IOWA HISTORIC PROPERTY STUDY:
IOWA-ILLINOIS MEMORIAL BRIDGE

carrying I-74 and U.S. 6 over Mississippi River
between Bettendorf, Scott County, Iowa and
Moline, Rock Island County, Illinois

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Introduction

The 1935 Iowa-Illinois Memorial Bridge is being documented at this time to fulfill the requirements of the Memorandum of Agreement regarding the removal of the Iowa-Illinois Memorial Bridge and the Iowana Farms Milk Company Building for the proposed improvements to Interstate 74 in Bettendorf, Iowa, and Moline, Illinois.[1] The 1959 twin suspension bridge will be removed as well, but it was determined to be ineligible for the National Register of Historic Places. Discussion of the history of the 1959 twin span is included, however, in the current report as part of the overall history of the Iowa-Illinois Memorial Bridge. Fieldwork for the documentation occurred in November 2009 and October 2010 (Fig. 1). Limitations on photography included limited shoreline access on the Illinois side, making good views of the bridge from the south somewhat challenging. Also, photographs on the bridge deck were not possible because of interstate traffic and prohibitions on pedestrian traffic.

Within the last few years, online primary sources have proliferated, along with historical materials regarding the Iowa-Illinois Memorial Bridge. Sources available online for this report included numerous historical photographs, as well as historical Davenport, Iowa, and U.S. newspapers that document the bridge planning and construction. Additional primary source material was found at the University of Iowa Libraries, the State Historical Society of Iowa in Iowa City, the Bettendorf Public Library, the Richardson-Sloane Special Collections Center at the Davenport Public Library, and the Iowa State University Special Collections in Ames.

Figure 1. Iowa-Illinois Memorial Bridge, View south-southwest from Bettendorf, Iowa, shoreline
Photo by Tallgrass Historians L.C., October 14, 2010

[1] The historic property documentation study for the Iowana Farms Milk Company building is reported separately in Price and Rogers (2012).

Part 1: The Bridge Today

Setting

The Iowa-Illinois Memorial Bridge is located in a large metropolitan area known as the "Quad Cities" straddling the Mississippi River. The name "Quad Cities" came into vogue in the 1930s and originally referred to Davenport on the Iowa side, and Rock Island, Moline, and East Moline on the Illinois side of the river. When Bettendorf began greatly expanding in the late 1940s, there was discussion about changing the reference to the "Quint Cities;" however, this name change never caught on and today, the "Quad Cities" refers collectively to the five cities of Davenport and Bettendorf in Iowa, and Rock Island, Moline, and East Moline in Illinois (Quad Cities accessed at http://en.wikipedia.org/wiki/Quad_Cities, May 2012). The Quad Cities straddle the Mississippi River where it flows from east to west, arranging the Iowa cities of Davenport and Bettendorf due north of the Illinois cities of Rock Island and Moline, respectively. The Iowa-Illinois Memorial Bridge makes the north-south connection between two of the Quad Cities, namely Bettendorf, Iowa, and Moline, Illinois (Figs. 2-5).

Figure 2. Iowa-Illinois Memorial Bridge, View west-northwest from Moline, Illinois
Photo by Tallgrass Historians L.C., October 14, 2010

Figure 3. Iowa-Illinois Memorial Bridge, View west from Moline, Illinois
Photo by Tallgrass Historians L.C., October 14, 2010

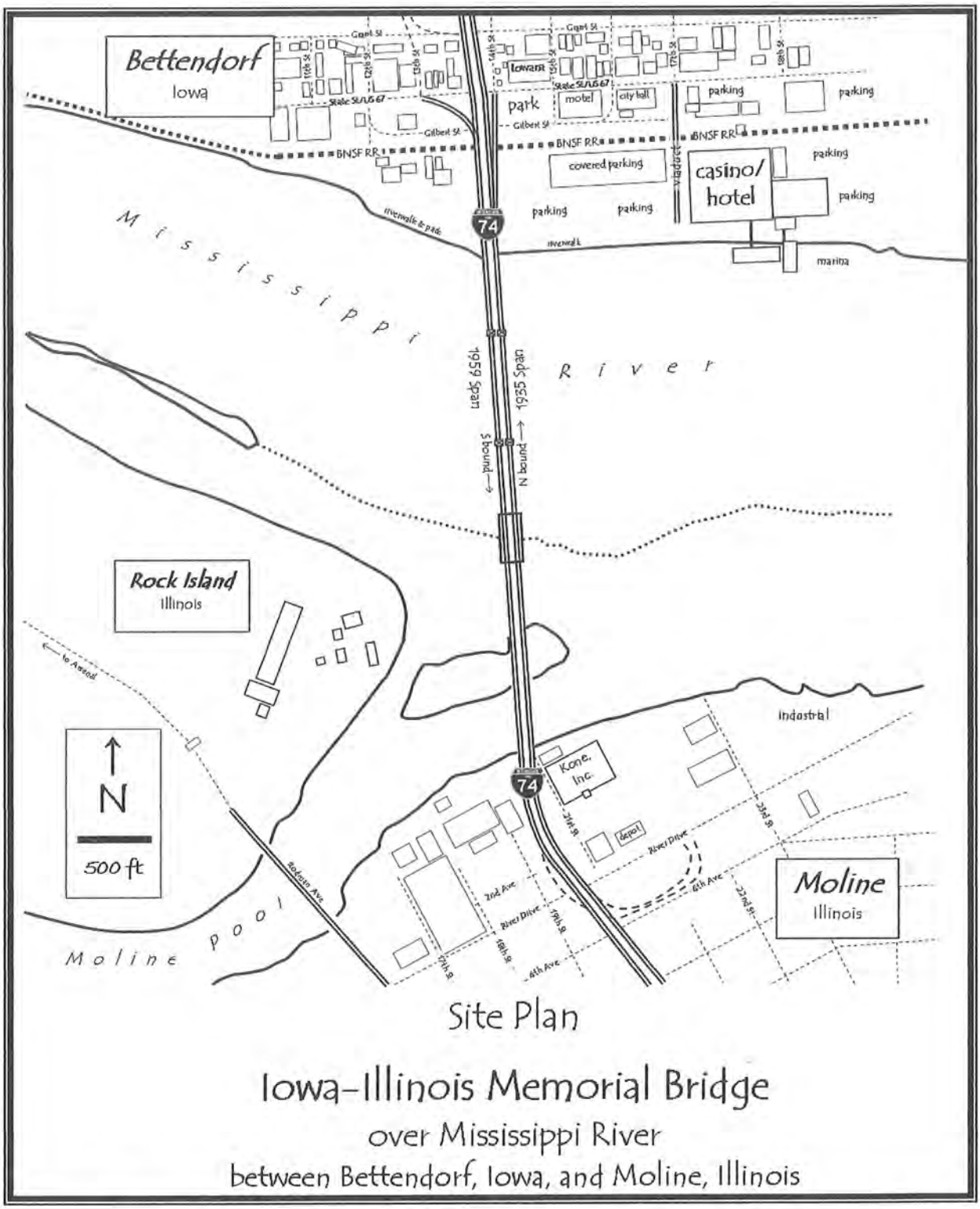

Figure 4. Site plan map showing bridge location in relation to Moline, Illinois, and Bettendorf, Iowa.
Prepared by Tallgrass Historians L.C., 2011, based on 2009 Orthophotos - USDA obtained from the/Iowa Geographic Map Server (2011)

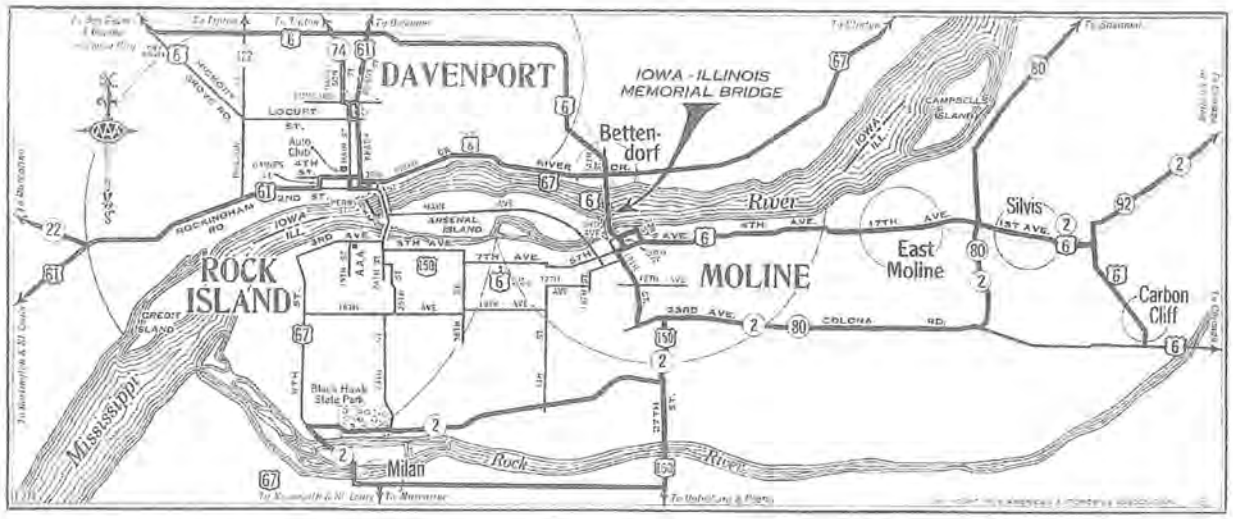

Figure 5. 1938 American Automobile Association brochure map showing bridge location in Quad Cities.
Source: AAA 1938; copy provided by the Iowa Department of Transportation, Ames.

Description

The design of the 1935 Iowa-Illinois Memorial Bridge is a three-span, twisted-wire-strand steel cable suspension bridge with six Warren stiffening trusses and six 22-foot deck truss approach spans (Figs. 5-8) (Fraserdesign 1994:29-30). The bridge has a 740-foot main span and a main bridge length of 1,850 feet, with a total length of bridge and approaches of 5,505 feet (Modjeski and Masters c.1981). The original roadway was 20 feet wide, with a four-foot sidewalk along the downstream side of the roadway. The central suspension allowed for 60 feet of vertical navigation clearance (Modjeski and Masters 1960:1). The substructure consists of concrete abutments, wingwalls, and piers. The floor/decking material consists of a concrete deck over steel stringers with steel guardrails. The substructure is supported on 45 foundations, 11 of which are in the river, and all carried down to bedrock. The two steel suspension towers are fixed-base, flexible-steel type structures, with the cables consisting of prestressed twisted wire rope. In order to reduce costs, the original construction made "liberal use of the economical silicon steel and wide-flange rolled beams" (Fraserdesign 1992; IDOT 2011).

By the 1950s, the traffic volume had increased at this crossing to the point that either a widened bridge or a second bridge was needed. The decision was made to build a twin of the 1935 bridge (Figs. 4, 7-8). The second bridge, completed in 1959, was as near a twin to the original as possible, with the main difference being a slightly larger new bridge because "road width specifications [had] changed between the two bridges' births," and some minor differences such as the use of aluminum handrails on the new bridge compared to the painted steel railings of the old (Schipper 2002; Modjeski and Masters 1960:6). The new bridge had a 24-foot roadway, with the river spans and vertical clearances "identical to those of the original bridge" (Schipper 2002). The placement of a second bridge next to the 1935 bridge (on the downstream or west side of the 1935 bridge), necessitated redesign and reconstruction of the approach spans and ramp system on both sides of the river. On the Bettendorf side, the result was two very tight on-off ramp loops to either side at the foot of each bridge, with the main traffic lanes descending to the north down to ground level.

Figure 6. Looking up at the deck stiffening trusses of the 1935 bridge
Photo by Tallgrass Historians L.C., November 13, 2009

Figure 7. View south toward Moline, along the east side of the 1935 bridge
Photo by Tallgrass Historians L.C., November 13, 2009

Figure 8. View south between the twin spans, 1935 bridge is on left
Photo by Tallgrass Historians L.C., November 13, 2009

Figure 9. View north between the deck trusses from Moline side; suspension towers in distance
Photo by Tallgrass Historians L.C., November 13, 2009

When both bridges were brought into the interstate system in the 1970s, a number of changes were made to bring the bridges and the approach spans fully into the interstate system. These modifications included: the removal of the sidewalk from the 1935 span; replacement of the railings that were along the sidewalk on the 1935 bridge; the removal of the tollbooth; the demolition of the existing bridge approaches and their replacement with new, elevated connection spans; and the construction of new on-and-off ramps on both sides of the river (Fig. 10).

Figure 10. View north at twin bridges as part of the I-74 interstate system on the Bettendorf side
Photo provided by the Iowa Department of Transportation, Ames

Part II: Historical Background

Planning a Bridge, 1906-1934

Before 1935, the only way to travel between Moline, Illinois, and Bettendorf, Iowa, was by ferry across the Mississippi River or, after 1896, by crossing the Government Bridge between Rock Island, Illinois, and Davenport, Iowa. The Government Bridge (designed 1893 and completed 1896) is a combined railroad and free highway swing-span bridge, the first commission of a young, solo engineer named Ralph Modjeski (Rogers 2002:10).[2]

Early documented efforts to build a bridge over the Mississippi River at Bettendorf began with William P. Bettendorf, founder of the Bettendorf Co. and the city of Bettendorf (incorporated in 1903). The General Bridge Act of 1906 (amended in 1946), allowed private citizens to build bridges as business ventures (U.S. Code, Title 33). Thus, in 1907, Bettendorf took "the first active steps for a bridge" from Bettendorf to Moline, and "through an act of Congress received

[2] During the winter months, a few brave souls walked across the frozen river, an extremely dangerous undertaking.

permission for such a span." Bettendorf's death in 1910, however, put all such bridge plans on hold (Schipper 2002; *Davenport Morning Democrat*, October 14, 1955).

In 1910, the Moline and Bettendorf Bridge Co., a private corporation, proposed a bridge over the Mississippi River between the two cities. On April 19, the Interstate Commerce Commission issued "a favorable report on a bill granting "to the Moline and Bettendorf Bridge Co., the right to construct a bridge across the Mississippi River, from Bettendorf to Moline" (*Muscatine Journal*, April 19, 1910). Less than two weeks later, the U.S. House of Representatives passed the "Bettendorf bridge bill," following a five-minute speech by Congressman Dawson (the bill's sponsor) "boosting the Mississippi valley's industrial importance and using the remarkable growth of the Bettendorf Steel Car Works as showing the strides being made" (*Muscatine Journal*, May 2, 1910). The Moline and Bettendorf Bridge Co., however, failed to raise the needed funds.

By 1927, a growing population and an increasing number of automobiles caused civic leaders on both sides of the river to renew the possibility of a Moline-Bettendorf bridge. These leaders included: Joseph Bettendorf (brother of William), J.L. Hecht (French Hecht and Co.), B.F. Peek, G.A. Shallberg, C.I. Josephson, A.J. Russell, and Charles Skinner (the latter having been Moline Mayor from 1903-1905 and 1919-1923). The group started lobbying for an "open-access" crossing that would not be subject to barge traffic like the Government Bridge's swing-span downriver. On May 26, 1928, the 70th Congress, under Public Law 533, "granted the group a franchise to build a bridge from Bettendorf to Moline as a commercial enterprise" (Schipper 2002).

> The law gave the entrepreneurs the right to charge tolls on the bridge; to condemn property on both sides of the river as needed; and to assign the franchise to another state or governmental authority.
>
> That part of the bill gained significance when the 1928 stock-market crash spoiled the original entrepreneurs' dream of acting alone. They offered the franchise to Moline, but the city refused it. Then they asked Davenport, which accepted (Schipper 2002:A6).

