record of Construction and Abandonment*, 95; Chris Cravens, "Wichita Falls and Oklahoma Railway," *The Handbook of Texas*, June 15, 2010, http://www.tshaonline.org/handbook/online/articles/eqw11.

[20] Bernice Norman Crockett, *Across the Muddy Red*, vol. 61 (University of Oklahoma Printing Services, 1983), 347.

[21] "Interstate Bridges," 1938, FF 38 Toll Bridges, Toll Roads, in 81.105 Box 78, Federal Writers Project - Transportation, 8931.06, Oklahoma History Center; "Interstate Bridges, Brief Description of Red River Bridges," 1937, Folder G-C-3, Red River and Sabine River bridge records (Box 2005/112), Texas Highway Department records, Texas State Library and Archives Commission.

[22] Crockett, *Across the Muddy Red*, 61:349, 361.

[23] Crockett, *Across the Muddy Red*, 61:347.

[24] "Interstate Bridges, Brief Description of Red River Bridges"; "Administration of Murray," September 30, 1940, Toll Bridges, Toll Fords Folder, Oklahoma History Center.

In 1927 the Texas Legislature passed a bill authorizing the Texas Highway Department (THD) to work with adjoining states in obtaining free interstate bridge crossings. The 1927 bill stipulated that Texas would pay up to "one-half of the amount necessary to acquire, construct and maintain any such bridge" in order to obtain the owner rights and that "any bridge now spanning any boundary between States and connecting designated highways of such States may be condemned for public use, and maintained for public use without charge."[25] In 1929 the Oklahoma Legislature passed similar free bridge legislation providing authorization to the OHC to work with the THD on Red River bridges. New free bridges were soon constructed between Randlett, Oklahoma, and Burkburnett, Texas, and between Terral, Oklahoma, and Ringgold, Texas.[26] The old Charlie Toll Bridge was purchased by the two states in 1933.

Even with the construction of new free bridges in the late 1920s and early 1930s, no crossing capable of handling ever-increasing traffic loads and volumes was present between the US 277 bridge near Randlett and the US 81 bridge near Terral, creating a gap of almost 50 miles. In response, the OHC and THD began planning for a new Red River bridge near the Wichita Falls and Oklahoma Railway bridge. The new crossing, oriented on a northwest-southeast alignment, was meant to provide a more direct connection between Waurika and Wichita Falls and the major highways that passed through both cities. In response to public requests for a new free bridge between Waurika and Byers, OHC engineers began preliminary investigations of two possible bridge sites in 1932, both north of the railroad bridge. By early 1934 OHC and THD engineers were in consultation regarding the bridge's eventual location. OHC staff completed preliminary engineering studies in coordination with the THD; however, the OHC lacked sufficient state-match funding to immediately construct the bridge and the project was shelved for over three years.[27]

Preliminary engineering and planning resumed in early 1938, with the OHC, THD, and BPR engineers jointly selecting a bridge location about one mile north of the railroad bridge. This location was determined to be more stable than the alternate site farther north, which was located near a bend in the river and therefore subject to potential scouring. The OHC was responsible for preparation of bridge plans, specifications, and estimates, with the THD providing review and approval. Each state was responsible for half the cost of construction. In May 1938 the OHC placed the SH 79 at Red River Bridge project on its regular Fiscal Year (FY) 1939 Federal Aid Program, with the project designated as Federal Aid Project (FAP) No. 1015-A(1).[28]

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[25] Jake J. Loy, *Texas Free Bridge Law*, *H.B. 379*, 1927; State of Oklahoma Highway Commission, *Report of the State Highway Commission for the Years 1929 to 1930 Inclusive* (Oklahoma City, Oklahoma: State of Oklahoma Highway Commission, 1930), 84–86.

[26] State of Oklahoma Highway Commission, *Report of the State Highway Commission for the Years 1929 to 1930 Inclusive*, 86–88.

[27] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–5, 8–6.

[28] State of Oklahoma Highway Commission, *Biennial Report of the Oklahoma State Highway Commission for the Period Ending June 30, 1940* (Oklahoma City, Oklahoma: State of Oklahoma Highway Commission, 1940), 19; National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–6.

OHC engineers began drafting plans by June 1938 and submitted an initial draft to the THD for review on August 1, 1938. The plans called for a 23-span bridge, with 21 Camelback pony truss main spans following the OHC's 1.5E-100 pony truss standard plan and two steel beam approach spans using the OHC's IB-6 steel beam standard plan. The plans also provided for a 26-span steel beam relief bridge, to be located just southwest of the main bridge on the Texas side of the river.[29] During plan review, THD State Highway Engineer Julian Montgomery expressed a desire for aesthetic changes to the bridge's pier design and concrete railings. OHC Bridge Engineer Homer White agreed to the railing changes, which lowered the railing height similar to contemporary THD standards, in an effort to improve visibility. However, White declined to change the design or appearance of the piers. Revised project plans were completed by OHC draftsmen on September 27, 1938, and the OHC submitted the project for BPR approval, which was received in late October 1938. The BPR provided federal funding for about half of the project cost, with each state responsible for half of the matching funds.[30]

Construction bids for the bridge were simultaneously opened in both Oklahoma City and Austin on November 22, 1938. The construction contract was awarded to Brooks and Dahlgren, Inc. of Oklahoma City, which had submitted the low bid of $345,188.50. The bridge's truss spans were fabricated by Virginia Bridge & Iron Company of Roanoke, Virginia. The OHC authorized the project on December 2, 1938, and construction began on January 2, 1939. The 1996 NRHP Nomination notes that "a special provision required the contractor to hire an equal number of laborers from each state."[31]

While bridge construction got underway, both states' highway departments completed roadways leading to the new bridge location. Soon after the initial 1932 planning meetings for the new bridge, the THD extended SH 79 from its terminus at Byers northeastward to the Red River. However, the highway was labeled as a "conditional designation" on the 1933 State Highway map and noted as an unimproved earthen road.[32] In mid-1937 the THD applied for National Recovery Work Relief (NRWR) and Works Progress Administration (WPA) funding to improve the SH 79 roadbed. The roadway was graded and graveled, along with the drainage structures being constructed.[33] The Oklahoma portion of SH 79 was constructed concurrently with the Red River bridge. The July 1938 Oklahoma State Highway map depicts

[29] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)," revised 1939, available at Oklahoma Department of Transportation and Texas Department of Transportation.

[30] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–6, 8–7; State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

[31] State of Oklahoma Highway Commission, *Biennial Report of the Oklahoma State Highway Commission for the Period Ending June 30, 1940*, 19; National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–7.

[32] "Official Map of the Highway System of Texas" (Austin, Tex.: Texas State Highway Department, June 15, 1933), https://www.tsl.texas.gov/cgi-bin/aris/maps/maplookup.php?mapnum=6188.

[33] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–5.

SH 79 as an earthen road, perhaps still in the planning stages.[34] In July 1939 the OHC authorized work on SH 79 from U.S. Highway (US) 70 southwest to the Red River for grading, graveling, and drainage structures. Oklahoma's SH 79 work was financed as a regular federal-aid project, separate from the bridge project.[35] Both states also undertook small projects on their respective bridge approaches, stabilizing shoulders through the application of oiled asphalt, sodding the sloped approach embankments, and installing guard rail.

Work on the SH 79 at Red River Bridge and its nearby relief bridge was completed ahead of schedule on September 11, 1939, and the project was formally completed in January 1940. The bridge was dedicated and brought into service in February 1940.[36] The project's cost, including both bridges, was $356,029.75. The smaller approach improvement projects, both accomplished as sub-units of the larger federal-aid project, totaled $5,273 for Texas and $2,700 for Oklahoma.[37]

Since its completion in 1939 few alterations have been made to the bridge. Erosion control and bank protection projects were undertaken in the 1950s and again in the early 1980s to prevent the Red River from washing out the banks and compromising the structural integrity of the bridge. General cleaning and repainting of the bridge took place in 1962-1964 and the early 1990s.[38]

[34] T.D. Murohy, "State of Oklahoma Department of Highways Map Showing Condition of Improvement of the State Highway System" (State of Oklahoma Department of Highways, April 1938).

[35] State of Oklahoma Highway Commission, *Biennial Report of the Oklahoma State Highway Commission for the Period Ending June 30, 1940*, 19.

[36] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 8–7.

[37] Texas Highway Department, "Record of State Control Numbers, Sections and Jobs: Red River Bridges and Overflow Section at Oklahoma State Line, Clay County, Highway 79"; State of Oklahoma Highway Commission, *Biennial Report of the Oklahoma State Highway Commission for the Period Ending June 30, 1940*, 19.

[38] Texas Highway Department, "Record of State Control Numbers, Sections and Jobs: Red River Bridges and Overflow Section at Oklahoma State Line, Clay County, Highway 79."

Part II. Structural/Design Information

A. General Statement:

1. Character: The SH 79 at Red River Bridge is a 23-span bridge, with 21 Camelback pony truss main spans and a steel I-beam approach span on each end of the bridge. The bridge is noted as a robust example of the Camelback pony truss, a design frequently employed by the OHC during the 1920s and 1930s but rarely constructed in Texas. The bridge was designed using OHC standard designs, slightly modified to accommodate slight changes to the bridge railings as suggested by THD engineers.

2. Condition of fabric: The condition of the bridge is very good. The bridge remains in its original location and has undergone no notable alterations since its original construction in 1939.

B. Description: The SH 79 at Red River Bridge carries SH 79 on an approximate northeast-southwest alignment over the Red River between Jefferson County, Oklahoma, and Clay County, Texas. SH 79 originates in Throckmorton County, Texas, extends northeast through Young and Archer Counties, and continues to Wichita Falls, Texas.[39] The route continues through Petrolia and Byers in Clay County, crosses the Red River into Oklahoma, and ends in Waurika 6 miles inside the state line. When the bridge was constructed in 1939 the main river channel flowed under the first and second truss spans on the west end.

The bridge is comprised of 21 identical riveted, camelback pony-truss spans with a single steel I-beam approach span at each end.[40] The bridge is 3,296'-3" in overall length. Each individual truss span is 100'-0" long, the west approach span is 61'-3" long, and the east approach span is 52'-3" long. Each span has an out-to-out width of 28'-10". The camelback pony truss spans were designed using the OHC's 1.5E-100 pony truss standard plan. The steel beam approach spans were designed using the OHC IB-6 steel beam standard plan.[41]

Each individual truss is comprised of a polygonal top chord of five equal slopes, built up with back-to-back channels riveted with a cover plate on the top and V-bracing on the bottom. The lower chord is built up with back-to-back channels riveted with batten plates on the top and bottom. The vertical and diagonal members are rolled I-section beams, connected to the upper and lower chords with riveted gusset plates. According to the 1938 as-built plans, the trusses were painted with a primer of red lead and two finish coats of aluminum.[42]

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[39] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 7–1.

[40] National Register of Historic Places, *State Highway 79 Bridge at the Red River, Byers, Clay County, Texas*, 7–2.

[41] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

[42] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

The floor beams are rolled I-beams with riveted gusset-plate connections at panel points above the lower chord. Extending between the floor beams are six lines of rolled I-section stringers with riveted angle connections to the floor beams. There is diagonal lateral bracing comprised on angle members below the floor beams. A concrete deck was poured directly on top of the stringers.

Each approach span is constructed of seven I-beam stringers. A series of riveted steel diaphragms extends between stringers.

The substructure is comprised of identical reinforced-concrete abutments and 25 identical concrete piers or bents. The abutments are built on pilings and have flat headwalls with sloped and angled wingwalls on either side. Each pier is built on pilings and consists of two outside round columns, each with a pier cap. A flat concrete web-wall extends between the columns to 1'-0" short of grade at the bottom and 1'-0" short of the pier cap at the top. The truss spans are carried by fixed and moveable bearings seated on the pier caps.

The truss-span bearings, termed "shoes" on the plans, are either single or continuous. Single shoes have flat steel plates bolted to the pier caps. They can function as fixed or expansion bearings, depending on whether the anchor bolts allow longitudinal movement of the plate by elongated bolt holes. The continuous shoes function as fixed bearings only. They have long steel plates that connect together the ends of two trusses meeting on the same pier cap. In this way, a continuous fixed bearing anchors each truss end point to the pier cap and also to the adjacent truss.[43]

As indicated on the plans, the approach spans employ a "special cast iron shoe" on the pier cap that is shared with a truss span. Because the approach spans have shallower floor systems than the truss spans, the special cast iron shoe acts as a tall pedestal to raise the approach-span deck. This allows the decks and roadways of the two spans to meet at the same elevation.[44]

The roadway is 24'-0" wide with 1'-6" sidewalks on both sides and a bituminous driving surface. Railings located along both sides of the truss spans consist of a pair of horizontal I-section members mounted on I-section vertical posts. The railings are described in plans as "hand rails" but function as rub rails to protect the truss from vehicular impact.[45] Railings over the approach spans are comprised of a single rectangular concrete rail carried on rectangular concrete posts. Each end post has three ornamental scribed vertical lines on the interior and exterior sides and each interior post has a single ornamental scribed vertical line on either side as well. Modern metal guard rails extend beyond the approach spans. A cast-metal plaque is located in Texas on the north face of the southwest end post and is partially covered by modern guard rail. The plaque has the following inscription:

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[43] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

[44] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

[45] State of Oklahoma Department of Highways, "Plan and Profile of Proposed State Highway, Federal Aid Project No. 1015-A(1)(1939)."

> Red River Bridge | built in 1939 | by the Texas Highway Department | and the Oklahoma Highway Commission | United States Bureau of Public Roads | Texas Highway Commission | Brady Centry Chairman | Harry Hines Member | Robert Lee Bobbitt Member | Julian Montgomery | Highway Engineer | Brooks and Dahlgren | Contractors

C. Site Information: State Highway 79 spans the Red River between Jefferson County, Oklahoma and Clay County, Texas. The bridge is located approximately 6 miles southwest of Waurika, Oklahoma, and approximately 7 miles northeast of Byers, Texas. At this location the Red River flows in a general north-to-south direction, with the bridge crossing the channel and floodplain in a northeast-southwest alignment. The surrounding area is rural, with relatively flat topography that gradually slopes downward to the wide and meandering Red River channel. Near the bridge's location, scrub vegetation and grasses with scattered trees are on the Oklahoma side of the river. Hardwoods with scattered grassy areas are present on the Texas side of the river, within the river's larger floodplain. The general vicinity is typified by agricultural land uses, with cropland and brushy range pasture.

Part III. Sources of Information

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HISTORIC AMERICAN ENGINEERING RECORD

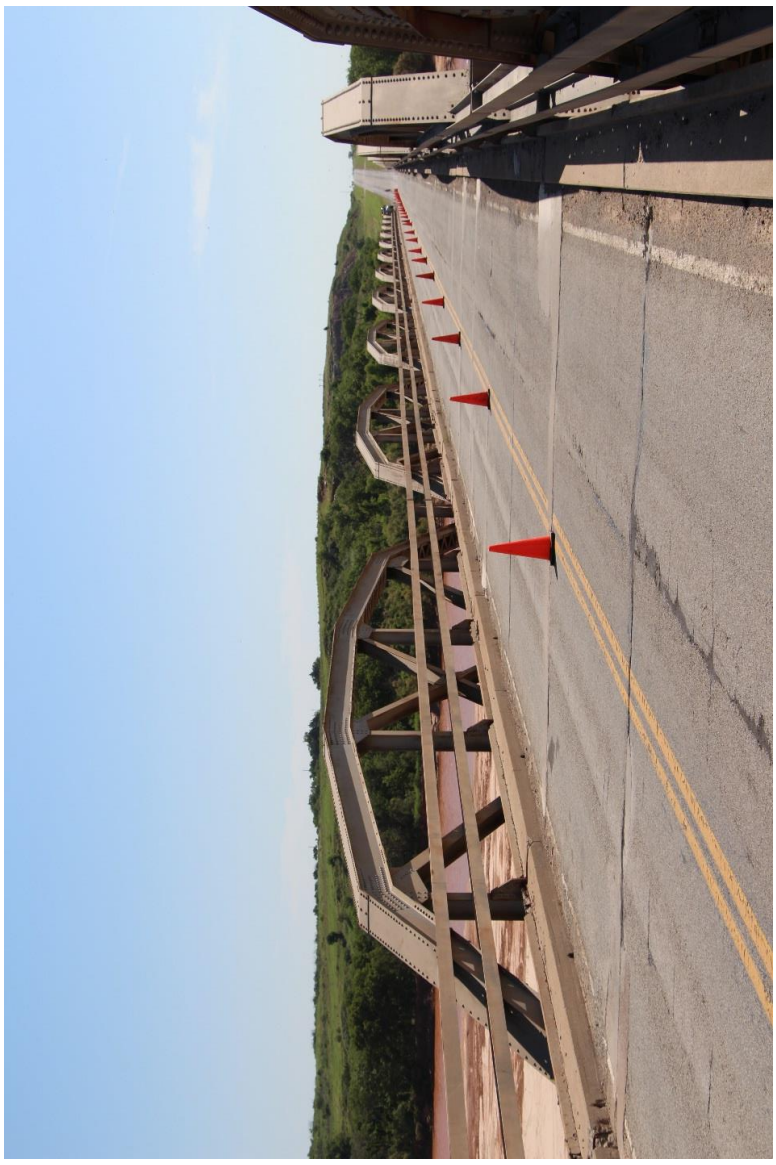
INDEX TO PHOTOGRAPHS

STATE HIGHWAY 79 AT RED RIVER BRIDGE
State Highway 79 over Red River
Jefferson County
Oklahoma

INDEX TO PHOTOGRAPHS

Tim Smith, Photographer, June 2015

1. OVERALL VIEW OF NORTHEAST APPROACH, LOOKING SOUTHWEST
2. OVERALL VIEW OF SOUTH TRUSSES, LOOKING SOUTHWEST
3. OVERALL VIEW OF BRIDGE, LOOKING NORTH
4. OVERALL VIEW OF BRIDGE SHOWING NORTH TRUSSES, LOOKING NORTHEAST
5. OVERALL VIEW OF SPANS AND PIERS, LOOKING SOUTHEAST
6. OVERALL VIEW OF SPANS AND PIERS, LOOKING SOUTHWEST
7. DETAIL VIEW OF TRUSS, LOOKING SOUTHEAST
8. DETAIL VIEW OF TOP CHORD WEB, LOOKING NORTHEAST
9. DETAIL VIEW OF TRUSS PANEL POINT AND GUSSET PLATE, LOOKING WEST
10. VIEW OF NORTHEAST APPROACH SPAN AND PIER, LOOKING SOUTHWEST
11. DETAIL VIEW OF CONCRETE POST AND RAIL, LOOKING SOUTHWEST
12. DETAIL VIEW OF HIGHWAY DEPARTMENT PLAQUE, LOOKING SOUTHWEST




RED RIVER BRIDGE
BUILT IN 1939 BY THE
TEXAS HIGHWAY DEPARTMENT
AND THE
BUREAU OF PU
TEXAS HIGHWAY
BRADY GENTRY
HARRY HINES
ROBERT LEE BO
JULIAN MON
HIGHWAY EN
BROOKS ADAM
CONTRAC

HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO FIELD RECORDS

STATE HIGHWAY 79 AT RED RIVER BRIDGE
State Highway 79 over Red River
Jefferson County
Oklahoma

PLAN SET 1 – SHEETS 1 THROUGH 11
Select 1939 as-built plans available at the Oklahoma Department of Transportation archives

PLAN SET 2 – SHEETS 12 THROUGH 36
Complete 1938 construction plans available at the Texas Department of Transportation archives

CHIEF DRAFTSM.	LOCATING ENG'R.	BRIDGE ENG'R.	DIVISION ENG'R.	CONSTRUCTION ENG'R.	B. P. R.
WWK 9/27/38	HSE	HLW	WHD	WCS	CHF

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA. TEXAS	1015-A(1)	1938	1	41

Revised Oct. 31, 1938
Revised May 13, 1939

GRADE CROSSINGS 0
GRADE CROSSINGS ELIMINATED 0
BY SEPARATION { OVERPASS 0 / UNDERPASS 0
BY RELOCATION 0
GRADE CROSSINGS REMAINING 0

INDEX OF SHEETS

STATE OF OKLAHOMA

DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

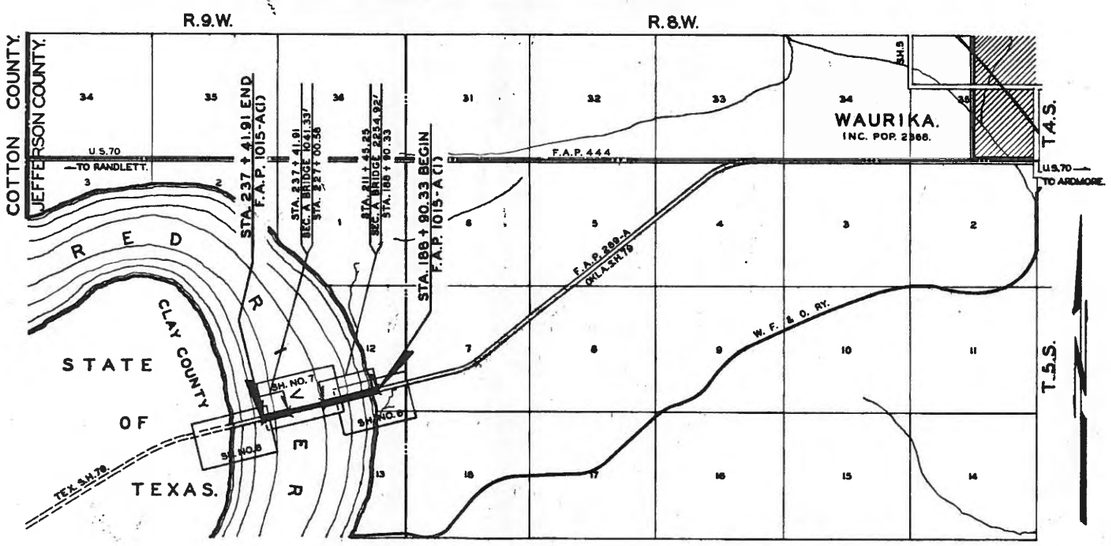
STATE HIGHWAY

FEDERAL AID PROJECT NO. 1015-A(1)(1939)

JEFFERSON COUNTY, OKLAHOMA
CLAY COUNTY, TEXAS

STATE HIGHWAY NO. 79 - 34-16

WAURIKA-WICHITA FALLS, RED RIVER BRIDGE



SCALES

PLAN 1"=100'
PROFILE { HOR. 1"=100' / VER. 1"=10'
CROSS SECTIONS 1"=5'
LAYOUT MAP 1"=3000'

CONVENTIONAL SIGNS

- PROPOSED ROAD
- RAILROADS
- RANGE & TOWNSHIP LINES
- SECTION LINES
- QUARTER SECTION LINES
- FENCES
- BASE LINE
- RIGHT-OF-WAY LINES
- GROUND LINES
- GRADE LINE
- TRAVELLED ROADS
- CULVERTS & BRIDGES
- TELEPHONE & TELEGRAPH
- POWER LINES
- BUILDINGS
- UNLOADING POINTS
- OIL WELLS
- RIGHT OF WAY MARKERS

ROADWAY LENGTH	1,555.33 FT.	0.294 MI.
BRIDGE LENGTH	3,296.25 FT.	0.624 MI.
PROJECT LENGTH		0.918 MI.
EQUATIONS.		NONE.
EXCEPTIONS.		NONE.

F.A. SPECIAL PROVISIONS GOVERN AND
STATE STANDARD SPECIFICATIONS GOVERN APPROVED NOV. 1, 1937

EXAMINED AND APPROVED
This ___ Day of ___ 1939
DISTRICT ENGINEER OKLAHOMA

EXAMINED AND APPROVED
This ___ Day of ___ 1939
DISTRICT ENGINEER TEXAS

EXAMINED AND APPROVED
This ___ Day of ___ 1939
CHIEF ENGINEER OKLAHOMA

EXAMINED AND APPROVED
This ___ Day of ___ 1939
STATE HIGHWAY ENGINEER TEXAS

RECOMMENDED FOR APPROVAL
This ___ Day of ___ 1939
SENIOR HIGHWAY ENGINEER BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL
This ___ Day of ___ 1939
DISTRICT ENGINEER BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL
CHIEF ENGINEER BUREAU OF PUBLIC ROADS

APPROVED
CHIEF OF BUREAU OF PUBLIC ROADS

MORRISON

JDP 5-15-39

POST 4929—200—6-37

F.A.P. 1015-A(1) SHEET NO. 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6.	(S.L.) (Ohio)	1015-A(1)	1938	5	21

Revised Oct. 7, 1938
Revised Oct. 31, 1938
Revised May 13, 1939

SUMMARY SHEET.

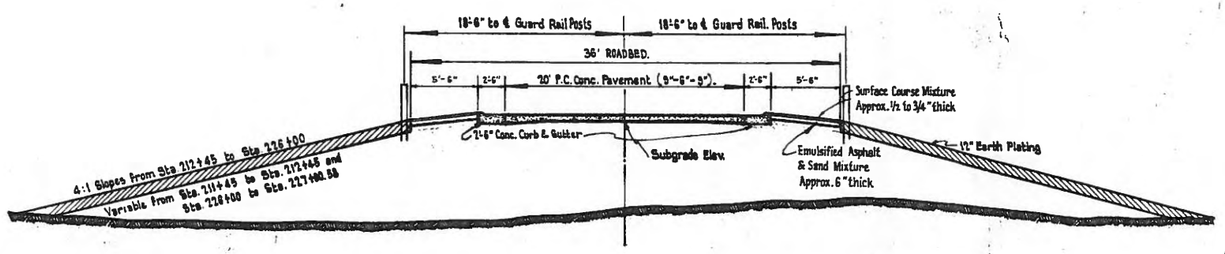
F.A.P. 1015-A.(1).

DRAINAGE STRUCTURES OVER 20 FT.

STR. NO.	P.& P. SHEET NO.	℄ STATION.	DESCRIPTION.	DESIGN	DES. SHEET NO.	CLASS "A" EXC. Cu.Yds.	SUBSTR. EXC. (COMMON) Cu.Yds.	SUBSTR. EXC. (ROCK) Cu.Yds.	REINF. CONC. HAND RAIL Lin. Ft.	STRUCT. STEEL Lbs.	CLASS "A" CONC. Cu.Yds.	CLASS "A" CONC. ABUT. & PIER BASES Cu.Yds.	CLASS "AA" CONC. Cu.Yds.	REINF. STEEL Lbs.	REINF. CONC. PILING Lin. Ft.	REINF. CONC. TEST PILES Each
1	667	200 + 17.79	21-100' Trusses — 1-40' & 1-50' I-Bm. Spans — 24' Rdy. — 2-1'-6" Sidewalks.	L.S. Spec. L.S. Spec.	5 bnts incl.	1900	7595	1027.5	225.	2,810,300	935.7	1588.1	1320.2	365,190	288	1
2	768	232 + 21.25	16-40' I-Bm. Spans — 24' Rdy. — 2-1'-6" Sidewalks.	CT6 Sp.	16-17-18	750	60	0.0	2084.5	152,000	274.8	0.0	763.6	133,140	4788	10
TOTAL						2650	7655	1027.5	2309.5	3,562,300	1210.5	1588.1	2083.8	498,330	5076	11

PAY QUANTITIES SEC.-A. RDY.

ITEM NO.	ITEM	UNIT	QUANTITY
202.06a.	Class "A" Excavation	Cu. Yds.	53,088
204.06	Overhaul.	Sta. Yds.	91,150
207.06a.	Shoulders.	Mi.	0.294
208.06a.	Earth Plating	Cu. Yds.	9,985
414.06a.	P.C. Conc. Pavement (9"-6"-9")	Sq. Yds.	3,385
414.06c.	Approach Slabs.	Sq. Yds.	90.06
509.06b	Class "A-A" Conc.	Cu. Yds	3.7
511.06	Reinf. Steel.	Lbs.	168
513.06a.	12" Corr. Galv. Metal Pipe	Lin. Ft.	80
609.06b	Combined Curb & Gutter (1'-6")	Lin. Ft.	3,047



TYPICAL GRADING SECTION.

PAY QUANTITIES SEC.-A. BRS.

ITEM NO.	ITEM.	UNIT	QUANTITY
℄ Sta. 200+17.79 — 21-100' Trusses — 1-50' & 1-50' I-Bm. Spans. — 24' Rdy — 2-1'-6" Sidewalks.			
202.06a.	Class "A" Excavation.	Cu. Yds.	1900.0
501.06b.	Substr. Exc. Common	Cu. Yds.	7595.0
501.06c.	" " Rock.	Cu. Yds.	1027.5
506.06	Reinf. Conc. Hand Rail.	Lin. Ft.	225.0
506.06a.	Struct. Steel.	Lbs.	2,810,300
509.06a.	Class "A" Conc.	Cu. Yds.	935.7
509.06aa.	Class "A" Conc. Abut. & Pier Bases.	Cu. Yds.	1588.1
509.06b.	Class "AA" Conc.	Cu. Yds.	1320.2
511.06	Reinf. Steel	Lbs.	365,190
514.06aa.	Reinf. Conc. Test Piles	Each.	1
514.06d.	" " Piling	Lin. Ft.	288
℄ Sta. 232+21.25 — 16-40' I-Bm. Spans. — 24' Rdy. — 2-1'-6" Sidewalks.			
202.06a.	Class "A" Excavation.	Cu. Yds.	750.
501.06b.	Substr. Exc. Common	Cu. Yds.	60
501.06c.	" " Rock.	Cu. Yds.	0.0
506.06	Reinf. Conc. Hand Rail.	Lin. Ft.	2084.5
506.06a.	Struct. Steel.	Lbs.	152,000
509.06a.	Class "A" Conc.	Cu. Yds.	274.8
509.06aa.	" " " Abut. & Pier Bases	Cu. Yds.	0.0
509.06b.	" "AA" " .	Cu. Yds.	763.6
511.06	Reinf. Steel.	Lbs.	133,140
514.06aa.	Reinf. Conc. Test Piles	Each.	10
514.06d.	" " Piling	Lin. Ft.	4788

(1) The area to be sodded shall be scarified to a depth of about 15 inches and the slopes reshaped by discing and harrowing before sod is placed. This work will not be paid for separately but cost of same Shall be included in the unit price bid for the sodding.

(2) Seeding shall be at the rate of 30 lbs. per. acre.

(3) Commercial Fertilizer shall be 4-8-6 and shall be applied at the rate of 200 lbs. per acre.

PAY QUANTITIES SEC. A. RDY. CONTRACT NO. 2

ITEM NO.	ITEM	UNIT	QUANTITY
623.06c.	Metal Plate Guard Rail	Lin. Ft.	3,100
626.06a.	Tuft Sodding (Bermuda)	Sq. Yds.	18,300
628.06	Seeding (Italian Rye)	Acres	38
629.06	Commercial Fertilizer (4-8-6)	Lbs.	760
Spec.	Emulsified Asphalt.	Gals.	10,000
Spec.	Surface Course Aggregate	Cu.Yds.	50

332

PLAN

Revised 10-31-38
Revised as Built—Oct. 1947.

STA. 176+80 N.&S. Sec. Line
1489' W. of ¼ Sec. Cor.

SEC. 7 - T5S - R9W.

SEC. 12 - T8S - R9W.

P.O.T. STA. 176+82 (½" Iron Pin).

Sta. 181+75 & Drain D.A. 51 Ac. C-18

P.O.T. STA. 182+78 (½" Iron Pin).

MINNIE COPER E½ E½

P.O.T. STA. 186+58.4 (½" Iron Pin).

STA. 188+90.39 BEGIN F.A.P. 1015-A(1).

Sta. 188+90.39

P.O.T. STA. 189+92.8 (½" Iron Pin).

Pasture.

Cultivated.

Pasture.

Temp. R/W for Backfill and Topping Material on F.A.P. 168-A and for Plating Material on F.A.P. 1015-A

MINNIE COPER E½ E½

STATE OF OKLAHOMA.

RED RIVER

Borrow to Here

Borrow to Here

RIVER BOTTOM.

RIVER BOTTOM.

R/W Line

R/W Line

175+00

180+00

185+00

190+00

195+00

200+00

205+00

S75° 92' W.

P.O.T. STA. 200+39

P.O.T. STA. 203+14.7 (Steak).

Salt Cedars.

Salt Cedars.

Salt Cedars.

Salt Cedars.

B. M. – Top R.R. (½" Iron Pin) 50' South
Sta. 176+82 El. 888.18

B.M. – 60d Spike in 5" Mesquite 72' Rt.
Sta. 180+ El. 880.58

B.M. – Top R.R. (½" Iron Pin) 80' Lt.
Sta. 186+88 El. 874.50

B.M. – 60d Spike in 12" Ash 88' Lt.
Sta. 189+12 El. 880.42

End of Slab-Sta 188+90.39

STA. 188+90.39 BEGIN F.A.P. 1015-A(1).

P.I. 1868.67

300' V.C.

-0.33%

+0.33%

-0.33%

2254.92' Sec. "A" Br.

2400' V.C.

Fill

HW 852.5

+2204

859.4

+50

P.I. 12292
El. 88400

St. No. 1
℄ Sta 200+17.79
21-100' Trusses, 1-60' & 1-50' Spans
24' Roadway, with 2 - 16" Sidewalks
Design 15E-100s, 15E-100s & 15E-80s
Sheet Nos. 9-15 Incl.

890
880
870
860
850
840
830

175 6 7 8 9 180 1 2 3 4 5 6 7 8 9 190 1 2 3 4 5 6 7 8 9 200 1 2 3 4 5 6 207

F.A.P. 1015-A(1) Sheet No. 8.

Revised as Built - Oct. 1947.

Revised Oct. 31, 1938
Revised May 13, 1939

Salt Cedars | Open | Scattered Timber | Open

Borrow to here

No Borrow

Sta. 211+45.25

P.O.T. STA. 210+80 (¾" Iron Pin).

P.O.T. STA. 221+69.8 (¾" Iron Pin).

P.O.T. STA. 235+13.7 (¾" Iron Pin)

Sta. 227+00.58

R/W. Line

S 35° 37' W

Slough

Metal Plate Guard
Rail on Rt. & Lt.
From Sta. 211+48 to Sta. 226+98
Metal Plate Guard Rail 3,100 L.F.

B.M. – 60d Spike in 11" Cottonwood 115' Lt.
Sta. 210+55 El. 850.45

B.M. – 60d Spike in 18" Cottonwood 110' Lt.
Sta. 223+30 El. 848.71

B.M. – 60d Spike in 6" Willow 140' Lt.
234+48 El. 849.67

B.M. – R.R. 60d Spike in 8" Willow 90° Rt.
Sta. 233+80 El. 846.74

End of Slab Sta. 211+45.25

End of Slab Sta. 227+00.58

Std. Approach Slab

Std. Approach Slab

Sta. No. 2 E Sta. 233+22.25
86-40'0" on Spans 2 @ 40' with 2-16" Sidewalks
Design C.T.G. Spec.
Sheet Nos. 16, 17 & 18.