Even then things did not go smoothly. No legal mandate existed for an Iowa city to build an inter-state bridge, particularly one that did not even connect to that city. Then, on April 9, 1929, the Iowa House passed the Greene interstate bridge bill, providing "that cities may build, buy, lease or condemn property to erect bridges across navigable rivers forming the boundary line between states" (*Davenport Democrat and Leader*, April 9, 1929). The bill also empowered cities "to create bridge commissions to recommend interstate bridge programs, suggest ways and means of financing the same, and recommend the creation of a bridge corporation" (ibid.). Although the bill was intended to aid Council Bluffs, Bettendorf and its bridge franchise immediately benefited (*Muscatine Journal and News Tribune*, February 21, 1929; *Davenport Democrat and Leader*, April 9, 1929; Schipper 2002).[3]

[3] Known as the "Greene interstate bridge bill," the bill was introduced by Rep. Harry Greene of Council Bluffs, where city leaders wanted to purchase an interstate bridge over the Missouri River traversed by an interurban traction line. The 43rd Assembly of the Iowa State Legislature created Chapter 195 to allow for such an undertaking. Bettendorf immediately benefited from the new legislation.

The approval process began in April 1931, when the Davenport City Council approved a resolution "providing for approval of a contract with an Ohio firm covering the issue and sale of municipal bonds for the bridge project" (*Muscatine Journal and News Tribune*, April 16, 1931). Although the bridge had been the subject of state newspapers for almost two years, the city council's action was "the first public indication that the backers will go ahead with their plans" (ibid.). The next hurdle was surmounted when voters approved a bond issue on May 12, 1931, by a nearly two-to-one margin. With passage of the bond issue, the bridge-building franchise held by local interests became city property and revenue bonds from bridge tolls would be issued as security (*Burlington Hawk-Eye*, May 12, 1931). A few days later:

> Stranahan, Harris and Co.—the investment-banking firm that had held the interim franchise since the original entrepreneurs had organized—assigned the franchise to the Davenport Bridge Commission, under the authority of the city of Davenport. Davenport Mayor George Tank appointed the new commission—which would serve for the next 40 years (Schipper 2002:A6).[4]

Obstacles began to crop up almost immediately. In mid-June, at a public hearing conducted by the Army Engineers Board, several parties voiced objections to the bridge design, saying it would interfere with navigation. Objecting parties included: Captain John Streckfus, Streckfus Steamboat Lines, St. Louis; Beder Wood, Moline; and O.F. Goeke of the Illinois State Highway Department. According to these objectors, the proposed bridge plans "would constitute a serious interference with river navigation in the vicinity of the Moline harbor and would also present traffic problems difficult of solution on the Moline side" (*Muscatine Journal and News-Tribune,* June 16, 1931). Specific objections to the bridge plans included:

> [T]he distance between the proposed bridge and the east end of Arsenal island was only 500 feet and that this width would not permit boats coming upstream to enter the Moline harbor. It was also claimed that the proposed height of 55 feet for the bridge span above river stage was not sufficient to permit high-stacked steamers to pass, even with stacks folded down (ibid.).

Although the Davenport Bridge Commission "felt confident that the difficulties might be settled and that no serious delay in construction work would result," the Army Board of Engineers upheld the objections to the bridge location and vertical clearance and ordered the plans revised, calling for "a site about 300 feet east of the original location and clearances which the war department said would afford free and easy navigation" (*Muscatine Journal and News-Tribune*, June 16, 1931, September 3, 1931). The Davenport Bridge Commission submitted revised plans to the War Department in Washington, D.C., and the latter approved the bridge plans as revised on September 3, 1931, signaling the commission to begin construction.

Instead of beginning construction, however, Iowa Representative Jacobsen introduced in February 1932 a bill in the U.S. House to extend the time for beginning construction and completing the bridge by one and three years respectively (*Waterloo Daily Courier,* February 10, 1932). The extension bill allowed time for the Davenport Bridge Commission "to make formal application for a loan of $1,250,000 from the Reconstruction Finance Corporation" or RFC (*Burlington Hawk Eye,* July 28, 1932). The RFC was a federal loan agency chartered in January of 1932 by Herbert Hoover's administration to help businesses weather the effects of the Great

[4] "Joseph W. Bettendorf tried to give his city some leverage in the decision-making on June 3, 1931, when he offered the Bettendorf City Council his own share in the bridge franchise. However, events had already passed him by" (Schipper 2002:A6).

Depression. The RFC, however, rejected the commission's loan application. The extension bill for the bridge was finally signed over a year later by President Hoover on March 2, 1933, just before President-elect Franklin D. Roosevelt was sworn into office (*Davenport Morning Democrat*, October 14, 1955; *Waterloo Daily Courier*, March 2, 1933).[5]

The City Council of Moline created a final obstacle to construction, when, "feeling left out of the loop," they voted to oppose the bridge construction in July 1933 (Schipper 2002:A6). Appeased by a delegation from the Davenport Bridge Commission that promised to pay for certain street improvements associated with Moline's proposed bridge approach, the Moline City Council voted to approve the bridge construction on October 2, 1933. This would not be the end of conflicts associated with the construction of this bridge or of its 1959 twin bridge, but at last the way was open for the Commission to build a bridge between Bettendorf and Moline. The original Commission members included: J.L. Hecht, L.J. Dougherty, J. Ross Lee, H.J. Lohmiller, V.E. Hayward (Secretary), and Mayor Merle F. Wells (Chairman) (Schipper 2002; Modjeski and Masters 1960:33).

Funding a major bridge construction at the height of the Great Depression was no small feat. On September 21, 1933, the Davenport Bridge Commission was allotted nearly $1.5 million in funding from the Public Works Administration (PWA), a New Deal agency (Fraserdesign 1994:29-30; Modjeski and Masters 1960:1). "Of this amount $322,000 is donated by the government, the balance being a loan which will be repaid out of bridge earnings" (*Mason City Globe-Gazette*, September 21, 1933). Members of the Davenport Bridge Commission said "work can start within 90 days, depending upon weather and river conditions" (ibid.).

The PWA (not to be confused with the WPA, or Works Progress Administration) was created and directed by Harold L. Ickes under the National Industrial Recovery Act of 1933. The PWA focused on major infrastructure and other large-scale projects – such as building dams, bridges, irrigation systems, even aircraft-carriers – designed to stimulate the economy and provide permanent improvements for the nation's citizens (Blum et al. 1977:644).

The WPA, on the other hand, was created later under the Emergency Relief Appropriation Act of 1935 and placed under the direction of Harry Hopkins. The WPA was intended as a make-work program but is perhaps best known for the number of "light public works" that it undertook, including roads, airports, schools, park enhancements, artwork projects, and other cultural endeavors that left the country richer in such resources if not actually richer financially (Blum et al. 1977:644).

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[5] The Reconstruction Finance Corporation (RFC) was an independent agency of the United States government chartered by the Herbert Hoover administration in 1932 and continued by Franklin D. Roosevelt's New Deal. The agency was modeled after the War Finance Corporation of World War I and gave $2 billion in aid to state and local governments and made loans to banks, railroads, mortgage associations, and other businesses, nearly all of which were repaid. It is unknown whether the Davenport Bridge Commission's application was not approved, or the project was simply delayed too long and the funding lost; nevertheless, funding for the bridge eventually came from the New Deal Public Works Administration (PWA) in 1933 (James Butkiewicz, "Reconstruction Finance Corporation," EH.Net Encyclopedia, edited by Robert Whaples 2002. Available online at http://eh.net/encyclopedia/article/butkiewicz.finance.corp.reconstruction. Accessed May 30, 2012).

The Iowa-Illinois Memorial Bridge was one of a number of federal-aid projects in the Quad Cities built during the Great Depression. Other projects included: the construction of a municipal stadium in Davenport; the U.S. Outerbelt Highway on the north side of Davenport (renamed Kimberly Road in 1936); the creation of a 205-acre municipal airport out of Franing Field, which "became the largest WPA project in Illinois;" and the construction of a new National Guard armory, a new city hall, and a new high school, all in Rock Island" (Tweet 1996:53-54). Up to 1936, the Iowa-Illinois Memorial Bridge, along with the Council Bluffs flood control project, constituted the largest PWA projects in the state.

The PWA required modifications to the bridge plans to reduce costs, and the Davenport Bridge Commission once more applied to the War Department for sanction. On October 31, 1933, Secretary of War, Harry H. Woodring approved the modified the bridge plans, reducing the cost of the structure as instructed by the PWA, and proposing "greater horizontal clearances of the span crossing the main river, with no change of vertical clearance" (*Muscatine Journal and News-Tribune*, October 31, 1933). Over the following five months, more changes were made and re-approved (*Mason City Globe-Gazette*, March 24, 1934). Specifically, "under the modified plans the length of spans one, five, six and twelve, will be increased" and a reduction will be "made in the vertical clearance in the sixth span from the Iowa shore from 40 to 38 feet" (ibid.). Bonds were issued in February 1934 and purchased by the PWA under a Loan and Grant Agreement. The commission obtained from the War Department "a permit covering the construction of the bridge, over navigable waters of the Mississippi River, opposite 14th Street in Bettendorf," allowing actual construction to begin at last in 1934 (Davenport Bridge Commission 1952:3).

As modified, Modjeski and Masters' plans and specifications called for "a bridge divided into two parts by a narrow island" (Fraserdesign 1992). North of the island, the bridge is a three-span, twisted-wire-strand cable suspension bridge. South of the island are six deck truss approach spans, supported on seven piers (Fraserdesign 1994:29-30; IDOT 2011). The bridge was to have a 740-foot main span and a main bridge length of 1,850 feet, with a total length of bridge and approaches of 5,505 feet. The roadway would be 20 feet wide, with a four-foot sidewalk along the downstream (west) side of the roadway. The central suspension was to allow for "60 feet of vertical navigation clearance over high water across a navigable channel 710 feet wide" (Modjeski and Masters 1960:1).

Construction began on July 1, 1934. Over the next year and half, nearly 500 workers, employed through the National Re-Employment Service at Davenport and Rock Island, worked on the bridge (IDOT 2011).

As the bridge neared completion and plans for the opening and dedication were set, the City of Moline, still waiting for their $120,000 and promised street improvements from the Davenport Bridge Commission, threatened to have Moline police halt traffic and the bridge opening ceremonies until the city was paid. The matter was quickly settled by the commission (Rogers 2002:13; *Davenport Morning Democrat*, October 14, 1955). Finishing touches to the bridge were completed late Saturday, November 16, 1935 (*Dubuque Telegraph-Herald*, November 15, 1935). The grand dedication and official bridge opening ceremony was to be held on Monday,

November 18, 1935, the details of which were described in Davenport and other Iowa newspapers:

> Dignitaries of Iowa and Illinois will join hands here Monday in dedication services of the new $1,700,000 [sic] bridge between Moline, Ill., and Bettendorf across the Mississippi River.
>
> The lists of celebrities will be headed by Governors Clyde L. Herring of Iowa and Henry Horner of Illinois, and J. Ray Murphy, Ida Grove, Ia., new national commander of the American Legion, who will be the chief speaker at the program.
>
> Ceremonies will be held on the bridge at 3 p.m. Monday, according to John C. Shenk, chairman of the dedication committee. If events move along with scheduled rapidity, the new span will be opened to public traffic at 4 p.m. at the end of the services.
>
> A ribbon symbolizing the union of the two states by the span of steel and concrete will be severed by Mrs. J. L. Hecht, wife of the man who has been champion of the move toward building this new connecting link between Iowa and Illinois.
>
> On the Iowa program, in addition to the governor, will be Mayors Merle F. Wells of Davenport and Gus Schmass, Bettendorf. Simultaneous with the Iowa service on the west approach will be an Illinois service at the east approach, with Mayors A. Henry Arp, Moline; John Bengston, Rock Island; Charles Carpenter, East Moline, and William Slover, Silvis, in addition to Governor Horner.
>
> Arrangements have been made for an attendance of 1,000 persons at a banquet in the evening. It will be held at the Rock Island government arsenal with Commander Murphy of the Legion giving the address.
>
> The bridge will be open to public inspection during the forenoon Monday, committee members said. An order prohibiting musical bands on the bridge during the service has been issued by the bridge commission. They fear the vibration of music on marching feet would endanger the structure (*Dubuque Telegraph-Herald,* November 15, 1935).

On November 18, 1935, the bridge was "dedicated in grand style with a horse show and fair."

> Youngsters from Lincoln School were herded on foot down the hill and paraded through town and across the bridge to Moline and back. Afterward, their ruddy, wind-chapped faces were still all smiles as they were treated to ice creams cones at the Iowana Farms (Collins et al. 2000:48-49).

The bridge was toll-free to the public on opening day and "between 15,000 and 20,000 persons crossed before the toll went into effect" (*Davenport Morning Democrat*, October 14, 1955). With National Commander of the American Legion Ray Murphy presiding over the ribbon-cutting and evening banquet, the Iowa-Illinois Memorial Bridge was dedicated to American World War I veterans of Iowa and Illinois. Eventually, the bridge came to memorialize veterans of all wars (Fig. 11) (Schipper 2002; IDOT 2011; *Ames Daily Tribune-Times*, November 19, 1935).

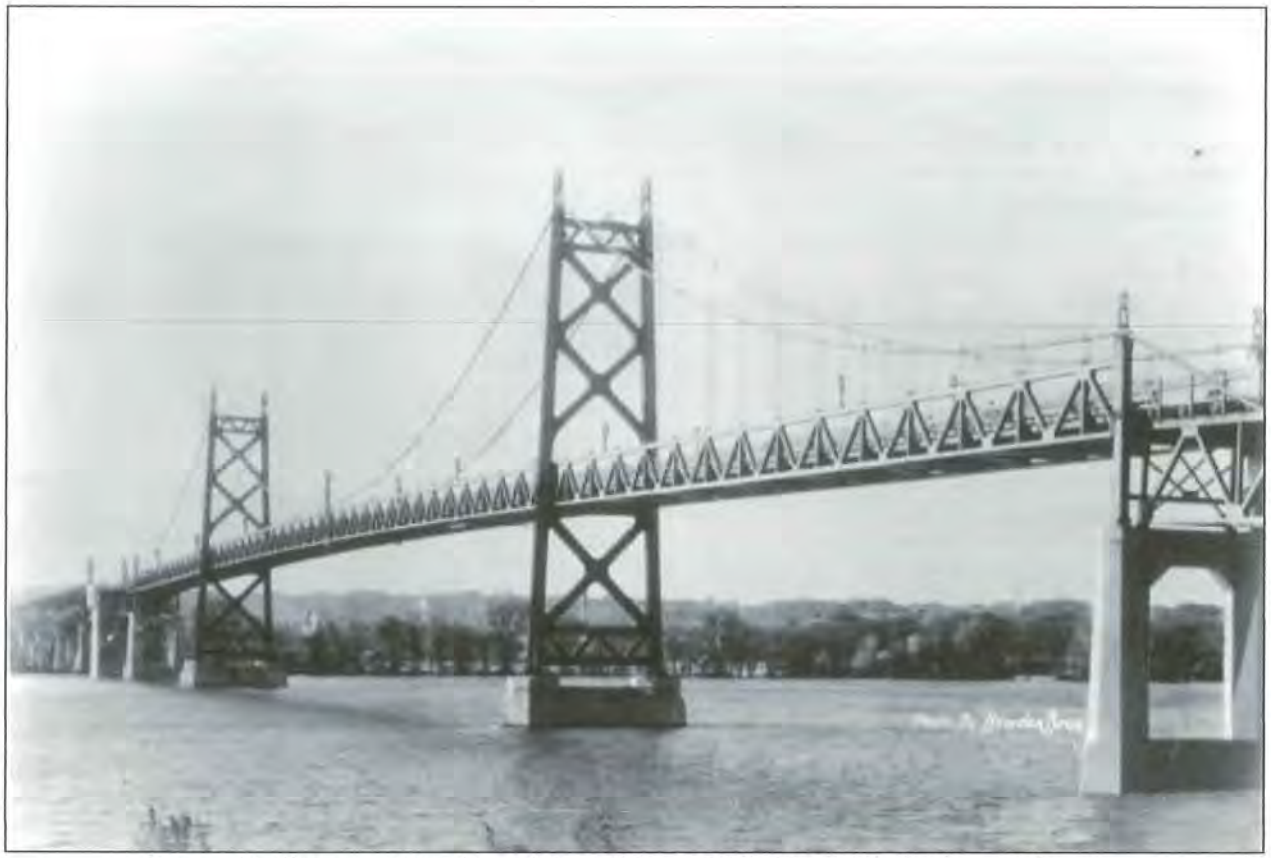

Figure 11. The completed Iowa-Illinois Memorial Bridge, c.1936, view southwest
Source: Davenport Public Library, Davenport, Iowa

The memorial dedication itself was commemorated with the placement of a dressed stone monument (extant) placed at the foot of the bridge on its west side, facing the curve of the south-bound turning lane off of State Street (Fig. 12). The monument was engraved across the top with the following dedication: "1935/Iowa Illinois Memorial Bridge/Dedicated to the Men and Women of these States Who Served in the World War." The monument included two inset bronze plaques, embossed with following information: the top plaque stated the official PWA name of the bridge – "Federal Emergency Administration of Public Works Project Number 42" – and the lower plaque listed the original members of the Davenport Bridge Commission and the engineers and contractors involved in the bridge's design and construction (Collins et al. 2000:55, 76; Rogers 2002:13).[6]

The reverse side of the extant monument displays two bronze plaques commemorating the 1959 twin span, the upper one expanding the dedication to the veterans of both World Wars, the main lower plaque listing the 1959 members of the Davenport Bridge Commission, and the engineers and contractors for the twin span. A third, lower plaque added later (likely after the opening of the bridges to I-74 traffic when the monument moved to its current location) expands once again the veterans dedication to include those who served in the Korean and Vietnam Wars. An aerial photograph, taken in 1961 after the 1959 bridge had been added and the off ramps had been

[6] The extant plaques are not the originals, which were stolen early on and subsequently replaced (Collins et al. 2000:55).

redesigned to accommodate both bridges, clearly shows that the monument had been moved to the grassy strip in-between the two approach ramps and oriented so that the monument faced each bridge ramp. At the original site, the monument's main face was angled to front the intersection at State Street. Then, when the bridge approaches and ramp system were reconstructed in the 1970s to fit the bridges into the new interstate system, the monument was moved yet again, this time to a location on the east side of the 1935 bridge, still at its foot and facing State Street, but now within a modern park first named Volunteer Park and then renamed in honor of former Bettendorf city mayor, Bill Glynn. The monument still sits at this location in the northwest corner of the park. The park location itself was the site of the curving off ramp for the Iowa-Illinois Memorial Bridge in its 1959-70s configuration. After the ramp was removed in the 1970s, the empty lot was made into the extant landscaped park (Collins et al. 2000; Rogers 2002).

Figure 12. Iowa-Illinois Memorial Bridge monument, Bill Glynn Park, view west, 2009
Photo by Tallgrass Historians L.C., November 2009

The completed bridge included a toll plaza situated on the deck truss section above the narrow island on the Moline side of the bridge (Fig. 13). Just before the completion of the bridge, the Davenport Bridge Commission conducted a survey "to determine the origin and destination of all cross river traffic in the community" during the year 1935 (Davenport Bridge Commission 1952:5). Because the bridge was to operate as a toll crossing near the east side of Arsenal Island, in competition with the toll-free Government Bridge on the west side of Arsenal Island, "the determination of suitable toll rates and the adoption of a feasible schedule was a complex and serious problem" (ibid.). The commission needed to establish tolls to encourage traffic to divert to the new crossing in sufficient volumes to yield revenue enough to pay off bonds and cover

bridge maintenance and operating costs. The commission determined the "traffic that could use the new bridge advantageously under nominal tolls," and the schedule of tolls was established. In 1936, less than 600,000 vehicles and pedestrians crossed the bridge, and revenue totaled just $85,000 (ibid.:5-6).[7]

On November 7, 1935, the Davenport Bridge Commission announced the toll schedule for the Iowa-Illinois Memorial Bridge beginning on November 18, the official opening day (*Muscatine Journal and News-Tribune*, November 7, 1935):

- 15 cents per passenger automobile (rate reduced to 10 cents with the purchase of a book of tickets for $1; no extra charge for the driver or passengers up to seven passengers);
- 15 cents per light truck (load capacity not over 3,750 pounds or gross weight not over 8,000 pounds; the book of tickets for $1 could also be used by light trucks);
- exception made for trucks licensed in Iowa or Illinois under state classes A and B, which are allowed a load capacity up to 2 tons for use of the bridge at the 15 cent rate;
- 30 cents per heavy truck (with a pay load over 3,750 pounds or gross weight over 8,000 pounds); and
- 5 cents per pedestrian.

It was reported in 1938 that "the toll charge [was] the lowest on any bridge over the Mississippi River between Minneapolis and New Orleans" (*The WPA Guide to 1930s Iowa* 1986:484).

After the completion of the Iowa-Illinois Memorial Bridge in November 1935, U.S. 6 was significantly rerouted to the new Mississippi River crossing (Fig. 13). U.S. 6 was rerouted after the Memorial Bridge opened, but the alignment along Locust Street, Bridge Avenue, 12th Street, Mound Street (in the Village of East Davenport), and River Drive was temporary until a new bypass to the north of the city was completed. The Highway Commission officially routed U.S. 6 onto Kimberly Road (dedicated in December 1936) on February 17, 1937 (Hancock 2011; Roseman et al. 2011).[8]

The Iowa-Illinois Memorial Bridge quickly became an icon for the City of Bettendorf and the Quad Cities generally. Images of the bridge appeared in local business advertising and on Bettendorf, Moline, and Quad Cities postcards (Figs. 14 and 15).

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[7] By 1951, traffic had increased over 500 percent and gross revenues from tolls approximated $410,000. Traffic volume on the bridge for 1952 was expected to reach 3,200,000 with gross revenue of $429,000. Average daily traffic was 8,750 crossings per day, with peak days at the 10,000 level (Davenport Bridge Commission 1952:6-7).

[8] In 1931, U.S. 6 was designated, and between Illinois and Iowa, it crossed the Mississippi River at the Quad Cities. The original path routed it into Davenport from the west and to the river in the downtown area. The highway then crossed the river on Modjeski's 1896 Government Bridge to Rock Island, Illinois, touching the western end of the island of Rock Island near the Arsenal in the process.

Figure 13. View north of bridge toll plaza and booths, c.1936
Source: Collins et al. 2000

Figure 14. View south-southeast of Bettendorf approach to the newly completed Iowa-Illinois Memorial Bridge, c.1936. U.S. Highway 6 was rerouted across the new bridge. Gas stations were located on each corner of State and 14th streets, positioned to catch Hwy 6 motorists before and after they crossed the bridge. Bettendorf City Hall (*two-story building, center left*) at the southeast corner of State and 14th streets, and the Texaco station (*right*), were both casualties of the 1959 twin span construction.
Source: Collins et al. 2000

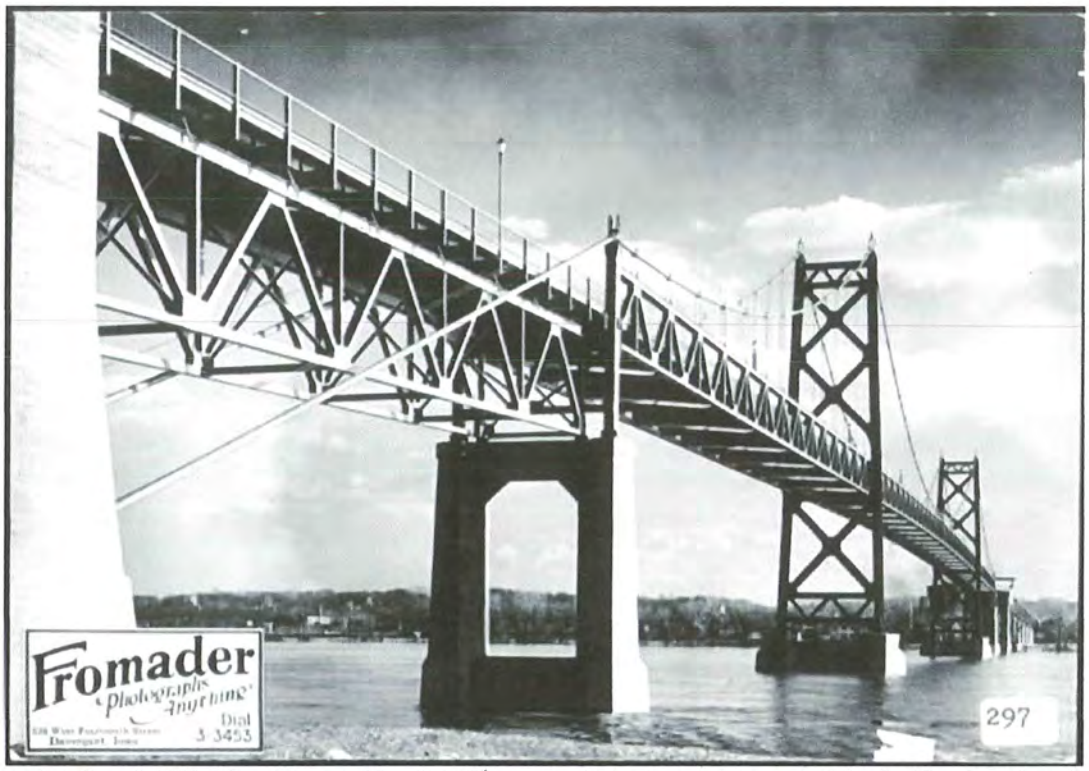

Figure 15. Quad Cities businesses, like this Davenport photographer, used the bridge in advertising.
Source: Davenport Public Library

Figure 16. Postcard views of the bridge abounded, such as this color view from the late 1940s-early 1950s. Source: Moline Illinois Flashback at http://www.captainerniesshowboat.com - March 2011

The Twin Bridge and Interstate 74

When the 1935 Iowa-Illinois Memorial Bridge was completed, there were no plans for a second span. The Davenport Bridge Commission was certain that this bridge would solve the area's traffic concerns for years to come. Over the next 20 years, however, the Iowa-Illinois Memorial Bridge played a key role in the development of the upstream Quad Cities communities of Bettendorf, Moline, and East Moline resulting in increased traffic over the bridge. The new bridge made interstate transportation much easier and attracted new industries to the Bettendorf - Moline transportation corridor. The Iowana Farms Milk Company built their modern milk plant in 1937 at the corner of State and 15th streets, essentially at the foot of the "splendid new bridge" (Vimont 1938:24; see also Price and Rogers 2012). J.I. Case Company and Alcoa also factored the bridge into their selection of Bettendorf as the place in which to expand their industries (Davenport Bridge Commission 1952:7).

By 1951, traffic had increased over 500 percent and gross revenues from tolls approximated $410,000. Traffic volume on the bridge for 1952 was expected to reach 3,200,000 with gross revenue of $429,000. Average daily traffic was 8,750 crossings per day, with peak days at the 10,000 level. Congestion on the bridge occurred daily, with the crossing and merging of traffic from two federal highways, U.S. 6 and U.S. 67, at the bridge entrance in Bettendorf. Traffic on the bridge itself had reached capacity. Not only was a grade separation structure urgently needed on the Iowa side, but a second bridge as well (Davenport Bridge Commission 1952:7).

After several traffic studies and consultations with the engineering firm Modjeski and Masters, the Davenport Bridge Commission decided to build a second bridge, using the past toll revenue. Federal support of the project came under Public Law 566 by the 82nd Congress on July 16, 1952. The bill was signed by President Harry S. Truman the next day (*Cedar Rapids Evening Gazette*, July 17, 1952).[9] In September 1952, the Davenport Bridge Commission presented their case for the "improvement and enlargement of the Iowa-Illinois Memorial Bridge" in a formal report. The Commission had already decided to build a second "twin structure, parallel and immediately adjacent to the downstream side of the existing bridge" (Davenport Bridge Commission 1952:10; see also Modjeski and Masters 1960:2).[10] Specific considerations in planning the new bridge at this crossing included the following:

- average daily volume of traffic was anticipated to increase from the 1952 average of 8,750 vehicles per day to 13,700 per day;
- the highway departments of both Iowa and Illinois were "contemplating major improvements of the more important highways leading to this bridge" in conjunction with the development of the federal interstate highway system, and it was noted that "the bridge will become an increasingly important link in the Federal Highway System and should be widened to four lanes in anticipation of this prospect;"
- current traffic on the bridge "approaches congestion conditions on the bridge roadway" on a nearly daily basis; and finally

[9] The measure had been introduced by Rep. Tom Martin (R-Iowa) in the house, with Sen. Bourke Hickenlooper (R-Iowa) placing it before the senate (*Cedar Rapids Evening Gazette*, July 17, 1952).

[10] There appears to have been little discussion or controversy involved in that particular decision. The good condition of the 1935 structure, not yet 20 years old at the time, and the difficulties entailed in widening an existing suspension bridge, likely factored into this initial decision.

- the Commission and the Cities of Davenport, Moline, and Bettendorf, would be open to serious criticism "for lack of foresight if the crossing is not enlarged before tolls are removed" in anticipation of inclusion of this crossing into an interstate freeway system (Davenport Bridge Commission 1952:11-13).

Initially, this proposal caused little controversy, and the ability of the Davenport Bridge Commission to finance the bridge largely through toll revenues was considered a major plus. The size of the toll revenues, however, sparked the interest of the various local governments, who saw an opportunity to obtain funding for local projects. For example, in 1952, the Davenport City Council "demanded thousands from bridge coffers to repave River Drive from the Bettendorf boundary to East 3rd Street" (Schipper 2002).[11] Other attempts included trying to charge property tax on the bridge by both Bettendorf and Scott County, an attempt "dissuaded by the Iowa attorney general" (ibid.). Both Bettendorf and Moline fought various aspects of the new bridge construction, with Bettendorf vying for "veto power over the location of the new second span" and Moline, wary of the impacts to local traffic flow and the loss of more downtown buildings, again requiring payment for the widening and improving of several Moline streets (ibid.). The disagreements resulted in court cases, with one even making it all the way to the U.S. Court of Appeals resulting in a ruling "that Davenport would pay Moline $39,000 for the streets" involved in the new bridge construction (ibid.). Bettendorf citizens also opposed the overpass of State Street, which would require their city hall to be moved, disrupting city business in the process. Once again homes and businesses would be displaced, and local sentiment on both sides of the river was not overwhelmingly in favor of the new bridge.