SHEET ESTIMATE

Sta. 211+45.25 to Sta. 227+00.58

Emb. 110%	53,908 C.Y.
Class "A" Borr.	33,068 C.Y.
Earth Plating 10%	5,913 C.Y.
(1) Overhaul	91,750 Sta. Y.

(1) Includes 24,150 Sta. Y. For Plating Material.

225.92 Sec "A" Br.

1041.33 Sec "A" Br.

-0.33%

-0.79%

+0.512%

+0.38%

+0.380%

+0.380%

300' V.C.

200' V.C.

300' V.C.

2400' V.C.

1050' V.C.

Fill

Fill

+22.04

+38.25

P.I. 889.45

P.I. 884.71

P.I. 867.26

P.I. +20.25
El. 860.00

Sta. 220+21.4
Lap Curb Drains Rt. & Lt.
Des. L.C.D.-1 Sh. No. 2A.

950

940

950

940

205 6 7 8 9 210 1 2 3 4 5 6 7 8 9 220 1 2 3 4 5 6 7 8 9 230 1 2 3 4 5 6 237

F.A.P. 1015-A(1) Sheet No. 7.

PLANS	PROPOSED
	PLOTTED
	BOOK
	NO. OF SHEETS

STATE	DIST.	COUNTY	SHEET NO.	TOTAL SHEETS
TEXAS	1015-A(1)	1938	8	24

Revised Oct. 31, 1938
Revised as Built - Oct. 1947

P.O.T. STA. 235+19.7 (½" Iron Pin).

P.O.T. STA. 237+41.91 (½" Iron Pin)

P.O.T. STA. 253+20.7 (½" Iron Pin).

R/W Lines

80'

No Borrow

Sta. 237+41.91

Cultivated

Cultivated.

Pasture

Pasture

235+00

240+00

245+00

250+00

255+00

S.75°32'W.

B.M. – R.P. (60d Spike in 8" Willow 50' Rt. Sta. 235+19.0 El. 848.74

B.M. – Top R.P. (½" Iron Pin) 100' Rt. Sta. 253+20.7 El. 868.92

End of Slab Sta. 237+41.91 END F.A.P. 1015-A(1).

1041.33 Sec. "A" Br.

-0.38%

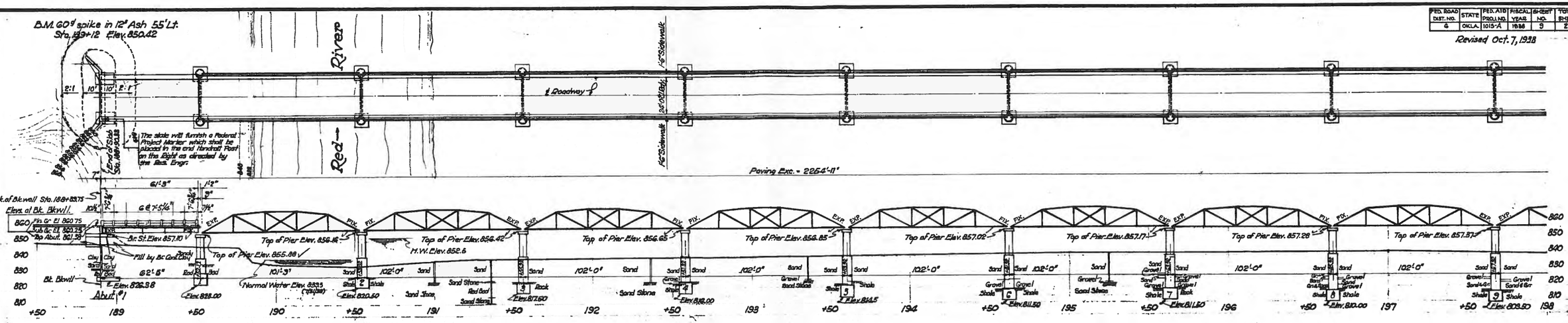
1050 V.C.

F.A.P. 1015-A(1) Sheet No. 8

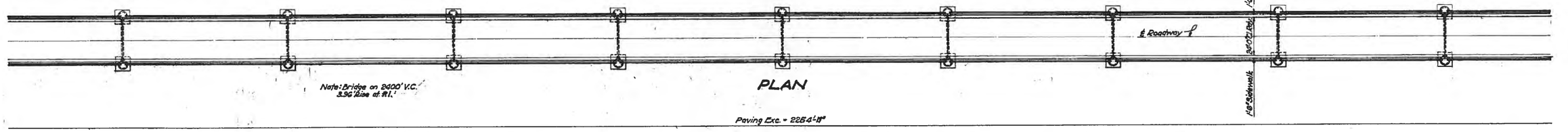
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	9	21

Revised Oct. 7, 1938

B.M. 60" spike in 12" Ash 55' Lt. Sta. 193+12 Elev. 850.42



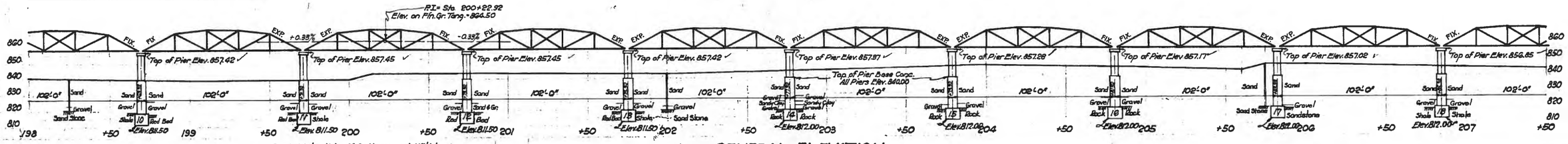
Note- Place C.I. Drains as shown (|) on Gen. Elev.



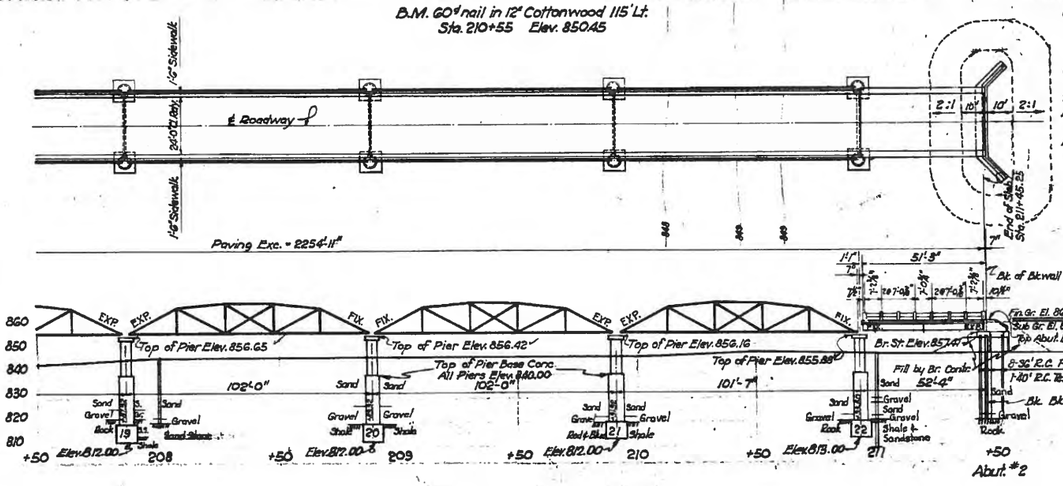
Note: Bridge on 2400' V.C. 3.96' rise at #1.

PLAN

Paving Exc. = 2254'-11"



B.M. 60" nail in 12" Cottonwood 115' Lt. Sta. 210+55 Elev. 850.45



Note:- Place C.I. Drains as shown (|) on Gen. Elev.

GENERAL ELEVATION

Scale 1" = 80'

DESIGN DATA

Concrete:	Class A	C50 #/sq.in.
	Floor Slab	800 #/sq.ft.
Steel		16,000 #/sq.in.
Loading: Okla. Std. Truck Train plus 30% Impact		
	Sidewalk	100 #/sq.ft.
Max. Foundation Pressure:	Abut. #1	3.75 tons/sq.ft.
	Abut. #2	28.2 tons/pile
	Piers - See table Sh. No. 12	

SUMMARY OF QUANTITIES

Item No. / Items / Location	202.06a Class A Excav. Cu. Yds.	501.06b Subst. Excav. Common Cu. Yds.	501.06c Subst. Excav. Rock Cu. Yds.	505.06 Reinf. Conc. Hand Rail Lin. Ft.	506.06a Struct. Steel Lbs.	509.06a Concrete Cu. Yds. Class A	509.06aa Cu. Yds. Cl. A Abut. & Pier Bases	509.06b Cu. Yds. Class A-A	511.06 Reinf. Steel Lbs.	514.06aa I.C. Test Piles Ea.	514.06d I.C. Piling L.F.
Abutments		184.3 ~~188~~	~~235~~ 107.4			87.1 ~~89~~	48.3 ~~49~~		15,350	1	~~280~~ 50.2
Piers		5077 ~~5280~~	~~3280~~ 878.7		2,688,212	848.6 ~~882~~	~~855~~ 486		138,310		
21-100' Trusses					~~6,088,308~~ 5,810,390		1554.1	1238.1	200,760		
I Bm. Spans				225.0	~~422,003~~ 418,107			82.1	10,770		
Totals	1900	~~5598~~ 5261	1021.5 986.1	225.0	~~7,288,523~~ 7,016,605	935.7	1602.4	1320.2	365,190	1	~~330~~ 305.2

GENERAL NOTES

This construction shall be in accordance with the Oklahoma Standard Specifications of 1937.

All exposed concrete surfaces to have a carborundum finish.

Bearing areas of concrete under all shoes shall be ground with a carborundum brick before placing shoes to secure full bearing of shoes on concrete.

A 40' I.C. Test Pile shall be driven at Abut. #2 at location shown on piling diagram. All I.C. piles shall be driven with a Vulcan No. 1 or equivalent steam hammer. High Early Strength Cement may be used for I.C. Piling, see Sec. 510 Okla. Std. Spec. of 1937.

For details of Abut. #1 see Sh. No. 10

For details of Abut. #2 see Sh. No. 11

For details of Piers see Sh. No. 12

For details of 100' Trusses see Stds. 15E-1004 & 15E-1005, Sh. Nos. 13 & 14.

For details of Roadway for I Bm. spans see Sh. No. 11 and Std. IB-6, Sh. No. 15.

For details of I.C. Piling see Std. CT-6, Sh. No. 18.

Approximately 1900 Cu. Yds. of Cl. A Excav. required to make fill around abuts. to be obtained as directed by Res. Engr.

The fill around abuts. shall be placed and compacted in accordance with Sec. 202.04c.

The structural steel shall be painted in accordance with Sec. 506.04 and Sec. 730 except that (a) three field coats of paint shall be applied, one of red lead (first field spec.) and two of aluminum (second field spec.) (b) Contact surfaces shall be clean and free of paint when assembled.

REVISED AS BUILT

RED RIVER

GENERAL ELEVATION & PLAN

SUMMARY OF QUANTITIES

21-100' TRUSSES - 1-60' & 1-50' I. BM. SPANS

24'-0" RDY. & 2-1'-6" SIDEWALKS

℄ STA. = 200+17.79

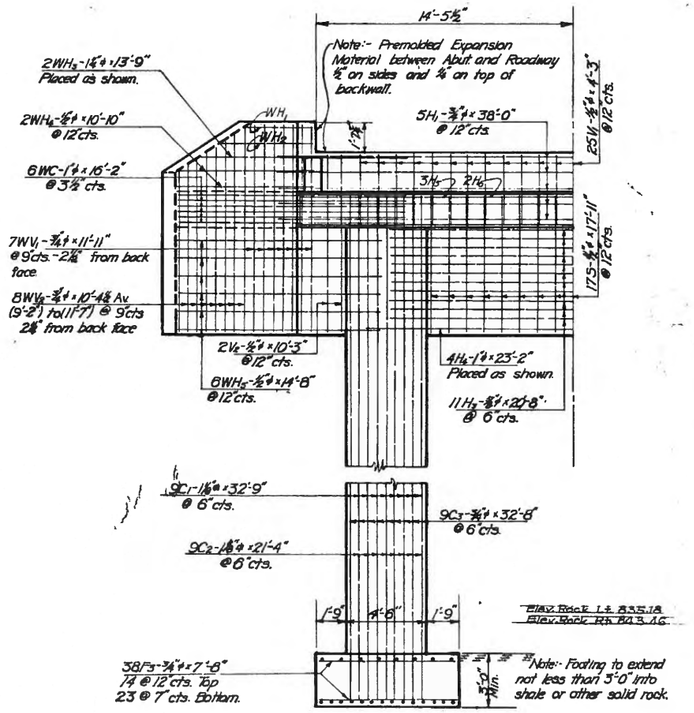
FED. AID PROJ. NO. 1015 SEC. "A" BR.

Drawn by Marsh Mar. 1938 & G.M.
Checked " W.C.Z. Sept "

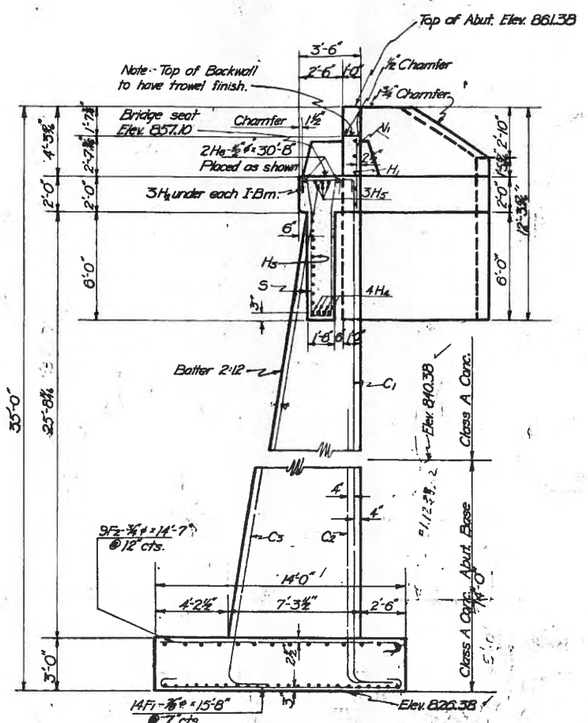
Soundings by Hedrick

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	10I5 SECA	1938	10	21

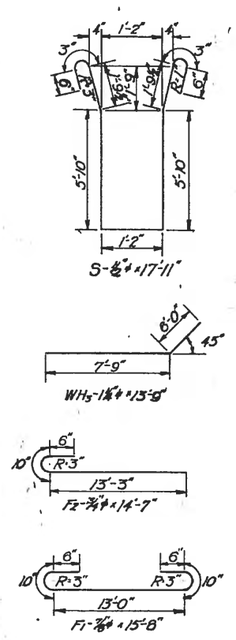
Revised Oct. 7, 1938



HALF ELEVATION



SECTION ON ℄



BAR LIST - ABUT. NO. 1				
Mark	No.	Size	Form	Length
F_1	28	⅞"ϕ	Bent	15'-8"
F_2	18	¾"ϕ	Bent	14'-7"
F_3	24	¾"ϕ	Str.	7'-8"
C_1	18	1⅛"ϕ	Bent	32'-5"
C_2	18	1⅛"ϕ	Bent	20'-10"
C_3	18	1"ϕ	Bent	32'-3"
H_1	5	¾"ϕ	Bent	38'-0"
H_2	21	⅛"ϕ	Bent	4'-3"
H_3	11	⅝"ϕ	Str.	20'-8"
H_4	4	1"ϕ	Str.	23'-2"
H_5	3	1"ϕ	Str.	30'-6"
H_6	2	⅛"ϕ	Str.	30'-6"
V_1	25	½"ϕ	Str.	4'-3"
V_2	4	½"ϕ	Str.	10'-3"
S	17	½"ϕ	Bent	17'-11"
WH_1	2	½"ϕ	Str.	5'-2"
WH_2	2	⅝"ϕ	Str.	7'-2"
WH_3	2	⅛"ϕ	Bent	13'-9"
WH_4	4	½"ϕ	Str.	10'-10"
WH_5	12	½"ϕ	Bent	13'-10"
WV_1	14	¾"ϕ	Str.	11'-11"
WV_2	16	¾"ϕ	Str.	10'-4⅛" Av.
WC	12	1"ϕ	Bent	16'-2"
CH	6	¾"ϕ	Bent	16'-5"

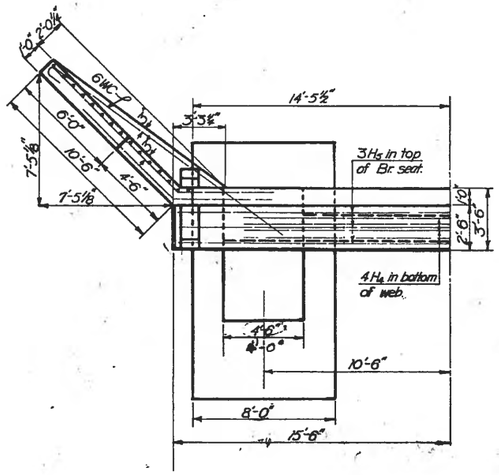
QUANTITIES — ABUT. NO. 1

Class A Conc.	49.2 Cu. Yds.
Class A Conc. Abut. Base	48.3 Cu. Yds.
Reinf. Steel	10,270 Lbs.
Substr. Excav. Common.	315 Cu. Yds. 18.2
*Substr. Excav. Rock	88.8 Cu. Yds. 100.4

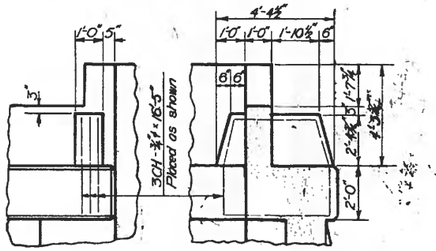
* Rock Excavation computed for average depth of 8.0 ft.

ABUT. NOTES.

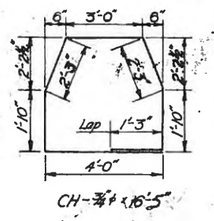
All concrete shall be poured in the dry.
Concrete in the footings of Abut. shall be poured against the rock foundation. The quantity of Class A Concrete in Abut. Bases and Substructure Excavation, Rock paid for under those items shall be the amount within the neat lines of the concrete as shown on these plans. Any variation in the elevation of Abut. Bases shall be taken care of in the shafts of the Abuts, any additional concrete shall be paid for as Class A Conc. in Abut. Bases. All cost of such variation shall be included in the unit price bid per Cu Yd. for Class A Concrete in Abut. Base and Substructure Excavation. Rock.

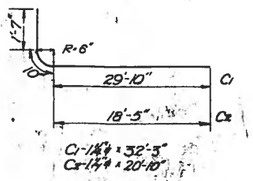


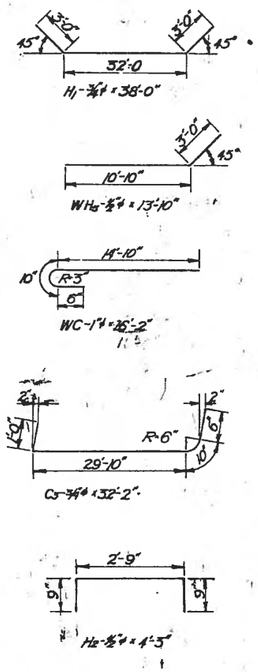
HALF PLAN



DETAILS OF COUNTERFORT



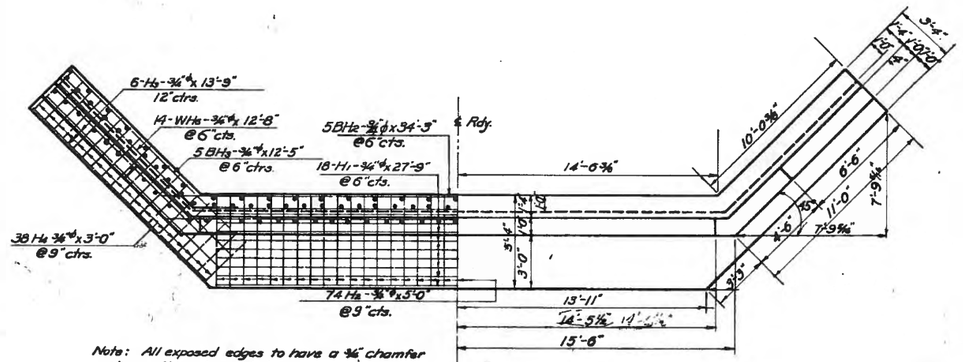


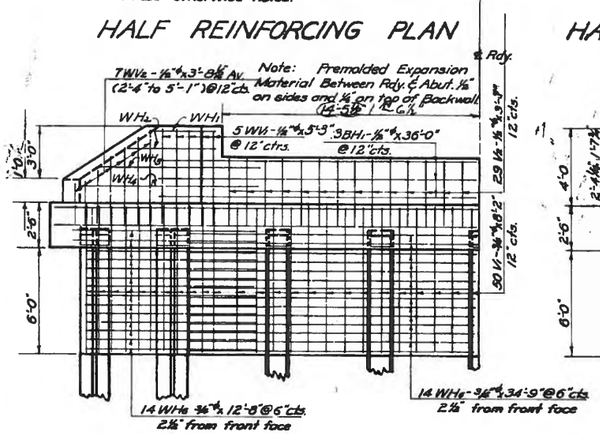


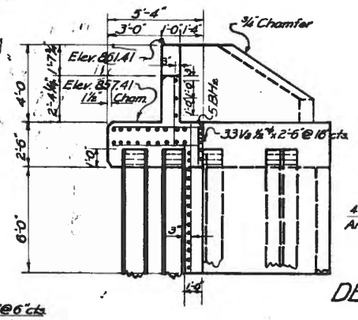
REVISED AS BUILT

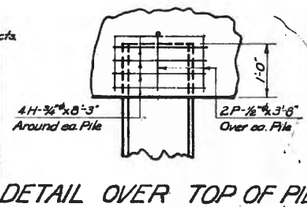
DETAILS OF ABUTMENT NO. 1
21-100' TRS. & 1-60' & 1-50' I-BM. SPANS
24' RDY. & 2-1'-6" SIDEWALKS
& STA. 200+17.79
F.A. PROJ. NO. 1015 A - BR.

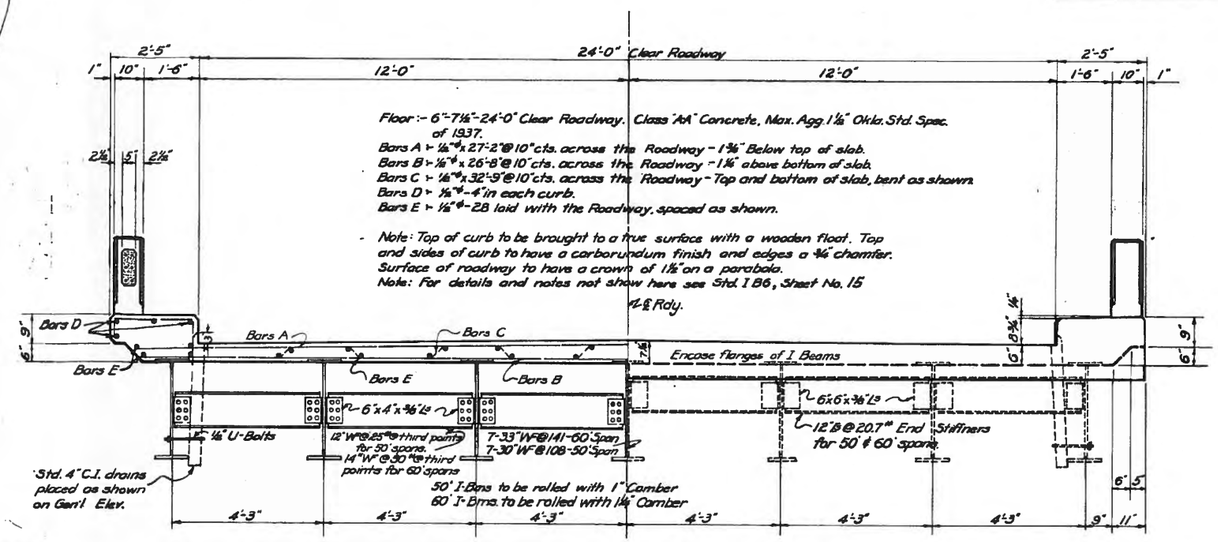
Drawn by H.R.W. Aug. 1938
Checked by H.E.M. " "











FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	11	21

Note: All exposed edges to have a ¾" chamfer unless otherwise noted.

HALF REINFORCING PLAN

HALF PLAN

HALF ELEVATION

SECTION ON ℄

DETAIL OVER TOP OF PILE

Floor :- 6"-7½"-24'-0" Clear Roadway. Class "AA" Concrete, Max. Agg 1½" Okla. Std. Spec. of 1937.
Bars A ⊢ ½"φ x 27'-2" @ 10" cts. across the Roadway - 1¾" Below top of slab.
Bars B ⊢ ½"φ x 26'-8" @ 10" cts. across the Roadway - 1¼" above bottom of slab.
Bars C ⊢ ½"φ x 32'-9" @ 10" cts. across the Roadway - Top and bottom of slab, bent as shown.
Bars D ⊢ ½"φ - 4" in each curb.
Bars E ⊢ ½"φ - 28 laid with the Roadway, spaced as shown.

Note: Top of curb to be brought to a true surface with a wooden float. Top and sides of curb to have a carborundum finish and edges a ¾" chamfer. Surface of roadway to have a crown of 1½" on a parabola.
Note: For details and notes not show here see Std. I B6, Sheet No. 15

HALF SECTION ACROSS ROADWAY

HALF END ELEVATION

Bars C - ½"φ x 32'-9"

H - ¾"φ x 8'-3"

P - ½"φ x 3'-8"

Note: All grooves in handrail posts shall be ¾" deep.
For Post Spacing, see Gen. Elev.

Note: Butts of Rails shall be padded with 2 layers of 1-Ply Asphalt Roofing Felt and ends shall be wrapped with 1 layer of the same material. All excess material shall be cut off after forms are removed.

DETAILS OF HANDRAIL & POSTS

PILE SPACING DIAGRAM

Drawn By N.E.S. Aug. 1938.
Checked By W.O.Z. " 1938.

BAR LIST-1-ABUT.				
Mark	No.	Size	Form	Length
H	36	¾"φ	Bnt.	8'-3"
H1	18	"	Str.	27'-9"
H2	76 74	"	"	5'-0"
H3	12	"	"	13'-9"
H4	76	"	"	3'-0"
WH1	2	½"φ	"	5'-1"
WH2	2	"	"	7'-3"
WH3	2	"	Bnt.	11'-4"
WH4	2	"		13'-4"
WH5	14	¾"φ	"	34'-9"
WH6	28	"	"	12'-8"
BH1	3	½"φ	"	36'-0"
BH2	5	¾"φ	Str.	34'-9"
BH3	10	"	"	12'-5"
V1	50	"	"	8'-2"
V2	29	½"φ	"	3'-7"
V3	33	"	"	2'-6"
WV1	10	"	"	5'-3"
WV2	14	"	"	9'-8½"
P	18	"	Bnt.	3'-8"

QUANTITIES ~ ABUT. NO. 2

Cl. A Conc.	37.9 Cu. Yds.
Reinf. Steel	5,080 Lbs.
Substruct. Excav. Comm.	0.0 Cu. Yds.
Reinf. Conc. Piles	[redacted] L. F. 305.2
Reinf. Conc. Test Piles	1 Ea.

AS BUILT PILING RECORD						
Pile No.	Length in Leads Lin. Ft.	Bearing Capacity Tons	Pen. in Ground Lin. Ft.	Cutoffs Lin. Ft.	Total Length Left in Pl. - L.F.	Pay Length Lin. Ft.
1	40' T.R.	Refusal	Test	Pile		
2	39'	114.3	31.02	0.00	39.00	39.00
3	39'	80.0	30.50	0.00	39.00	39.00
4	39'	96.0	30.56	0.00	39.00	39.00
5	39'	120.0	30.45	0.00	39.00	39.00
6	39'	109.0	28.44	2.10	36.90	36.90
7	39'	100.0	28.05	2.50	36.50	36.50
8	39'	100.0	29.04	1.50	37.50	37.50
9	39'	120.0	29.84	.70	38.30	38.30

Revised as Built

DETAILS OF ABUT. NO. 2 & RDY. FOR I BM. SPANS
21-100' TRUSSES - 1-60' I BM. & 1-50' I BM. SPAN
24' ROADWAY & 2-1'-6" SIDEWALKS
℄ STA. 200+17.79
F.A. PROJ. NO. 1015 SEC. A BRIDGE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	12	21

Revd. 10-7-38

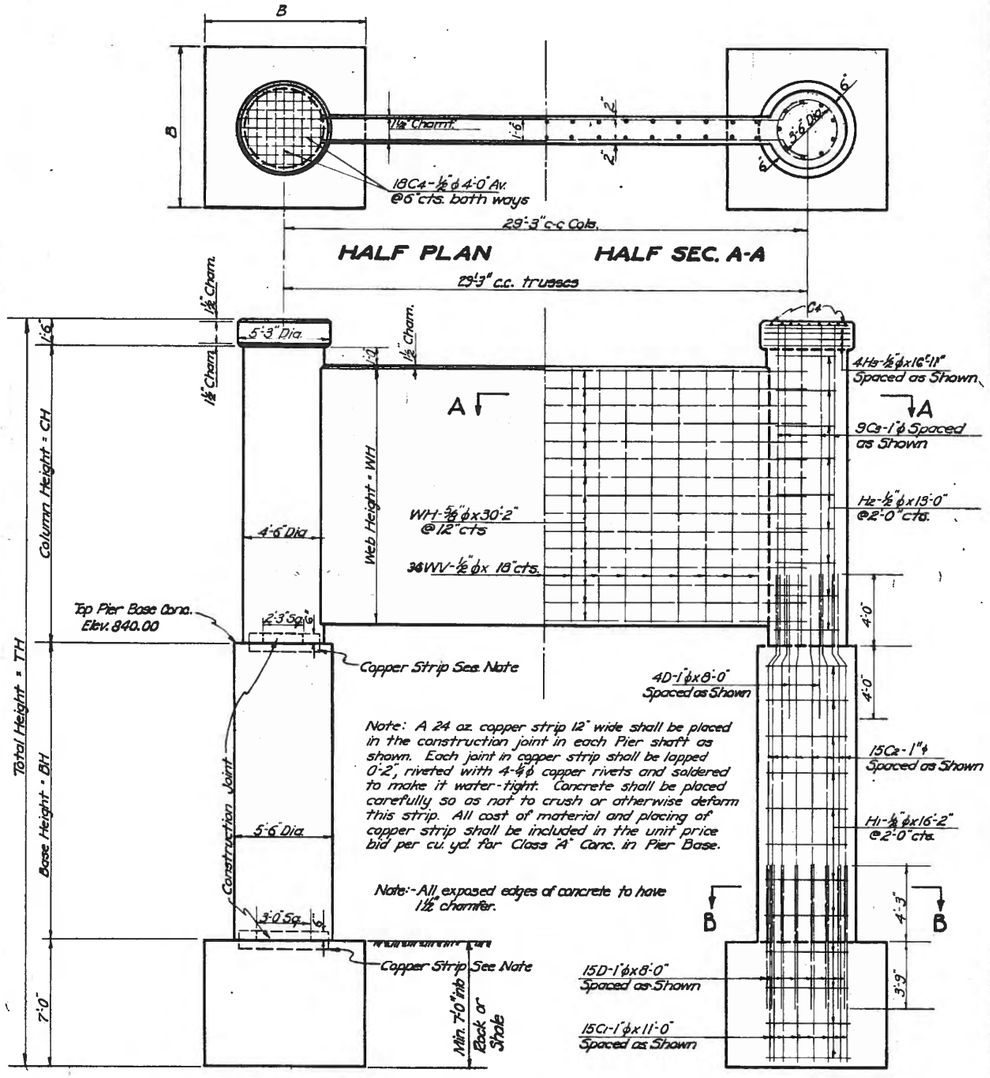


TABLE OF DIMENSIONS & ELEVATIONS

Pier No.	DIMENSIONS TH	BH	CH	WH	B	Elev. Top of Rock Left	ELEVATIONS Bottom of Base	Top of Base Conc.	Elev. Top of Rock Right	Top of Pier Cap	BEARING Tons per Sq. Ft. at Base	Rock Exc. Depth of Base in Rock *
1	32'-10 9/16"	10'-0"	14'-4 5/16"	12'-0"	7'-6"	831.16	823.0	840.0	831.62	855.88	3.8	14.6
2	35'-7 1/16"	12'-6"	14'-7 5/8"	12'-6"	8'-0"	826.84	8225 *	840.0	826.35	856.16	3.8	8.3
3	36'-11 1/16"	15'-6"	14'-11 5/8"	12'-6"	8'-0"	824.73	8175 *	840.0	824.33	856.42	3.9	8.0
4	40'-7 3/16"	17'-0"	15'-1 5/8"	13'-0"	8'-0"	823.79	816.0	840.0	823.18	856.65	3.9	7.8
5	42'-4 3/16"	18'-6"	15'-4 3/8"	13'-0"	8'-0"	823.22	814.5	840.0	823.51	856.85	4.0	8.2
6	45'-6 1/4"	21'-6"	15'-6 1/4"	13'-6"	8'-6"	818.18	8115 *	840.0	818.78	857.02	3.7	7.8
7	45'-8"	21'-6"	15'-8"	13'-6"	8'-6"	819.66	811.5	840.0	818.84	857.17	3.7	7.8
8	47'-3 3/16"	23'-0"	15'-9 3/16"	13'-6"	8'-6"	818.26	810.0	840.0	817.88	857.28	3.7	8.2
9	47'-10 1/16"	23'-6"	15'-10 1/16"	13'-6"	8'-6"	818.57	809.5	840.0	818.10	857.37	3.7	8.1
10	45'-11 1/16"	21'-6"	15'-11 1/16"	13'-6"	8'-6"	819.76	811.5	840.0	819.50	857.42	3.7	8.2
11	45'-11 7/16"	21'-6"	15'-11 7/16"	13'-6"	8'-6"	819.77	811.5	840.0	819.73	857.45	3.7	8.3
12	45'-11 7/16"	21'-6"	15'-11 7/16"	13'-6"	8'-6"	819.30	811.5	840.0	819.52	857.45	3.7	8.3
13	45'-11 7/16"	21'-6"	15'-11 7/16"	13'-6"	8'-6"	819.15	811.5	840.0	820.07	857.42	3.7	8.2
14	45'-4 7/16"	21'-0"	15'-10 7/16"	13'-6"	8'-6"	820.40	812.0	840.0	820.10	857.37	3.7	9.0
15	45'-3 9/16"	21'-0"	15'-9 9/16"	13'-6"	8'-6"	820.53	812.0	840.0	820.15	857.28	3.7	7.9
16	45'-2"	21'-0"	15'-8"	13'-6"	8'-6"	820.71	812.0	840.0	820.34	857.17	3.7	9.3
17	45'-0 1/4"	21'-0"	15'-6 1/4"	13'-6"	8'-6"	821.16	812.0	840.0	820.50	857.02	3.7	9.0
18	44'-10 3/16"	21'-0"	15'-4 3/16"	13'-0"	8'-6"	820.60	812.0	840.0	820.12	856.85	3.7	7.6
19	44'-7 13/16"	21'-0"	15'-1 13/16"	13'-0"	8'-6"	821.89	812.0	840.0	822.45	856.65	3.7	11.0
20	44'-5 1/16"	21'-0"	14'-11 1/16"	12'-6"	8'-0"	822.15	812.0	840.0	820.27	856.42	4.0	8.2
21	44'-1 7/16"	21'-0"	14'-7 7/16"	12'-6"	8'-0"	820.03	812.0	840.0	820.56	856.16	4.0	8.4
22	42'-10 3/16"	20'-0"	14'-4 3/16"	12'-0"	7'-6"	820.25	813.0	840.0	820.55	855.88	3.9	8.0

* Note:- Substruct. Excav. Rock computed for average depth of base in Rock shown in Table.