Despite these controversies, the new bridge was approved and built on the downstream (west) side of the 1935 bridge. The Davenport Bridge Commission again hired the engineering firm Modjeski and Masters,[12] this time to redesign and adapt the firm's original 1935 bridge, rather than design a whole new bridge. The attempt was made to make the new bridge as near a twin to the original as possible. The new bridge, however, was slightly larger because "road width specifications [had] changed between the two bridges' births" (Schipper 2002). The new bridge had a 24-foot roadway, with the river spans and vertical clearances "identical to those of the original bridge" (Modjeski and Masters 1960:3). Other differences, such as aluminum handrails on the new bridge rather than the painted steel railings on the old, were minor (ibid.:6). As a result, the new bridge strongly mirrored the original bridge and provided an aesthetic solution to a growing traffic problem. Construction started on the new bridge in July 1958. The span was completed and opened for traffic in November 1959, and the older span then closed for repairs. "Dravo Corporation performed the work on the Substructure, Bethlehem Steel Company on the Superstructure, and Valley Construction Company on the Approach Roadways" of the new bridge (ibid.:4). Both spans were officially opened and dedicated on January 20, 1960 (Schipper 2002).

The bridges continued to operate as toll bridges for a time, but as anticipated, the federal government "wanted the bridges for the planned Interstate 74 river crossing" (Schipper 2002). While the Davenport Bridge Commission hoped to negotiate a compromise wherein they could

[11] The demand that was dropped after the Commission proved that the River Drive project was "too far from the Bridge to be considered an 'approach' and therefore could not legally be funded" (Schipper 2002).
[12] Although Ralph Modjeski died in 1940, the firm continued to bear his name.

continue to operate the toll bridges even after interstate designation (similar to the Indiana Turnpike and the George Washington Bridge), they were unsuccessful.

> In August 1965, the commission made an agreement with the Iowa and Illinois highway departments to give up the twin bridges when toll revenues were sufficient to repay construction financing. Reluctantly, the Davenport Bridge Commission turned over the bridges on Dec. 31, 1969 (ibid.).

In order to bring the bridges and the approach spans fully into the interstate system, a number of changes and new constructions were made. These included: the removal of the sidewalk from the 1935 span; the removal of the tollbooth; the demolition of the existing bridge approaches and their replacement with new, elevated connection spans; and the construction of new on-and-off ramps on both sides of the river. "The I-74 bridge over the Mississippi River opened to traffic in both directions on Nov. 26, 1974, and Interstate 74 was completed through Moline on Dec. 10, 1975" (Schipper 2002). Without a bridge and its source of revenue, the Davenport Bridge Commission, having functioned for over 40 years, was officially disbanded in 1971.[13]

Fifty-one years after the second bridge was built to alleviate growing traffic congestion and safety concerns, the same concerns prompted a study of the existing twin bridges and the design of I-74 to determine how to correct problems and bring the bridge crossing into the twenty-first century (Rogers 2002; Schipper 2002). As with the earlier bridge proposals, the study was not without controversy, with local groups concerned about the potential loss of the historic bridges and the upheaval to both Moline and Bettendorf businesses and traffic that would likely come with new construction (Schipper 2002). The current documentation study of the 1935 Iowa-Illinois Memorial Bridge is the result of the conclusion that there was no prudent or feasible alternative to the removal of this historic structure and its replacement with a new bridge at this river crossing.

Part III: Construction History

The Suspension Bridge

The first metal suspension bridge in the United States was built by James Finley, a justice of the peace in Fayette County, Pennsylvania, in 1801. The bridge featured a wood-truss-stiffened vehicular deck suspended by wrought iron chains. Finley patented his bridge in 1808, and though many more were built, critics pointed to the chains as potential "weak links" in Finley's design. The introduction of metal cables eventually addressed the problem (Parsons Brinckerhoff et al. 2005:3-132).

In 1816, Josiah White and Erskine Hazard constructed what is believed to be the first wire pedestrian suspension bridge in the country. The bridge spanned the Schuylkill River near Philadelphia. In 1842, Charles Ellet, Jr., designed the first wire cable suspension bridge over the Schuylkill River at Fairmount Park in Philadelphia. The bridge had a clear span of 358 feet

[13] All construction debt had been paid off by that time, "in fact, there was $600,000 in excess of its debt obligations, which the city of Davenport and the states of Illinois and Iowa fought over in yet another lawsuit filed in 1973. The city eventually won and got the money" (*Quad City Times,* April 20, 1999).

between the towers, supported by five cables on each side. A well regarded design, the bridge encouraged the construction of other wire cable suspension bridges. The bridge also established Ellet as the country's leading suspension bridge designer, and he went on to design two important bridges, one at Wheeling, West Virginia (completed in 1849), and the other over Niagara Gorge between New York and Canada. The former bridge, spanning 1,010 feet over the Ohio River, was the longest bridge in the world for many years and Ellet's final triumph as a bridge engineer (Parsons Brinckerhoff et al. 2005:3-132).

In the 1850s, John Roebling took over as the country's leading suspension bridge designer by winning the contract to build the second suspension bridge (and first railroad bridge) across the Niagara Gorge. Completed in 1855, Roebling's bridge was the longest railway bridge in the world and the last suspension bridge built for railroad traffic for 133 years (Parsons Brinckerhoff et al. 2005:3-132).

The suspension bridge became Roebling's specialty. Extant examples include the 1867 bridge over the Ohio River between Cincinnati, Ohio, and Covington, Kentucky. Renamed the John A. Roebling Suspension Bridge in 1984, this bridge was the first to use both vertical suspenders and diagonal stays fanning out from the towers. Roebling's Brooklyn Bridge, however, overshadows all others. Completed in 1883, the bridge plan involved two towers, cables and suspenders, anchorages, and a stiffening truss – all the character defining features of the suspension bridge type (Parsons Brinckerhoff et al. 2005:3-132).

In the early twentieth century, steel became the primary bridge-building material, allowing engineers to design bridges with more strength and less mass. Suspension bridges particularly benefited from the new material. "If suspension bridges look lighter than other types of steel bridge," wrote the Curator of Architecture at the Museum of Modern Art in 1949, "it is because they *are* lighter. The supporting cables, being wholly in tension, takes full advantage of the fact that steel is far more efficiently used in tension than in compression. Thus it is in the suspension bridge that the nature of steel is most completely realized" (Mock 1949:54).[14]

In 1924, the celebrated bridge engineer Ralph Modjeski expressed his partiality to the suspension bridge type. At the time, he was supervising construction of the Delaware River Bridge (later renamed Ben Franklin Bridge) over the Delaware River connecting Camden and Philadelphia, which would be the world's longest suspension bridge until his 1929 Ambassador Bridge. At the time, Modjeski believed "most of the large bridges of the future will be the suspension type" and he foresaw ever longer spans in the future:

> "We could now go beyond the span length of the Delaware River Bridge, at the present time the longest suspension bridge in the world," he said. "The primary requirement would be a stronger wire. . . . I should say that with such a wire, we could build a suspension bridge with a single span of 3500 feet--or just twice the length of the Delaware River Bridge span. Perhaps that could be stretched a little. Yes, we could build a suspension bridge today with a four-thousand-foot span" (*Sioux City Journal*, November 23, 1924).

As highway building and federal employment relief merged in the New Deal programs of the Great Depression, suspension bridges proliferated. Indeed, some of the country's most iconic

[14] Author's emphasis.

bridges were built in the 1930s: Triborough Bridge (1936); Golden Gate Bridge (1938); and San Francisco-Oakland Bay Bridge (1937). Aesthetically, the suspension bridge reflected the 1930s vision of future cities, such as the city in the Futurama exhibit at the 1939 New York World's Fair, where curving highways and graceful suspension bridges removed all obstacles to traffic flow. Streamlined in form and function, with ever longer spans as foreseen by Ralph Modjeski in 1924, suspension bridges in the Thirties represented the speed and flow associated with progress and modernity (Giedion 1969:610; Greif 1975:32).

From Ellet and Roebling in the nineteenth century to Ammann, Moiseiff, Steinman, Modjeski, and others in the twentieth century, America led the world in suspension bridge design and construction until 1981, when the Humber Bridge in England was built. Ralph Modjeski, and his engineering firm Modjeski and Masters, designed a number of suspension bridges from 1921 to 1959, many of which are extant (Table 1).

Table 1. Extant Suspension Bridges by Modjeski and Masters, 1921-1959
Source: Modjeski and Masters c.1981

Name	Location	Total Length *(bridge + approaches)*	Years *(design + construction)*
Ben Franklin Bridge	over Delaware River, Philadelphia, PA	8249 ft	1921-1926
Mid-Hudson Bridge	over Hudson River, Poughkeepsie, NY	4007 ft	1923-1930
Iowa-Illinois Memorial Bridge (first span)	over Mississippi River Bettendorf, IA & Moline, IL	5550 ft	1933-1936
Gateway Bridge	over Mississippi River, Clinton, IA	3514 ft	1946-1957
Ogdensburg Bridge	over St. Lawrence River, Ogdensburg, NY	7377 ft	1952-1960
Walt Whitman Bridge	over Delaware River, Philadelphia, PA	6.2 miles	1952-1957
Iowa-Illinois Memorial Bridge (twin span)	over Mississippi River Bettendorf, IA & Moline, IL	5550 ft	1935-1959

Designers and Builders of the Iowa-Illinois Memorial Bridge, 1935

In 1934, the Davenport Bridge Commission awarded the bridge design and construction supervision to Modjeski and Masters of Harrisburg, Pennsylvania, with Ralph Modjeski, Frank Masters, and Montgomery Case the design engineers. The construction contract for the substructure was awarded to the Kansas City Bridge Company of Kansas City, Missouri, and the contract for the superstructure to the McClintic-Marshall Corporation of Chicago.

Ralph Modjeski (1861-1940)

Engineer Ralph Modjeski (born Rudolf Modrezejewski), considered by many to have been one of America's great bridge builders, was born in Bochnia near the city of Krakow in Poland on January 27, 1861 (Fig. 17). Modjeski immigrated to the United States at the age of 15 in 1876 along with his mother, famous Shakespearean actress Helena Modrezejewski (or as she was later called in America—Madame Modjeska). While his early talent suggested a promising career as a concert pianist, he became instead a successful civil engineer earning his degree at the Ecolé Nationale des Pont et Chaussées in Paris.[15] He graduated in 1885 and began his career in Chicago where "he worked for seven years with one of the leading bridge builders of that time, George S. Morison" (Ploss 2002). In 1893, Modjeski began a solo career, with his first commission having been the design and construction of the combined railroad and highway bridge (i.e., the Government Bridge) over the Mississippi River at Rock Island, Illinois (Fig. 13). From this point, his career was launched quite successfully, with his firm based in Harrisburg, Pennsylvania. It was there that Frank M. Masters came to work for Modjeski in 1904 (Modjeski and Masters c.1981).

Figure 17. Ralph Modjeski, 1861-1940
Source: Modjeski and Masters c.1981

During the 1920s, Modjeski had become "one of the world's most famous builder of bridges" (*Sioux City Journal,* November 23, 1924). His fame brought him awards from peers and adulation from the media. In 1924, Modjeski was featured in a syndicated article, "Building the Dream Bridge of the Future" (ibid.). Pictured "in oilskins and rubber boots, Modjeski," the portrait caption read, "builder of magnificent bridges, described as 'the Polish-born wizard who has put the stamp of his artistry and technical skill on nearly a hundred million dollars' worth of American bridges' walks on the floor of the river, among the 'sandhogs,' and climbs to the highest pinnacle, intent upon the fulfillment of his dreams" (ibid.).

In 1929, Modjeski was awarded the John Fritz Gold Medal in American Engineering, the highest honor in the field, "for his genius in combining strength and beauty" (Anonymous 2002).[16] In 1930, a survey by Villanova College of the deans of engineering schools in the United States placed Ralph Modjeski at No. 10 in a list of "the 10 greatest engineers of the past 25 years" (*Mason City Globe-Gazette,* February 28, 1930). Others named to the modern engineering pantheon were Herbert Hoover (No. 1), Thomas A. Edison (No. 3), and Henry Ford (No. 9) (ibid.). In 1931, Modjeski received the Washington Award from the Western Society of Engineers, and was the featured subject of a syndicated feature, "The Boyhood of Famous

[15] Translates as the National School of Bridges and Roads.
[16] "Other recipients of that medal have been Guglielmo Marconi, inventor of the wireless, Alexander Graham Bell, inventor of the telephone, and George Westinghouse, who developed the modern air brake" (*Oakland Tribune,* October 29, 1936).

Americans," published in many newspapers around the country (Illinois Engineering Hall of Fame 2011; Fitzgerald 1931).[17]

Ralph Modjeski retired in 1936 at age 75, after seeing the completion of the San Francisco Oakland Bay Bridge (or Trans-Bay Bridge), for which he had served as Chairman of the Consulting Board of Engineers. By that time, he had designed and built over 50 bridges, most of which remain in service today and "remain classical examples of the art of bridge engineering" (Illinois Engineering Hall of Fame 2011). He had become known as the "forty million dollar bridge builder," having personally directed construction of bridges approximating that amount (*Oakland Tribune*, October 29, 1936). He died four years later in 1940 at the age of 79. He was living in Los Angeles at the time of his death (*Alaska Miner*, July 2, 1940).

Among Modjeski's major design accomplishments were the Thebes Bridge over the Mississippi River at Thebes, Illinois, completed in 1904;[18] the Benjamin Franklin Bridge, a suspension bridge between Philadelphia and Camden, New Jersey, completed in 1926 and "considered his greatest achievement;" the tied-arch Tacony-Palmyra Bridge over the Delaware River in northeast Pennsylvania completed in 1929; the Trans-Bay Bridge between San Francisco and Oakland in California completed in 1936; and the Blue Water Bridge connecting Port Huron, Michigan, with Sarnia, Ontario, Canada, completed in 1938 (Modjeski and Masters c.1981).

Modjeski's career began and ended with Quad Cities bridges: his first bridge was the Government Bridge at Rock Island/Davenport (1893-96) and one of his last bridges was the Iowa-Illinois Memorial Bridge at Bettendorf/Moline (1935).[19] The 1935 bridge was, in fact, designed by Ralph Modjeski, Frank Masters, and Montgomery Case. The later 1959 "twin bridge" was designed by Frank Masters based on the original 1935 bridge design.[20] Modjeski's firm designed a total of 16 bridges over the Mississippi River, including the two between Moline and Bettendorf, with only one other being of a suspension design—the Gateway Bridge at Clinton, Iowa, built in the late 1950s. The Gateway Bridge is an unloaded backstay suspension design, while the Iowa-Illinois Memorial Bridges are cable suspension bridges.

Frank M. Masters, Jr. (1883-1974)

In 1904, Frank M. Masters, Jr. began his professional association with Ralph Modjeski, when the latter employed Masters as a engineer specializing in metallurgy and steelwork fabrication (Fig.

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[17] J.V. Fitzgerald's Modjeski biographical feature was printed in the *Lake Park News*, February 5, 1931; *LeMars Globe-Post*, April 27, 1931; and *Boyden Reporter*, February 12, 1931, among others. Modjeski's fame also brought him notoriety. In 1931 he traveled to Reno, Nevada, to divorce his wife of 46 years; he was remarried the next day to a woman also divorced the previous day. Afterward, three attorneys unsuccessfully tried to have his divorce and remarriage set aside on a residency technicality. Later in the year, Modjeski was sued for $500,000 by a young French dancer who claimed "breach of promise," likely causing the engineer much embarrassment with love letters allegedly written by him reprinted in the papers. See "All His Trouble Came to Him at 70," *San Antonio Light*, October 15, 1933.

[18] Because of his work on the Thebes Bridge, a portrait and brief biography of Ralph Modjeski was included in the 1902 "Who's Who" book, *Men of Illinois* (Chicago: Halliday Witherspoon, 1902), 33.

[19] Modjeski officially retired a month after his Oakland Bay Bridge opened in October 1936 (*Oakland Tribune*, October 29, 1936).

[20] Signatures on original bridge plans on file Modjeski and Masters, Inc., Harrisburg, Pennsylvania; e-mail confirmation from Gwyn Marini, Modjeski and Masters, dated February 8, 2002.

18). During World War I, Masters served as an Army Ordnance officer, after which he spent four years in private practice as a consulting engineer. In 1924, Masters entered into a partnership with Ralph Modjeski under the firm name of Modjeski and Masters. When Modjeski retired in 1936, Masters assumed control and ownership of the firm. When the firm was reorganized in 1947 as a five-man partnership, Masters became senior partner. Masters retired in 1968 and died in 1974 (Modjeski and Masters c.1981).

Figure 18. Frank M. Masters, Jr. 1883-1974
Source: Modjeski and Masters c.1981

The Modjeski and Masters firm continues to operate into the present day with offices in Harrisburg, New Orleans, Chicago, and Washington, D.C. (Ploss 2002).

Kansas City Bridge Company (1893-1960)

The construction contract of the Iowa-Illinois Memorial Bridge went to the Kansas City Bridge Company, which in cooperation with the McClintic-Marshall Corporation built the bridge (Fig. 19) (IDOT 2011). Established in Kansas City, Missouri, in 1893, the Kansas City Bridge Company began by building county bridges, gradually taking on larger projects such as state highway and railroad bridges. During the first decades of the twentieth century, the company graduated to building very large bridges and "specializing in deep open and pneumatic pier foundations" (*Galveston Daily News*, February 20, 1958). At the same time, the company expanded their construction expertise to include "dams, locks, piers, and docks, and in the 1920's entered the field of flood control and improvement of inland waterways" (ibid.). Most of their work centered on projects in the Midwest. The Kansas City Bridge Company ceased operations in 1960 ("Kansas City Bridge Company," accessed at http://en.wikipedia.org/wiki/Kansas_City_Bridge_Company, May 2012).

Figure 19. Advertisement in *Frisco Employees Magazine*, July 1931
Source: Springfield-Greene County Library.
Obtained at http://thelibrary.springfield.missouri.org/lochist/frisco/magazines on March 2011

McClintic-Marshall Construction Company (1900-c.1937)

McClintic-Marshall Construction Company of Pittsburgh, Pennsylvania, was formed in 1900 by Howard H. McClintic and Charles D. Marshall, with financial backing from Andrew Mellon. Greatly benefiting from the turn to steel for large building and bridge projects, by 1929, McClintic-Marshall had only one sizable competitor, the American Bridge Co., a subsidiary of U.S. Steel. In 1931, Bethlehem Steel purchased McClintic-Marshall, and thereby became U.S. Steel's major rival (Time, Inc. 1931).

In their four decades of existence, McClintic-Marshall built some of America's most iconic buildings and bridges: Hells Gate Bridge over New York City's East River (1916); Ambassador Bridge over the Detroit River (1929); George Washington Bridge (1931); the Waldorf-Astoria Hotel (1931); half of the floors in the Empire State Building (1931); Black Hawk Bridge over the Mississippi River in Lansing, Iowa (1931); and the Golden Gate Bridge (1937). The company was best known for the Golden Gate Bridge, taking four years to complete and requiring 83,000 tons of steel shipped from the East Coast to San Francisco through the Panama Canal, the locks of which were also built by McClintic-Marshall in 1911-14. After merging with Bethlehem Steel in 1931, the McClintic-Marshall Construction Company was officially dissolved during construction of the Golden Gate Bridge (c.1937). Howard McClintic died in 1938 (Lehigh Engineering Heritage Initiative 2011).

Construction of the Original Bridge, 1934-1935

Construction of the Iowa-Illinois Memorial Bridge began on July 1, 1934 with the pier foundations. The Kansas City Bridge Company used pneumatic caissons to erect the piers (*Galveston Daily News*, February 20, 1958).[21] A total of forty-five foundations built on bedrock composed the substructure, eleven of which are in the river. Once the Kansas City Bridge Company completed the foundations, the McClintic-Marshall Corporation began making preparations for the superstructure. They erected the steel suspension towers, constructed the approaches, and then strung the cables in place. The high-profile towers were fixed-base, flexible-type steel structures; the cables consisted of prestressed twisted wire rope. The structure made use of silicon steel and wide-flange rolled beams in an effort to reduce costs (Fraserdesign 1992). Costing an aggregate $1,700,000, work was completed on the bridge in November 1935 (Fig. 20).

When completed the bridge was described as "of the most modern design and construction, providing a two-lane concrete roadway with traffic capacity equal to that of the newest state highway" (AAA 1938).

> It is a 'high-level' crossing with ample clearance underneath for the largest steamboats on the upper Mississippi.
>
> This large suspension bridge is a new type in the Middle West. The graceful lines of this structure add new beauty to this already scenic portion of the Mississippi River (ibid.).

[21] As noted previously, the Kansas City Bridge Company specialized in the use of pneumatic caissons.

The total length of the river crossing was 5,552 feet, with the suspension spans 1,480 feet in length. The navigation clearance over the main channel was 60 feet, with the overhead clearance for traffic of 14 feet 6 inches. The total height of the main towers was 160 feet, while the distance between the main towers was 740 feet. The main cables were 10 inches in diameter, with the main cables being 1,906 feet in length. The depth of the main foundations was 15 to 22 feet. The total weight of the structural steel was 5,000 tons, while the volume of concrete totaled 21,000 cubic yards (AAA 1938).

Figure 20. Iowa-Illinois Memorial Bridge, 1935 (view southwest)
Source: Modjeski and Masters c.1981

The Twin Span, 1958-1959

By the 1950s, the traffic volume had increased at this crossing to the point that either a widened bridge or a second bridge was needed. The decision was made to build a twin of the 1935 bridge. Construction began July 1, 1958, with the substructure built by Dravo Corporation, the superstructure by Bethlehem Steel Company, and the approach roadways by Valley Construction Company (Modjeski and Masters 1960:4). The Bethlehem Steel Company even developed a new cable wrapping machine for the project and had it built in a local machine shop.[22] Other subcontractors included: the Industrial Construction Company, which completed the roadway paving; the Gould Construction Company of Davenport, which performed the paving; L.B. Foster Company, which supplied the aluminum handrails; the Davenport Electric Contract Company, which furnished all the electrical equipment for the roadway, navigation, and aerial beacon lighting; and Priester Construction Company, which built and reconstructed the administrative rooms, toll booths, and canopies (ibid.:21-34).

The second bridge, completed in 1959, was as near a twin to the original as possible, with the main difference being a slightly larger new bridge because "road width specifications [had]

[22] The new machine had to be developed because a National steel strike had made the original cable wrapping machines unavailable (Modjeski and Masters 1960:22).

changed between the two bridges' births," and some minor differences such as the use of aluminum handrails on the new bridge compared to the painted steel railings of the old (Schipper 2002; Modjeski and Masters 1960:6). The new bridge had a 24-foot roadway curb to curb, with the river spans and vertical clearances "identical to those of the original bridge" (ibid:3) (Fig. 21).

Figure 21. Twin spans of the Iowa-Illinois Memorial Bridge, 1959. View north from toll plaza.
Source: Modjeski and Masters c.1981

The placement of a second bridge next to the 1935 bridge (on the downstream or west side of the 1935 bridge), necessitated redesign and reconstruction of the approach spans and ramp system on both sides of the river. On the Bettendorf side, the result was two very tight on-off ramp loops to either side at the foot of each bridge, with the main traffic lanes descending to the north down to ground level (Fig. 22).

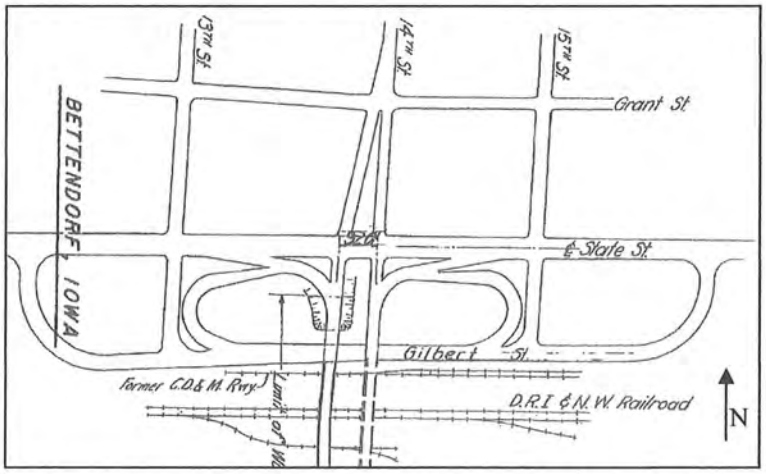

Figure 22. Plan map showing the tight on-off ramps for the twin spans of the Iowa-Illinois Memorial Bridge, 1959. Source: Modjeski and Masters 1960

On the Moline side, the result was a second parallel ramp and elevated highway cutting north through the downtown area, crossing the river island, and linking with the new double span toll plaza that marked the beginning of the Illinois side of the twin span bridge (Modjeski and Masters 1960:26, 30).

Adaptation to Federal Interstate System, 1973-1976

In the 1970s, a number of changes were made to bring the bridges and the approach spans fully into the interstate system. These modifications included the removal of the sidewalk from the 1935 span, replacement of the railings that were along the sidewalk on the 1935 bridge, the removal of the tollbooth, the demolition of the existing bridge approaches and their replacement with new, elevated connection spans, and the construction of new on-and-off ramps on both sides of the river (Fig. 23).

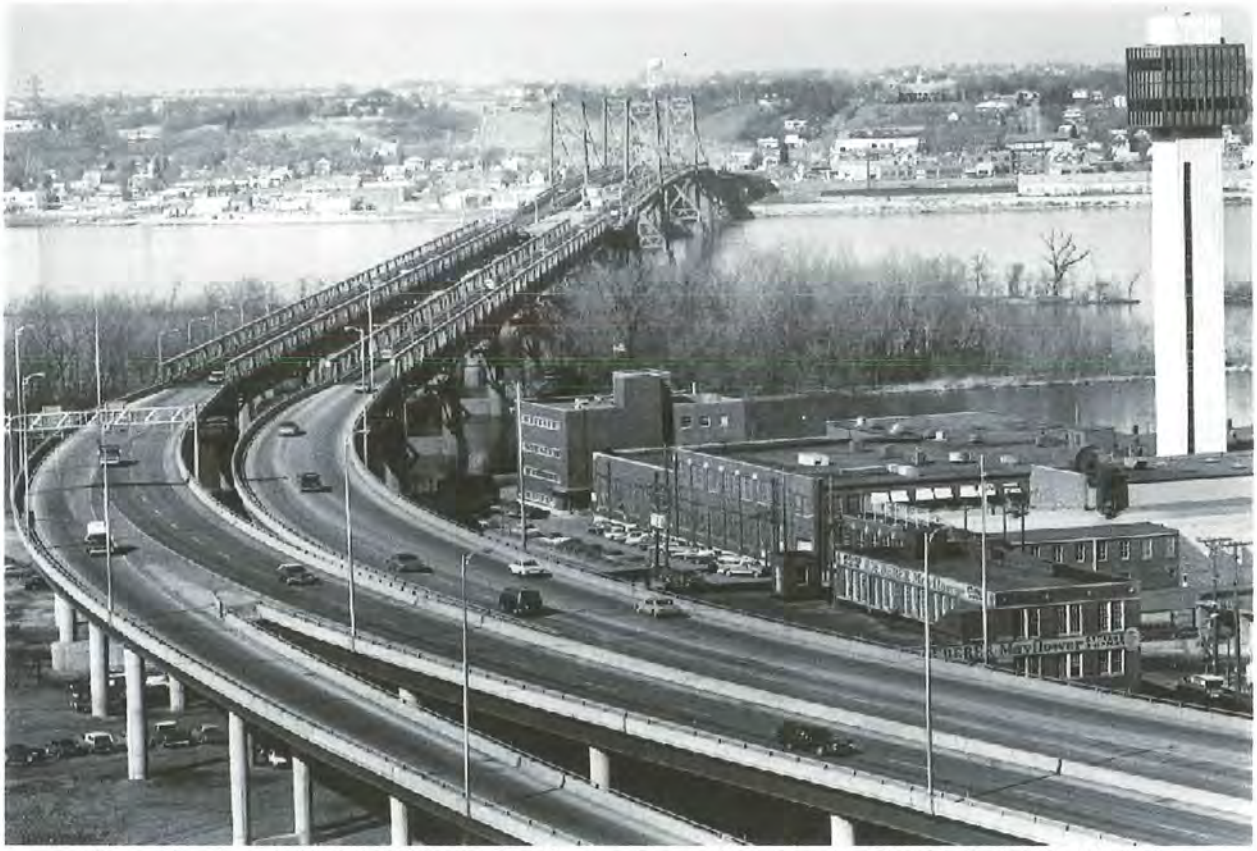

Figure 23. Completed I-74 bridges, looking north-northeast toward Bettendorf, March 1976
Source: Bill Fisher Archives. Obtained at http://www.captainerniesshowboat.com/moline.html in January 2011.

Part IV: Significance of the Bridge

The 1935 Iowa-Illinois Memorial Bridge was previously determined eligible as an individual structure for the National Register as part of a statewide study of DOT bridges in Iowa (Fraserdesign 1992, 1994:29-30). The bridge is eligible under Criterion A "as the largest, most important federal works project in Iowa" and under Criterion C because "it possesses a high degree of technological" importance. The bridge is also significant as a rare bridge type and as one of the "Great River" bridges built over a major river. The general selection criteria for bridges as set forth by the statewide Multiple Property Document for Iowa Bridges included:

1. Contributes to an understanding of the broad historical patterns of transportation and development on a state, regional, or local level (especially applicable for *original* structures on such major transportation routes as the Lincoln Highway, or across such waterways as the Missouri and *Mississippi* rivers).
2. Embodies noteworthy architectural design or ornamentation.
3. Embodies *non-standard design or unconventional engineering for the period.*
4. Embodies *the work of an important engineer*, architect, fabricator, or contractor.
5. Constructed prior to 1920.
6. Represents *a "rare" bridge type*, defined as constituting one percent or less of the initial study group (Roberts and Fraser 1995:H-60).[23]

The Iowa-Illinois Memorial Bridge qualifies under four of these selection criteria—it is the original structure built over a major waterway, it embodies a non-standard bridge design for the period, was the work of an important engineer (Ralph Modjeski), and constitutes a rare bridge type as defined by the statewide study (ibid.). Additional historical significance is derived from the fact that it was a Depression-era Public Works Administration (PWA) project (Rogers 2002:31).

The Iowa-Illinois Memorial Bridge had to be removed to make room for a new I-74 bridge over the Mississippi River at Moline and Bettendorf. The construction of the new bridge also required removal of the historic Iowana Farms Milk Company building. The documentation reported herein and for that of the Iowana Farms Milk Company (see Price and Rogers 2012) fulfils the requirements of the Memorandum of Agreement regarding the removal of these historic properties.

[23] Emphasis added.