* 819.87 Lt. 819.20 Rt
* 816.82 Lt. 816.82 Rt
* 811.00 Lt. 811.50 Rt

BAR LIST

Pier No.	Bars C1 1" ϕ Str. No.	Length	Bars C2 1" ϕ Bnt. No.	Length	Bars C3 1" ϕ Str. No.	Length	Bars C4 ½" ϕ Str. No.	Length	Bars D 1" ϕ Str. No.	Length	Bars H1 ½" ϕ Bnt. No.	Length	Bars H2 ½" ϕ Bnt. No.	Length	Bars H3 ½" ϕ Bnt. No.	Length	Bars WH 5/8" ϕ Bnt. No.	Length	Bars WV ½" ϕ Str. No.	Length
1	30	11'-0"	30	14'-3"	18	15'-1"	36	4'-0" Av.	38	8'-0"	18	16'-2"	14	13'-0"	8	16'-11"	26	30'-2"	34	11'-6"
2	30	11'-0"	30	16'-9"	18	15'-11"	36	4'-0" Av.	38	8'-0"	20	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
3	30	11'-0"	30	19'-9"	18	16'-2"	36	4'-0" Av.	38	8'-0"	24	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
4	30	11'-0"	30	21'-3"	18	16'-5"	36	4'-0" Av.	38	8'-0"	24	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-6"
5	30	11'-0"	30	22'-9"	18	16'-7"	36	4'-0" Av.	38	8'-0"	22	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
6	30	11'-0"	30	25'-9"	18	16'-9"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
7	30	11'-0"	30	25'-9"	18	16'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
8	30	11'-0"	30	27'-3"	18	17'-0"	36	4'-0" Av.	38	8'-0"	32	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
9	30	11'-0"	30	27'-9"	18	17'-1"	36	4'-0" Av.	38	8'-0"	32	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
10	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
11	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
12	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
13	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
14	30	11'-0"	30	25'-9"	18	17'-1"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
15	30	11'-0"	30	25'-9"	18	17'-0"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
16	30	11'-0"	30	25'-9"	18	16'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
17	30	11'-0"	30	25'-9"	18	16'-9"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
18	30	11'-0"	30	25'-9"	18	16'-7"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
19	30	11'-0"	30	25'-9"	18	16'-5"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-6"
20	30	11'-0"	30	25'-9"	18	16'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
21	30	11'-0"	30	25'-9"	18	15'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
22	30	11'-0"	30	24'-9"	18	15'-7"	36	4'-0" Av.	38	8'-0"	28	16'-2"	14	13'-0"	8	16'-11"	26	30'-2"	34	11'-9"

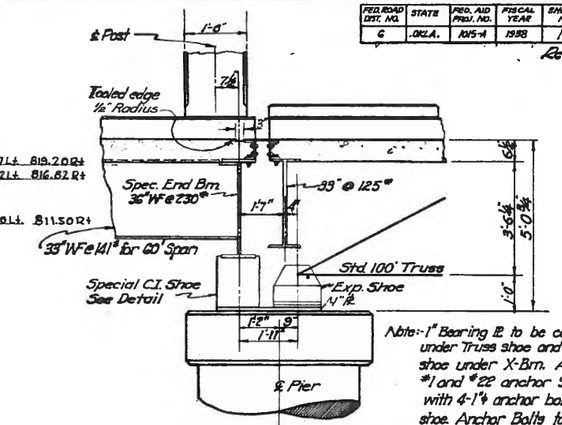
PIER QUANTITIES

Pier No.	Class "A" Conc. Cu. Yds.	C1 "A" Conc. Pier Base Cu. Yds.	Reinf. Steel Lbs.	Substr. Exc. Common Cu. Yds.	Substr. Exc. Rock Cu. Yds.
1	35.9	46.8	5240	200	35.3
2	34.9	54.9	5510	189	33.5
3	37.2	61.7	5810	189	36.6
4	38.2	63.1	6010	230	35.5
5	38.4	65.7	6170	258	42.0
6	39.3	76.7	6470	260	38.7
7	39.5	75.3	6480	256	41.5
8	39.6	77.9	6490	261	43.2
9	39.7	78.8	6510	260	43.4
10	39.8	75.3	6490	239	43.5
11	39.8	75.3	6490	224	44.4
12	39.8	75.3	6490	202	44.4
13	39.8	75.3	6490	247	43.9
14	39.7	74.4	6450	243	43.2
15	39.6	74.4	6440	245	44.5
16	39.5	74.4	6440	241	45.6
17	39.3	74.4	6430	241	47.2
18	38.4	74.4	6410	237	44.7
19	38.2	74.4	6400	215	54.5
20	37.2	70.1	6320	243	38.9
21	36.9	70.1	6310	300	39.3
22	35.9	64.4	6160	334	30.8
Tot.	848.6	1954.8	138,310	7289	878.7

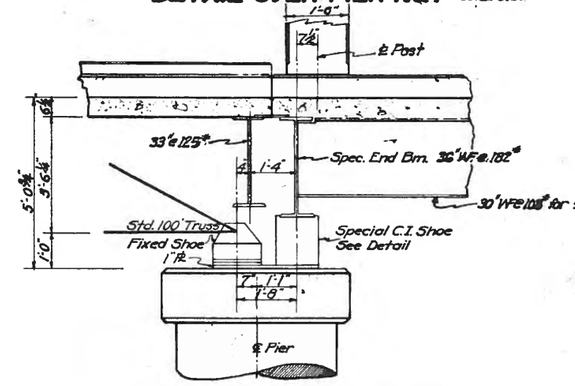
Issue 1 5021

P" /	9'-0"	C"	4'-6½"
2	11"-C"	"	"
3	14"-C"	"	"
4	16'-0"	"	"
5	17'-C"	"	"
6	20'-C"	"	"
7	20'-C"	"	"
8	22'-0"	"	"
9	22'-C"	"	"
10	20'-C"	"	"
11	20'-C"	"	"
12	20'-C"	"	"
13	20'-C"	"	"
14	20'-0"	"	"
15	20'-0"	"	"
16	20'-0"	"	"
17	20'-0"	"	"
18	20'-0"	"	"
19	20'-0"	"	"
20	20'-0"	"	"
21	20'-0"	"	"
22	19'-0"	"	"

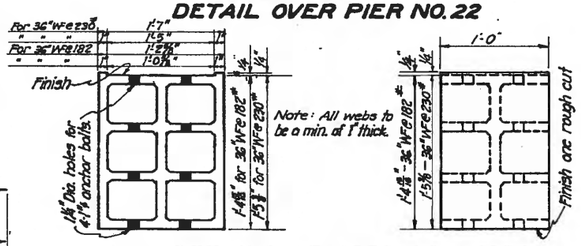
C2 Bars - 1" ϕ



DETAIL OVER PIER NO. 1



DETAIL OVER PIER NO. 22



DETAILS OF SPEC. C.I. SHOES

Note: All concrete shall be poured in the dry.

Concrete in the footings of Piers shall be poured against the rock foundation. The quantity of Class "A" Conc. in Pier Bases and Substructure Excavation Rock paid for under those items shall be the amount within the neat lines of the concrete as shown on these plans. Any variation in the elevation of Pier Bases shall be taken care of in the shafts, and any additional concrete shall be paid for as Class A Conc. in Pier Bases. All cost of such variation shall be included in the unit price bid per Cu. Yd. for Cl. A Conc. Pier Bases and Substruct. Excav. Rock.

Round Pier Bases of equivalent area and volume may be substituted for the square bases shown. Plans for the round bases shall be submitted to and approved by the State Highway Commission before construction is started.

REVISED AS BUILT

DETAILS OF PIERS
21-100' TRUSSES, 1-60' I-BM. & 1-50' I-BM. SPAN
24'-0" ROADWAY & 2-1'-6" SDWLKS.
& STA. 200+17.79
FED. AID PROJECT NO. 1015-A-BR.

H.E.M. July, 1938
S.R.M. " "
W.C.Z. Sept. "

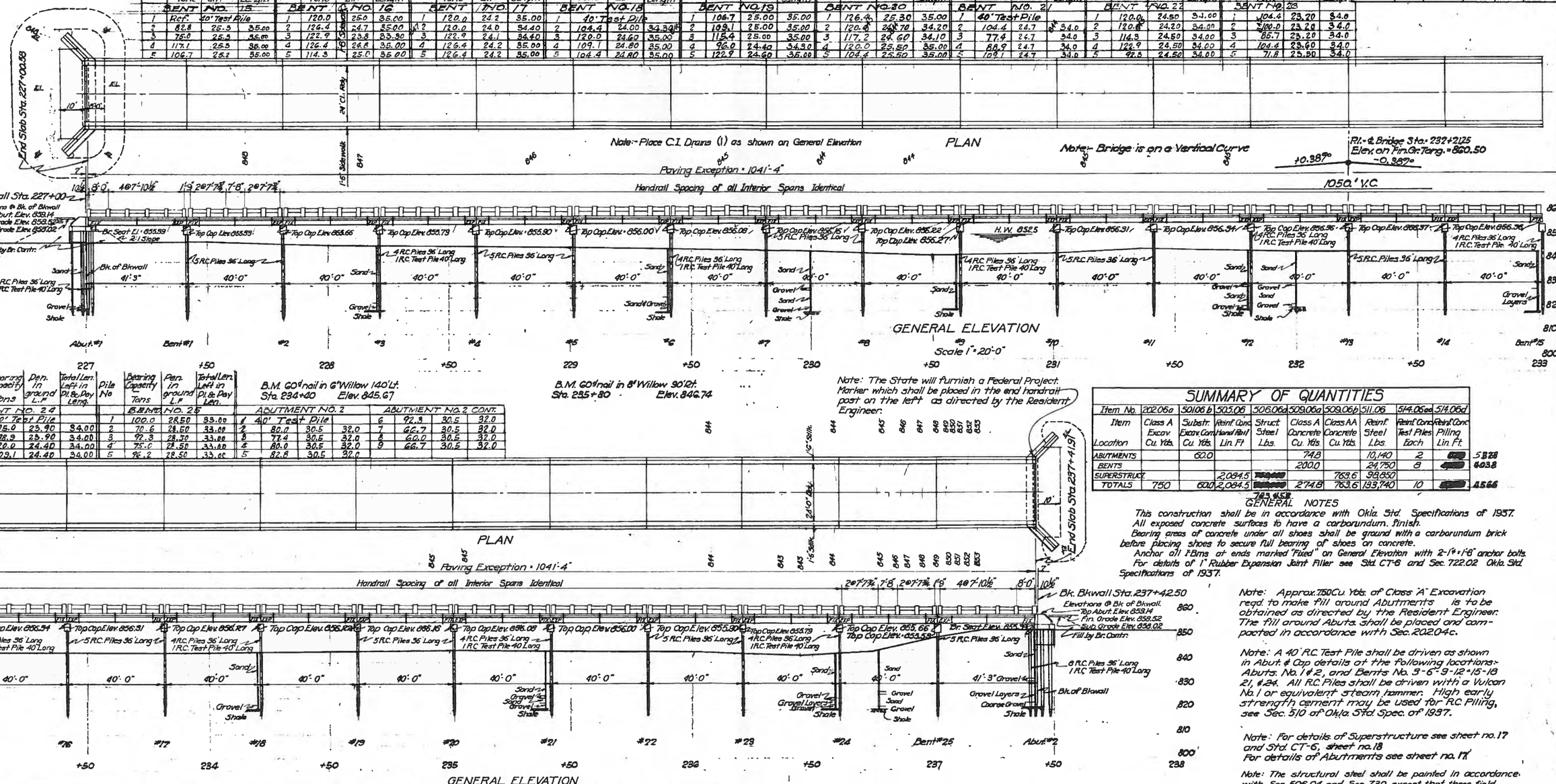
Detailed By
Traced By
Checked By

Sheet No. 12

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	16	21

Pile No.	Bearing Capacity Tons	Pen. in ground L.F.	Total Len. Left in Pl. & Pay Length
BENT NO. 15			
1	Ref.	40' Test Pile	
2	82.8	25.5	35.00
3	75.0	25.5	35.00
4	117.1	25.5	35.00
5	106.7	25.2	35.00
BENT NO. 16			
1	120.0	25.0	35.00
2	126.4	24.7	35.00
3	122.9	23.8	33.90
4	126.4	24.8	35.00
5	126.4	25.0	35.00
BENT NO. 17			
1	120.0	24.2	35.00
2	120.0	24.0	34.40
3	122.9	24.1	34.40
4	126.4	24.2	35.00
5	126.4	24.2	35.00
BENT NO. 18			
1	40' Test Pile		
2	104.4	24.00	34.30
3	120.0	24.60	35.00
4	109.1	24.80	35.00
5	104.4	24.80	35.00
BENT NO. 19			
1	106.7	25.00	35.00
2	109.1	25.00	35.00
3	115.4	25.00	35.00
4	96.0	24.40	34.30
5	122.9	24.60	35.00
BENT NO. 20			
1	126.4	25.30	35.00
2	120.0	24.70	34.20
3	117.2	24.60	34.10
4	120.0	25.50	35.00
5	122.9	24.60	34.00
BENT NO. 21			
1	40' Test Pile		
2	104.4	24.7	34.0
3	77.4	24.7	34.0
4	68.9	24.7	34.0
5	109.1	24.7	34.0
BENT NO. 22			
1	120.0	24.50	34.00
2	120.0	24.20	34.00
3	114.3	24.50	34.00
4	122.9	24.50	34.00
5	92.5	24.50	34.00
BENT NO. 23			
1	104.4	23.70	34.00
2	100.0	23.20	34.0
3	86.7	23.20	34.0
4	104.4	23.60	34.0
5	71.8	23.90	34.0

Fin./L. Left in Pl. & Pay Leng. $4.0 $4.0 $4.0 $4.0 $4.0



Pile No.	Bearing Capacity Tons	Pen. in ground L.F.	Total Len. Left in Pl. & Pay Leng.
BENT NO. 24			
1	40' Test Pile		
2	75.0	25.90	34.00
3	88.3	25.90	34.00
4	120.0	24.40	34.00
5	109.1	24.40	34.00
BENT NO. 25			
1	100.0	28.50	33.00
2	70.6	28.50	33.00
3	92.3	28.30	33.00
4	75.0	28.50	33.00
5	96.2	28.50	33.00
ABUTMENT NO. 2			
1	40' Test Pile		
2	80.0	30.5	32.0
3	77.4	30.5	32.0
4	80.0	30.5	32.0
5	82.8	30.5	32.0
ABUTMENT NO. 2 CONT.			
6	92.3	30.5	32.0
7	66.7	30.5	32.0
8	60.0	30.5	32.0
9	66.7	30.5	32.0

B.M. 60¢ nail in 6" Willow 140' Lt. Sta. 234+40 Elev. 845.67

B.M. 60¢ nail in 8" Willow 90' Rt. Sta. 235+80 Elev. 846.74

Note: The State will furnish a Federal Project Marker which shall be placed in the end handrail post on the left as directed by the Resident Engineer.

SUMMARY OF QUANTITIES

Item No.	202.06a	501.06 b	503.06	506.06a	509.06a	509.06b	511.06	514.06aa	514.06d
Item / Location	Class A Excav. Cu. Yds.	Substr. Excav. Cont. Cu. Yds.	Reinf. Conc. Hand Rail Lin. Ft.	Struct. Steel Lbs.	Class A Concrete Cu. Yds.	Class AA Concrete Cu. Yds.	Reinf. Steel Lbs.	Reinf. Conc. Test Piles Each	Reinf. Conc. Piling Lin. Ft.
ABUTMENTS		60.0			74.8		10,140	2	5838
BENTS					200.0		24,750	8	4038
SUPERSTRUCT.			2,084.5			763.6	98,850		
TOTALS	750	60.0	2,084.5		274.8	763.6	133,740	10	4566

GENERAL NOTES

This construction shall be in accordance with Okla. Std. Specifications of 1937.
All exposed concrete surfaces to have a carborundum finish.
Bearing areas of concrete under all shoes shall be ground with a carborundum brick before placing shoes to secure full bearing of shoes on concrete.
Anchor all I Bms at ends marked "Fixed" on General Elevation with 2-1¼"×1'-6" anchor bolts.
For details of 1" Rubber Expansion Joint Filler see Std. CT-6 and Sec. 722.02 Okla. Std. Specifications of 1937.

Note: Approx. 750 Cu. Yds. of Class 'A' Excavation regd. to make fill around Abutments is to be obtained as directed by the Resident Engineer. The fill around Abuts. shall be placed and compacted in accordance with Sec. 202.04c.

Note: A 40' R.C. Test Pile shall be driven as shown in Abut. & Cap details at the following locations:- Abuts. No. 1 & 2, and Bents No. 3-6-9-12-15-18 21, & 24. All R.C. Piles shall be driven with a Vulcan No. 1 or equivalent steam hammer. High early strength cement may be used for R.C. Piling, see Sec. 510 of Okla. Std. Spec. of 1937.

Note: For details of Superstructure see sheet no. 17 and Std. CT-6, sheet no. 18
For details of Abutments see sheet no. 17

Note: The structural steel shall be painted in accordance with Sec. 506.04 and Sec. 730 except that three field coats of paint shall be applied, one of red lead (first field spec.) and two of aluminum (second field spec.).

Pile No.	Bearing Capacity Tons	Pen. in Ground L.F.	Total Leng. left in pl. & Pay Leng.
ABUTMENT NO. 1			
1	40' Test Pile		
2	70.6	27.47	34.00
3	77.4	27.41	"
4	80.0	27.47	"
5	92.3	27.47	"
6	82.7	27.48	"
7	109.0	27.47	"
8	120.0	27.45	"
9	114.3	27.39	34.00
BENT NO. 1			
1	133.3	29.08	34.40
2	133.3	29.65	35.00
3	127.0	29.15	35.00
4	120.0	28.17	33.50
5	120.0	28.39	34.40
BENT NO. 2			
1	129.7	27.21	34.00
2	120.	27.44	34.20
3	114.3	27.33	34.10
4	126.3	27.77	34.50
5	133.3	27.87	34.20
BENT NO. 3			
1	Refusal	40' Test Pile	
2	120.0	26.54	35.00
3	120.0	26.79	35.00
4	120.0	26.00	34.10
5	114.5	26.25	34.10
BENT NO. 4			
1	Ref.	27.76	34.50
2	114.5	27.50	34.30
BENT NO. 5			
1	Ref.	27.15	34.20
2	120.0	27.31	34.40
3	104.5	27.33	34.40
4	100.0	26.93	34.00
5	128.6	27.85	34.90
BENT NO. 6			
1	114.5	27.50	34.30
BENT NO. 7			
1	40' Test Pile		
2	120.	28.30	34.40
3	120.	24.00	35.00
4	133.3	28.70	35.00
5	126.3	23.20	34.00
BENT NO. 8			
1	114.3	22.85	34.50
2	120.	23.00	34.10
3	120.	23.36	34.10
4	126.3	22.94	34.20
5	92.3	22.80	35.00
BENT NO. 9			
1	40' Test Pile		
2	120.	28.30	34.40
3	120.	24.00	35.00
4	133.3	28.70	35.00
5	126.3	23.20	34.00
BENT NO. 10			
1	120.0	23.50	34.00
2	114.3	24.50	34.40
3	120.0	24.10	33.70
4	120.0	22.40	33.10
5	120.0	22.60	33.50
BENT NO. 11			
1	114.3	26.10	35.40
2	100.0	26.80	36.00
3	80.0	26.60	36.00
4	120.0	26.80	36.00
5	80.0	26.40	36.00
BENT NO. 12			
1	Ref.	40' Test Pile	
2	75.0	24.90	34.00
3	84.0	25.70	34.70
4	78.0	26.90	36.00
5	72.7	27.00	36.00
BENT NO. 13			
1	70.6	26.10	36.00
2	89.8	26.00	36.00
3	92.3	26.10	36.00
4	88.2	26.20	36.00
5	88.9	24.60	34.60
BENT NO. 14			
1	116.3	23.10	32.90
2	118.3	24.50	34.40
3	108.1	24.60	34.40
4	101.0	25.10	35.00
5	88.9	24.70	35.00

DESIGN DATA

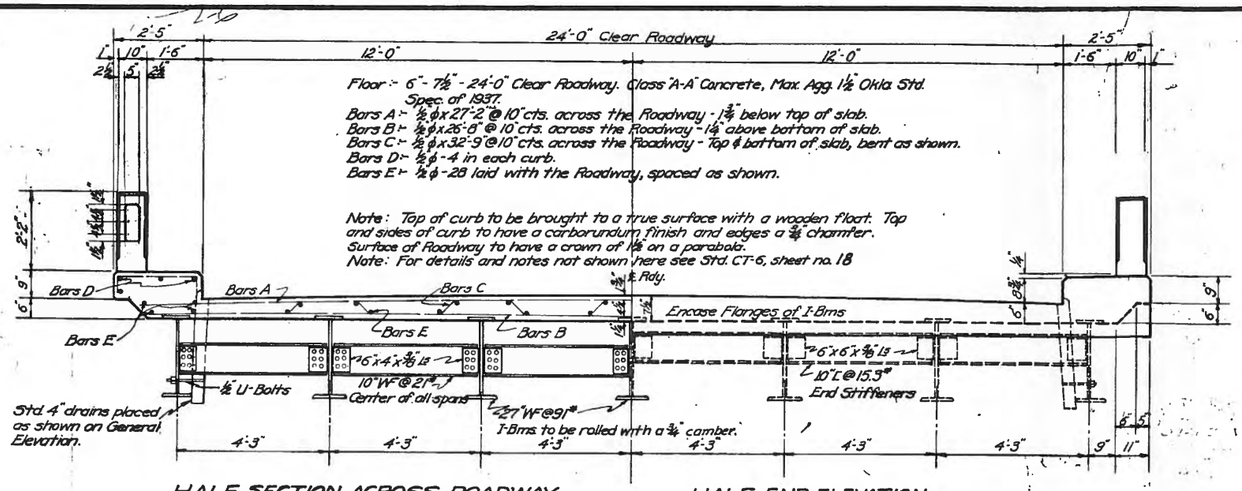
Concrete: Class 'A' 650 lbs/sq in
Floor Slab 600 " "
Steel 16,000 " "
Loading: Rdy. + Okla. Standard Truck Train + 30% Impact
Sidewalk = 100 lbs/sq ft.
Max. Foundation Pressure: Abuts. = 24.6 tons/pile
Bents = 29.0 " "

Drawn by Marsh April 1938 a. s.m.
Checked & W.C.Z. Sept. "
Soundings By Heinrick

REVISED AS BUILT
GENERAL ELEVATION & PLAN
SUMMARY OF QUANTITIES
26-40' I-BM. SPANS
24'0" RDY. & 2-1'6" SIDEWALKS
& STA. 232+21.25
FED. AID PROJ. NO. 1015 SEC. A-BR.

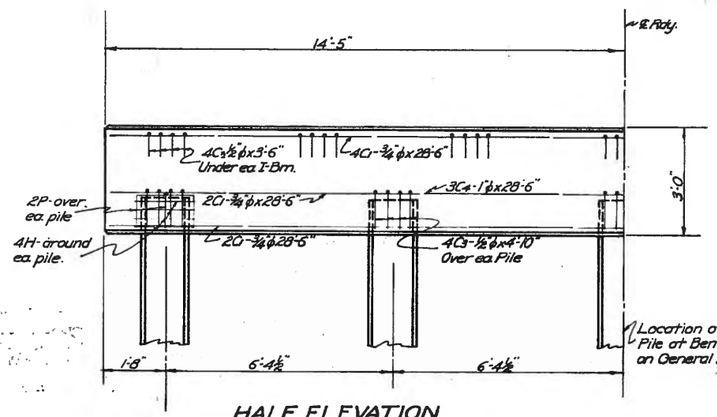
Sheet No. 16

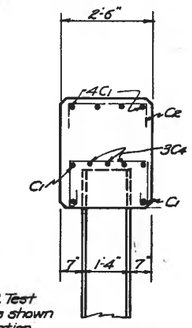
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	17	21



HALF SECTION ACROSS ROADWAY

HALF END ELEVATION

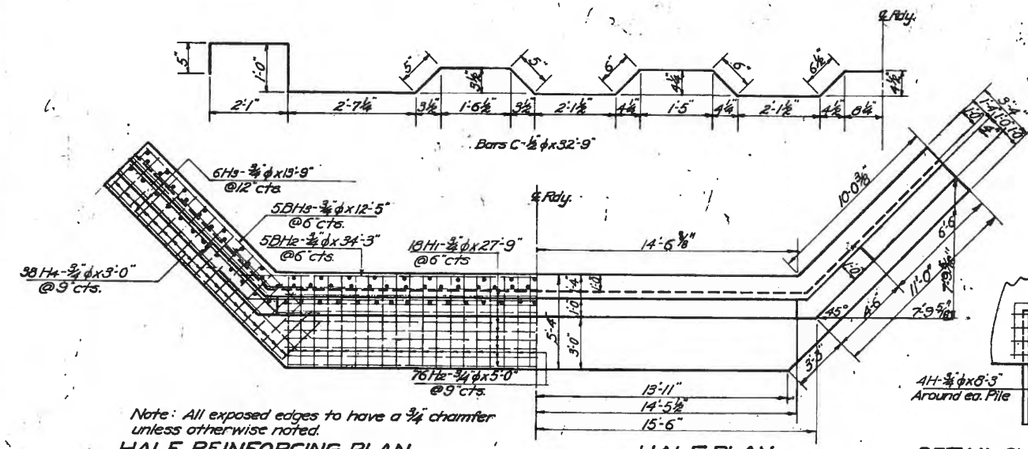




SECTION

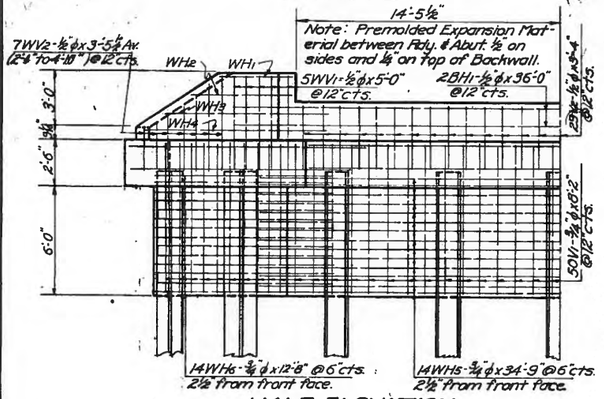
HALF ELEVATION

SECTION ON ℄

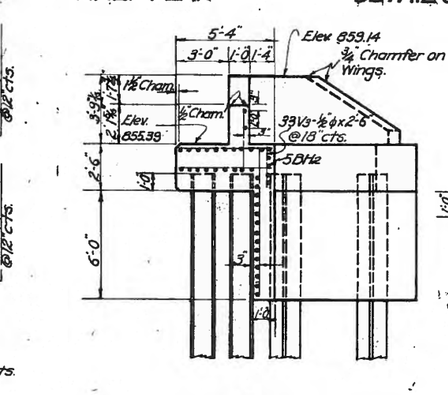


Note: All exposed edges to have a ¾" chamfer unless otherwise noted.

HALF REINFORCING PLAN



HALF ELEVATION



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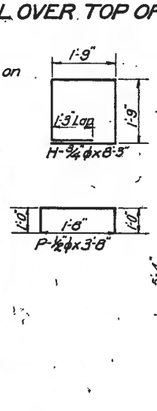
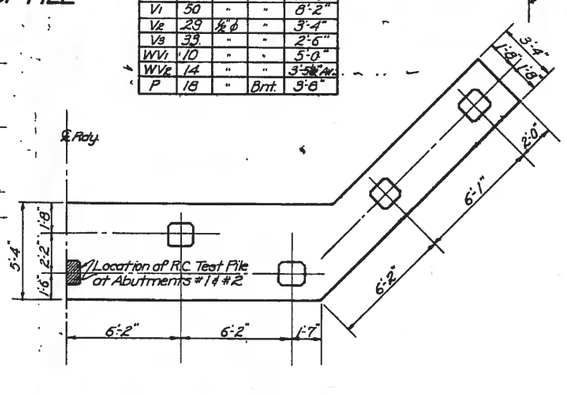
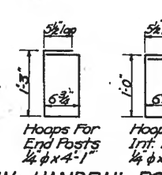
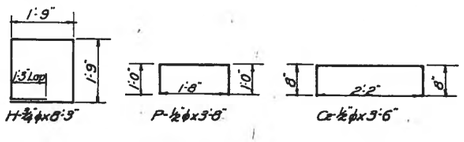
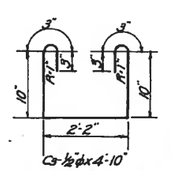




BAR BENTS IN HANDRAIL POSTS







BAR LIST ~ 1 CAP				
Mark	No.	Size	Form	Length
C₁	8	¾ϕ	Str.	28'-6"
C₂	28	½ϕ	Bnt	3'-6"
C₃	20	"	"	4'-10"
C₄	3	1ϕ	Str.	28'-6"
H	20	¾ϕ	Bnt	8'-3"
P	10	½ϕ	"	3'-8"

QUANTITIES ONE CAP

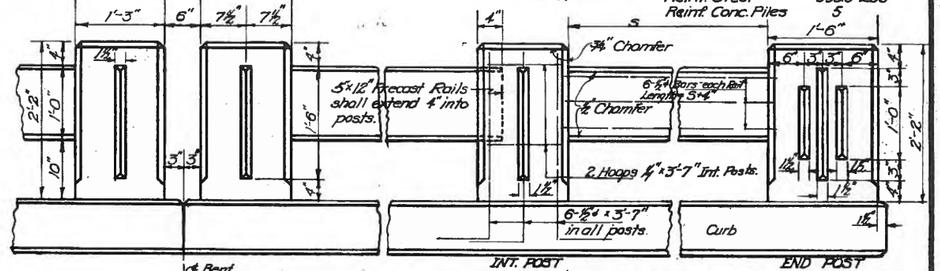
Class "A" Conc.	80 Cu. Yds.
Reinf. Steel	9900 Lbs
Reinf. Conc. Piles	5

BAR LIST ~ I-ABUT.				
Mark	No.	Size	Form	Length
H	36	¾ϕ	Bnt.	8'-3"
H₁	18	"	Str.	27'-9"
H₂	76	"	"	5'-0"
H₃	12	"	"	19'-9"
H₄	76	"	"	3'-0"
WH₁	2	½ϕ	"	5'-1"
WH₂	2	"	"	7'-3"
WH₃	2	"	Bnt.	11'-4"
WH₄	2	"	"	13'-4"
WH₅	14	¾ϕ	"	34'-9"
WH₆	28	"	"	12'-8"
BH₁	2	½ϕ	"	36'-0"
BH₂	5	¾ϕ	Str.	34'-3"
BH₃	10	"	"	12'-5"
V₁	50	"	"	8'-2"
V₂	29	½ϕ	"	3'-4"
V₃	33	"	"	2'-6"
WV₁	10	"	"	5'-0"
WV₂	14	"	"	3'-5½" Av.
P	18	"	Bnt.	3'-6"

'PILE SPACING DIAGRAM

QUANTITIES ABUTMENTS

Item	Abut. No. 1	Abut. No. 2
Class A Conc.	37.4 Cu. Yds.	37.4
Reinf. Steel	5070 Lbs.	5070
Substr. Encove, Common	0 Cu. Yds.	~~55~~ 56
Reinf. Conc. Piling	2.72 ~~2.88~~ Lin. Ft.	~~288~~ 2.56
Reinf. Conc. Test Pile	1 Ea.	1



Note: All grooves in handrail posts shall be ¾" deep. For Post Spacing see Gen. Elev.

Note: Butts of Rails shall be padded with 2 layers of 1-ply Asphalt Roofing Felt, and ends shall be wrapped with one layer of the same material. All excess material shall be cut off after forms are removed.

DETAILS OF HANDRAIL & POSTS

Drawn By S.R.M. June, 1938
Checked By W.C.Z Aug. "

REVISED AS BUILT

DETAILS OF ABUTS., PILE BENTS & RDY.
26-40' I-BM SPANS
24' ROADWAY & 2-1'-6" SIDEWALKS
& STA. 232+21.25
F.A. PROJ. NO. 1015 SEC. A BRIDGE

C-1160

Revised Oct 31, 1938

GRADE CROSSINGS	0
GRADE CROSSINGS ELIMINATED BY SEPARATION (OVERPASS)	0
GRADE CROSSINGS ELIMINATED BY SEPARATION (UNDERPASS)	0
GRADE CROSSINGS ELIMINATED BY RELOCATION	0
GRADE CROSSINGS REMAINING	0

STATE OF OKLAHOMA

DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

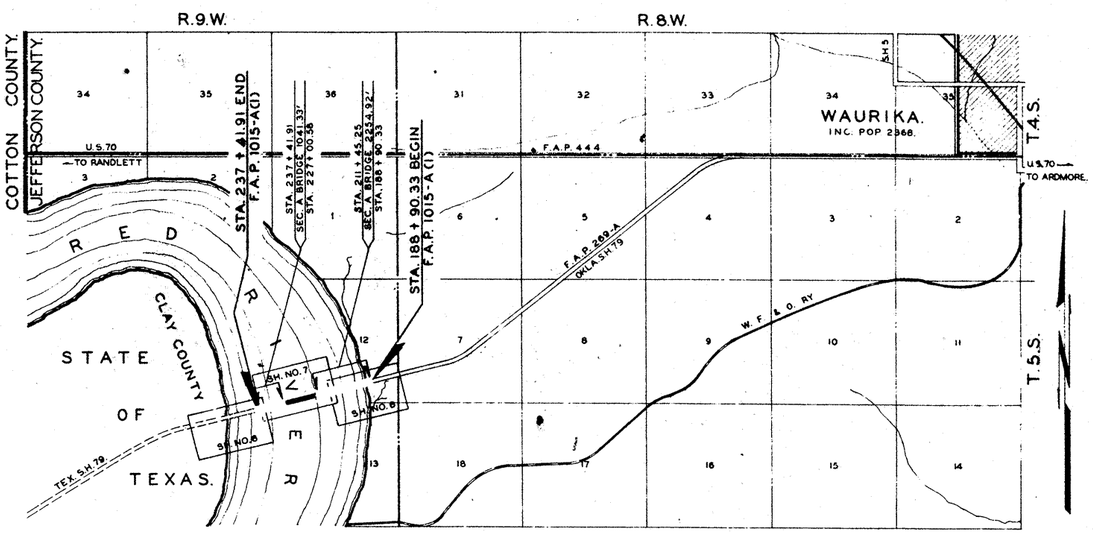
FEDERAL AID PROJECT NO. 1015-A (1)(1939)

JEFFERSON COUNTY, OKLAHOMA
CLAY COUNTY, TEXAS

STATE HIGHWAY NO. 79

WAURIKA-WICHITA FALLS, RED RIVER BRIDGE

INDEX OF SHEETS



SCALES

PLAN 1" = 100'

PROFILE (HOR. 1" = 100' / VER. 1" = 10')

CROSS SECTIONS 1" = 5'

LAYOUT MAP 1" = 3000'

CONVENTIONAL SIGNS

- Proposed Road
- Railroads
- Range & Township Lines
- Section Lines
- Quarter Section Lines
- Fences
- Base Line
- Right-of-Way Lines
- Ground Lines
- Grade Line
- Travelled Roads
- Culverts & Bridges
- Telephone & Telegraph
- Power Lines
- Buildings
- Unloading Points
- Oil Wells
- Right of Way Markers

F.A. SPECIAL PROVISIONS GOVERN AND STATE STANDARD SPECIFICATIONS GOVERN APPROVED NOV. 1, 1937

ROADWAY LENGTH	1,555.33 FT.	0.294 MI.
BRIDGE LENGTH	3,296.25 FT.	0.624 MI.
PROJECT LENGTH		0.918 MI.
EQUATIONS.		NONE.
EXCEPTIONS		NONE.

EXAMINED AND APPROVED
This 7th Day of Nov. 1938
BRIDGE ENGINEER OKLAHOMA

EXAMINED AND APPROVED
This 7th Day of Nov. 1938
BRIDGE ENGINEER TEXAS

EXAMINED AND APPROVED
This 28th Day of Nov. 1938
CHIEF ENGINEER OKLAHOMA

EXAMINED AND APPROVED
This 15th Day of Nov. 1938
STATE HIGHWAY ENGINEER TEXAS

RECOMMENDED FOR APPROVAL
This 2nd Day of Nov. 1938
SENIOR HIGHWAY ENGINEER BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL
This 3rd Day of Dec. 1938
DISTRICT ENGINEER BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL
CHIEF ENGINEER BUREAU OF PUBLIC ROADS

APPROVED
CHIEF OF BUREAU OF PUBLIC ROADS

STATE OF OKLAHOMA

DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

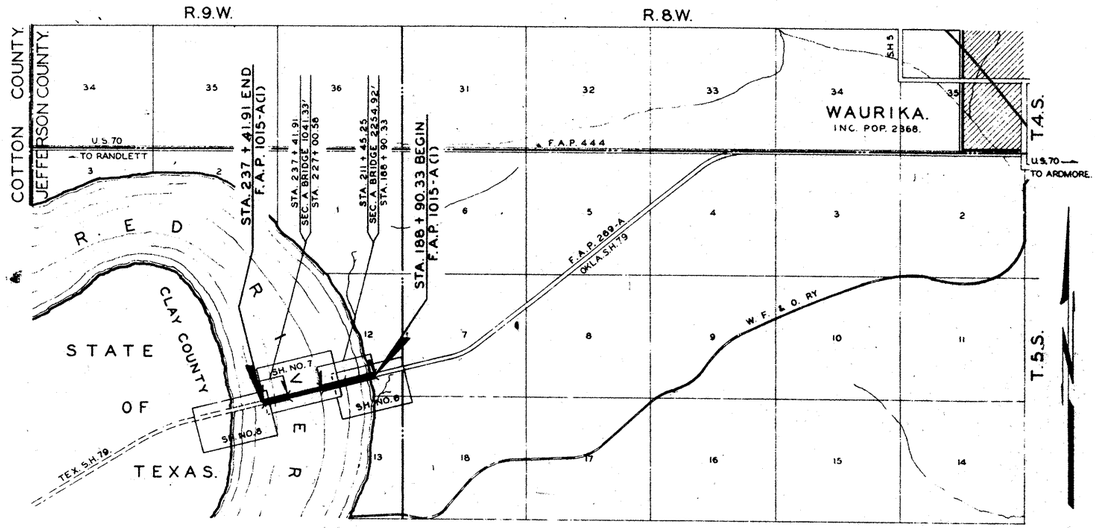
FEDERAL AID PROJECT NO. 1015-A(1)(1939)

JEFFERSON COUNTY, OKLAHOMA
CLAY COUNTY, TEXAS

STATE HIGHWAY NO. 79

WAURIKA-WICHITA FALLS, RED RIVER BRIDGE

INDEX OF SHEETS.



SCALES

PLAN 1" = 100'

PROFILE (HOR. 1" = 100'; VER. 1" = 10')

CROSS SECTIONS 1" = 5'

LAYOUT MAP 1" = 3000'

CONVENTIONAL SIGNS

- PROPOSED ROAD
- RAILROADS
- RANGE & TOWNSHIP LINES
- SECTION LINES
- QUARTER SECTION LINES
- FENCES
- BASE LINE
- RIGHT-OF-WAY LINES
- GROUND LINES
- GRADE LINE
- TRAVELLED ROADS
- CULVERTS & BRIDGES
- TELEPHONE & TELEGRAPH
- POWER LINES
- BUILDINGS
- UNLOADING POINTS
- OIL WELLS
- RIGHT OF WAY MARKERS

ROADWAY LENGTH	1,555.33 FT.	0.294 MI.
BRIDGE LENGTH	3,296.25 FT.	0.624 MI.
PROJECT LENGTH		0.918 MI.

EQUATIONS. NONE.

EXCEPTIONS. NONE.

Revised Oct. 31, 1938
Revised May 13, 1939

GRADE CROSSINGS	0
GRADE CROSSINGS ELIMINATED	0
BY SEPARATION (OVERPASS)	0
BY SEPARATION (UNDERPASS)	0
BY RELOCATION	0
GRADE CROSSINGS REMAINING	0

EXAMINED AND APPROVED
This [redacted] Day of [redacted] 1939
BRIDGE ENGINEER OKLAHOMA.

EXAMINED AND APPROVED
This [redacted] Day of [redacted] 1939
BRIDGE ENGINEER TEXAS

EXAMINED AND APPROVED
This 24 Day of May 1939
CHIEF ENGINEER OKLAHOMA

EXAMINED AND APPROVED
This [redacted] Day of [redacted] 1939
STATE HIGHWAY ENGINEER TEXAS.

RECOMMENDED FOR APPROVAL
This [redacted] Day of [redacted] 1939
[redacted]
DISTRICT ENGINEER BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL
[redacted]
CHIEF ENGINEER BUREAU OF PUBLIC ROADS

APPROVED
[redacted]
CHIEF OF BUREAU OF PUBLIC ROADS

F.A. SPECIAL PROVISIONS GOVERN AND
STATE STANDARD SPECIFICATIONS GOVERN APPROVED NOV 1, 1937

MORRISON

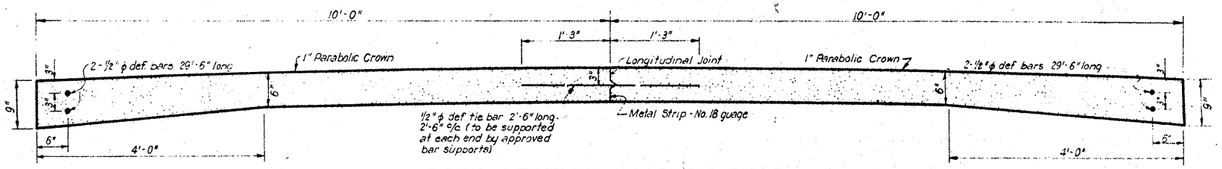
FED. ROAD DIST. NO.	STATE	FED. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.				

CONSTRUCTION NOTES

Tie bars to be supported in position by bar supports at each end.

½" ϕ def. marginal bars to be supported in position by approved removable supports or by approved supports left in place.

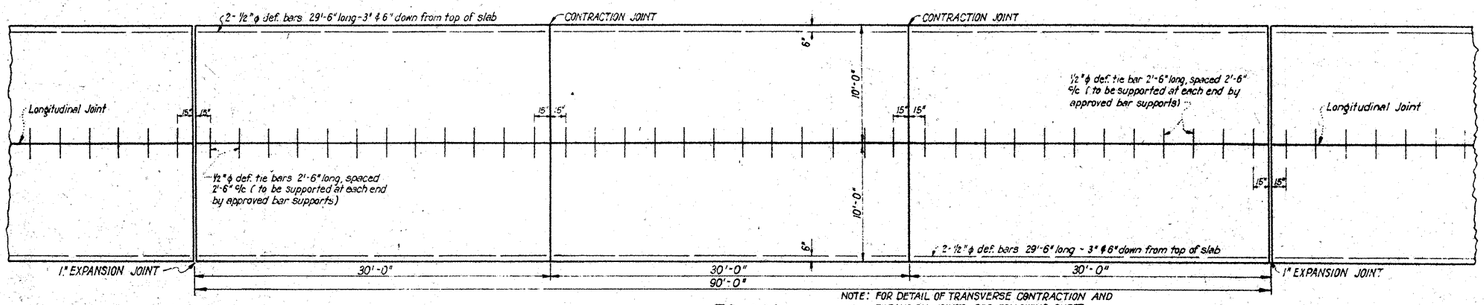
Piles of Concrete not to be used.



CROSS SECTION 20' SURFACING

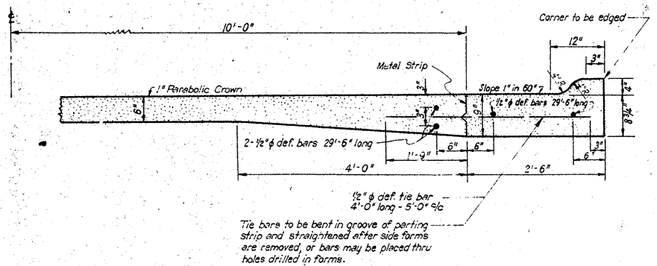
QUANTITIES FOR 90 FT. OF SLAB

CONCRETE	200.0 S.Y. (36.67 C.Y.)
TIE BARS	36 EACH
MARGINAL BARS	12 EACH
DEFORMED METAL STRIP	90.0 L.F.

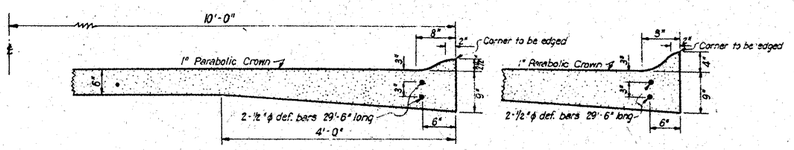


NOTE: FOR DETAIL OF TRANSVERSE CONTRACTION AND EXPANSION JOINTS, SEE FOLLOWING SHEET.

PLAN

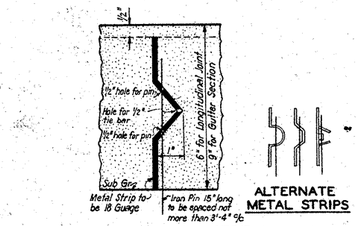


DETAIL OF CURB AND GUTTER



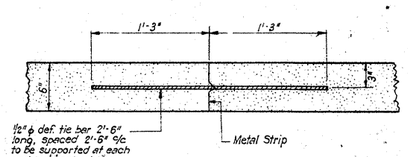
Concrete Lip Curb shall be constructed immediately after the concrete in the pavement has been finished and before it has attained initial set.

DETAIL OF LIP CURBS

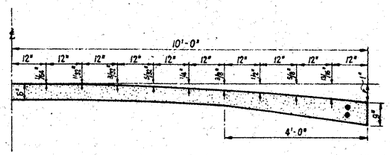


ALTERNATE METAL STRIPS

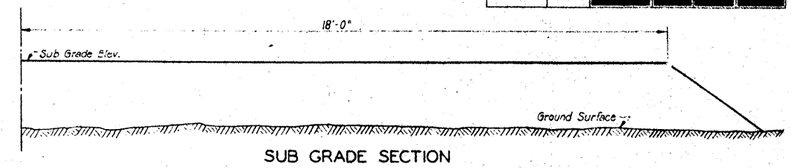
DETAIL OF METAL STRIP FOR GUTTER SECTION AND LONGITUDINAL JOINT



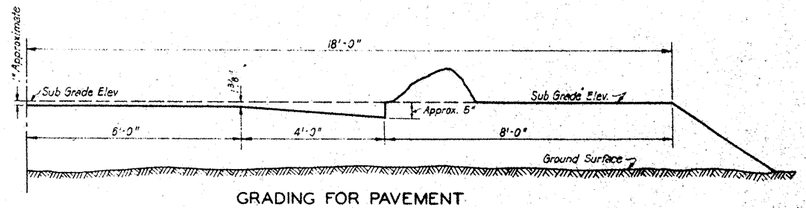
DETAIL OF TIE BARS FOR LONGITUDINAL JOINT



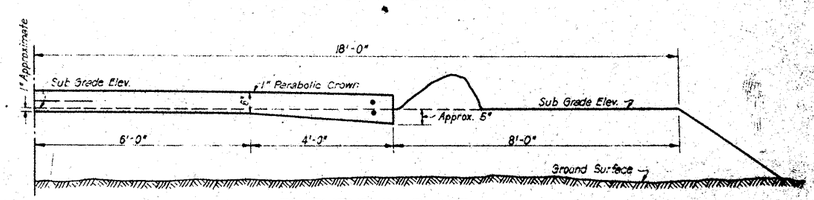
TEMPLATE FOR 20' PAVING 1" PARABOLIC CROWN



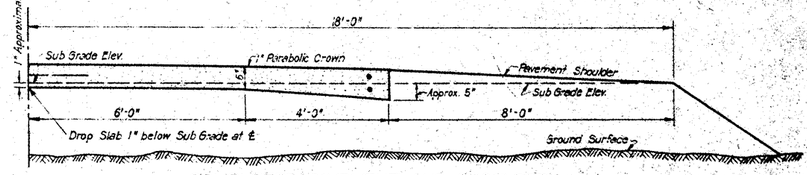
SUB GRADE SECTION



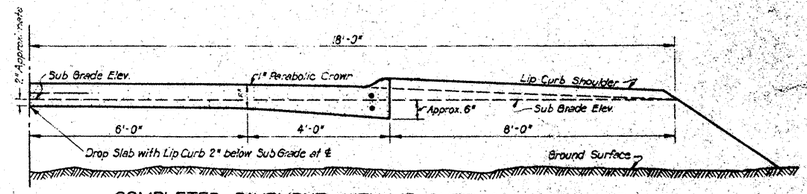
GRADING FOR PAVEMENT



PAVEMENT IN PLACE



COMPLETED PAVEMENT AND SHOULDER



COMPLETED PAVEMENT WITH LIP CURB AND SHOULDER

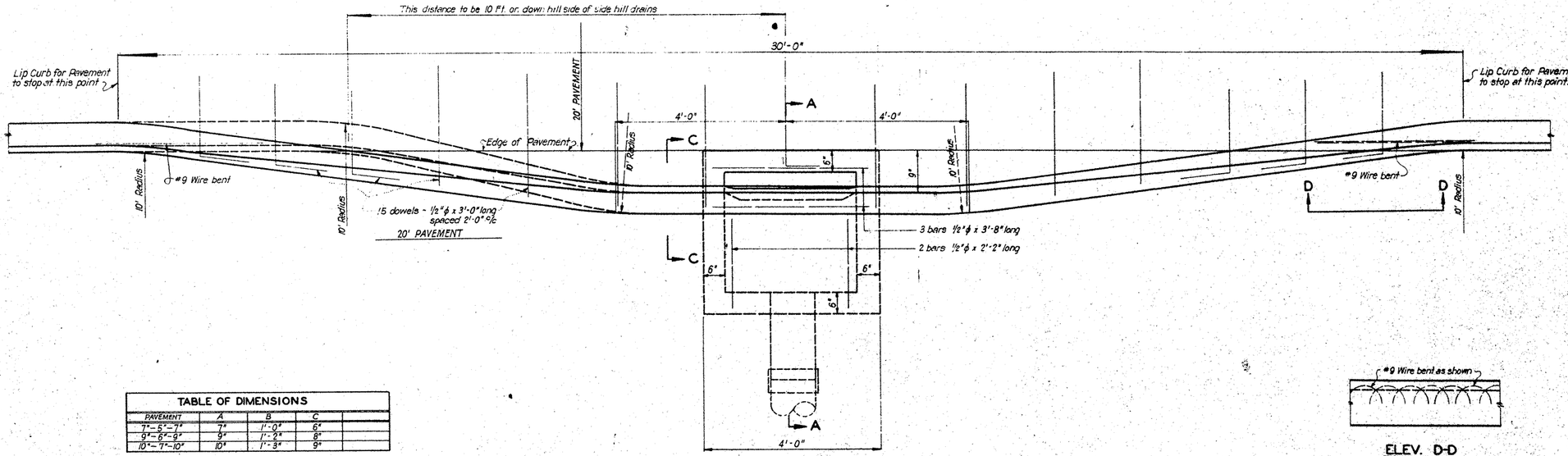
DETAIL OF PAVEMENT SHOULDER CONSTRUCTION WITH AND WITHOUT LIP CURB

OKLAHOMA STATE HIGHWAY COMMISSION TYPICAL PAVING SECTION 20 FT. SURFACING

Checked by M.P. Foster, Chief Draftsman
Checked by J.O. Powell, Engineer of Design

CD-1

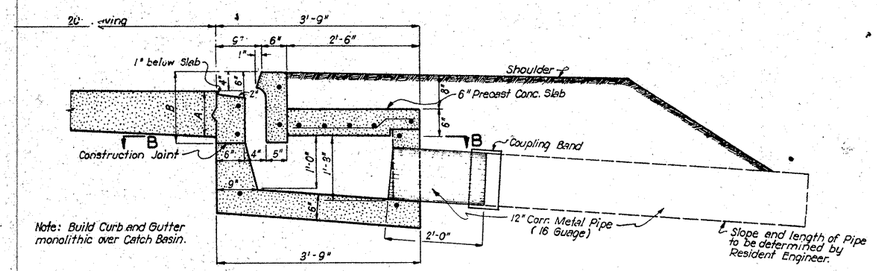
FED. ROAD DIST. NO.	STATE				
6	OKLA.				



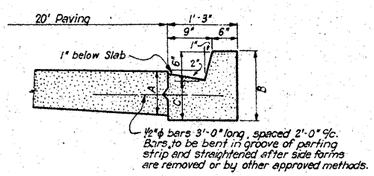
PLAN

TABLE OF DIMENSIONS				
PAVEMENT	A	B	C	
7"-8"-9"	7"	1'-0"	6"	
9"-9"-9"	9"	1'-2"	8"	
10"-9"-10"	10"	1'-3"	9"	

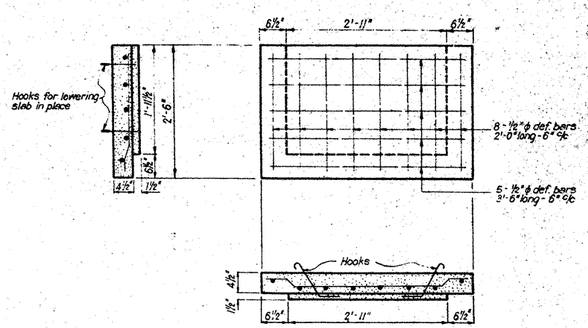
ELEV. D-D



SECTION A-A

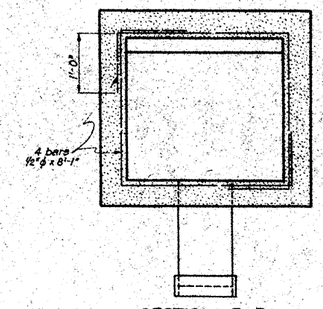


SECTION C-C



DETAIL OF 6" PRECAST CONCRETE SLAB

CLASS 'A-A' CONC.____0.19 C.Y.
REINF. STEEL_____ 23.0 LBS.



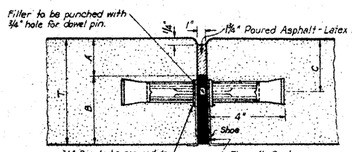
SECTION B-B

SUMMARY OF QUANTITIES FOR ONE LIP CURB DRAIN	
CLASS A-A CONC.	1.6 C.Y.
REINF. STEEL	84.0 LBS.

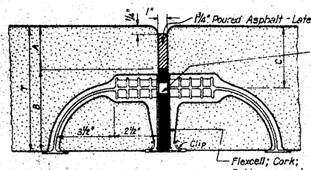
OKLAHOMA STATE HIGHWAY COMMISSION STANDARD LIP CURB DRAIN

LCD-1

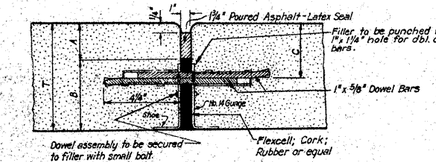
Drawn by S.E. Bounds 1-28-38
Checked by M.R. Kester



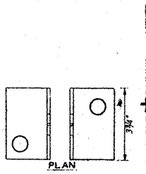
"J" BAR



NATIONAL "U" BAR

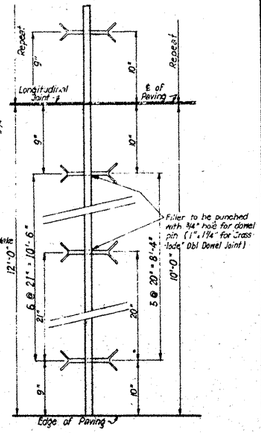


"CROSSLODE" DOUBLE DOWEL JOINT



ELEVATION

DETAIL OF SHOE FOR "J" BAR

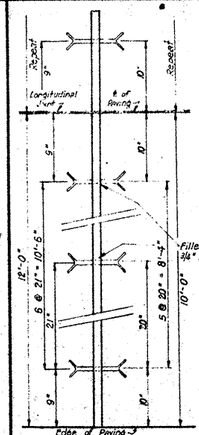


DETAIL OF SPACING FOR "J" BARS, NATIONAL "U" BAR & "CROSSLODE" DOUBLE DOWEL JOINT.

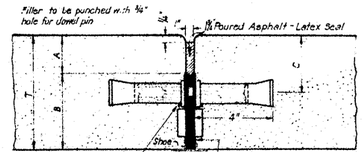
TABLE OF DIMENSIONS				
PAVING	T	A	B	C
7"- 5"- 7"	5"	1½"	3⅛"- 5⅛"	2½"
9"- 6"- 9"	6"	2"	4"- 7"	3"
10"- 7"- 10"	7"	2"	5"- 8"	3½"

Note: Only fillers which are reasonably rigid, compressible and non-extruding shall be used in this type joint.

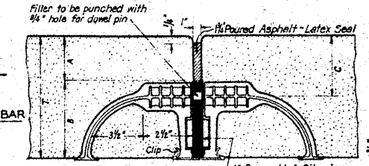
TYPE "A" EXPANSION JOINT



DETAIL OF SPACING FOR "J" BARS AND NATIONAL "U" BAR



"J" BAR

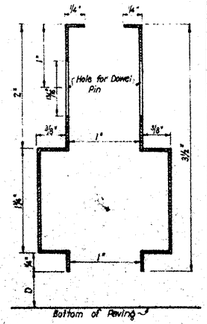


NATIONAL "U" BAR

Premoulded Filler to be so perforated as to reduce volume of Filler approximately 25%. All perforations to be under side shields.

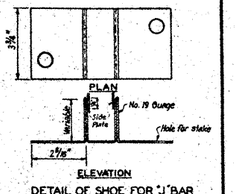
TABLE OF DIMENSIONS					
PAVING	T	A	B	C	D
7"- 5"- 7"	5"	1½"	3⅛"- 5⅛"	2½"	0"
9"- 6"- 9"	6"	2"	4"- 7"	3"	½"
10"- 7"- 10"	7"	2"	5"- 8"	3½"	1"

TYPE "B" EXPANSION JOINT

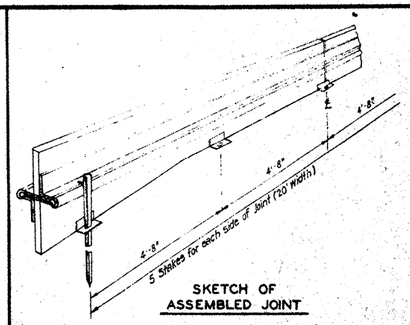


Shield to be rolled to crown of Paving. Ends of recess shall be crimped to close opening.

DETAIL OF METAL SHIELD



DETAIL OF SHOE FOR "J" BAR

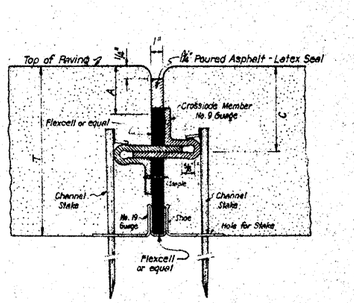


SKETCH OF ASSEMBLED JOINT

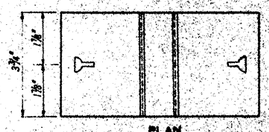
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.				

Revised March 15, 1938.
Revised March 25, 1938.
Revised June 15, 1938.
Revised Aug. 29, 1938.

TABLE OF DIMENSIONS				
PAVING	T	C	A	
7"- 5"- 7"	5"	2½"	2"	
9"- 6"- 9"	6"	3"	2"	
10"- 7"- 10"	7"	3⅛"	2"	

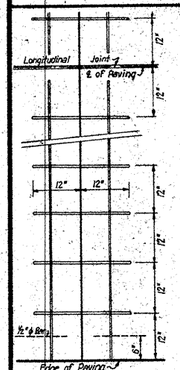


ELEVATION

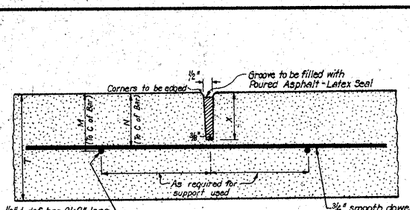


DETAIL OF SHOE

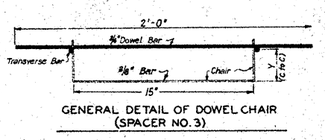
TYPE "C" EXPANSION JOINT "CROSSLODE"



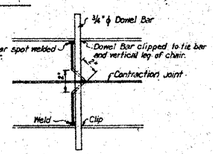
DETAIL OF SPACING FOR DOWEL BARS



CONTRACTION JOINT

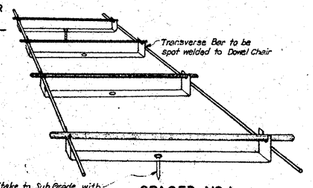


GENERAL DETAIL OF DOWEL CHAIR (SPACER NO. 3)

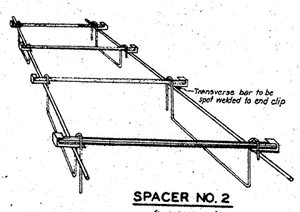


PLAN OF DOWEL CHAIR (SPACER NO. 3)

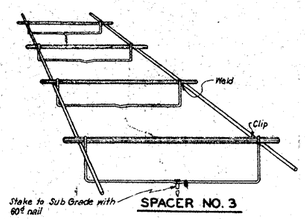
TABLE OF DIMENSIONS					
PAVING	T	M	N	X	Y
7"- 5"- 7"	5"	3⅛"	2½"	1½"	1⅞"
9"- 6"- 9"	6"	3⅞"	3"	2"	2⅜"
10"- 7"- 10"	7"	4⅛"	3½"	2⅜"	2⅞"



SPACER NO. 1 (WHEELING)

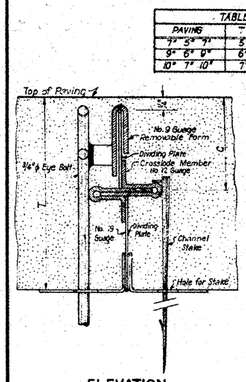


SPACER NO. 2 (LACLEDE)

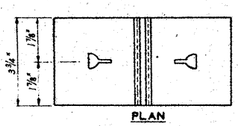


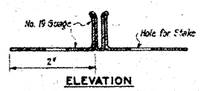
SPACER NO. 3

TYPE "A" CONTRACTION JOINT

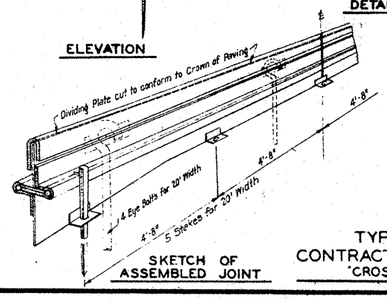


ELEVATION





ELEVATION
DETAIL OF SHOE



SKETCH OF ASSEMBLED JOINT

TYPE "B" CONTRACTION JOINT "CROSSLODE"

CONSTRUCTION NOTES

The Contractor may select the type and combination of expansion and contraction joints he elects to use. After selection is made, the same type of joint shall be used throughout the project.

In addition to chairs indicated, the Contractor shall provide suitable installing devices and such additional stakes as may be required to hold the joint vertical and securely in line and position. The Contractor will also be required to satisfactorily form the upper portion of the joint for receiving the poured Seal.

If type "C" expansion joint is used, the fillers in the top portion of the joint may be omitted during placing of the joint, but shall be inserted immediately upon removal of installing devices. To facilitate such installation, this portion of the filler may be reduced to ⅜" in thickness.

If type "B" contraction joint is used, the lower dividing plate shall be cut to fit subgrade, the upper dividing plate shall be cut to a true crown of the pavement and when the joint is installed, the top shall be parallel to and one-fourth (¼) inch below the finished surface of the pavement. The removable form and stakes shall be removed before the final passage of the finishing machine. Final finishing operations shall close this joint and edging will not be required.

When type "A" contraction joint is used, other dowel holding and spacing devices may be used when approved in writing by the Engineer. To obtain such approval, the Contractor shall submit a detailed drawing of the device he proposes to use. All dowel holding and spacing devices shall be left in place.

Expansion joint fillers of a length less than one half the width of pavement shall not be used except in the case of multiple traffic lane pavement in which event the filler shall be of a length not less than the distance between longitudinal joints.

OKLAHOMA STATE HIGHWAY COMMISSION

STANDARD EXPANSION & CONTRACTION JOINTS

J-1

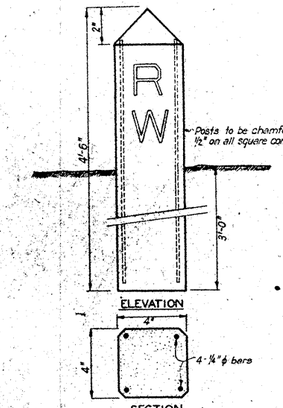
Drawn by S.E. Bounds 1-5-38
Checked by M.R. Kistler - Chief Draftsman
Checked by J.C. Powell - Engineer of Design

5271

GHWAY
ANDARDS

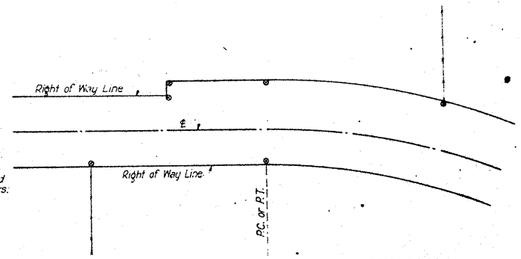
FED. ROAD DIST. NO.	STATE	"PROJ." NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.				

TOP VIEW



ELEVATION

SECTION



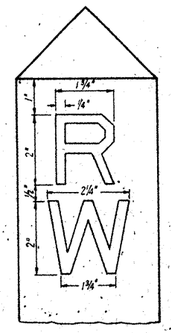
SKETCH SHOWING LOCATION OF RIGHT-OF-WAY MARKERS

Right of Way Markers to be placed at property line intersections, at the P.C. and P.T. of all curves, at all Right of Way corners, and at intervals, on tangent, convenient for sight alignment of fences and not to exceed 660'.

Markers to be set within the Right-of-Way, with back side of the top of Monument on the Right-of-Way line.

Markers to be of Class "A" Concrete and reinforced as shown.

Letters to be placed on one side only and set to face roadway.

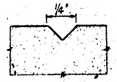


DETAIL OF LETTERS

Letters to be of type shown, ¼" wide at face of Post.

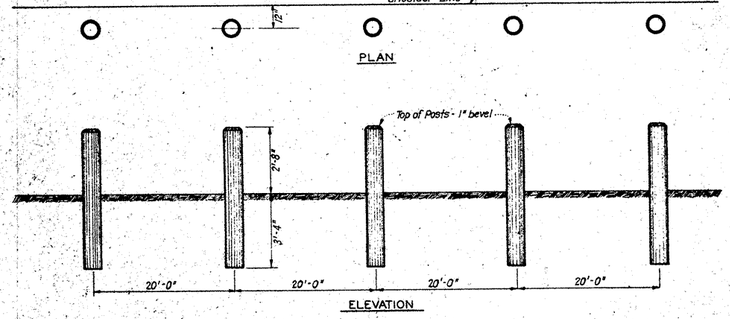
Post to have a carborundum finish. Letters to be painted black.

Letters to be formed by triangular strips.



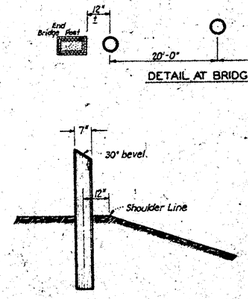
SECTION OF LETTER

RIGHT-OF-WAY MARKERS



PLAN

ELEVATION



SECTION

All round posts shall have a nominal diameter of 7" measured at the top.

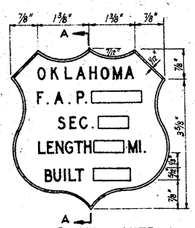
All posts to be creosoted with 16 Lbs. initial treatment and 8 Lbs. final retention.

DETAIL AT BRIDGE END

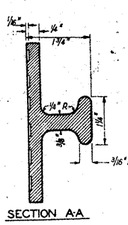
GUIDE POSTS

Markers shall be bronze castings, 65% Copper, 5% Lead, 5% Tin and 5% Zinc. Raised edge, letters and stencil blocks to be polished.