Part V: Reference Sources

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APPENDICES

Location Maps

Site Plan

Aerial Views, 1938, 1960s, and 1994

Iowa-Illinois Memorial Bridge Timeline

Construction photographs, 1934-35

Construction photographs, 1958-59

Construction photographs, 1973-75

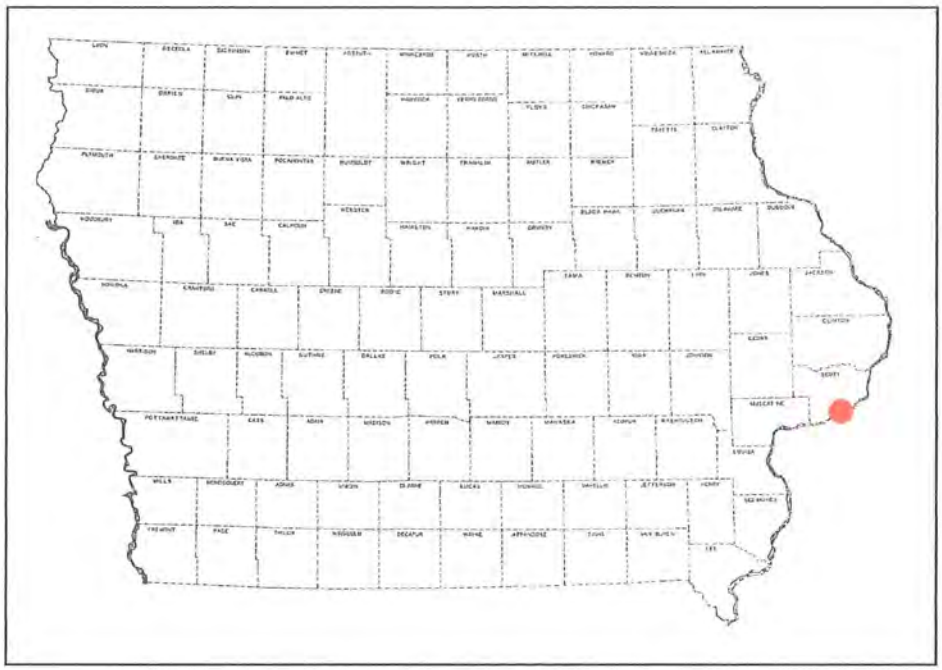
Original Plans for the Iowa-Illinois Memorial Bridge, April 1934

Current Study Photographs (submitted previously to IDOT and SHPO)

Current Study Color Slides (submitted previously to IDOT and SHPO)

Current Study Photograph Log Sheets (submitted previously to IDOT and SHPO)

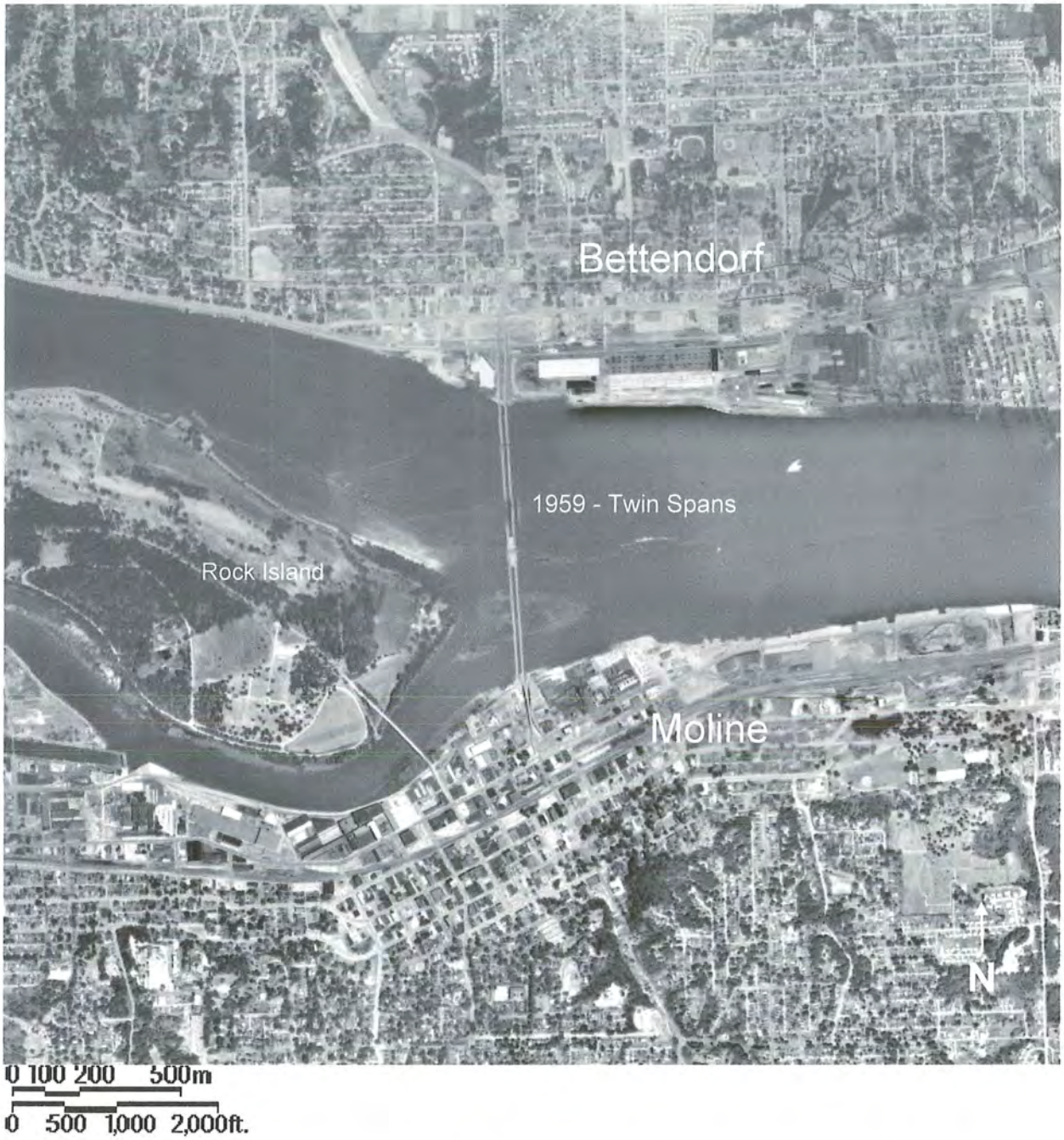
Iowa Historical Architectural Data Base (HADB) Form



Location of Iowa-Illinois Memorial Bridge

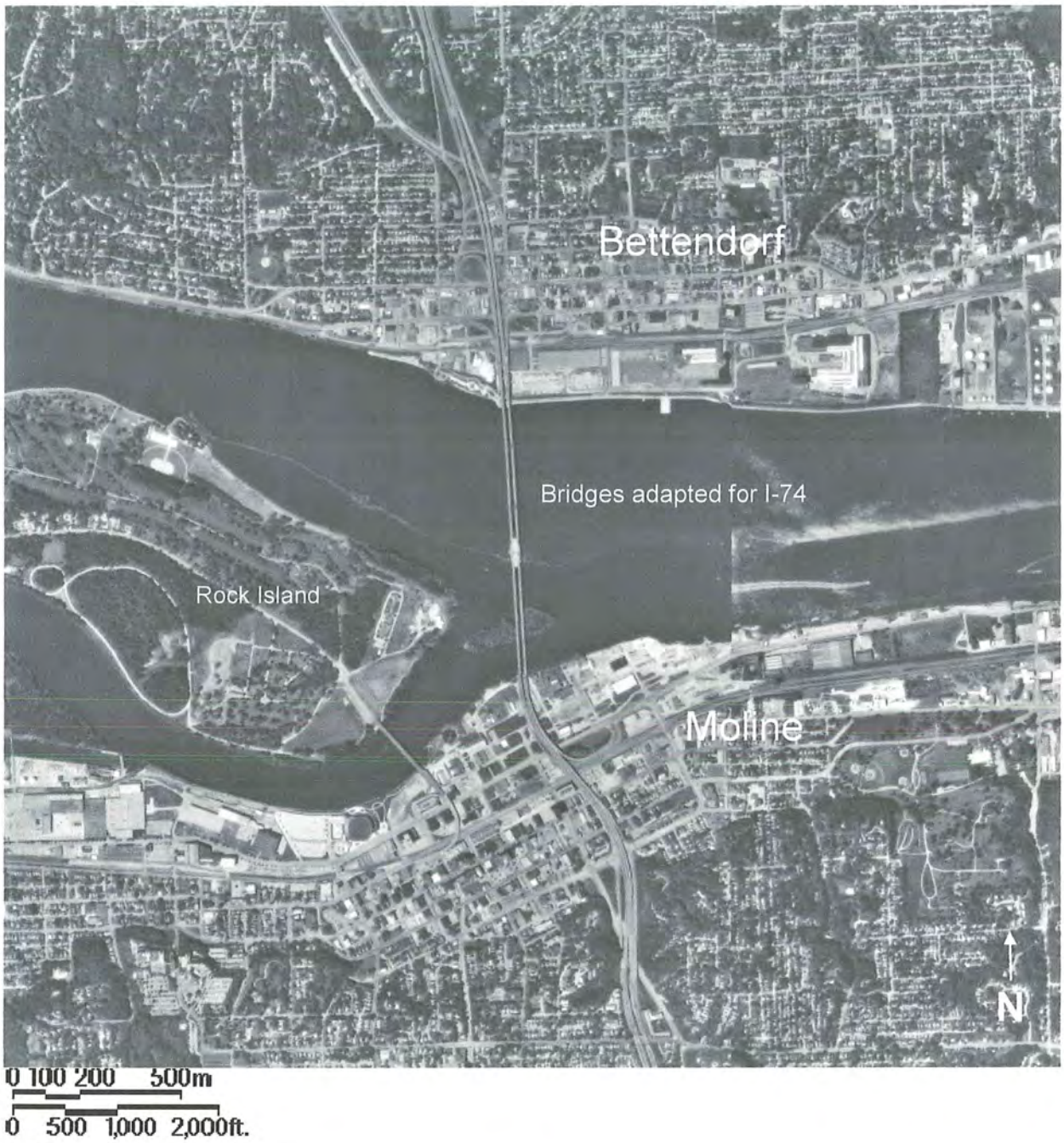
1938 Aerial View

Source: Iowa Geographic Map Server – ISU GIS Support & Research Facility. Obtained at http://ortho.gis.iastate.edu on January 8, 2011



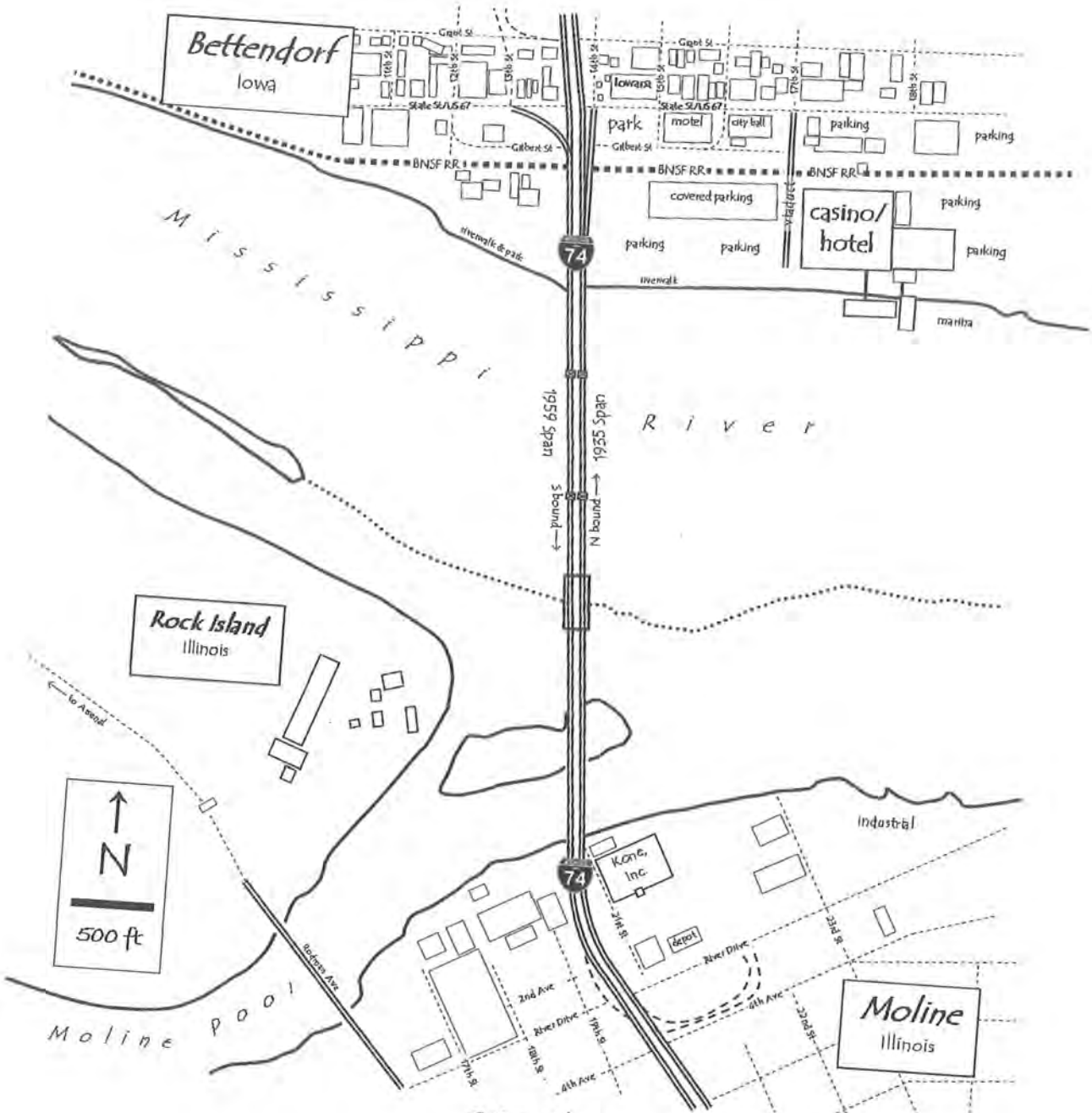
1960s Aerial View

Source: Iowa Geographic Map Server – ISU GIS Support & Research Facility. Obtained at http://ortho.gis.iastate.edu on January 8, 2011



1994 Aerial View

Source: Iowa Geographic Map Server – ISU GIS Support & Research Facility. Obtained at http://ortho.gis.iastate.edu on January 8, 2011



Site Plan

Iowa-Illinois Memorial Bridge

over Mississippi River

between Bettendorf, Iowa, and Moline, Illinois

Prepared by Tallgrass Historians L.C., 2011

Based on 2009 Orthophotos - USDA / Iowa Geographic Map Server - Iowa State University Geographic Information Systems Support & Research Facility @ http://ortho.gis.iastate.edu, January 2011

IOWA-ILLINOIS MEMORIAL BRIDGE – TIMELINE	
1906	U.S. Congress passes General Bridge Act, allowing private citizens to build bridges as business ventures.
1907	William P. Bettendorf first proposes a bridge over Mississippi River between Bettendorf and Moline.
1910	Bettendorf dies June 3. His bridge idea is taken up by the Moline and Bettendorf Bridge Co.
1910	April 19: Interstate Commerce Commission (ICC) grants the Moline and Bettendorf Bridge Co., the right to construct a bridge across Mississippi River from Bettendorf to Moline.
1910	May 2: U.S. House passes "Bettendorf bridge bill." Moline and Bettendorf Bridge Co., however, fails to raise the money needed.
1927	Civic leaders on both sides of the river renew possibility of a Moline-Bettendorf bridge.
1928	May 26: Under Public Law 533, the 70th U.S. Congress grants the new bridge group a franchise to build a bridge from Bettendorf to Moline.
1929	February 21: Greene Interstate Bridge Bill is introduced in Congress.
1929	April 19: Congress passes Greene Interstate Bridge Bill.
1929	October 29: Bridge plans thwarted by stock market crash.
1931	May 12: Voters overwhelmingly approve bond issue: makes bridge-building franchise into city property and allows revenue bonds from bridge tolls to be issued as security.
1931	May 19: Davenport Mayor George Tank establishes Davenport Bridge Commission (DBC).
1931	June: Several parties object to bridge design as an interference with navigation.
1931	September 3: War Department in Washington, D.C., approves revised bridge plans.
1932	February: Bill is introduced in U.S. House extends time for beginning construction and completing the bridge by one and three years respectively.
1932	February 10: DBC applies for a loan of $1,250,000 from the Reconstruction Finance Corporation (RFC).
1932	July 28: RFC rejects the DBC's loan application.
1933	March 2: President Hoover signs extension bill for the bridge just days before President-elect Franklin D. Roosevelt is sworn in.
1933	September 21: Bridge is funded through the Public Works Administration (PWA).
1933	October 31: Secretary of War Harry H. Woodring approves the modified the bridge plans.