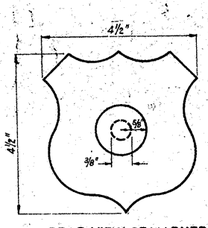
Marker to be placed at beginning and end of Section, paralleling center line.



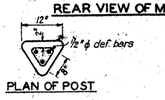
FACE OF MARKER



SECTION A-A

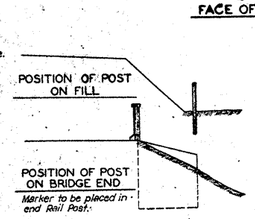


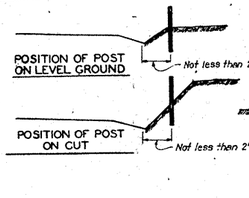
REAR VIEW OF MARKER

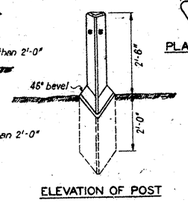


PLAN OF POST

On fill sections place Marker at toe of slope. If fill exceeds 4'-0" place Marker at Right-of-Way line or build foundation.





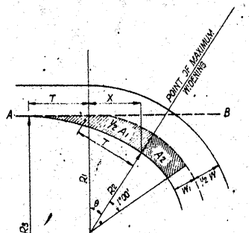


ELEVATION OF POST

Posts to be Class "A" Concrete. Bronze Marker to be placed in 2 sides flush with face. Posts to be chamfered ½" on all square corners. All bars ½" ϕ.

Marker furnished by State. Post furnished by Contractor.

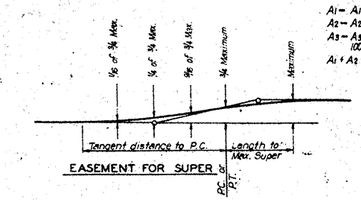
MONUMENTS FOR FEDERAL AID PROJECTS



Note: Where "T" is too long for existing conditions, formulas do not apply. Use "X" as distance from beginning of widening to P.C. or P.T. then:-

$T' = \frac{1}{2} + \frac{50}{R}(R_1 + R_2)$

W = Width of Pavement
W1 = Width of Maximum Widening in Feet
R = ℄ Radius of Curve
R1 = R - ½ W
R2 = R1 - W1
R3 = R1 + R2
θ = Con° ℄
T = R1 Sin. θ
X = T Cos. θ
A1 = $(R_3 + R_1)(\frac{\theta}{3} - .000032321\ \theta^3\ R_2)$ Sq. Yds.
A2 = .00193925 W1 (R1 - ½ W1) Sq. Yds.
S = Super Elevation - Variable - ¾ Maximum at P.C. or P.T.
S = $\frac{.0667}{R}$ per foot of paving - V = Velocity 40 Miles per Hour R = Radius



EASEMENT FOR SUPER

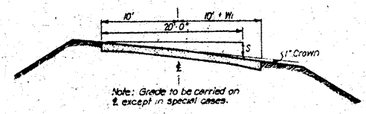
METHOD OF CALCULATING WIDENING AREAS

A1 = A1

A2 = At x (Δ - 2θ)

A3 = As x Length of Curve in 100' Stations

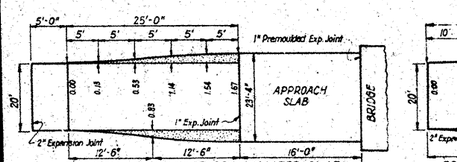
At + A2 + As = Total Additional Area.



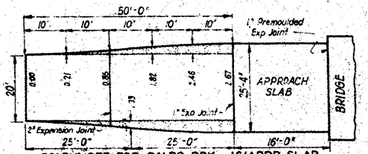
Note: Grade to be carried on ℄ except in special cases.

WIDENING AREAS ~ 20' PAVEMENT								SUPER ELEVATION 20' PAVEMENT		
W-0.5 for each D over 7°				A1 - Both ends of Curve						
A2 - 1" of uniform widening				A3 - 1 Sta. due to length of Arc						
D	W1	θ	T	X	A1	A2	A3	S	TANGENT DIST. TO P.C.	LENGTH OF SPIRAL
1° 00'							0.002	0.874	120.0	40.0
1° 30'							0.005	0.561	128.0	42.7
2° 00'							0.011	0.748	140.0	46.7
2° 30'							0.017	0.935	152.0	50.7
3° 00'							0.025	1.122	160.0	53.3
3° 30'							0.035	1.309	180.0	60.0
4° 00'							0.044	1.496	200.0	66.7
4° 30'							0.057	1.683	220.0	73.3
5° 00'							0.071	1.870	240.0	80.0
5° 30'							0.084'	2.057	260.0	86.7
6° 00'	1.00	2° 36' 13"	43.48	43.48	9.38	1.832	0.102	2.244	280.0	93.3
6° 30'	1.00	2° 45' 11"	41.88	41.85	9.00	1.890	0.120	"	"	"
7° 00'	1.00	2° 51' 14"	40.25	40.21	8.46	1.968	0.136	"	"	"
7° 30'	1.25	3° 17' 13"	43.88	43.81	12.08	1.827	0.156	"	"	"
8° 00'	1.50	3° 44' 09"	46.02	45.92	15.66	2.054	0.180	"	"	"
8° 30'	1.75	4° 09' 58"	48.21	48.08	18.71	2.255	0.204	"	"	"
9° 00'	2.00	4° 34' 12"	50.05	49.89	22.21	2.429	0.228	"	"	"
9° 30'	2.25	4° 59' 14"	51.61	51.41	25.77	2.586	0.256	"	"	"
10° 00'	2.50	5° 23' 03"	53.02	52.79	29.53	2.727	0.282	"	"	"
10° 30'	2.75	5° 48' 31"	54.25	53.97	33.10	2.850	0.300	"	"	"
11° 00'	3.00	6° 12' 54"	55.34	55.01	36.85	2.988	0.342	"	"	"
11° 30'	3.25	6° 36' 30"	56.28	55.91	40.61	3.072	0.372	"	"	"
12° 00'	3.50	7° 00' 49"	57.14	56.71	44.42	3.167	0.425	2.500	320.0	106.7
12° 30'	3.76	7° 24' 52"	57.94	57.45	48.26	3.264	0.442	"	"	"
13° 00'	4.00	7° 48' 38"	58.62	58.08	52.06	3.333	0.477	"	"	"
13° 30'	4.25	8° 12' 12"	59.27	58.66	55.85	3.406	0.516	"	"	"
14° 00'	4.50	8° 35' 29"	59.84	59.17	59.81	3.474	0.553	"	"	"
14° 30'	4.75	8° 59' 32"	60.36	59.64	64.69	3.528	0.598	"	"	"
15° 00'	5.00	9° 23' 18"	60.81	60.05	67.13	3.593	0.636	"	"	"
15° 30'	5.25	9° 47' 14"	61.22	60.43	71.48	3.652	0.680	"	"	"
16° 00'	5.50	10° 10' 49"	61.73	60.76	75.40	3.696	0.724	"	"	"
16° 30'	5.75	10° 34' 59"	62.12	61.06	79.37	3.742	0.769	"	"	"
17° 00'	6.00	10° 58' 44"	62.47	61.29	83.28	3.785	0.818	"	"	"
17° 30'	6.25	11° 21' 58"	62.80	61.57	87.15	3.825	0.867	"	"	"
18° 00'	6.50	11° 45' 05"	63.11	61.79	91.14	3.862	0.916	"	"	"
18° 30'	6.75	12° 09' 02"	63.39	61.97	95.00	3.900	0.970	"	"	"
19° 00'	7.00	12° 33' 04"	63.66	62.14	98.93	3.930	1.002	"	"	"
19° 30'	7.25	12° 56' 13"	63.90	62.28	102.85	3.960	1.076	"	"	"
20° 00'	7.50	13° 20' 00"	64.12	62.39	107.02	3.988	1.135	"	"	"

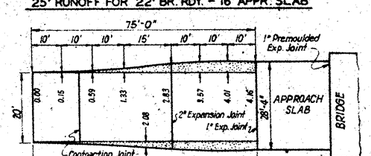
SUPER ELEVATION & WIDENING DATA FOR HIGHWAY CURVES



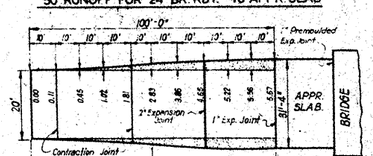
25' RUNOFF FOR 22' BR. RDY. - 16' APPR. SLAB



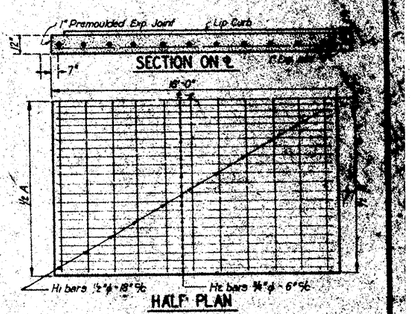
50' RUNOFF FOR 24' BR. RDY. - 16' APPR. SLAB



75' RUNOFF FOR 27' BR. RDY. - 16' APPR. SLAB



100' RUNOFF FOR 30' BR. RDY. - 16' APPR. SLAB



SECTION ON ℄

HALF PLAN

QUANTITIES FOR RUNOFF			
APPROACH SLAB	RUNOFF	CONC. PAVING S.Y.	R-STEEL * Lbs.
22' BR. RDY.	25'	4.64	
24' BR. RDY.	50'	14.83	
27' BR. RDY.	75'	34.67	
30' BR. RDY.	100'	63.00	

* Note: Extra widening to be of uniform thickness same as edge of 20' Slab. Extra widening to be reinforced same as edge of 20' Slab.

LIST OF QUANTITIES FOR ONE 16' APPROACH SLAB WITH LIP CURB

	ONE 16' APPROACH SLAB 30' BR. RDY.			ONE 16' APPROACH SLAB 27' BR. RDY.			ONE 16' APPROACH SLAB 24' BR. RDY.			ONE 16' APPROACH SLAB 22' BR. RDY.			ONE 16' APPROACH SLAB 20' BR. RDY.		
	No.	Size	Length	No.	Size	Length	No.	Size	Length	No.	Size	Length	No.	Size	Length
Bar H1	11	½" ϕ	30'-10"	11	½" ϕ	27'-10"	11	½" ϕ	24'-10"	11	½" ϕ	22'-10"	11	½" ϕ	20'-7" Av.
Bar H2	62	¾" ϕ	15'-8"	56	¾" ϕ	15'-8"	50	¾" ϕ	15'-8"	45	¾" ϕ	15'-8"	42	¾" ϕ	15'-8"
A	Bridge End		31'-4"	Bridge End		28'-4"	Bridge End		25'-4"	Bridge End		23'-4"	Bridge End		21'-4"
B	Slab End		31'-4"	Slab End		28'-4"	Slab End		25'-4"	Slab End		23'-4"	Slab End		20'-0"
TOTAL	Concrete		55.69 S.Y.	Concrete		50.36 S.Y.	Concrete		45.03 S.Y.	Concrete		41.47 S.Y.	Concrete		36.74 S.Y.
	R. Steel		1708.0 Lbs.	R. Steel		1541.0 Lbs.	R. Steel		1376.0 Lbs.	R. Steel		1242.0 Lbs.	R. Steel		1151.0 Lbs.

P.C. CONCRETE APPROACH SLABS

OKLAHOMA STATE HIGHWAY COMMISSION STANDARDS

Drawn by S.E. Bounds 1-26-38
Checked by M.O. Kester

FED ROAD DIST. NO	STATE	FED A/D PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A(1)	1938	8	31

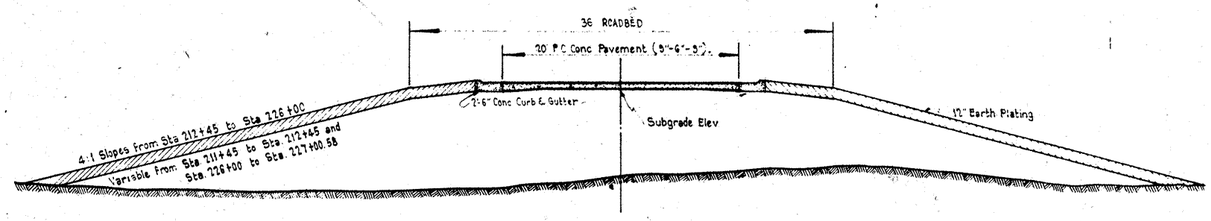
Revised Oct. 7, 1938
Revised Oct 31, 1938

SUMMARY SHEET.

F.A.P. 1015-A.(1).

DRAINAGE STRUCTURES OVER 20 FT.

STR NO.	P.& P. SHEET NO.	℄ STATION.	DESCRIPTION.	DESIGN	DES SHEET NO.	CLASS "A" EXC Cu.Yds.	SUBSTR EXC. (COMMON) Cu.Yds	SUBSTR EXC. (ROCK) Cu.Yds	REINF CONC HAND RAIL Lin. Ft.	STRUCT STEEL Lbs.	CLASS "A" CONC Cu.Yds.	CLASS "A" CONC ABUT & PIER BASES Cu.Yds	CLASS "AA" CONC Cu.Yds.	REINF. STEEL Lbs.	REINF CONC PILING Lin. Ft.	REINF CONC TEST PILES Each
1	6&7	200 + 17.79	21-100' Trusses - 1-60' & 1-50' I-Bm. Spans - 24' Rdy. - 2-1'-6" Sidewalks.	1-50' 1-60' Spans	3 to 15 incl.	1800	7595	1027.5	225.	2,810,300	935.1	1593.1	1320.2	365,190	288	1
2	7&8	232 + 21.25	26-40' I-Bm. Spans - 24' Rdy. - 2-1'-6" Sidewalks	C16 Sp.	16-17-18	750	60	0.0	2084.5	752,000	274.8	0.0	763.6	133,140	4788	10
		TOTAL				2550	7655	1027.5	2309.5	3,562,300	1210.5	1593.1	2083.8	498,330	5076	11



TYPICAL GRADING SECTION.

PAY QUANTITIES SEC.-A. RDY.

ITEM NO	ITEM	UNIT	QUANTITY
201.06a	Class "A" Excavation.	Cu. Yds.	53,068
204.06	Overhaul	Sec. Yds	91,150
207.06a	Shoulders	Mi.	0.294
208.06a	Earth Plating	Cu. Yds	5983
414.06a	P.C. Conc. Pavement (9"-6"-9")	Sq. Yds.	3,385
414.06c	Approach Slabs	Sq. Yds.	90.06
509.06b	Class "A-A" Conc	Cu. Yds	3.7
511.06	Reinf. Steel	Lbs.	168
513.06a	12" Corr. Galv. Metal Pipe	Lin. Ft.	80
605.06b	Combined Curb & Gutter (1'-6")	Lin. Ft.	3047

PAY QUANTITIES SEC.-A. BRS.

ITEM NO.	ITEM.	UNIT	QUANTITY
℄ Sta 200+17.79 - 21-100' Trusses - 1-60' & 1-50' I-Bm. Spans. - 24' Rdg - 2-1'-6" Sidewalks.			
201.06a	Class "A" Excavation.	Cu. Yds	1800.0
501.06b	Substr. Exc. Common	Cu. Yds.	7595.0
501.06c	" Rock.	Cu. Yds.	1027.5
505.06	Reinf. Conc. Hand Rail.	Lin. Ft.	225.0
506.06a	Struct. Steel.	Lbs.	2,810,300
509.06a	Class "A" Conc	Cu. Yds	935.1
509.06aa	Class "A" Conc. Abut & Pier Bases.	Cu. Yds.	1593.1
509.06b	Class "AA" Conc	Cu. Yds.	1320.2
511.06	Reinf. Steel	Lbs.	365,190
514.06aa	Reinf. Conc. Test Piles	Each.	1
514.06d	" Piling	Lin. Ft.	288
℄ Sta 232+21.25 - 26-40' I-Bm Spans. - 24' Rdy. - 2-1'-6" Sidewalks.			
201.06a	Class "A" Excavation.	Cu. Yds	750.
501.06b	Substr. Exc. Common	Cu. Yds	60
501.06c	" Rock.	Cu. Yds	0.0
505.06	Reinf. Conc. Hand Rail.	Lin. Ft	2084.5
506.06a	Struct. Steel.	Lbs.	752,000
509.06a	Class "A" Conc.	Cu. Yds.	274.8
509.06aa	" " Abut & Pier Bases.	Cu. Yds.	0.0
509.06b	" "AA" "	Cu. Yds	763.6
511.06	Reinf. Steel.	Lbs.	133,140
514.06aa	Reinf. Conc. Test Piles	Each	10
514.06d	" Piling	Lin. Ft	4788

PRO ROAD DIST NO	STATE	PROJ NO PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
6	OKLA OKLA	1015-A(1)	1938	5	11

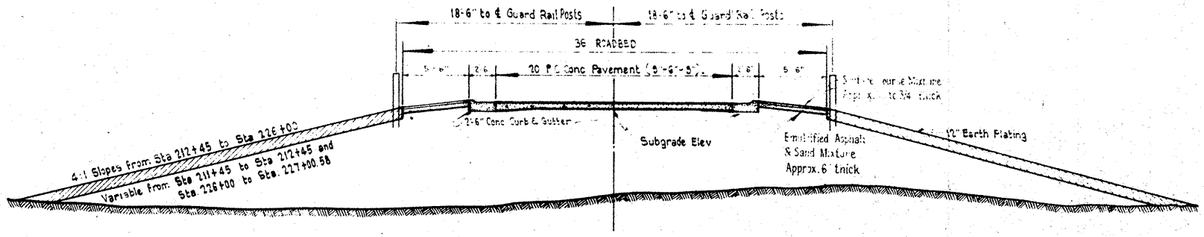
Revised Oct. 7, 1938
Revised Oct. 31, 1938
Revised May 15, 1939

SUMMARY SHEET.

F.A.P. 1015-A.(1).

DRAINAGE STRUCTURES OVER 20 FT.

STR NO.	P & P SHEET NO	℄ STATION.	DESCRIPTION.	DESIGN	DES SHEET NO	CLASS "A" EXC. Cu.Yds	SUBSTR EXC. (COMMON) Cu.Yds	SUBSTR. EXC. (ROCK) Cu.Yds	REINF CONC HAND RAIL Lin. Ft.	STRUCT STEEL Lbs	CLASS "A" CONC Cu.Yds	CLASS "A" CONC ABUT. & PIER BASES Cu.Yds.	CLASS "AA" CONC Cu.Yds	REINF. STEEL Lbs	REINF CONC PILING Lin. Ft.	REINF CONC TEST PILES Each
1	667	200 + 17.79	21-100' Trusses - 1-60' & 1-50' I-Bm Spans - 24' Rdy. - 2-1'-6" Sidewalks.	1936 Spec. Rev. 1938	3 Sheets incl.	1900	7595	1027.5	225.	2,810,300	935.7	1539.1	1320.2	365,190	288	1
2	768	231 + 21.25	26-40' I-Bm. Spans - 24' Rdy. - 2-1'-6" Sidewalks	C76 Sp.	16-17-18	750	60	0.0	2084.5	752,000	274.8	0.0	163.6	133,140	4788	10
TOTAL						2650	7655	1027.5	2309.5	3,562,300	1210.5	1539.1	1483.8	498,330	5076	11



TYPICAL GRADING SECTION.

(1) The area to be sodded shall be scarified to a depth of about 15 inches and the slopes reshaped by discing and harrowing before sod is placed. This work will not be paid for separately but cost of same Shall be included in the unit price bid for the sodding.

(2) Seeding shall be at the rate of 30 lbs. per. acre.

(3) Commercial Fertilizer shall be 4 - 8 - 6 and shall be applied at the rate of 200 lbs. per acre.

PAY QUANTITIES SEC.-A. RDY.

ITEM NO.	ITEM	UNIT	QUANTITY
202.06a.	Class "A" Excavation	Cu. Yds.	53,068
204.06	Overhaul	Sta. Yds	91,150
207.06a.	Shoulders.	Mi.	0.294
208.06a.	Earth Plating	Cu. Yds.	5883
414.06a	P.C. Conc. Pavement (9"-6"-9")	Sq. Yds.	3,885
414.06c	Approach Slabs.	Sq. Yds.	90.06
509.06b	Class "A-A" Conc.	Cu. Yds	3.2
511.06	Reinf. Steel.	Lbs.	168
513.06a.	12" Corr. Galv. Metal Pipe	Lin. Ft.	80
608.06b	Combined Curb & Gutter (7'-6")	Lin. Ft.	3047

PAY QUANTITIES SEC.-A. BRS.

ITEM NO.	ITEM.	UNIT	QUANTITY
℄ Sta. 200+17.79 - 21-100' Trusses - 1-60' & 1-50' I-Bm. Spans. - 24' Rdy - 2-1'-6" Sidewalks.			
202.06a	Class "A" Excavation.	Cu. Yds.	1900.0
501.06b.	Substr. Exc. Common	Cu. Yds.	7595.0
501.06c.	" " Rock.	Cu. Yds.	1027.5
505.06	Reinf. Conc. Hand Rail.	Lin. Ft.	225.0
506.06a	Struct. Steel	Lbs.	2,810,300
509.06a.	Class "A" Conc.	Cu. Yds	935.7
509.06aa.	Class "A" Conc. Abut & Pier Bases.	Cu. Yds.	1539.1
509.06b	Class "AA" Conc	Cu. Yds.	1320.2
511.06	Reinf. Steel	Lbs.	365,190
514.06aa	Reinf. Conc. Test Piles	Each.	1
514.06d.	" " Piling	Lin. Ft.	288
℄ Sta 231+21.25 - 26-40' I-Bm Spans - 24' Rdy. - 2-1'-6" Sidewalks.			
202.06a	Class "A" Excavation.	Cu. Yds.	750.
501.06b	Substr. Exc. Common	Cu. Yds	60
501.06c	" " Rock.	Cu. Yds	0.0
505.06	Reinf. Conc. Hand Rail.	Lin. Ft.	2084.5
506.06a	Struct. Steel.	Lbs.	752,000
509.06a.	Class "A" Conc.	Cu. Yds.	274.8
509.06aa.	" " " Abut. & Pier Bases.	Cu. Yds.	0.0
509.06b	" "AA" "	Cu. Yds	163.6
511.06	Reinf. Steel.	Lbs.	133,140
514.06aa.	Reinf. Conc Test Piles	Each	10
514.06d.	" " Piling	Lin. Ft.	4788

PAY QUANTITIES SEC. A. RDY. CONTRACT NO. 2

ITEM NO.	ITEM	UNIT	QUANTITY
623.06c	Metal Plate Guard Rail	Lin. Ft.	3,100
626.06a	Turf Sodding (Bermuda)	Sq. Yds.	18,330
628.06	Seeding (Italian Rye)	Acres	38
629.06	Commercial Fertilizer (4-8-6)	Lbs.	760
Spec	Emulsified Asphalt	Gals.	10,000
Spec	Surface Course Aggregate	Cu. Yds	50

FED. ROAD DIST. NO.	STATE	ROAD OR PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
11	OKLA.	1015-A(1)	1938	6	21

Revised 10-31-38

PLAN — SURVEYED — PLOTTED — GRADES CHECKED — B.M.'s NOTED — STRUCTURE NOTES CHECKED — DRAWN — TRACED — CHECKED

NOTE BOOK — NO.

SEC. 7 - T5S - R8W.

SEC. 12 - T5S - R9W.

STA. 176+60 N. & S. Sec. Line
1487' N. to ¼ Sec. Cor.

P.O.T. STA. 176+82 (½" Iron Pin).

½" Iron Pin 60' N. 7.06 E.

½" Iron Pin 60' S. 7.06 E.

975° 32' W.

Pasture.

Cultivated.

Sta. 181+15 & Drain. C.M.P. D.A. 31 A.C.

P.O.T. STA. 182+41.8 (½" Iron Pin).

P.O.T. STA. 186+53.4 (½" Iron Pin).

½" Iron Pin

MINNIE COPER
E½ E½

STA. 188+30.33 BEGIN F.A.P. 1015-A (1).

P.O.T. STA. 188+93.38

P.O.T. STA. 189+32.8 (½" Iron Pin).

Rip Rap in 10' Ash.

O K L A H O M A.

STATE OF

R I V E R

R E D

Borrow to Here

R I V E R B O T T O M.

R/W Line

Temp. R/W For Backfill and Topping Material on F.A.P. 168-A and For Plating Material on F.A.P. 1015-A

MINNIE COPER
E½ E½

Side Borrow may be obtained Rt. and Lt. Sta. 190+00 to Sta. 210+00

P.O.T. STA. 200+39

P.O.T. STA. 203+14.7 (Stake).

Salt Cedars.

Sand

175+00 180+00 185+00 190+00 195+00 200+00 205+00

B.M. - Top R.P. (½" Iron Pin) 60' South Sta. 176+82 El. 885.18

B.M. - 60d Spike in 5" Mesquite 72' R. Sta. 180+ El. 880.38

B.M. - Top R.P. (½" Iron Pin) 80' Lt. Sta. 188+80 El. 871.50

B.M. - 60d Spike in 12" Ash 95' Lt. Sta. 199+12 El. 850.42

STA. 188+30.33 BEGIN F.A.P. 1015-A(1).

Head of Slope Sta. 188+93.38

El. 863.47

300' V.C.

-0.33%

Fill by Br. Contr.

+0.33%

2254.32' Sec. "A" Br.

El. 852.5

2400' V.C.

Fl. 842.92
El. 864.00

St. No. 1 Sta. 200+17.79
Consist: 2-20' Trusses + 60 @ 15'-0"
24'-0" Wide - 18'-5" Roadway
Design: 155-100, 155-100 & 18
Steel Nos. 5-15 Incl.

880 870 860 850 840 830

PLATE 1-PLAN-PROFILE U. S. P. R. STANDARD

F.A.P. 1015-A(1) Sheet No. 5

Printed in U.S.A.
On ARKWRIGHT Tracing Cloth

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA TEXAS	1015-A(1)	1938	7	21

Revised Oct. 31, 1938

B3276

SHEET ESTIMATE

STA. 211+45.25 TO STA. 227+00.58

- Emb +20% ______ 58,068 C.Y.
- Class "A" Borr. ______ 58,068 C.Y.
- Earth Plating +10% ______ 5,983 C.Y.
- (1) Overhaul ______ 91,150 Sec. Y.

(1) Includes 24,150 Sec. Y. for Plating Material.

There shall be no side borrow obtained
Rt. & Lt. Sta. 210 to 239

PLATE I-PLAN-PROFILE B.P.R. STANDARD

EUGENE DIETZGEN CO.

Printed in U.S.A.
On ARKWRIGHT Tracing Cloth

F.A.P. 1015-A(1) Sheet No. 7

FED. ROAD DIST. NO.	STATE	ROAD PROJ. NO.	AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA TEXAS	1015-A(1)	1938	7	21	

Revised Oct. 31, 1938
Revised May 13, 1939

PLAN — SURVEYED, PLOTTED, NOTE BOOK, NO., ALIGNMENT CHECKED, RT. OF WAY CHECKED, BY, DATE

Salt Cedars | Open | Scattered Timber | Open

205+00 | 210+00 | 215+00 | 220+00 | 225+00 | 230+00 | 235+00

P.O.T. STA. 210+30 (½" Iron Pin)

P.O.T. STA. 221+69.8 (½" Iron Pin)

P.O.T. STA. 235+13.7 (½" Iron Pin)

Sta 211+45.25

Sta 227+00.38

Borrow to here

No Borrow

Borrow to here

No Borrow

R/W Line

R/W Line

S 35° 32' W

Open | Scattered Timber | Open

There shall be no side borrow obtained Rt. & Lt. Sta. 210 to 239

Const. Metal Plate Guard Rail on Rt. & Lt. From Sta. 211+48 to Sta 226+98 Metal Plate Guard Rail 3,100 L.F.

Const. 2-4'-0" Sidewalks

B.M.-60¢ Spike in 17" Cottonwood 115° Lt. Sta. 210+55 El. 950.45

B.M.-60¢ Spike in 18" Cottonwood 110° Lt. Sta. 223+90 El. 948.71

B.M.-60¢ Spike in 8" Willow 140° Lt. 234+50 El. 945.67

B.M.-R.R. Bolt Spike in 8" Willow 90° Rt. Sta. 238+98 El. 946.74

PROFILE — SURVEYED, PLOTTED, NOTE BOOK, NO., GRADE CHECKED, B. M.'s NOTED, STRUCTURE NOTES RECHKD., BY, DATE

Mass Diagram Scale 1" = 5000 C.Y.

SHEET ESTIMATE

STA. 211+45.25 to STA 227+00.38

Emb 110%*	59,068 C.Y.
Class "A" Surv.	59,068 C.Y.
Earth Plating 10%*	5,993 C.Y.
(1) Overhaul	34,150 Sec. Y.

(1) Includes 24,160 Sec. Y. For Plating Material.

9" End of Slab Sta 211+45.25

Std Approach Slab

2254.92 Sec "A" Br.

Fill by Br. Cont.

122.34

2450' V.C.

-0.33%

300' V.C.

Estimated Overhaul 67,000 Sec.Y.

P.I. 850.45

P.I. 854.11

-0.79%

200' V.C.

+0.512%

P.I. 851.26

Sta 220+21.4 Const. Lip Curb Drains R.C.I.D. No. 1 Co. Sh. No 2A.

Std Approach Slab

End of Slab Sta 227+00.38

10.38%

300' V.C.

Fill by Br. Cont.

1054' V.C.

1041.33 Sec "A" Br.

703.80'

-0.38%

P.I. 842.13

P.I. 860.00

950

940

205 | 6 | 7 | 8 | 9 | 210 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 220 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 230 | 1 | 2 | 3 | 4 | 5 | 6 | 237

PLATE I-PLAN-PROFILE H. P. W. STANDARD

KEUFFEL & ESSER CO. Chicago-New York

F.A.P. 1015-A(1) Sheet No. 7

Printed in U.S.A. On ARKWRIGHT Tracing Cloth

FED. ROAD DIST. NO.	STATE	SEC. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA. TEXAS	1015-A(1)	1938	8	21

Revised Oct 31, 1938

P.O.T. STA. 235+13.7 (½" Iron Pin).

P.O.T. STA. 237+23.8 (½" Iron Pin)

Sta 237+41.91

No Borrow

R/W Line

R/W Line

No Borrow

STA. 237+41.91 END F.A.P. 1015-A (1).

Cultivated

240+00

245+00

Cultivated.

S. 75°32' W.

250+00

Slough

Slough

151'-11" Water Tanks

Spring

P.O.T. STA. 253+20.7 (½" Iron Pin).

Pasture

255+00

Pasture

B.M. = R.P. (50¢ Spike in 8" Willow 30' R.L. Sta. 235+80 El. 848.74

B.M. = Top R.P. (½" Iron Pin) 100' Rt. Sta 253+20.7 El. 869.92

1041.33 Sec "A" Br.

½" Bolt at Stub Sta 237+41.91

STA. 237+41.91 END F.A.P. 1015-A (1).

-0.38%

Finley Br. Contr.

1000 V.C.

860

850

840

235 6 7 8 9 240 1 2 3 4 5 6 7 8 9 25. 1 2 3 4 5 6 7 258

PLATE I-PLAN-PROFILE A. P. P. STANDARD

GENE DIETZGEN CO. Chicago New York

F.A.P. 1015-A(1) Sheet No. 8

Printed in U.S.A. Co. ARKWRIGHT Tracing Cloth

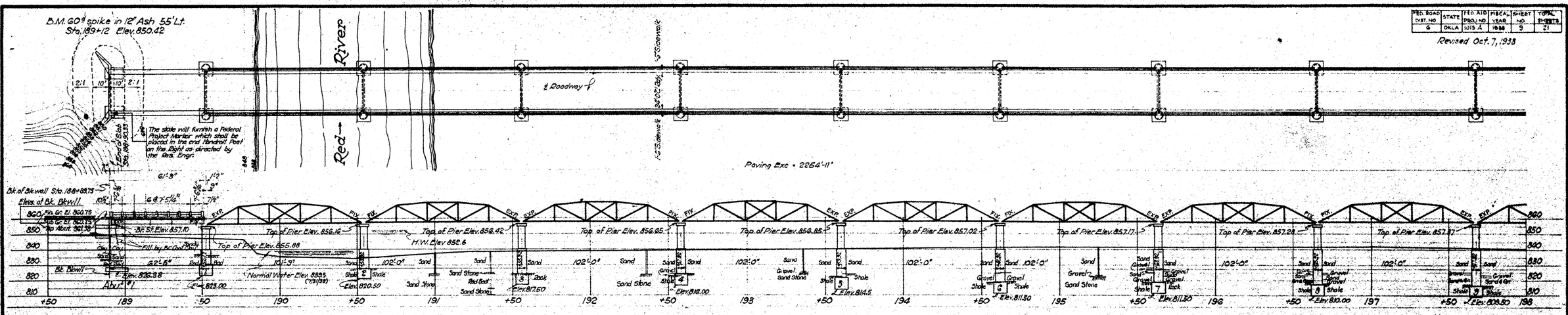
PLAN: SURVEYED, PLOTTED, QUANTITIES CHECKED, NOTE BOOK, NO.

PROFILE: SURVEYED, PLOTTED, GRADES CHECKED, B. M.'S NOTED, STRUCTURE NOTATIONS CHKD., NO.

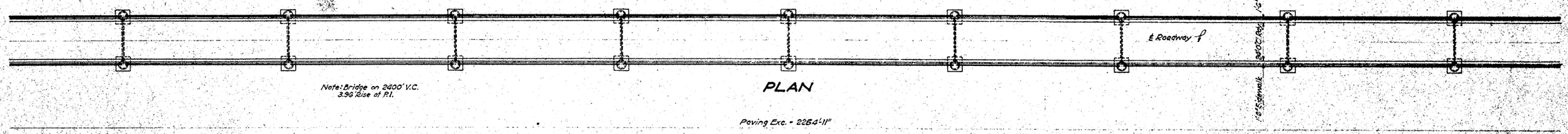
FED. ROAD DIST. NO	STATE	FED. AID PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015 A	1938	9	21

Revised Oct. 7, 1938

B.M. 60ᵈ spike in 12" Ash 55'Lt. Sta. 189+12 Elev. 850.42

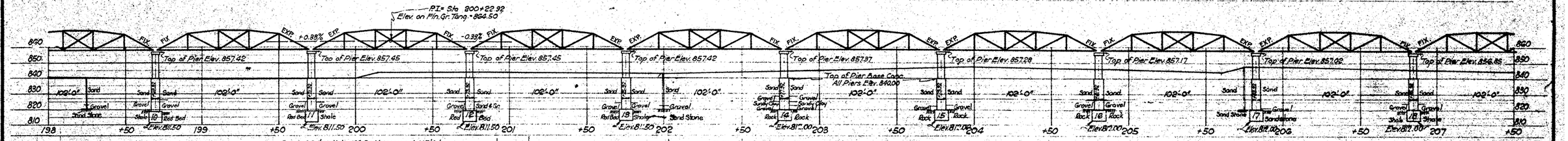


Note:- Place C.I. Drains as shown (|) on Gen. Elev.

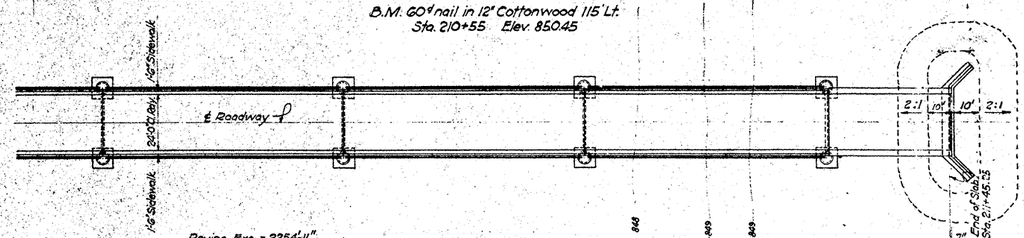


PLAN

Paving Exc. = 2254'-11"



B.M. 60ᵈ nail in 12" Cottonwood 115'Lt. Sta. 210+55 Elev. 850.45



GENERAL ELEVATION

Scale 1" = 30'

DESIGN DATA

Concrete: Class A — 650 ⁰/₀"
Fiber Slab — 800 ⁰/₀"
Steel — 16,000 ⁰/₀"
Loading: Okla. Std. Truck Train plus 30% Impact — 100 ⁰/₀"
Sidewalk
Max. Foundation Pressure: Abut. #1 — 3.75 tons/s.f.
Abut. #2 — 28.2 tons/pile
Piers - See table Sh. No. 12

Note:- Place C.I. Drains as shown (|) on Gen. Elev

SUMMARY OF QUANTITIES

Item No / Items / Location	202.06a Class A Excav. Cu. Yds.	501.06b Subst. Excav. Common Cu. Yds.	501.06c Subst. Excav. Rock Cu. Yds.	505.06 Reinf. Conc. Hand Rail Lin. Ft.	506.06a Struct. Steel Lbs.	509.06a Concrete Cu. Yds. Class A	509.06aa Cu. Yds. Cl. A Abut. & Pier Bases	509.06b Cu. Yds. Class A-A	511.06 Reinf. Steel Lbs.	513.06aa R.C. Test Piles Ea.	513.06d R.C. Piling L.F.
Abutments		315	62.5			87.1	48.3		15,350	1	288
Piers		7,280	961.0			848.6	1550.8		138,310		
21-100' Trusses					2,618,300			1238.1	200,760		
1 Bm Spans				225.0	122,000			82.1	10,770		
Totals	1900	7,595	1027.5	225.0	2,810,300	935.7	1599.1	1320.2	365,190	1	288

GENERAL NOTES

This construction shall be in accordance with the Oklahoma Standard Specifications of 1927.

All exposed concrete surfaces to have a carborundum finish.

Bearing areas of concrete under all shoes shall be ground with a carborundum brick before placing shoes to secure full bearing of shoes on concrete.

A 40' R.C. Test Pile shall be driven at Abut. #2 at location shown on piling diagram. All R.C. piles shall be driven with a Vulcan No. 1 or equivalent steam hammer. High Early Strength Cement may be used for R.C. Piling, see Sec. 510 Okla. Std. Spec. of 1927.

For details of Abut. #1 see Sh. No. 10
For details of Abut. #2 see Sh. No. 11
For details of Piers see Sh. No. 12
For details of 100' Trusses see Stds. 15E-1004 & 15E-1005, Sh. Nos. 13 & 14.
For details of Roadway for 1-Bm. spans see Sh. No. 11 and Std. 1-B-6, Sh. No. 15.
For details of R.C. Piling see Std. CT-6, Sh. No. 18.

Approximately 1900 Cu. Yds. of Cl. A Excav. required to make fill around abuts. to be obtained as directed by Res. Engr.

The fill around abuts. shall be placed and compacted in accordance with Sec. 202.04c.

The structural steel shall be painted in accordance with Sec. 504.04 and Sec. 730 except that (a) three field coats of paint shall be applied, one of "red lead" first field spec.) and "two of aluminum (second field spec.) (b) Contact surfaces shall be clean and "free of paint" when assembled.

RED RIVER
GENERAL ELEVATION & PLAN
SUMMARY OF QUANTITIES
21-100' TRUSSES ~ 1-60' & 1-50' I-BM. SPANS
24'-0" RDY. & 2-1'-6" SIDEWALKS
℄ STA. = 200+17.79
FED. AID PROJ. NO. 1015 SEC. "A" BR.

Soundings by Hedrick Mar. 1938 & C.I.P. Sept. "

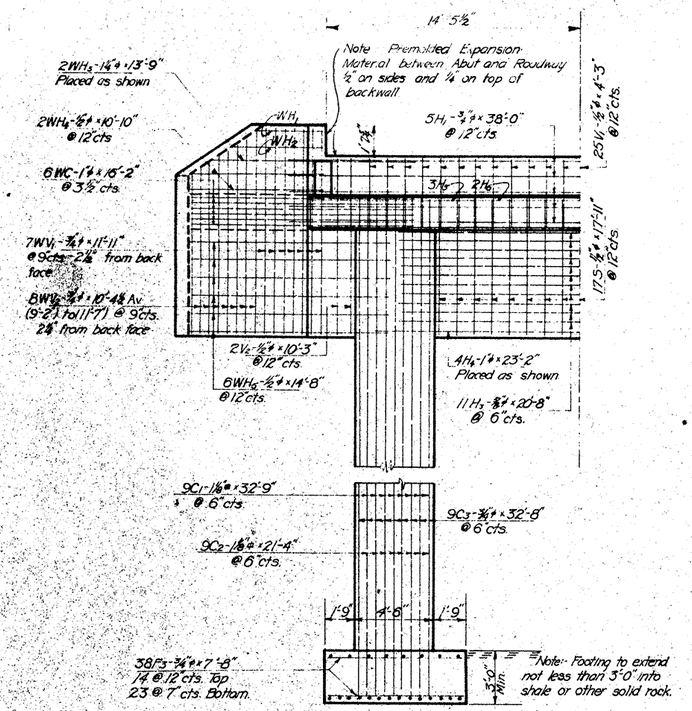
Drawn by Marsh
Checked " W.C.Z.

327 1

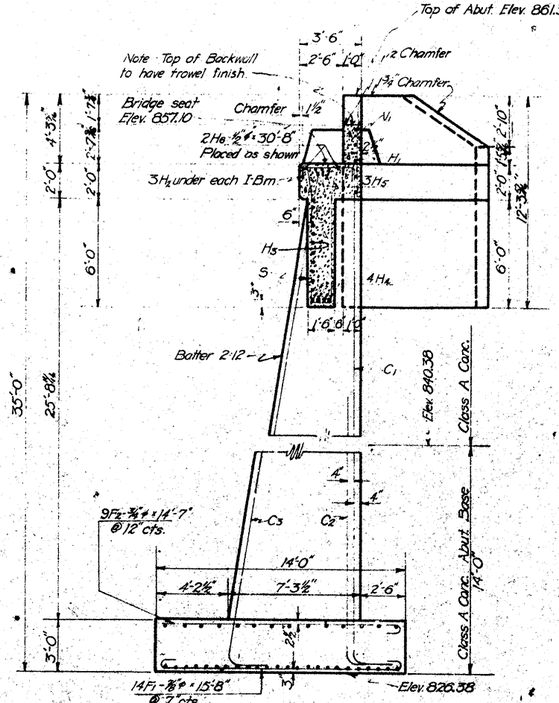
Sheet No. 9

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	TOTAL SHEETS	SHEET NO.	TOTAL SHEETS
6	ONT.	DIS SEC A	1988	10	21

Revised Oct. 7, 1988



HALF ELEVATION



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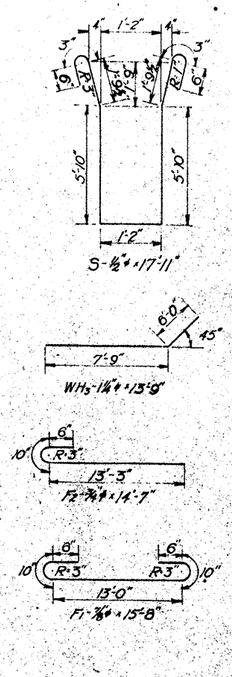
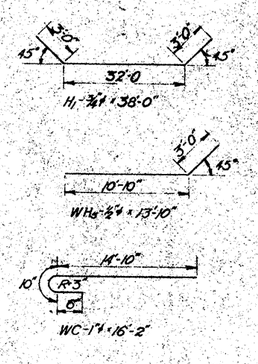




BAR LIST - ABUT. NO. 1

Mark	No.	Size	Form	Length
F1	28	⅞"ø	Bent	15'-8"
F2	18	¾"ø	Bent	14'-7"
F3	7+1	¾"ø	Str.	7'-8"
C1	18	1⅛"ø	Bent	32'-3"
C4	18	1⅛"ø	Bent	20'-10"
C2	18	¾"ø	Bent	32'-3"
H1	5	¾"ø	Bent	38'-0"
H2	21	⅝"ø	Bent	4'-3"
H3	11	⅝"ø	Str.	20'-8"
H4	4	1"ø	Str.	23'-2"
H5	3	1"ø	Str.	30'-8"
H6	2	⅞"ø	Str.	30'-8"
V1	25	¾"ø	Str.	4'-3"
V2	1	⅝"ø	Str.	10'-3"
S	17	½"ø	Bent	17'-11"
WH1	2	½"ø	Str.	5'-2"
WH2	2	½"ø	Str.	7'-2"
WH3	2	1¼"ø	Bent	13'-9"
WH4	4	⅝"ø	Str.	10'-10"
WH5	12	1¼"ø	Bent	13'-10"
WV1	14	¾"ø	Str.	11'-11"
WV2	16	¾"ø	Str.	10'-4" Av.
WC	12	1"ø	Bent	16'-2"
CH	6	¾"ø	Bent	16'-5"

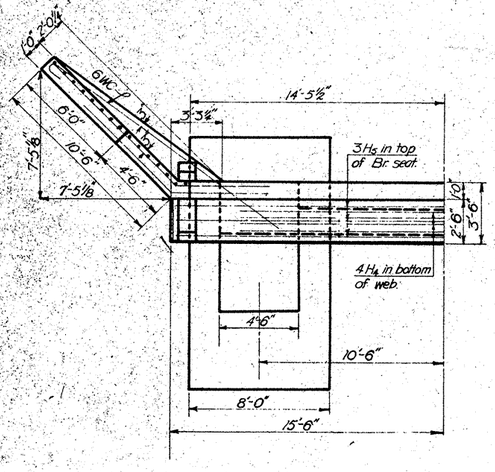
QUANTITIES ABUT. NO. 1

Class A Conc.	49.2 Cu. Yds.
Class A Conc. Abut. Base	48.3 Cu. Yds.
Reinf. Steel	10,270 Lbs.
Substr. Excav. Common	315 Cu. Yds.
*Substr. Excav. Rock	66.5 Cu. Yds.

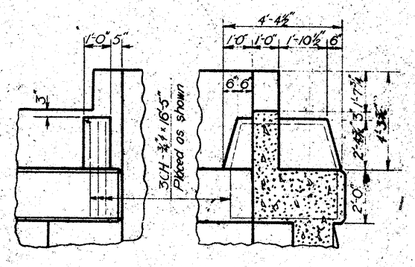
* Rock Excavation computed for average depth of 8.0 ft.

ABUT. NOTES.

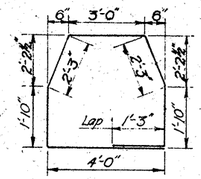
All concrete shall be poured in the dry. Concrete in the footings of Abut. shall be poured against the rock foundation. The quantity of Class A Concrete in Abut. Bases and Substructure Excavation, Rock paid for under those items shall be the amount within the neat lines of the concrete as shown on these plans. Any variation in the elevation of Abut. Bases shall be taken care of in the shafts of the Abuts. any additional concrete shall be paid for as Class A Conc. in Abut. Bases. All cost of such variation shall be included in the unit price bid per Cu. Yd. for Class A Concrete in Abut. Base and Substructure Excavation, Rock



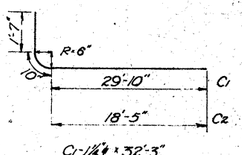
HALF PLAN



DETAILS OF COUNTERFORT



CH-¾"ø×16'-5"



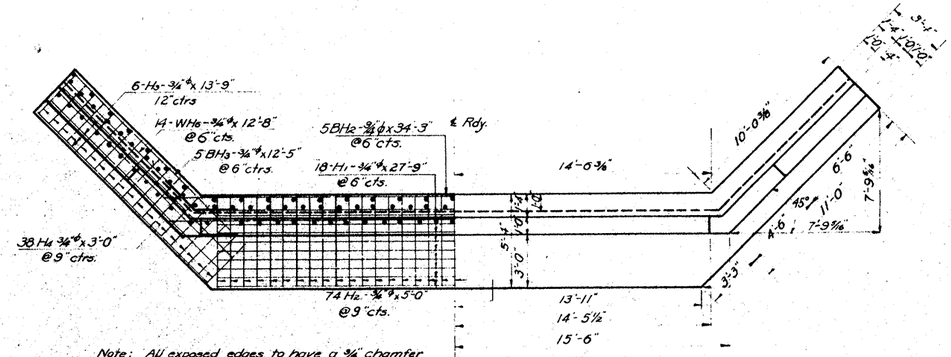
C1-1¼"ø×32'-3"
C2-1¼"ø×20'-10"

DETAILS OF ABUTMENT NO. 1
21-100' TRS. ℄ 1-60' ℄ 1-50' I BM. SPANS
24' RDY. ℄ 2-1'-6" SIDEWALKS
℄ STA. 200+17.79
F.A. PROJ. NO. 1015 A - BR.

Drawn by H.R.W. Aug. 1988
Checked by M.E.M. 1" = 1'

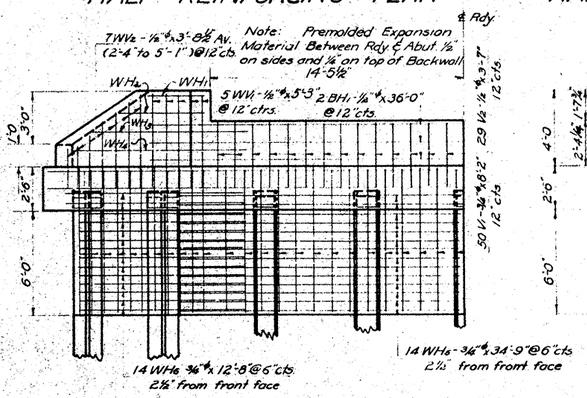
Sheet No. 10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	11	21

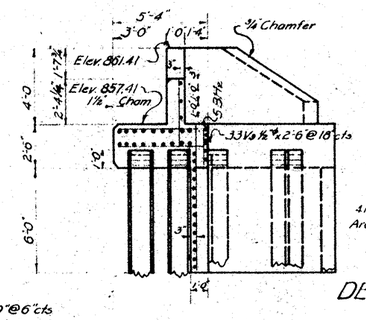


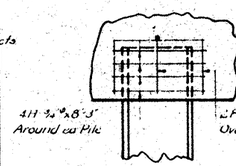
Note: All exposed edges to have a ¾" chamfer unless otherwise noted.

HALF REINFORCING PLAN

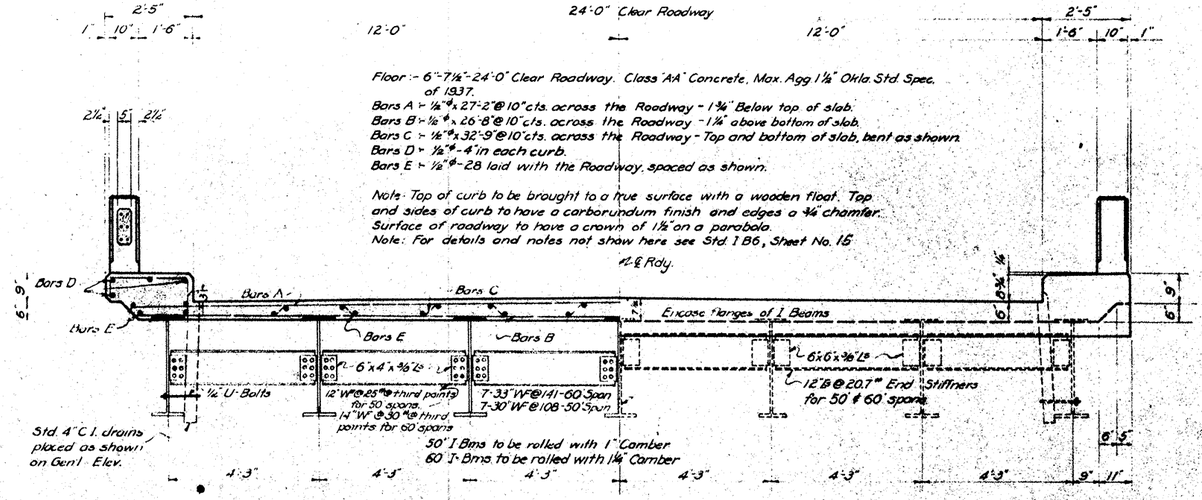


HALF PLAN





DETAIL OVER TOP OF PILE

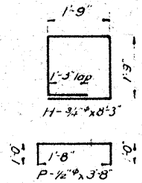


HALF SECTION ACROSS ROADWAY

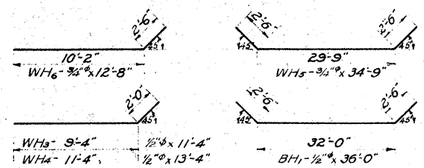
HALF END ELEVATION

HALF ELEVATION

SECTION ON ℄



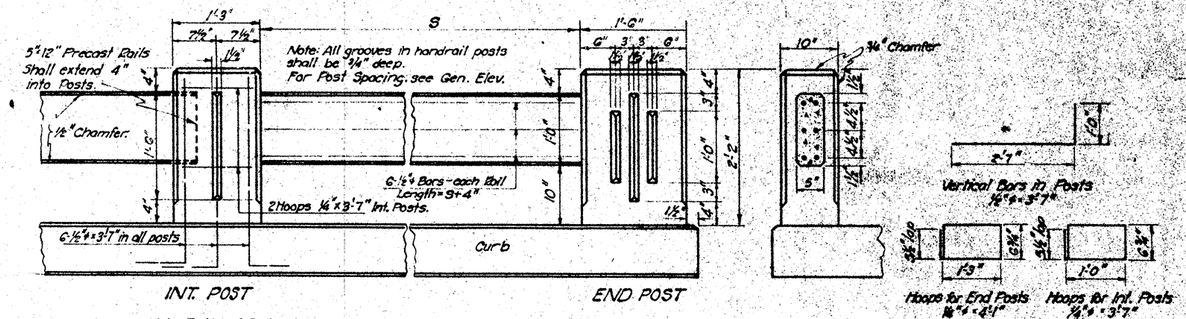
PILE SPACING DIAGRAM



BAR LIST - 1 - ABUT.				
Work	No.	Size	Form	Length
H	36	¾"ϕ	Bnt.	8'-3"
H1	18	"	Str.	27'-9"
H2	76	"	"	5'-0"
H3	12	"	"	13'-9"
H4	76	"	"	3'-0"
WH1	2	½"ϕ	"	5'-1"
WH2	2	"	"	7'-3"
WH3	2	"	Bnt.	11'-4"
WH4	2	"	"	13'-4"
WH5	14	¾"ϕ	"	34'-9"
WH6	28	"	"	12'-8"
BH1	2	½"ϕ	"	36'-0"
BH2	5	¾"ϕ	Str.	34'-9"
BH3	10	"	"	12'-5"
V1	50	"	"	8'-2"
V2	29	½"ϕ	"	3'-7"
V3	33	"	"	2'-6"
WV1	10	"	"	5'-3"
WV2	14	"	"	3'-8 3/16"
P	18	"	Bnt.	3'-8"

QUANTITIES - ABUT. NO. 2

Cl. A Conc.	37.9 Cu. Yds.
Reinf. Steel	5,080 Lbs.
Substruct. Excav. Comm.	0.0 Cu. Yds.
Reinf. Conc. Piles	288 L. F.
Reinf. Conc. Test Piles	1 Ea.



Note: Butts of Rails shall be padded with 2 layers of 1-Ply Asphalt Roofing Felt and ends shall be wrapped with 1 layer of the same material. All excess material shall be cut off after forms are removed.

DETAILS OF HANDRAIL & POSTS

Drawn By N.E.S. Aug. 1938
Checked By W.C.Z. " 1938

DETAILS OF ABUT. NO. 2 ℄ RDY. FOR 1 BM. SPANS
21-100' TRUSSES - 1-60' I BM. ℄ 1-50' I BM. SPAN
24' ROADWAY ℄ 2-1'-6" SIDEWALKS
℄ STA. 200+17.79
F.A. PROJ. NO. 1015 SEC. A BRIDGE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	12	21

Rev. 10-7-38

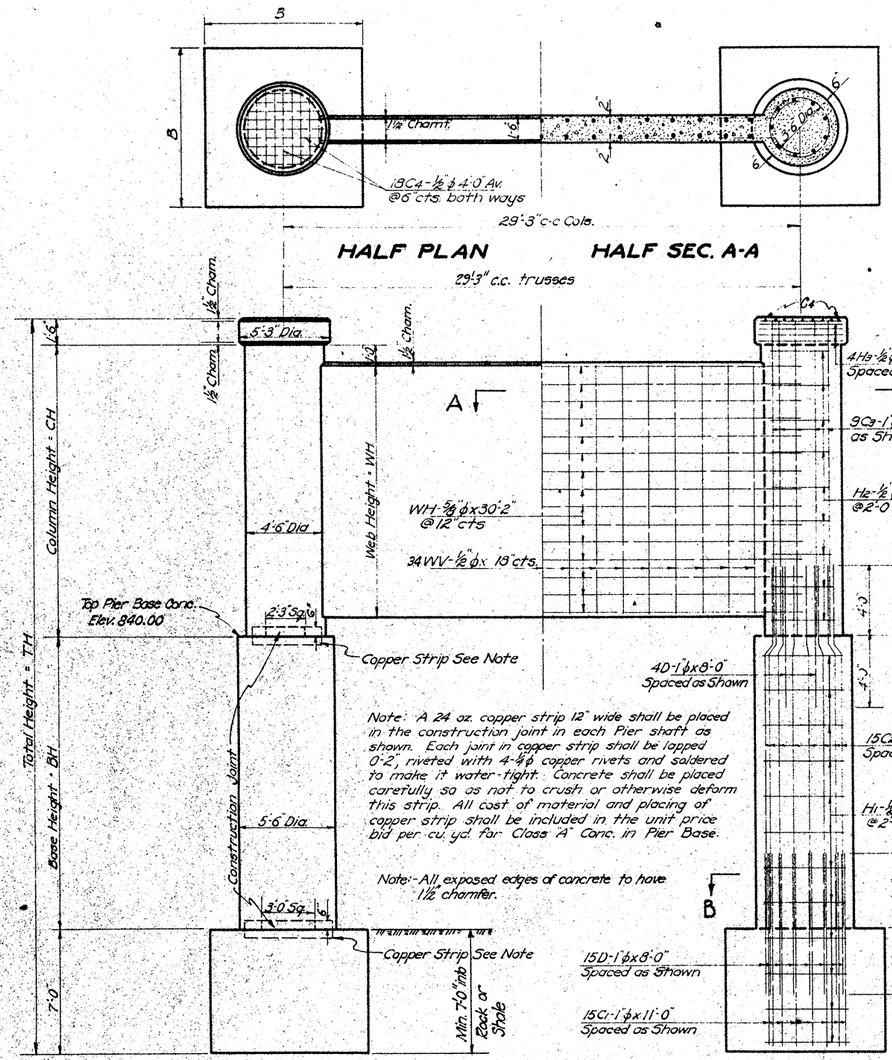


TABLE OF DIMENSIONS & ELEVATIONS

Pier No.	TH	B1	CH	WH	B		Bottom of Base	Top of Base Conc.		Top of Pier Cap	Bearing Tons per Sq Ft at base	Rock Exc. Depth of Base in Rock *
1	32'-10 9/16"	10'-0"	14'-4 1/16"	12'-0"	7'-6"		823.0	840.0		856.39	3.8	14.6
2	35'-7 1/16"	12'-6"	14'-7 1/8"	12'-6"	8'-0"		820.5	840.0		856.16	3.8	8.3
3	38'-11 1/16"	15'-6"	14'-11 1/8"	12'-6"	8'-0"		817.5	840.0		856.42	3.9	8.0
4	40'-11 1/16"	17'-0"	15'-1 1/8"	13'-0"	8'-0"		816.0	840.0		856.65	3.9	7.8
5	42'-4 7/16"	18'-6"	15'-2 3/8"	13'-0"	8'-0"		814.5	840.0		856.85	4.0	8.2
6	45'-6 1/4"	21'-6"	15'-6 1/4"	13'-6"	8'-6"		811.5	840.0		857.02	3.7	7.8
7	45'-8"	21'-6"	15'-8"	13'-6"	8'-6"		811.5	840.0		857.17	3.7	7.8
8	47'-3 7/8"	23'-0"	15'-9 3/8"	13'-6"	8'-6"		810.0	840.0		857.29	3.7	8.2
9	47'-10 1/16"	23'-6"	15'-10 5/16"	13'-6"	8'-6"		809.5	840.0		857.37	3.7	8.1
10	45'-11 1/16"	21'-6"	15'-11 1/8"	13'-6"	8'-6"		811.5	840.0		857.42	3.7	8.2
11	45'-11 1/16"	21'-6"	15'-11 1/8"	13'-6"	8'-6"		811.5	840.0		857.45	3.7	8.3
12	45'-11 1/16"	21'-6"	15'-11 1/8"	13'-6"	8'-6"		811.5	840.0		857.45	3.7	8.3
13	45'-11 1/8"	21'-6"	15'-11 1/8"	13'-6"	8'-6"		811.5	840.0		857.42	3.7	8.2
14	45'-4 7/16"	21'-0"	15'-10 5/16"	13'-6"	8'-6"		812.0	840.0		857.37	3.7	9.0
15	45'-3 3/8"	21'-0"	15'-9 3/8"	13'-6"	8'-6"		812.0	840.0		857.28	3.7	7.9
16	45'-2"	21'-0"	15'-8"	13'-6"	8'-6"		812.0	840.0		857.17	3.7	9.3
17	45'-0 1/4"	21'-0"	15'-6 1/4"	13'-6"	8'-6"		812.0	840.0		857.02	3.7	9.0
18	44'-10 3/8"	21'-0"	15'-4 3/8"	13'-0"	8'-6"		812.0	840.0		856.85	3.7	7.6
19	44'-7 3/16"	21'-0"	15'-1 5/16"	13'-0"	8'-6"		812.0	840.0		856.65	3.7	11.0
20	44'-5 1/16"	21'-0"	14'-11 1/8"	12'-6"	8'-0"		812.0	840.0		856.42	4.0	8.2
21	44'-1 15/16"	21'-0"	14'-7 1/16"	12'-6"	8'-0"		812.0	840.0		856.16	4.0	8.4
22	42'-10 5/8"	20'-0"	14'-4 5/16"	12'-0"	7'-6"		813.0	840.0		855.88	3.9	8.0

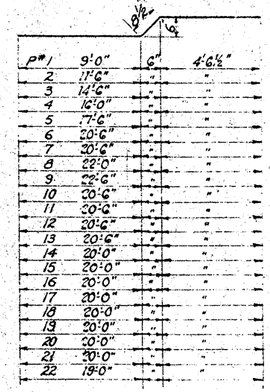
* Note:- Substruct. Excav. Rock computed for overage depth of base in Rock shown in Table.

BAR LIST

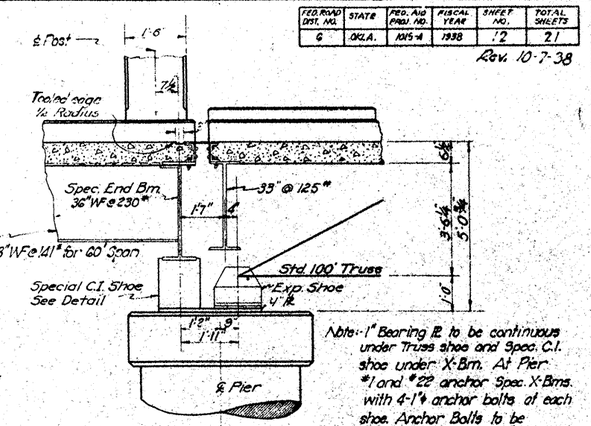
Pier No.	Bars C1 1" ϕ Str.		Bars C2 1" ϕ Bnt.		Bars C3 1" ϕ Str.		Bars C4 ½" ϕ Str.		Bars D 1" ϕ Str.		Bars H1 ½" ϕ Bnt.		Bars H2 ½" ϕ Bnt.		Bars H3 ½" ϕ Bnt.		Bars WH 5/8" ϕ Bnt.		Bars WV ½" ϕ Str.	
	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length
1	30	11'-0"	30	14'-3"	18	15'-7"	36	4'-0" Av.	38	8'-0"	18	16'-2"	14	13'-0"	8	16'-11"	26	30'-2"	34	11'-6"
2	30	11'-0"	30	16'-9"	18	15'-11"	36	4'-0" Av.	38	8'-0"	20	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
3	30	11'-0"	30	19'-9"	18	16'-2"	36	4'-0" Av.	38	8'-0"	24	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
4	30	11'-0"	30	21'-3"	18	16'-5"	36	4'-0" Av.	38	8'-0"	24	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
5	30	11'-0"	30	22'-9"	18	16'-7"	36	4'-0" Av.	38	8'-0"	26	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
6	30	11'-0"	30	25'-9"	18	16'-9"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
7	30	11'-0"	30	25'-9"	18	16'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
8	30	11'-0"	30	27'-3"	18	17'-0"	36	4'-0" Av.	38	8'-0"	32	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
9	30	11'-0"	30	27'-9"	18	17'-1"	36	4'-0" Av.	38	8'-0"	32	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
10	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
11	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
12	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
13	30	11'-0"	30	25'-9"	18	17'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
14	30	11'-0"	30	25'-3"	18	17'-1"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
15	30	11'-0"	30	25'-3"	18	17'-0"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
16	30	11'-0"	30	25'-3"	18	16'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
17	30	11'-0"	30	25'-3"	18	16'-9"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	13'-2"
18	30	11'-0"	30	25'-3"	18	16'-7"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
19	30	11'-0"	30	25'-3"	18	16'-5"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-8"
20	30	11'-0"	30	26'-9"	18	16'-2"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	28	30'-2"	34	12'-2"
21	30	11'-0"	30	25'-3"	18	15'-11"	36	4'-0" Av.	38	8'-0"	30	16'-2"	16	13'-0"	8	16'-11"	26	30'-2"	34	12'-2"
22	30	11'-0"	30	24'-3"	18	15'-7"	36	4'-0" Av.	38	8'-0"	28	16'-2"	14	13'-0"	8	16'-11"	26	30'-2"	34	11'-3"

PIER QUANTITIES

Pier No.	Class "A" Conc. Cu. Yds.	Cl. A Conc. Pier Base Cu. Yds.	Reinf. Steel Lbs.	Substr. Exc. Common Cu. Yds.	Substr. Exc. Rock Cu. Yds.
1	35.9	46.8	5240	130	60.5
2	38.9	55.2	5510	65	39.3
3	37.2	60.5	5810	145	37.9
4	38.2	63.1	6010	230	37.0
5	38.4	65.7	6170	250	38.9
6	39.3	75.3	6470	340	41.7
7	38.5	75.3	6480	350	41.7
8	39.6	77.9	6690	375	43.9
9	39.7	78.8	6670	365	43.4
10	39.8	75.3	6490	315	43.9
11	39.8	75.3	6490	315	44.4
12	39.8	75.3	6490	385	44.4
13	39.8	75.3	6490	370	43.9
14	39.7	74.4	6450	375	46.2
15	39.6	74.4	6440	440	42.9
16	39.5	74.4	6440	400	49.8
17	39.3	74.4	6430	430	48.2
18	38.4	74.4	6410	410	40.7
19	38.2	74.4	6400	380	58.9
20	37.2	70.1	6320	410	38.9
21	36.9	70.1	6310	410	39.8
22	35.9	64.4	6160	390	33.9
Tot.	848.6	1550.8	138,310	7280	961.0

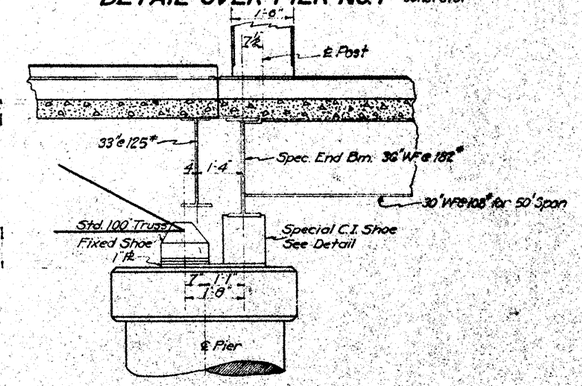


C2 Bars - 1" ϕ

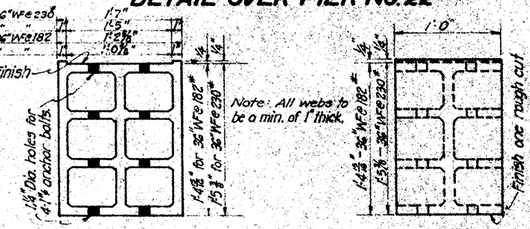


Note:- 1" Bearing Pl. to be continuous under Truss shoe and Spec. C.I. shoe under X-Bm. At Pier #1 and #22 anchor Spec. X-Bms. with 4-1" ϕ anchor bolts at each shoe. Anchor Bolts to be imbedded a min. of 1'-0" into concrete.

DETAIL OVER PIER NO. 1



DETAIL OVER PIER NO. 22



Note: All webs to be a min. of 1" thick.

DETAILS OF SPEC. C.I. SHOES

Note: All concrete shall be poured in the dry.

Concrete in the footings of Piers shall be poured against the rock foundation. The quantity of Class A Conc. in Pier Bases and Substructure Excavation Rock paid for under those items shall be the amount within the neat lines of the concrete as shown on these plans. Any variation in the elevation of Pier Bases shall be taken care of in the shafts, and any additional concrete shall be paid for as Class A Conc. in Pier Bases. All cost of such variation shall be included in the unit price bid per Cu. Yd. for Cl. A Conc. Pier Bases and Substruct. Excav. Rock.