IOWA-ILLINOIS MEMORIAL BRIDGE – TIMELINE	
1934	February - June: Bonds issued and purchased by the PWA under a Loan and Grant Agreement. DBC obtains building permit from War Department.
1934	July 1: Bridge construction begins.
1935	November 18: The Illinois-Iowa Memorial Bridge is formally opened and dedicated.
1952	After several traffic studies and consultations with the engineering firm Modjeski and Masters, Davenport Bridge Commission decides to build a twin bridge, using past toll revenues.
1952	July 16: Federal support of twin span passes the 82nd Congress under Public Law 566.
1952	July 17: President Harry S Truman signs bill.
1958	July: Construction starts on the new span.
1959	November: New span opens for traffic; older span is closed for repairs.
1960	July 1: Work on both spans is complete.
1961	January 20: Twin spans are officially dedicated.
1965	August: Davenport Bridge Commission makes agreement with Iowa and Illinois highway departments to give up the twin bridges when toll revenues were sufficient to repay construction financing.
1969	December 31: Davenport Bridge Commission turns over twin bridges to highway departments for adaptation to Interstate 74.
1971	Left without a bridge or its source of revenue, the 40-year-old Davenport Bridge Commission is officially disbanded.
1974	November 26: I-74 bridges over the Mississippi River open to traffic.
1975	December 10: Interstate 74 is completed through Moline.

CONSTRUCTION PHOTOGRAPHS

ORIGINAL BRIDGE, 1934-35

Source: Davenport Public Library, Davenport, Iowa

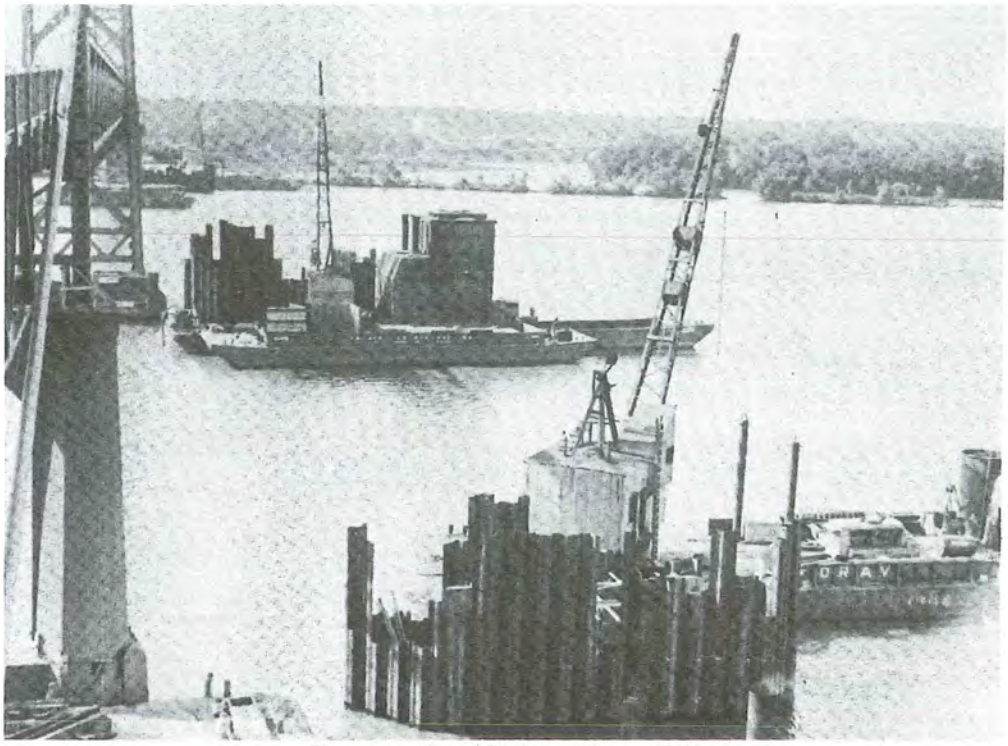
Construction of suspension piers, early 1935

Photo of man on temporary catwalk along the cables showing the bridge before road deck constructed, probably summer 1935

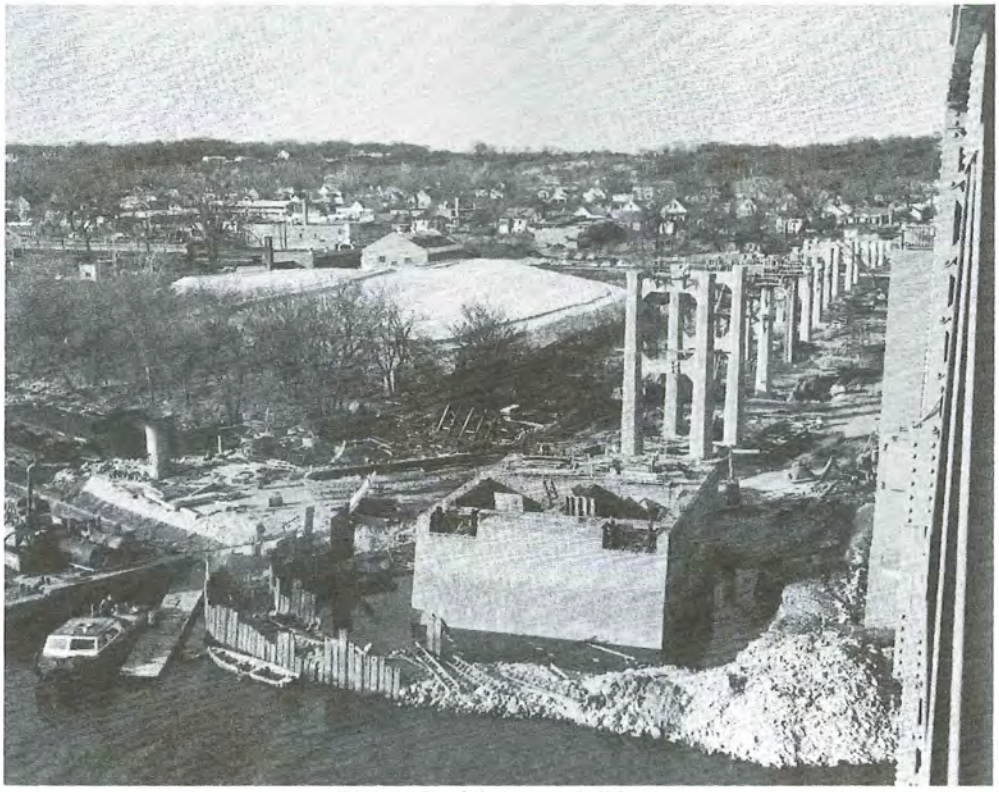
Suspension cables finished, awaiting road deck