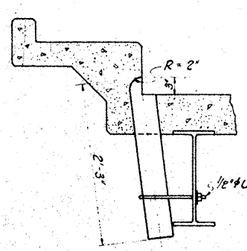
Round Pier Bases of equivalent area and volume may be substituted for the square bases shown. Plans for the round bases shall be submitted to and approved by the State Highway Commission before construction is started.

DETAILS OF PIERS
21-100' TRUSSES, 1-60' I-BM. & 1-50' I-BM. SPAN
24'-0" ROADWAY & 2-1'-6" SDWLKS.
& STA. 200+17.79
FED. AID PROJECT NO. 1015-A-BR.

Detailed By H.E.M. July 1938
Traced By S.R.M.
Checked By W.C.Z. Sept "

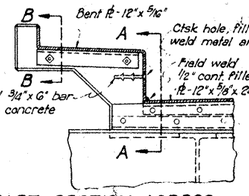
5414

Supervised: H.K.White & D.J.McCullough Oct. 1938
Drawn: L.W.Leech "
Checked: E.L.Sloan "

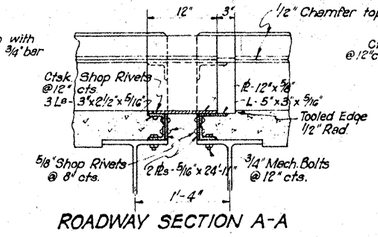


DETAIL OF DRAIN

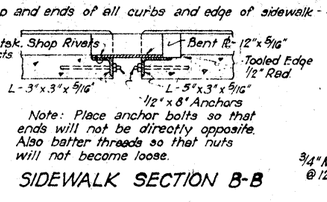
Cast Iron Drains, 4"ϕ x 2'-3" x 3/8" thick to be placed on both sides of the Rdwy. at the center of each panel except in panels adjacent to abutments.



PART SECTION ACROSS EXPANSION DEVICE

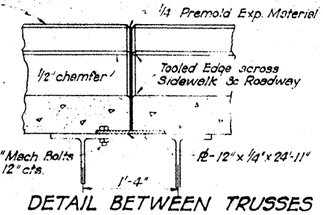


ROADWAY SECTION A-A

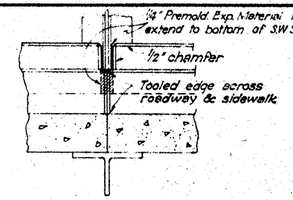


Note: Place anchor bolts so that ends will not be directly opposite. Also batter threads so that nuts will not become loose.

SIDEWALK SECTION B-B

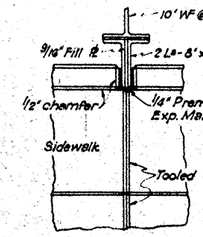


DETAIL BETWEEN TRUSSES AT FIXED JOINTS



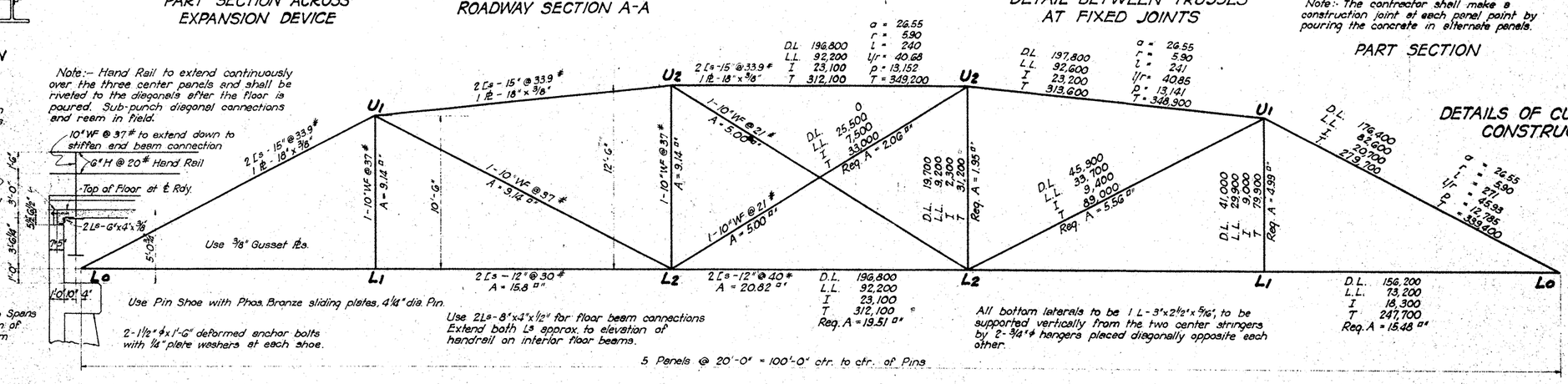
Note:- The contractor shall make a construction joint at each panel point by pouring the concrete in alternate panels.

PART SECTION



PART PLAN

DETAILS OF CURB OPENING AT CONSTRUCTION JOINTS



Note:- When I-Beam Approach Spans are framed into the end beam of the truss, place the end beam directly over the pin.

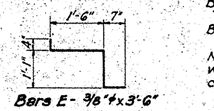
ROADWAY FLOOR AND SIDEWALK

Roadway Slab:- 6 1/2" thick; Class AA Concrete, maximum aggregate 1 1/2".
Sidewalk Slab:- 4" thick, " " " " " "
Section 504, Oklahoma Standard Specifications of 1937 for construction.
Finish roadway and sidewalk floors in accordance with Section 504.04
Top of sidewalk curb to be brought to a true surface with a wooden float; top and sides of sidewalk curb and sides of roadway curbs to have a carborundum block finish. Edges of curbs and sidewalks to have a 1/2" chamfer.
Surface of roadway floor slab to have a crown of 1 1/2" on a parabola. The bridge is designed for a future wearing surface on the roadway floor slab of 2" @ 22.5 lb. per sq. ft.

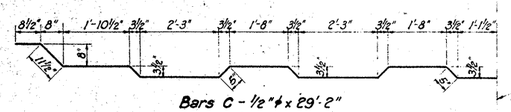
REINFORCING

Bars A - 1/2" ϕ @ 10" cts. across the roadway, 1 3/4" below top of slab.
Bars B - 1/2" ϕ @ 10" cts. across the roadway, 1 1/4" above bottom of slab.
Bars C - 1/2" ϕ @ 10" cts across the roadway, top and bottom of slab, bent as shown.
Bars D - 1/2" ϕ longitudinal, 2 in each sidewalk curb, 24 in roadway. (19'-10" long in interior panels.)
Bars E - 3/8" ϕ @ 5" cts. across the sidewalk, 1 1/4" below top of sidewalk floor.
Bars H - 3/8" ϕ longitudinal, 5 in each sidewalk, spaced as shown.

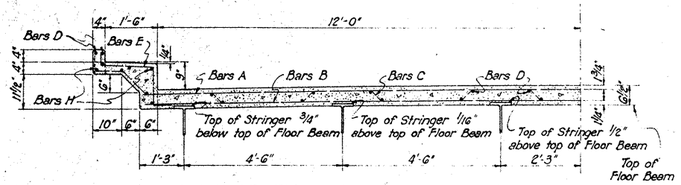
Note:- Reinforcing steel in floor slab shall be held in place with precast concrete blocks spaced at 2'-0" alternate centers under the top row of 'D' bars.
The end bars of all panels shall be 'C' bars.



Bars E - 3/8" ϕ x 3'-6"



Bars C - 1/2" ϕ x 29'-2"



HALF SECTION THROUGH FLOOR

TRUSS LOADING

Floor	.5417 x 25.0 x 150	=	2,031 Lb. per Lin. Ft. of Br.
Curbs & Sidewalk	(.3333 x 4.3333 + 5 x .5 + .5 x .8333 - .0208 x 1.5) 150	=	312 " " " " "
Future Surface	24 x 22.5	=	540 " " " " "
Steel		=	1,217 " " " " "
	Total Dead Load	=	4,100 " " " " "

PANEL LOADING

Rdy. L.L. 80 Lb. per Sq. Ft. or concentrated loading as shown in Fig. No. 1, Oklahoma Standard Specifications of 1937, Part V.

Panel D.L. = 4,100 x 20 x .5 = 41,000 Lb.
Panel L.L. Rdy = 80 x 24 x 20 x .5 = 19,200 Lb.
Impact on Truss members = 100 S + (L + 300)
Impact on Floor System and Hangers = 30 % of Live Load.

INTERIOR STRINGER LOADING

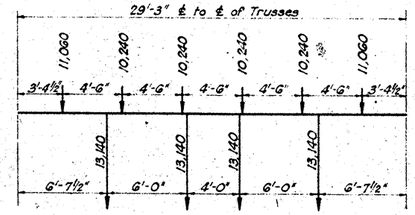
Floor and Surface	[(.5417 x 150) + 22.5] 4.5	=	467 Lb. per Ft.
Stringer		=	45 " " "
	Total Dead Load	=	512 " " "
D.L.M.	512 (10 x 9 - 9² x .5)	=	25,340 Ft. Lb.
L.L.M.	5,940 x 9	=	53,460 " "
Impact	30 %	=	16,040 " "
	Total Moment	=	94,840 " "
Req'd. S = 71.1	Use 16" WF @ 45 #		S = 72.4

OUTSIDE STRINGER LOADING

Sidewalk & Curbs = (2.1667 x 3.3333 + 5²/8 + 4.1667 x .5 - 4.5 x .0208) 150 = 156 Lb. per Ft.
Floor & Surfacing, = (22.5 x 3.01 + (150 x 3.5 x .5417) " = 352 " "
Stringer D.L. " = 45 " "
Total Dead Load " = 553 " "

D.L. Moment	553 x 10 x 9 - 553 x 9²/8	=	27,370 Ft. Lb.
L.L. "	5940 x 9 x 3.75/4.5	=	44,550 " "
Impact	30 %	=	13,320 " "
	Total Moment	=	85,280 " "
Req'd. S = 64.0	Use 16" WF @ 45 #		S = 72.4

FLOOR BEAMS



D.L. Interior Stringer = 512 x 20 = 10,240 Lb.
Outside Stringer = 553 x 20 = 11,060 "
L.L. = 13,140 "

INTERIOR BEAMS

D.L.M. of Beam	= 1/8 x 150 x 29.25²	=	16,040 Ft. Lb.
D.L.M.	= (11,060 x 3.375) + (10,240 x 20.25)	=	244,290 " "
L.L.M.	= 13,140 x 19.25	=	252,950 " "
Impact	= 30 % of L.L.M.	=	75,890 " "
	Total Moment	=	589,570 " "
Req'd. S = 442.2	Use 36" WF @ 150 #		S = 502.9

END BEAMS

D.L.M. of Beam	= 1/8 x 125 x 29.25²	=	13,370 Ft. Lb.
D.L.M.	= 244,690 x 10.1667/20	=	124,380 " "
L.L.M.	= 12,384 x 19.25	=	238,390 " "
Impact	= 30 % of L.L.M.	=	71,520 " "
	Total Moment	=	447,660 " "
Req'd. S = 335.7	Use 33" WF @ 125 #		S = 385.1

GENERAL NOTES

All construction shall conform to the Oklahoma Standard Specifications of 1937.

All steel to be structural grade except pins and rollers, which are to be cold rolled or forged. All reinforcing steel to be deformed bars, cold bent; no welds permitted.

All rivets to be 3/4" ϕ except those in 2 1/2" legs of angles which may be 5/8" ϕ. All field rivets to be driven with a pneumatic hammer.

The basis of payment for Structural Steel shall be the weight of the specified section. Sections of equivalent strength will be approved, if requested, but no allowance will be made for increased weight.

Paint: According to the Oklahoma Standard Specifications of 1937 for shop and field, except mechanical equipment may be used for field paint. Second field coat to be aluminum paint.

Concrete materials shall be handled as specified in Sec. 509.04.

All welding shall be in accordance with the A.A.S.H.O. Specifications.

* The following statement shall apply to the 1935 A.A.S.H.O. Specifications: "The paint shall be applied to steel surfaces which have been cleaned and dried. Two coats of paint, of which one coat shall be applied at the field shop, and one coat in the field after erection. Each coat of paint shall be applied to a dry surface. The paint shall be clear and free from water, grit, dirt, skins, or other foreign matter."

All Use of Structural Steel Paints in all contracts up to A.S.T.M. Designation D-261-38 to each paint or paint for first coat of aluminum paint.*

Revised Oct. 25, 1938

FED. ROAD DIST. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.			

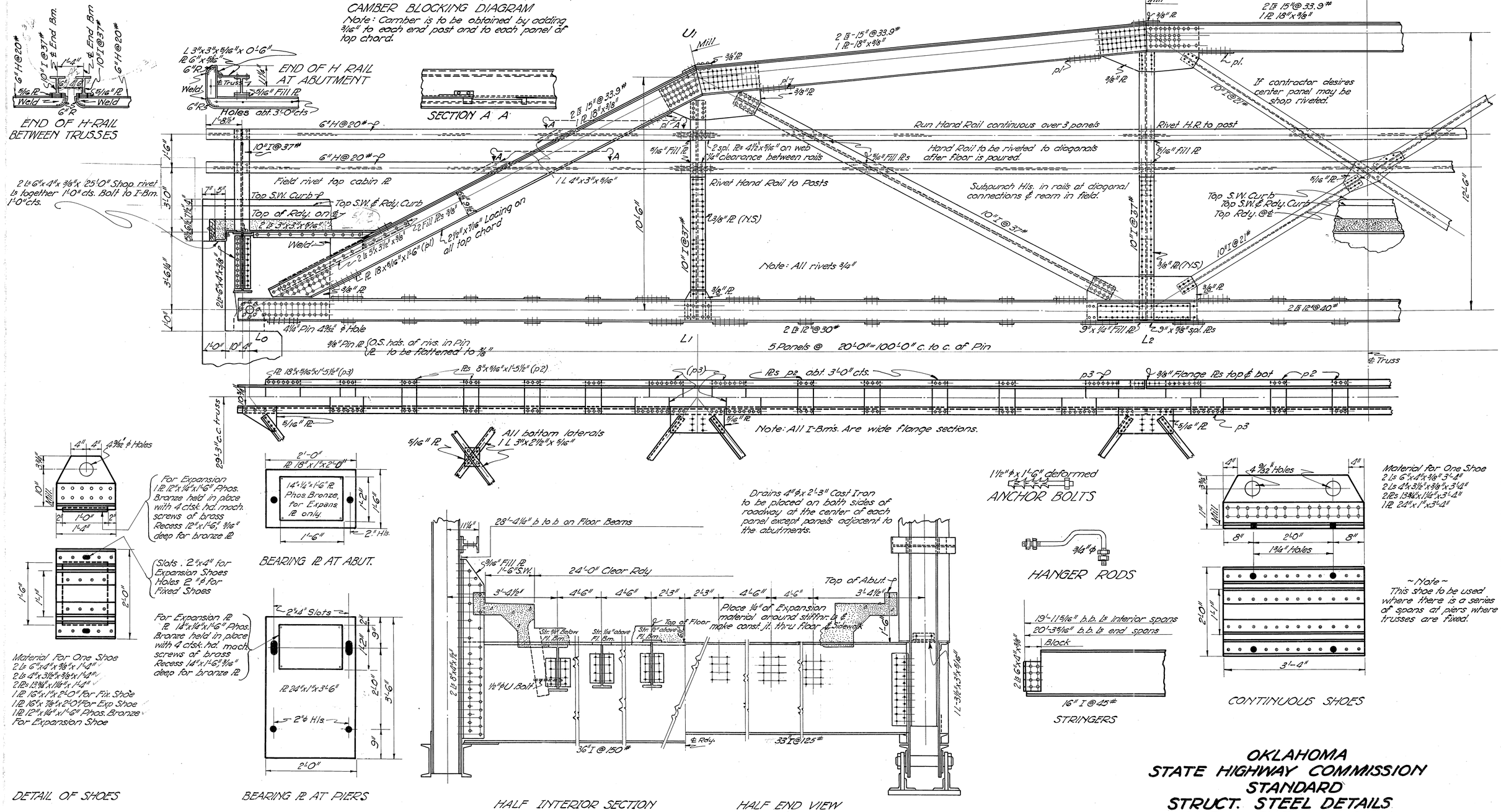
OKLAHOMA STATE HIGHWAY COMMISSION STANDARD GENERAL DESIGN 100' RIVETED TRUSS SPAN 24' ROADWAY 2-1'-6" SIDEWALKS

1.5E-1004

FED ROAD DIST. NO.	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.				

Revised 10-11-38

Note: Truss to be shop assembled to the proper camber as shown on the Camber Blocking Diagram. Ream all truss connections and match-mark all connections reamed while the truss is assembled.



Designed By: M.H. & E.S.
Supervised By: H.X.W. & D.I.M.S.
Drawn By: H.E. Fertig June 1938
Checked By: E.L. Sloan July 1938

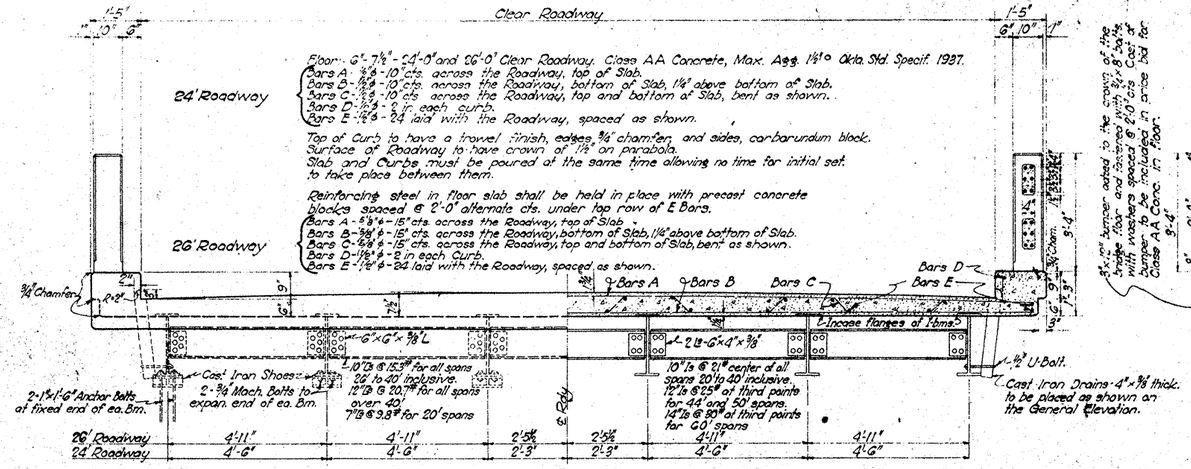
OKLAHOMA STATE HIGHWAY COMMISSION STANDARD STRUCT. STEEL DETAILS 100' RIVETED TRUSS 24'-0" ROADWAY WITH 2-1'-6" SIDEWALKS

1.5E-100s

Do not use - Replaced by 1.5E-100s

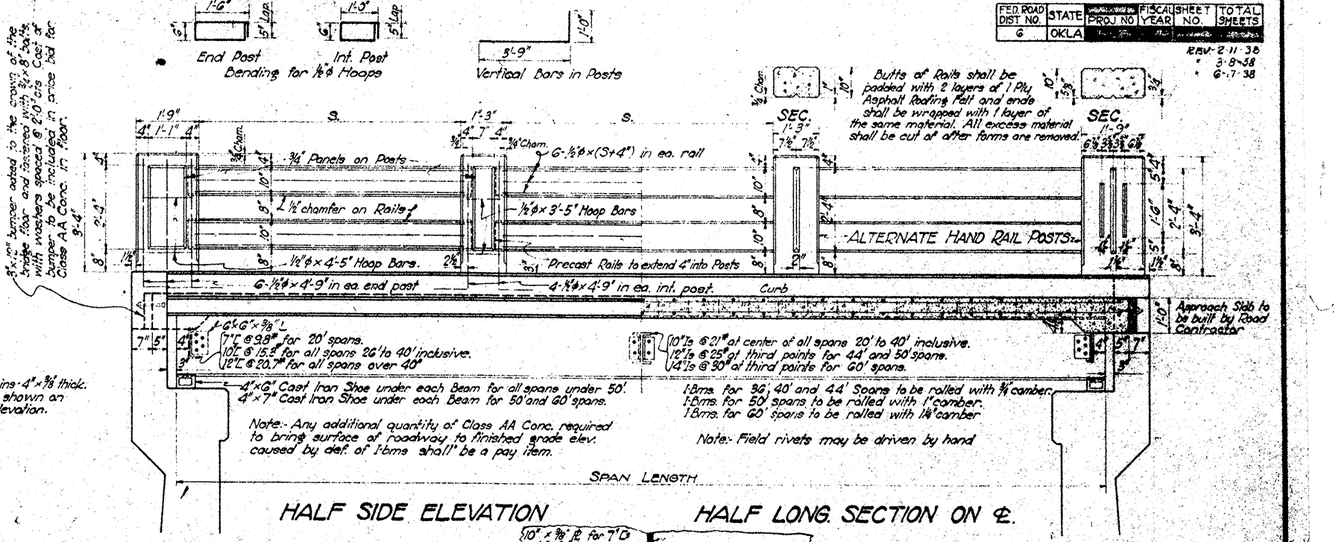
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
G	OKLA.	[illegible]			

REV- 2-11-38
" 3-8-38
" 6-7-38



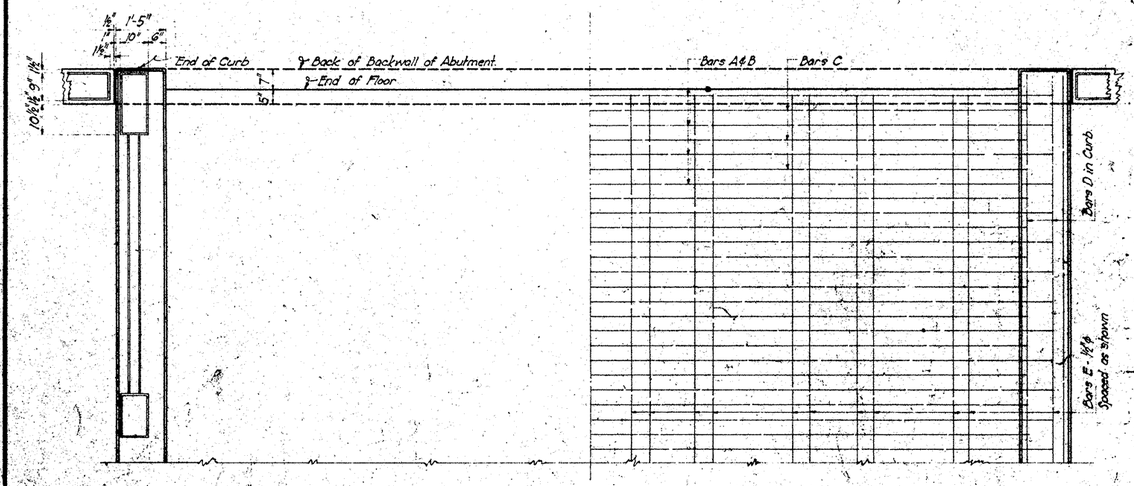
HALF END ELEVATION

HALF TRANSVERSE SECTION



HALF SIDE ELEVATION

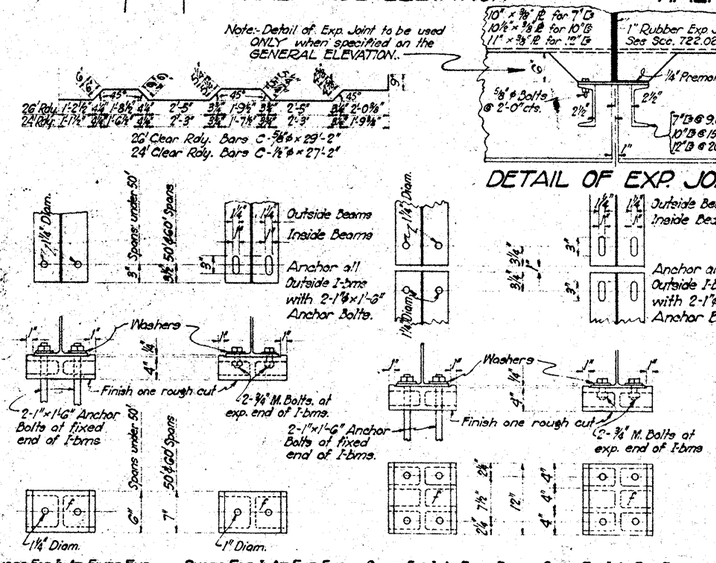
HALF LONG. SECTION ON ℄.



PART PLAN

PART PLAN SHOWING REINFORCING

Note:- Quantities of Class A-A Conc. include additional Conc. based on an assumed deflection of ⅜" on a parabola on 26'-0" 30' Spans.



DETAIL OF EXP. JOINT

DETAIL FOR CONTINUOUS SPANS

DETAILS OF SINGLE SPAN OR ABUT. SHOES

DETAILS OF CONTINUOUS SPAN PIER SHOES

TABLE OF DIMENSIONS AND QUANTITIES

Span Length	24' ROADWAY I-BEAMS No.	Size	Spacing	Weight of Bms. Per Lin. Ft.	Weight of Bms. Total	Weight Stiffnrs and Drains	Weight of Shoes	FLOOR Total Weight	FLOOR Class AA Conc.	FLOOR Reinf. Steel	Conc. Hand Rail Lineal Feet	Post Spacing Length S.	Paving Exception Lineal Feet	26' ROADWAY I-BEAMS No.	Size	Spacing	Weight of Bms. Per Lin. Ft.	Weight of Bms. Total	Weight Stiffnrs and Drains	Weight of Shoes	FLOOR Total Weight	FLOOR Class AA Conc.	FLOOR Reinf. Steel
20'	6	16"@ 45#	4'-6"	270	5,400	1,450	450	7,300	14.80	1,785	44.5	5'-5"	21.33										
26'	6	21"@ 59#	4'-6"	354	9,204	1,846	500	11,550	19.20	2,295	56.5	7'-5½"	27.88										
30'	6	21"@ 63#	4'-6"	378	11,340	1,860	500	13,700	21.85	2,620	64.5	6'-3"	31.33	6	21"@ 68#	4'-11"	408	12,240	1,970	500	14,710	23.30	2860
36'	6	24"@ 80#	4'-6"	480	17,280	1,880	540	19,700	25.05	3,190	74.5	7'-9"	37.33	6	24"@ 80#	4'-11"	480	17,280	1,990	540	19,810	26.75	3,410
40'	6	27"@ 91#	4'-6"	546	21,840	1,970	590	24,400	27.65	3,460	84.5	6'-9"	41.33	6	27"@ 91#	4'-11"	546	21,840	2,080	590	24,510	29.45	3,770
44'	6	27"@ 98#	4'-6"	588	25,872	3,138	590	29,600	30.20	3,840	92.5	7'-6⅛"	45.33	6									
50'	6	30"@ 116#	4'-6"	696	34,800	3,200	700	38,700	34.05	4,530	104.5	7'-1"	51.33	6	33"@ 125#	4'-11"	750	37,500	3,390	730	41,620	36.30	4,720
60'	6	33"@ 141#	4'-6"	846	50,760	3,660	730	55,150	40.45	5,170	124.5	7'-3⅛"	61.33	6	36"@ 150#	4'-11"	900	54,000	3,870	760	58,630	43.15	5,630

Note:- The basis of payment for structural steel will be the weight of the lightest section specified.
Sections of equivalent strength will be approved but no allowance will be made for increased weight.
All beams for end spans are to be ½" shorter than nominal span length.
All beams for interior spans are to be 1" shorter than nominal span length.

GENERAL NOTES FOR SHOES

All webs to be ⅜" thick.
Bearing surfaces of all shoes shall be finished
Width of shoes to equal flange width of beam plus 2½"
Minimum 3"x ¼" washers for all 1" Anchor bolts.
Minimum 2"x ⅛" washers for all ⅝" Mach. bolts.
Bevel washers for Beth. Beams.
All dimensions for castings shown or noted are minimum and no underrun is permitted.

Live Load: Truck loading as per specifications, Fig. 1, Sec. 515 Impact, 30% of Live Load.

GENERAL NOTES

All construction to conform to Oklahoma Standard Specifications of 1937, as approved by the U.S. Bureau of Public Roads.
The measurement of fine and coarse aggregate shall be by weight in accordance with Sec. 509.04c.
The Concrete Mixer shall comply with the requirements of Section No. 509.03
Concrete Materials shall be handled as specified in Section No. 509.04a
All Concrete in superstructure to be Class AA. All reinforcing steel to be deformed bars, cold bent, no welds permitted. All dimensions relating to reinforcing, spacing are to be to center of bars. When splicing is necessary, bars are to be lapped 40 diameters.
All exposed concrete surfaces to have a carborundum finish. All exposed corners to have ¾" chamfer. All chamfer strips to be sized lumber.
Finish as per specifications in Section No. 509.04f. Finish for floor as per specifications in Section No. 504.04e.

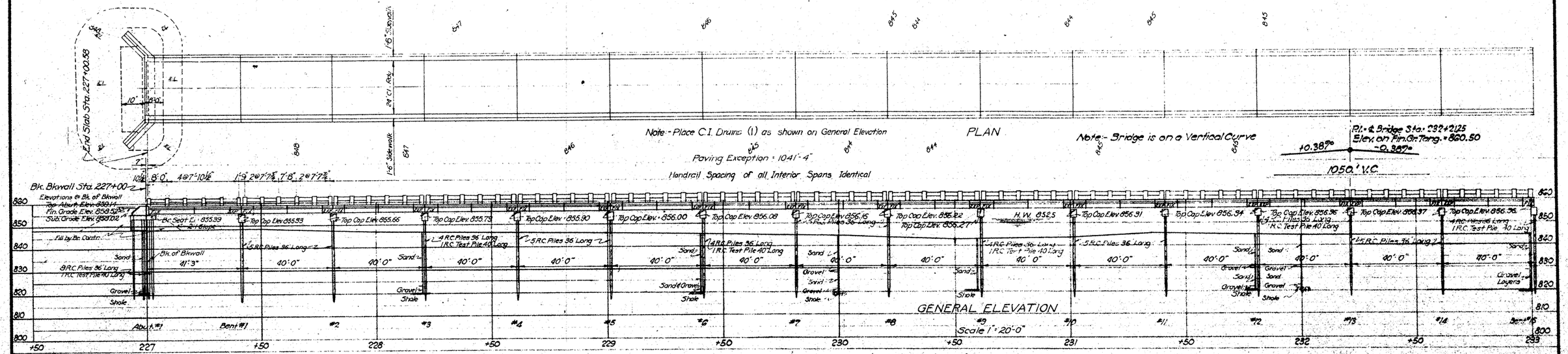
Second field coat shall be Aluminum Paint.

OKLAHOMA STATE HIGHWAY COMMISSION STANDARD I-BM BRIDGES 24'-0" & 26'-0" CONCRETE ROADWAY SPAN LENGTHS 20' FT. TO 60 FT.

IB-6

Supervision of H.X. White and D.J. McCullough
Drawn by W.O. Blackford Nov. 1937
Checked by W.C. Zwiesk. Dec. 1, 1937

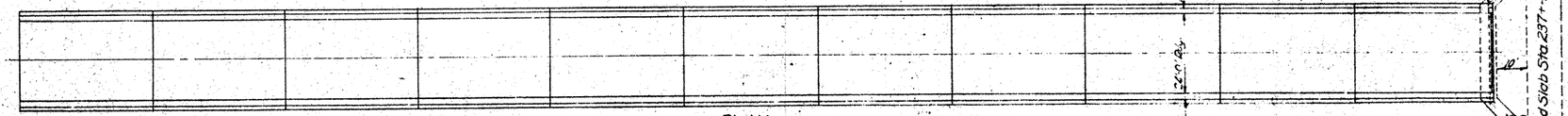
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	1015-A	1938	16	21



B.M. 60d nail in 6" Willow 140' Lt.
Sta. 234+40 Elev. 845.67

B.M. 60d nail in 8" Willow 90' Rt.
Sta. 235+80 Elev. 846.74

Note: The State will furnish a Federal Project Marker which shall be placed in the end handrail post on the left as directed by the Resident Engineer.



Soundings by Hetrick

Drawn By Marsh April 1938 & S.M.
Checked " W.C.Z. Sept "

SUMMARY OF QUANTITIES

Item No.	202.06a	501.06 b	505.06	506.06a	509.06a	509.06b	511.06	514.05aa	514.05d
Item	Class A Excav	Substr Excav Cont'd and Rem'l	Reinf Conc	Struct Steel	Class A Concrete	Class AA Concrete	Reinf Steel	Reinf Conc Test Piles	Reinf Conc Piling
Location	Cu. Yds.	Cu Yds.	Lin. Ft	Lbs.	Cu Yds	Cu Yds.	Lbs.	Each	Lin Ft
ABUTMENTS		500			748		10,140	2	576
BENTS					2000		24,750	8	4,212
SUPERSTRUCT.			2,094.5	752,300		763.5	99,850		
TOTALS	750	600	2,094.5	752,300	274.8	763.6	133,740	10	4,788

GENERAL NOTES

This construction shall be in accordance with Okla. Std. Specifications of 1937.
All exposed concrete surfaces to have a carborundum finish.
Bearing areas of concrete under all shoes shall be ground with a carborundum brick before placing shoes to secure full bearing of shoes on concrete.
Anchor all I Bms at ends marked "Fixed" on General Elevation with 2-1"x1'-6" anchor bolts.
For details of 1" Rubber Expansion Joint Filler see Std. CT-6 and Sec. 722.02 Okla. Std. Specifications of 1937.

Note: Approx. 750 Cu Yds of Class A Excavation reqd to make fill around Abutments is to be obtained as directed by the Resident Engineer. The fill around Abuts. shall be placed and compacted in accordance with Sec. 202.04c.

Note: A 40' R.C. Test Pile shall be driven as shown in Abut. & Cap details at the following locations- Abuts. No. 1 & 2, and Bents No. 3-6-9-12-15-18-21, & 24. All R.C. Piles shall be driven with a Vulcan No. 1 or equivalent steam hammer. High early strength cement may be used for R.C. Piling, see Sec. 510 of Okla. Std. Spec. of 1937.

Note: For details of Superstructure see sheet no. 17 and Std. CT-6, sheet no. 18.
For details of Abutments see sheet no. 11.

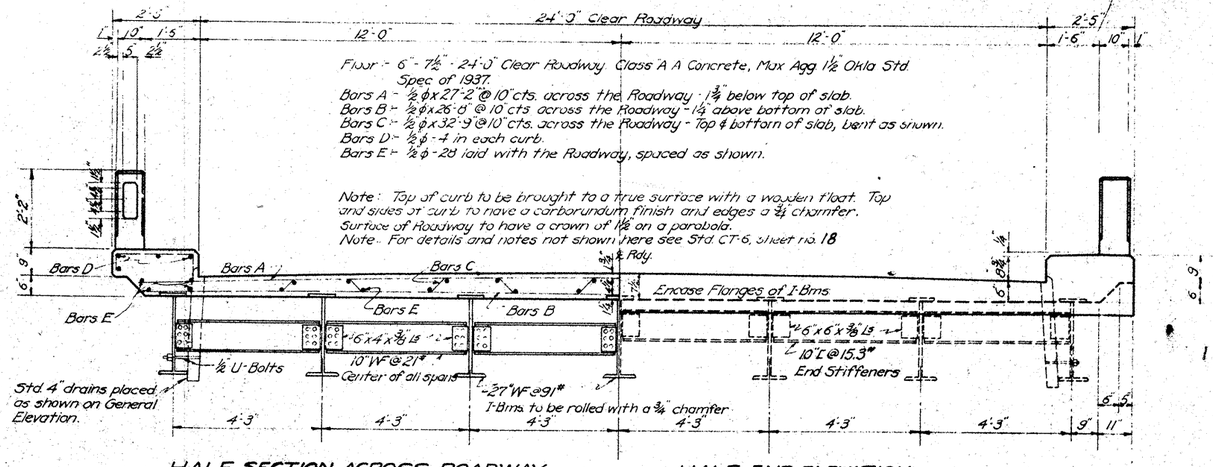
Note: The structural steel shall be painted in accordance with Sec. 506.04 and Sec. 730 except that three field coats of paint shall be applied, one of red lead (first field spec.) and two of aluminum (second field spec.).

DESIGN DATA

Concrete:	Class 'A'	650 lbs/sq in
	Floor Slab	800 " "
Steel		16,000 " "
Loading:	Rdy. + Okla. Standard Truck Train + 30% Impact	
	Sidewalk +	100 lbs/sq ft.
Max. Foundation Pressure:	Abuts +	24.6 tons/pile
	Bents	28.0 " "

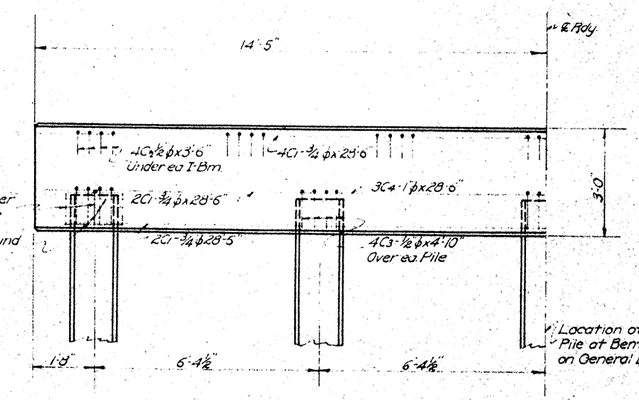
GENERAL ELEVATION & PLAN
SUMMARY OF QUANTITIES
26-40' I-BM. SPANS
24'-0" RDY. & 2-1'-6" SIDEWALKS
& STA. 232+21.25
FED. AID PROJ. NO. 1015 SEC. A-BR.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA	1015-A	1938	17	21

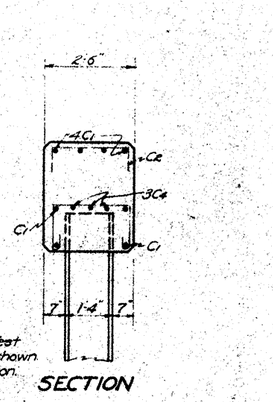


HALF SECTION ACROSS ROADWAY

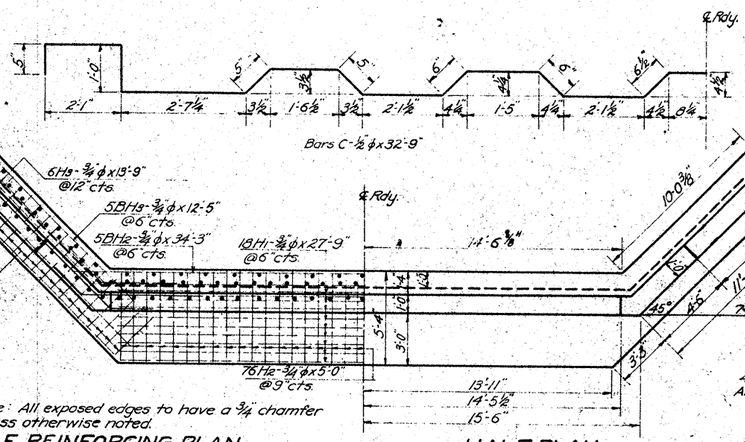
HALF END ELEVATION



HALF ELEVATION



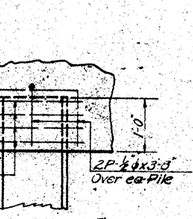
SECTION



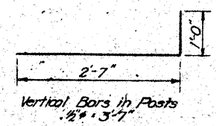
Note: All exposed edges to have a ¾ chamfer unless otherwise noted.

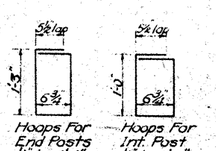
HALF REINFORCING PLAN

HALF PLAN

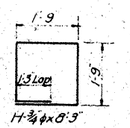


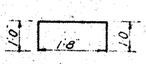
DETAIL OVER TOP OF PILE

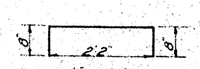


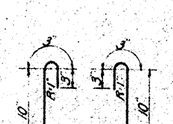


BAR BENTS IN HANDRAIL POSTS







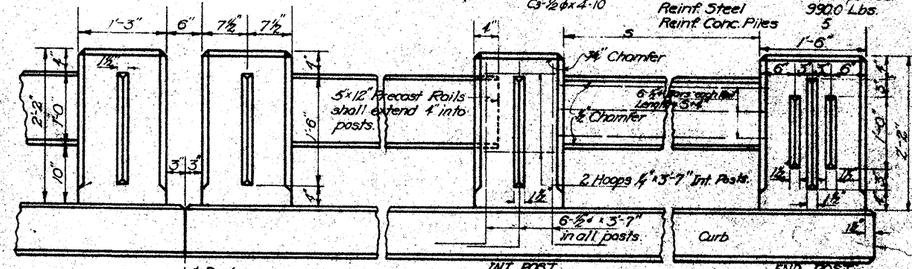


BAR LIST ~ 1 CAP				
Mark	No.	Size	Form	Length
C1	8	¾ϕ	Str.	28'-6"
C2	28	½ϕ	Bnt	3'-6"
C3	20	"	"	4'-10"
C4	3	1ϕ	Str.	28'-6"
H	20	¾ϕ	Bnt	8'-3"
P	10	½ϕ	"	3'-8"

QUANTITIES ONE CAP

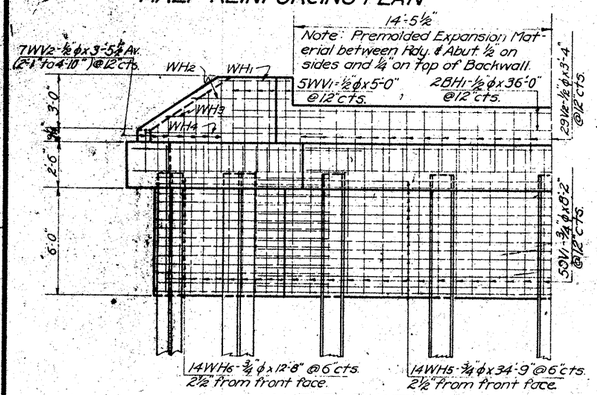
Class 'A' Conc.	80 Cu. Yds.
Reinf. Steel	9900 Lbs.
Reinf. Conc. Piles	5

BAR LIST ~ 1 ABUT.				
Mark	No.	Size	Form	Length
H	36	¾ϕ	Bnt.	8'-3"
WH1	18	"	Str.	27'-9"
WH2	76	"	"	5'-0"
WH3	12	"	"	13'-9"
WH4	76	"	"	3'-0"
WH1	2	½ϕ	"	5'-1"
WH2	2	"	"	7'-3"
WH3	2	"	Bnt.	11'-4"
WH4	2	"	"	13'-4"
WH5	14	¾ϕ	"	34'-9"
WH6	28	"	"	12'-8"
BH1	2	½ϕ	"	36'-0"
BH2	3	¾ϕ	Str.	34'-3"
BH3	10	"	"	12'-6"
V1	50	"	"	6'-2"
V2	29	½ϕ	"	3'-4"
V3	33	"	"	2'-6"
V4	10	"	"	5'-0"
V5	14	"	"	3'-5½"
V6	18	"	Bnt.	3'-6"

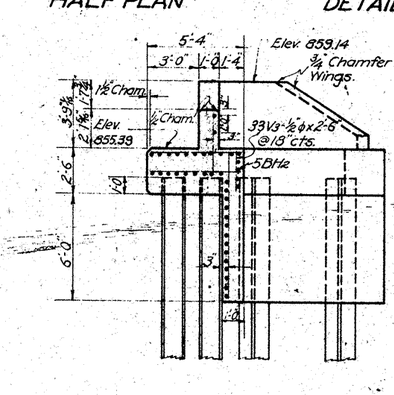


Note: All grooves in handrail posts shall be ¾" deep. For Post Spacing see Gen. Elev.
Note: Butts of Rails shall be padded with 2 layers of 1-ply Asphalt Roofing Felt, and ends shall be wrapped with one layer of the same material. All excess material shall be cut off after forms are removed.

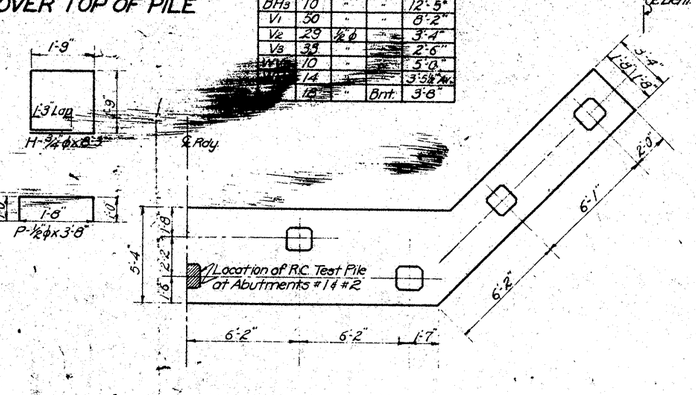
DETAILS OF HANDRAIL & POSTS



HALF ELEVATION



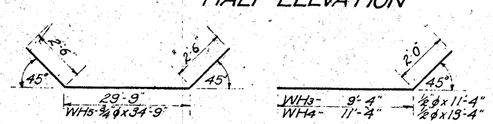
SECTION ON ℄

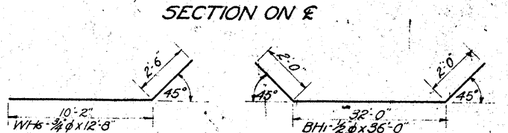


PILE SPACING DIAGRAM

QUANTITIES ABUTMENTS

Item	Abut. No. 1	Abut. No. 2
Class A Conc.	37.4 Cu. Yds.	37.4
Reinf. Steel	5070 Lbs.	5070
Substr. Excava., Common	0 Cu. Yds.	60
Reinf. Conc. Piling	288 Lin. Ft.	288
Reinf. Conc. Test Pile	1 Ea.	1





DETAILS OF ABUTS., PILE BENTS & RDY.
26-40' I-BM SPANS
24' ROADWAY & 2-1'-6" SIDEWALKS
& STA. 232+21.25
F.A. PROJ. NO. 1015 SEC. A BRIDGE

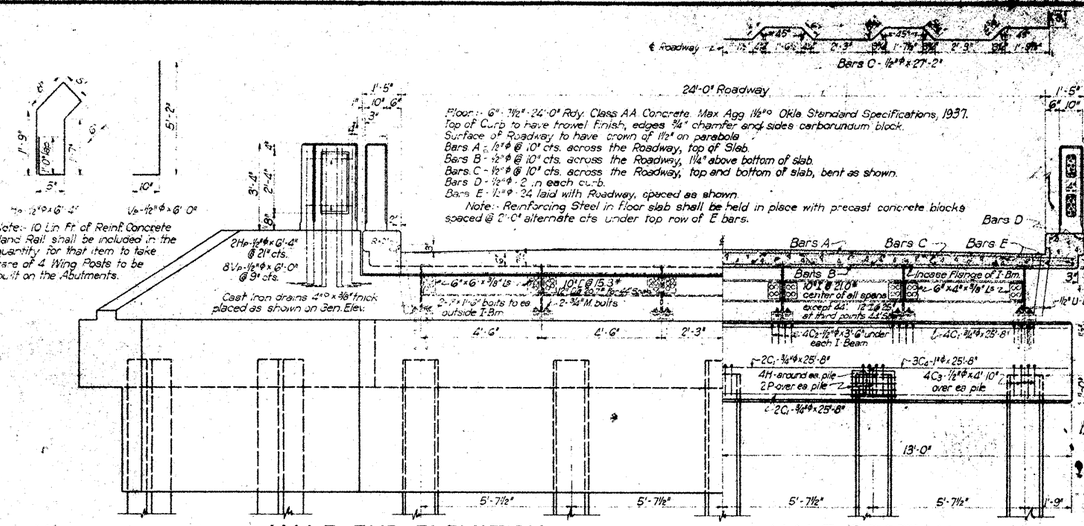
Drawn By S.R.T. June, 1938
Checked By W.C.Z Aug. "

B-5-1-1

Note: Any additional quantity of Class A A Concrete required to bring surface of roadway to finished grade elevation caused by deflection of I-Bms, shall be a pay item.

Rev. Oct. 21 1938
" July 9 1937
" Feb. 11, 1938
" June 17, 1938
" Oct. 12, 1938

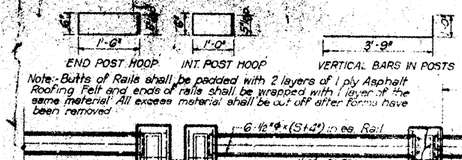
FED. ROAD DIST. NO.	STATE	SHEET NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	OKLA.				

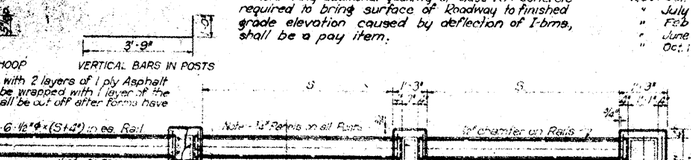


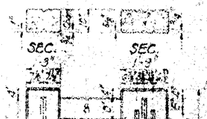
Floor: 6" 1½#-24'-0" Rdy. Class AA Concrete. Max. Agg. 1½". Okla. Standard Specifications, 1937.
Top of Curb to have trowel finish, edges ¾" chamfer and sides carborundum block.
Surface of Roadway to have crown of 1½" on parabola.
Bars A - ½"ϕ @ 10" cts. across the Roadway, top of Slab.
Bars B - ½"ϕ @ 10" cts. across the Roadway, 1¼" above bottom of slab.
Bars C - ½"ϕ @ 10" cts. across the Roadway, top and bottom of slab, bent as shown.
Bars D - ½"ϕ - 2 in each curb.
Bars E - ½"ϕ - 24 laid with Roadway, spaced as shown.
Note: - Reinforcing Steel in floor slab shall be held in place with precast concrete blocks spaced @ 2'-0" alternate cts. under top row of E bars.

Note: - 10 Lin. Ft. of Reinf. Concrete Hand Rail shall be included in the quantity for that item to take care of 4 Wing Posts to be built on the Abutments.

Note: - Butts of Rails shall be padded with 2 layers of 1 ply Asphalt Roofing Felt and ends of rails shall be wrapped with 1 layer of the same material. All excess material shall be cut off after forms have been removed.







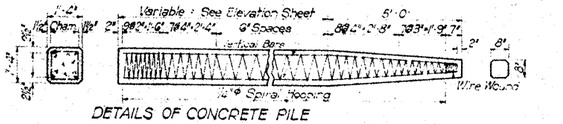
3"x 12" Bumper bolted to crown of Bridge Floor and fastened with ⅝"x 8"M bolts and washers, spaced 2'-0" cts. Cost of bumpers to be included in the price bid for Class A A Conc. in Floor.

Note: - ¼" Premolded Expansion Material in Const. Joints in Floor over each bent.
Tooled edge across Roadway at Const. Joints.
Ends of curbs to have ¾" chamfer on top and sides at Const. Joints.

Note: - I-Bms. for 36' and 40' spans to be rolled with ¾" camber.

PART SECTION

PART SIDE ELEVATION

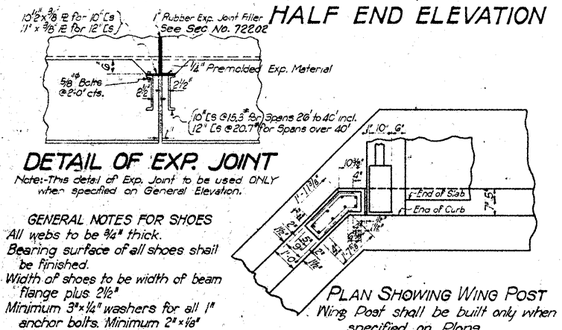


DETAILS OF CONCRETE PILE

NOTE - Equipment required for driving piles: No 1 Vulcan Hammer or equivalent steam hammer, and if necessary, to obtain required penetration without damage to piles, a pump and equipment sufficient to furnish 500 gallons per minute at two ¾" nozzles. Class AA Concrete to be used for piling. Max. Agg. 1½". All exposed surfaces of reinforced concrete piles shall have a carborundum finish. Vertical bars in piling for lengths less than 35' use 4-½"ϕ bars for lengths of 35' to 39' use 6-½"ϕ bars for lengths of 40' and over use 8-½"ϕ bars.

When piling cast, as determined by test piles, are of such a length as to cause an increase in the weight of steel used per lineal ft. of pile over that required in the piles as shown on the plans, such increased weight of steel will be measured and paid for as provided in Sec. 511 at the contract unit price bid for other reinforcing steel used in the structure.

The use of High Early Strength Cement will be permitted. See note below.



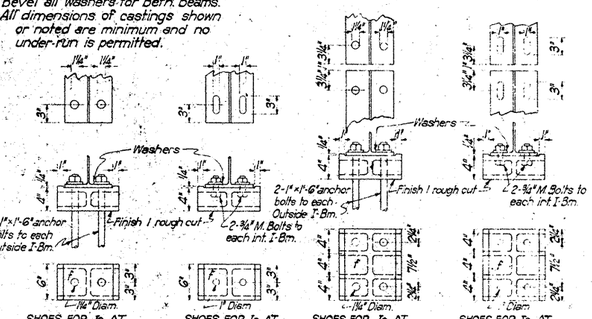
DETAIL OF EXP. JOINT

Note: - This detail of Exp. Joint to be used ONLY when specified on General Elevation.

PLAN SHOWING WING POST
Wing Post shall be built only when specified on Plans.

GENERAL NOTES FOR SHOES

All webs to be ¾" thick.
Bearing surface of all shoes shall be finished.
Width of shoes to be width of beam flange plus 2½"
Minimum 3"x¼" washers for all 1" anchor bolts. Minimum 2"x⅛" washers for all ¾" Misch. bolts.
Bevel all washers for Beth. Beams.
All dimensions of castings shown or noted are minimum and no under-run is permitted.



DETAIL OF SHOES ON ABUTMENTS
DETAIL OF SHOES ON PILE CAPS

BAR LIST - I CAP

Mark	No.	Size	Form	Length
C_1	8	¾"ϕ	Str.	25'-8"
C_2	24	½"ϕ	Bnt.	3'-6"
C_3	20	"	"	4'-10"
C_4	3	"	Str.	25'-8"
H	20	¾"ϕ	Bnt.	8'-3"
P	10	½"ϕ	"	3'-8"

Class A Conc. I Cap - 12 Cu. Yds.
Reinf. Steel I Cap - 920 Lbs.
9 Reinf. Conc. Piles in I Cap

BAR LIST - I ABUTMENT

Mark	No.	Size	Form	Length 21"Is	24"Is	27"Is
H	36	¾"ϕ	Bnt.	8'-3"	8'-3"	8'-3"
H_1	18	"	Str.	25'-9"	25'-9"	25'-9"
H_2	70	"	"	5'-0"	5'-0"	5'-0"
H_3	12	"	"	15'-3"	15'-3"	15'-3"
H_4	84	"	"	3'-0"	3'-0"	3'-0"
WH_1	2	½"ϕ	"	6'-7"	6'-7"	6'-7"
WH_2	2	"	"	8'-9"	8'-9"	8'-9"
WH_3	2	"	Bnt.	12'-10"	12'-10"	12'-10"
WH_4	2	"	"	14'-10"	14'-10"	14'-10"
WH_5	14	¾"ϕ	"	32'-9"	32'-9"	32'-9"
WH_6	28	"	"	14'-2"	14'-2"	14'-2"
BH_1	2	½"ϕ	"	34'-0"	34'-0"	34'-0"
BH_2	6	¾"ϕ	Str.	32'-3"	32'-3"	32'-3"
BH_3	10	"	"	13'-11"	13'-11"	13'-11"
V	52	"	"	8'-2"	8'-2"	8'-2"
V_2	27	½"ϕ	"	2'-10"	3'-1"	3'-4"
V_3	35	"	"	2'-6"	2'-6"	2'-6"
WV	12	"	"	4'-6"	4'-9"	5'-0"
WV_2	14	"	"	2'-11"	3'-2"	3'-5"
P	18	"	Bnt.	3'-8"	3'-8"	3'-8"

QUANTITIES - I ABUTMENT

Item	21"Is	24"Is	27"Is
Class A Conc. Cu. Yds.	86.90	37.35	37.85
Reinf. Steel - Lbs.	5,055	5,085	5,095

9 - Reinforced Conc. Piles in 1 Abut.

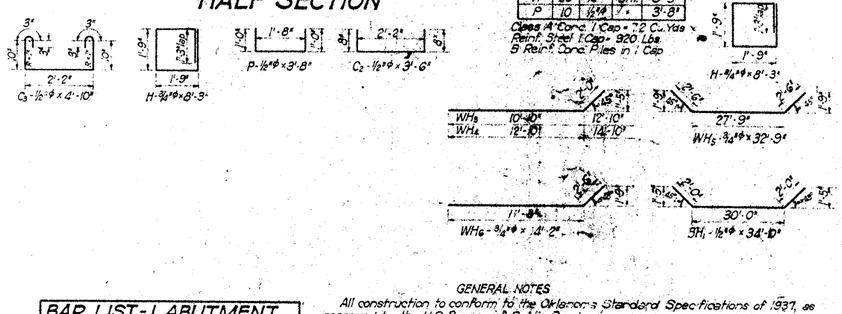


TABLE OF DIMENSIONS AND QUANTITIES

24'-0" ROADWAY

	I-Beams for One Span							End Span			Int. Span		
	No.	Size	Spac.	Weight of Beams Per Lin. Ft.	Weight of Beams Total	Weight of Stiff'ners & Drains	Weight of Shoes	Total Weight	Class AA Concrete Cu. Yds.	Reinf. Steel Lbs.	Post Spacing Length S	Class AA Concrete Cu. Yds.	Reinf. Steel Lbs.	Post Spacing Length S
26	6	21"@ 59# WF I	4'-6"	354	9,204	1,846	500	11,550	17.90	2215	7'-1½"	17.10	2,175	6'-10"
30	6	21"@ 63# WF I	4'-6"	378	11,340	1,860	500	13,700	20.45	2,550	6'-0⅜"	19.65	2,510	5'-9¾"
36	6	24"@ 80# WF I	4'-6"	480	17,280	1,880	540	19,700	24.30	3,055	7'-6⅜"	23.50	3,010	7'-3½"
40	6	27"@ 91# WF I	4'-6"	546	21,840	1,970	590	24,400	26.85	3,385	6'-6⅞"	26.05	3,345	6'-4⅜"
44	6	27"@ 98# WF I	4'-6"	588	25,872	3,138	590	29,600	29.50	3,775		28.75	3,720	

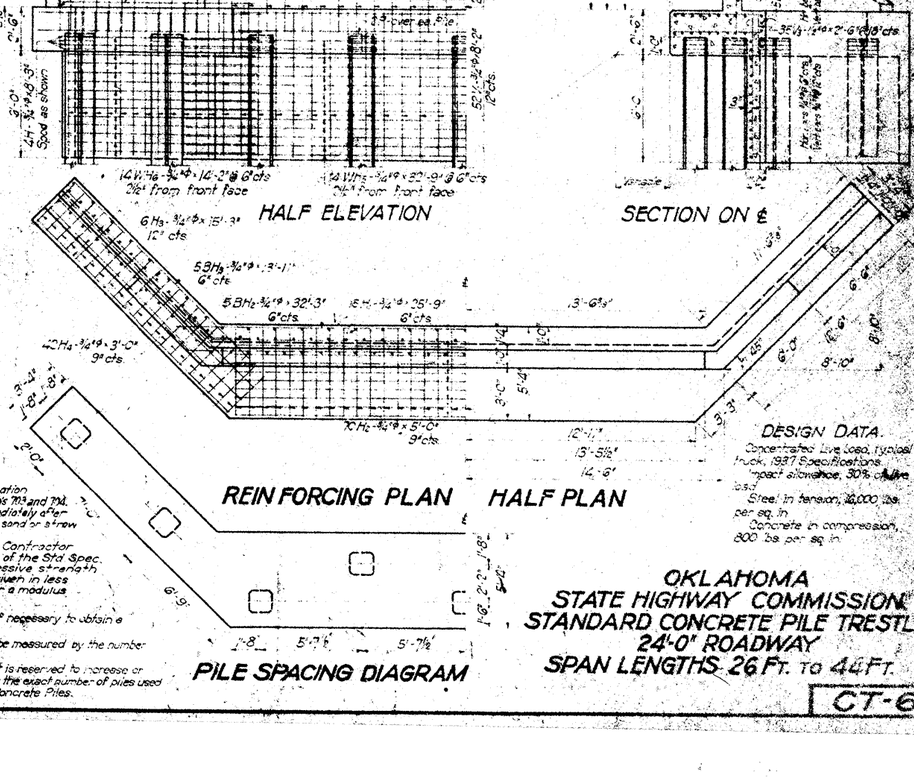
Note: - The basis of payment for structural steel will be the weight of the lightest section specified. Sections of equivalent strength will be approved but no allowance will be made for increased weight.

GENERAL NOTES

All construction to conform to the Oklahoma Standard Specifications of 1937, as approved by the U.S. Bureau of Public Roads.
The measurement of fine and coarse aggregate shall be by weight in accordance with Section No. 509.04c.
The Concrete Mixer shall comply with the requirements of Section No. 509.05.
Concrete Materials shall be handled as specified in Section No. 509.04a.
All concrete in superstructure to be Class A A. All reinforcing steel to be deformed bars, cold bent, no welds permitted. All dimensions relating to reinforcing spacing are to center of bars. When splicing is necessary, bars are to be lapped 40 diameters.
All exposed concrete surfaces to have a carborundum finish. All exposed corners to have ¾" chamfer except where otherwise noted. All chamfer strips to be sized lumber.
Slab and Curbs must be poured at the same time allowing no time for initial set to take place between them.
Finish as per specifications in Section No. 509.06. Finish for floor as per specifications in Section No. 504.04a.
Second field coat shall be Aluminum Paint.
All beams for end spans are to be ½" shorter than nominal span length.
All beams for interior spans are to be 1" shorter than nominal span length.
Bearing areas of Concrete under all shoes shall be ground with a Carborundum brick before placing shoes to secure full bearing of shoes on Concrete.

NOTE: - SPECIAL PROVISIONS FOR CONCRETE TEST PILES.

DESCRIPTION: The lengths of piles shown on the plans are for estimating purposes only and are not guaranteed. The actual lengths to be used will be determined after driving the specified number of test piles at the locations shown on the plans.
MATERIAL: Test piles shall be made of Class A A Concrete. The use of a standard approved brand of High Early Strength cement will be permitted which conforms to the requirements of the A.S.T.M. serial designation C 74 - 30 T, or subsequent revisions thereto. The aggregate shall conform to the requirements of Sec. Nos. 703 and 704.
CURING: Piling shall be covered with 8 inches of previously wetted burlap laid longitudinally on piling immediately after concrete is placed and the burlap shall be kept saturated for one day. The piling shall then be covered with clean sand or straw and kept continuously wet for 5 more days.
DRIVING EQUIPMENT: Equipment for driving test piles shall be identical with that which the Contractor proposes to use on the regular piles and shall conform in every way with the requirements of the Std. Spec.
DRIVING PILES: Test cylinders or beams, or both, shall be made and tested for compressive strength or modulus of rupture. Test piles, when High Early Strength Cement is used, shall not be driven in less than 7 days after casting, and in no event until a compressive strength of 4,000 per sq. in. or a modulus of rupture of 700 per sq. in. has been obtained, to the satisfaction of the Engineer.
Piles shall be driven to the elevations shown on the plans or to a greater depth if necessary to obtain a bearing capacity of twenty-five (25) tons per pile.
METHOD OF MEASUREMENT: Concrete test piles shall be cast to the lengths specified on the plans and shall be measured by the number of piles complete in place.
BASIS OF PAYMENT: Concrete test piles will be paid for at the unit price bid per pile complete in place. Right is reserved to increase or decrease the number of test piles. In case of such variation the unit price bid by the Contractor shall prevail for the exact number of piles used. Build ups on test piles due to driving below grade will be paid for at the unit price bid per lin. ft. for Reinforced Concrete Piles.



DESIGN DATA.

Concentrated Live Load, Typical truck, 1937 Specifications.
Impact allowance, 30% of Live Load.
Steel in tension, 16,000 lbs. per sq. in.
Concrete in compression, 800 lbs. per sq. in.

OKLAHOMA STATE HIGHWAY COMMISSION
STANDARD CONCRETE PILE TRESTLE
24'-0" ROADWAY
SPAN LENGTHS 26 Ft. TO 44 Ft.

CT-6

Checked by H. B. Shelton May, 1935

FED. ROAD DIST. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA. TEXAS	1015-A(1)	1938	19	21

Revised Oct. 31, 1938

215+85

Emb. ~~1915.0~~ 1408.0 ELEV. GRADE 841.8 ~~31.49~~ 57.39
Plating 130.0

Emb. ~~1758.4~~ 1915.7
Plating 169.8

150

Emb. ~~1985.0~~ 1969.0 41.8 ~~31.72~~ 58.26
Plating 132.0

Emb. ~~851.0~~ 715.4
Plating 68.3

35

Emb. ~~955.0~~ 1011.0 49.2 ~~31.25~~ 58.88
Plating 114.0

Emb. ~~1251.3~~ 1321.7
Plating 148.8

215

Emb. ~~2858~~ 1028.0 48.2 ~~56.32~~ 58.66
Plating 111.0

Emb. ~~3048.4~~ 3794.5
Plating 420.4

214

Emb. ~~3848~~ 1021.0 48.6 ~~31.18~~ 58.26
Plating 116.0

Emb. ~~3577.8~~ 3646.3
Plating 422.2

213

Emb. 948.0 47.2 55.78
Plating 112.0

Emb. 9214.9
Plating 368.5

212

Emb. 788.0 48.0 60.11
Plating 87.0

Emb. 1447.8
Plating 155.1

211+45.25

Emb. 640.0 48.6 DOWNGRADE 60.29
Plating 66.0

189

49.2

65

ELEV. 849.9

E.A.P. 1015-A (1)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA. TEXAS	1015-A(1)	1938	20	21

Revised Oct. 31, 1938.

FINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
NOTE BOOK	TEMPLATE		
NO.	AREAS CHECKED		

ORIGINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
NOTE BOOK	TEMPLATE		
NO.	AREAS CHECKED		

B32-90

222

ELEV. 847.0
SUBGRADE 55.10
55.73

Emb. ~~428.0~~ 491.0
Plating 79.0

Emb. ~~1580.4~~ 1680.0
Plating 261.7

+10

48.8
~~58.95~~
55.27

Emb. ~~495.0~~ 517.0
Plating 78.0

Emb. ~~237.1~~ 246.6
Plating 33.2

221

Emb. ~~785.0~~ 809.0
Plating 101.0

44.4
~~55.03~~
55.22

Emb. ~~737.1~~ 752.8
Plating 83.7

+80

411
~~55.01~~
55.14

Emb. ~~1208.0~~ 1223.0
Plating 125.0

Emb. ~~1318.0~~ 1330.1
Plating 138.9

+50

411
~~56.98~~
55.05

Emb. 1710.0
Plating 125.0

Emb. ~~1758.2~~ 1767.4
Plating 203.7

220

44.8
~~56.00~~
55.03

Emb. ~~721.0~~ 728.0
Plating 95.0

Emb. ~~2427.0~~ 2533.3
Plating 335.2

9

48.7
~~55.05~~
55.50

Emb. ~~530.0~~ 640.0
Plating 86.0

Emb. ~~2185.2~~ 2451.3
Plating 318.5

8

46.2
~~55.12~~
56.23

Emb. ~~590.0~~ 684.0
Plating 86.0

Emb. ~~2487.1~~ 2664.8
Plating 347.6

7

456
~~56.16~~
57.08

Emb. ~~783.0~~ 863.0
Plating 99.0

Emb. ~~2879.1~~ 3042.6
Plating 388.9

216

ELEV. 845.0
SUBGRADE ~~57.22~~
57.87

Emb. ~~810.0~~ 936.0
Plating 111.0

Emb. ~~617.9~~ 666.4
Plating 66.5

FED. ROAD DIST. NO.	STATE	PROJ. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA. TEXAS	1016-A(1)	1938	21	41

Revised Oct. 31, 1938

FINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.

ORIGINAL SURVEY
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
NOTE BOOK
NO.

B32.1

241

ELEV. 851.9

52.2

240

9

52.5

238

52.7

237+50

591

227+50.58

48.2
SUBGRADE 58.02

Emb. 490.0
Plating 58.0

Emb. 1974.8
Plating 270.1

6

48.1
~~51.02~~
57.63

Emb. 570.0
Plating 87.0

Emb. ~~1148.0~~ 2155.6
Plating 309.8

5

47.6
~~51.17~~
57.21

Emb. ~~590.0~~ 694.0
Plating 80.0

Emb. ~~1000.0~~ 2057.6
Plating 303.7

4

48.4
~~52.45~~
56.75

Emb. ~~450.0~~ 517.0
Plating 84.0

Emb. ~~990.0~~ 992.6
Plating 158.4

225+50

41.7
~~56.15~~
56.50

Emb. ~~515.0~~ 555.0
Plating 87.0

Emb. ~~1041.0~~ 1126.8
Plating 163.0

223

Emb ~~61.0.0~~ 662.0 ELEV. 846.1
Plating 89.0 SUBGRADE ~~58.10~~

Emb. ~~1922.6~~ 2135.2
Plating 311.1