CONSTRUCTION OF TWIN SPAN, 1958-1959

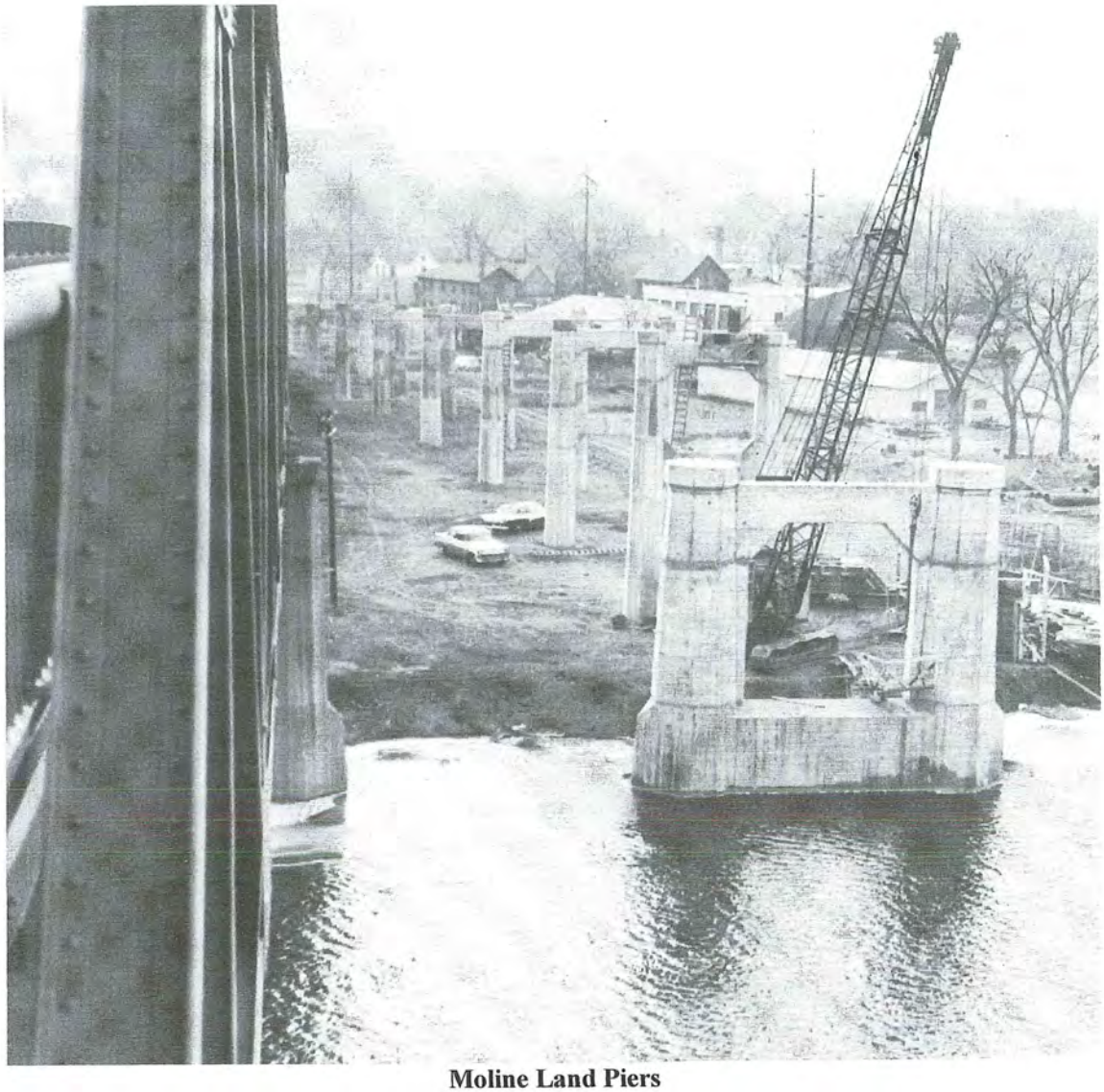
Source: Modjeski and Masters 1960



Construction of River Piers, 1958



Bettendorf Approach Piers

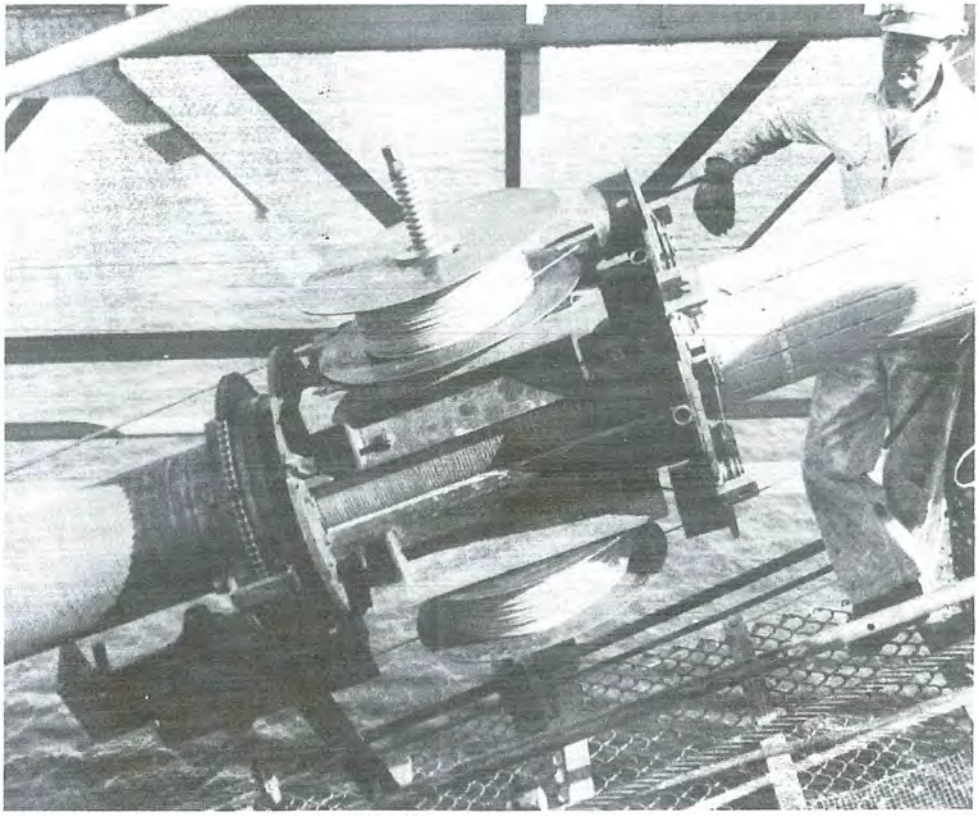


Moline Land Piers

Aerial View Looking North of Twin Span Construction from Moline

Suspended Span Erection, View Southeast

View Looking North at Bettendorf Approach Construction

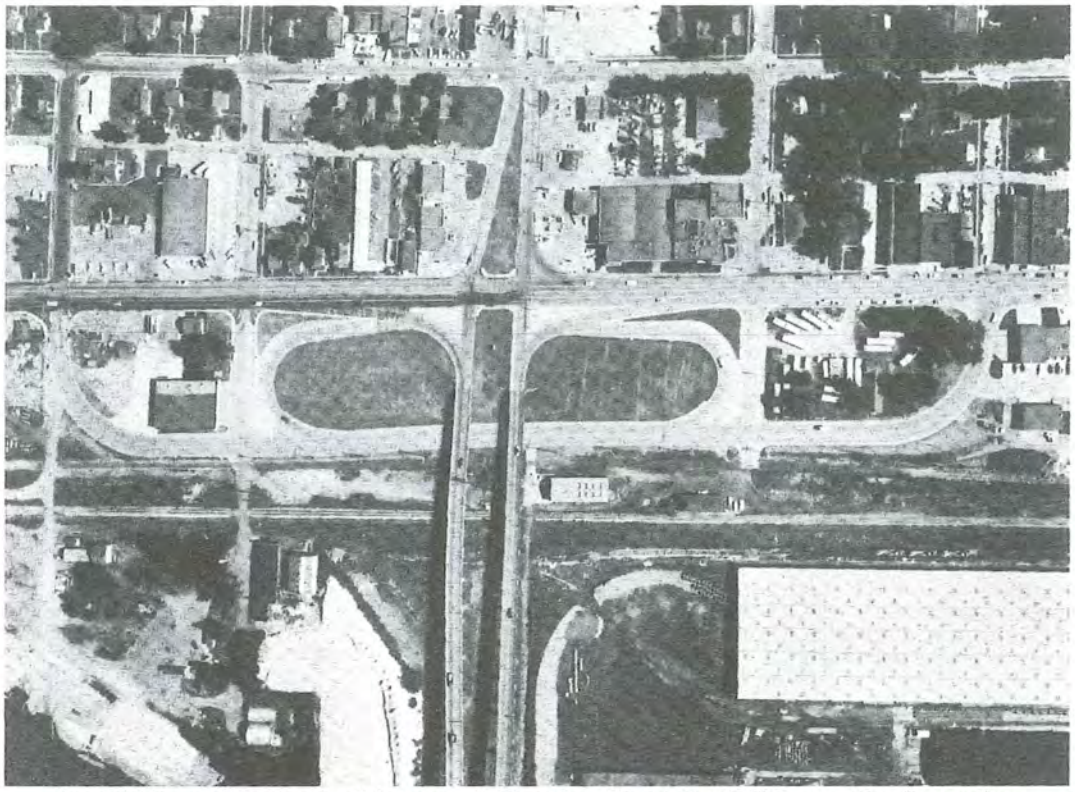


Cable Wrapping Machine

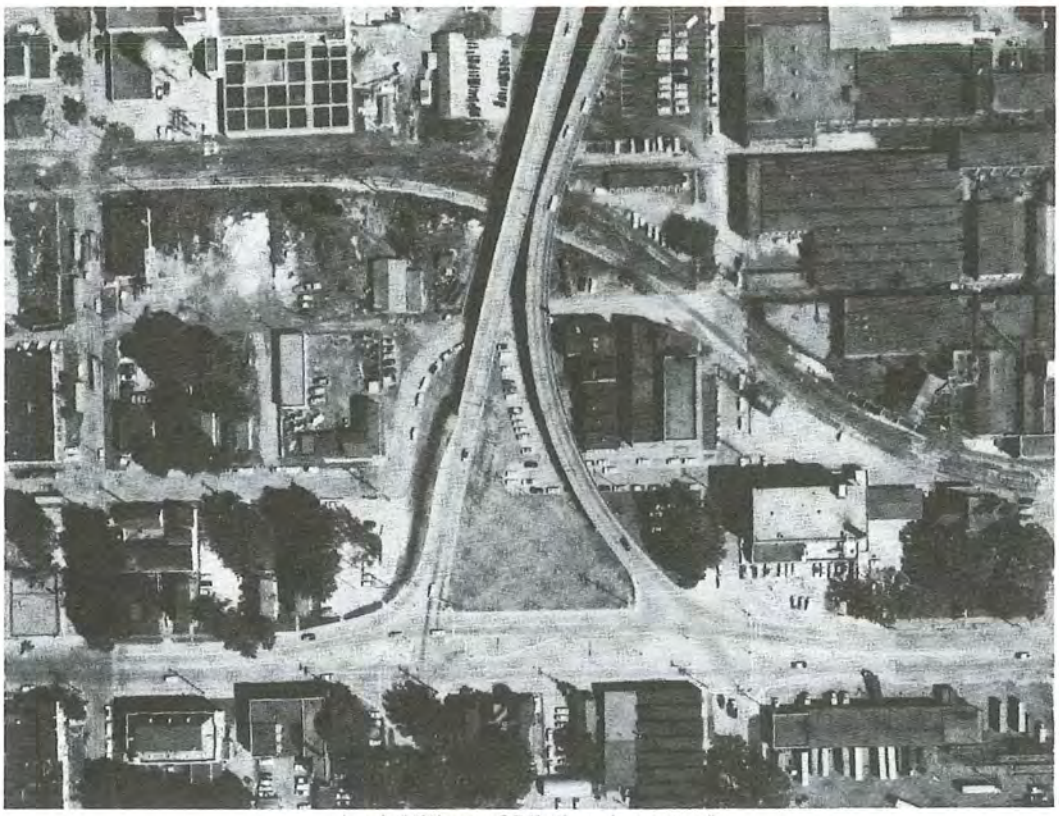
Toll Plaza Reconstruction, View South

Completed Toll Plaza, View South

Bettendorf Approach Paving, View Northwest



Aerial View of Bettendorf Approach Showing Tight On-Off Ramp Configuration



Aerial View of Moline Approach

Aerial View Looking East-Southeast of Completed Twin-Span Structure

Additional Construction Photographs of 1958-59 Twin Span

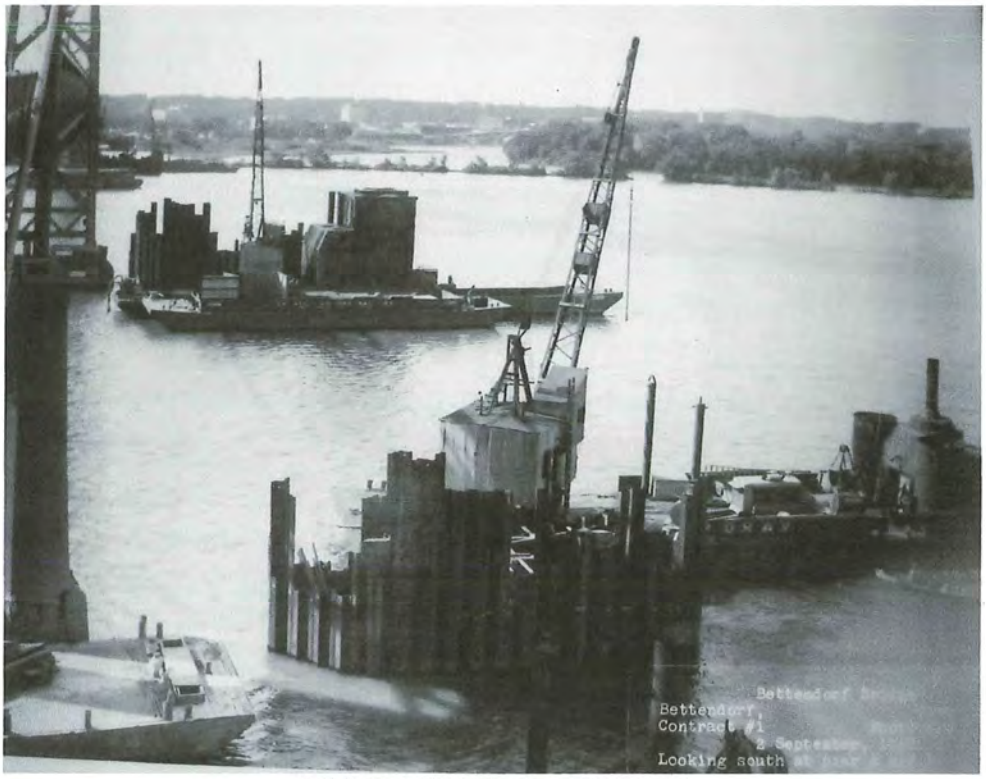
Source: Bettendorf Bridge Photographs in the Fred White Papers,[1] Special Collections Department, Parks Library, Iowa State University, Ames, Iowa

CONTRACT NO. 1 - PHOTO 8, Looking South at Moline Approach - August 15, 1958

CONTRACT NO. 1 - PHOTO 9, Looking South at Bettendorf Approach - September 2, 1958

[1] Fred White retired from the Iowa State Highway Commission (ISHC) in 1952. He remained with the ISHC as a consulting engineer between 1953 and 1954. Afterwards, White remained in Ames as the Midwest Representative (i.e., a consulting engineer) for Modjeski & Masters, Harrisburg, PA as late as 1960. It is assumed that these construction photographs were generated in his capacity as consulting engineer for Modjeski & Masters during the twin span construction.

CONTRACT NO. 1 - PHOTO 11
Looking North at Moline Approach - September 2, 1958

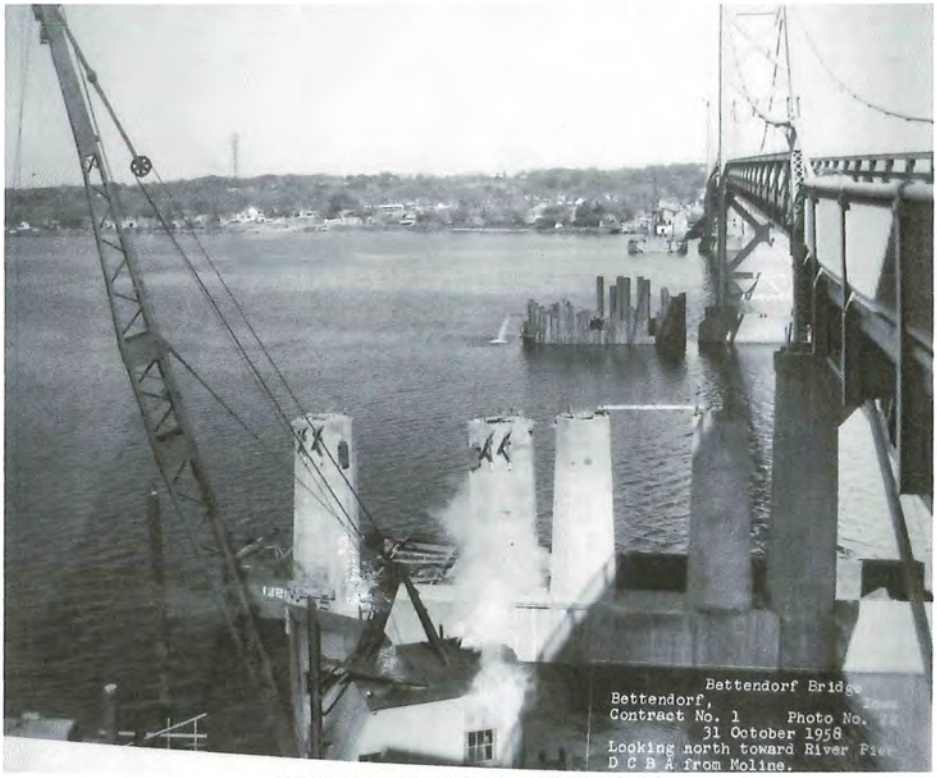


CONTRACT NO. 1 - PHOTO 14
Looking South at Pier A and B - September 2, 1958

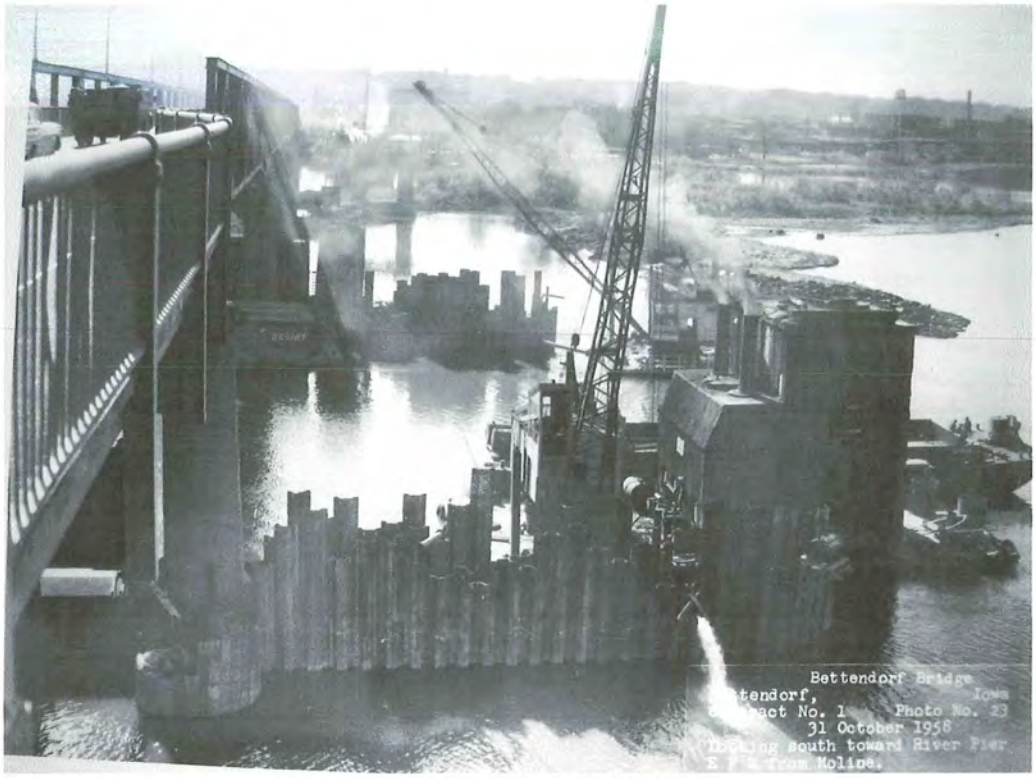
CONTRACT NO. 1 - PHOTO 19
Looking North to Bettendorf Approach - October 16, 1958

CONTRACT NO. 1 - PHOTO 20
Looking South at Pier J - October 16, 1958

CONTRACT NO. 1 - PHOTO 21
Looking North at Moline Anchorage - October 16, 1958

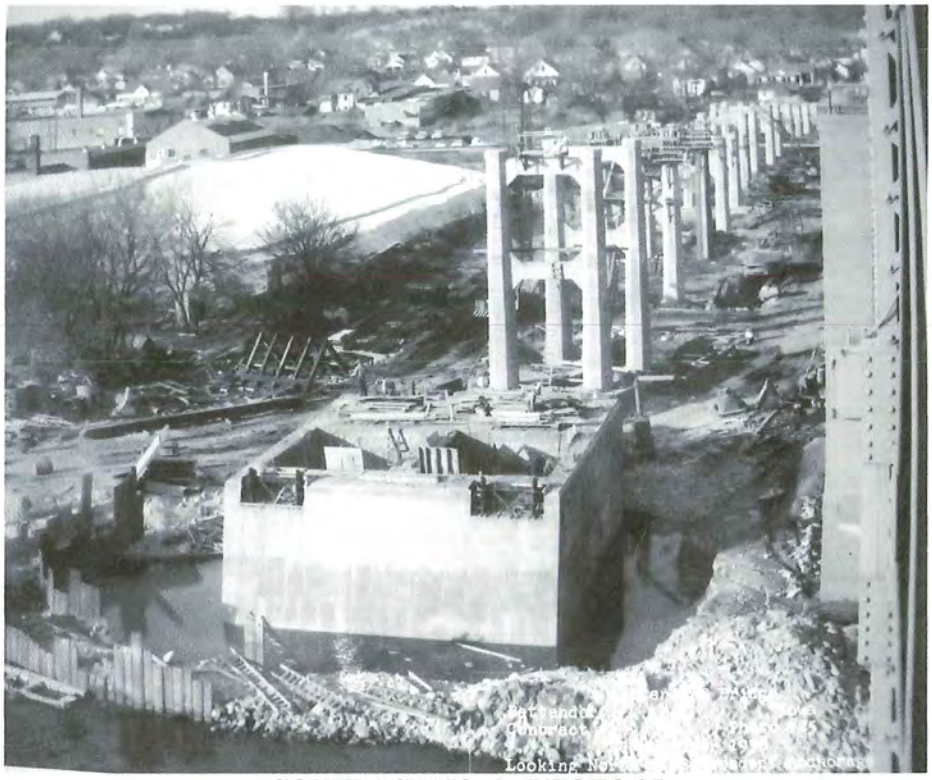


CONTRACT NO. 1 - PHOTO 22
Looking North Toward River Pier D, C, B, A from Moline - October 31, 1958

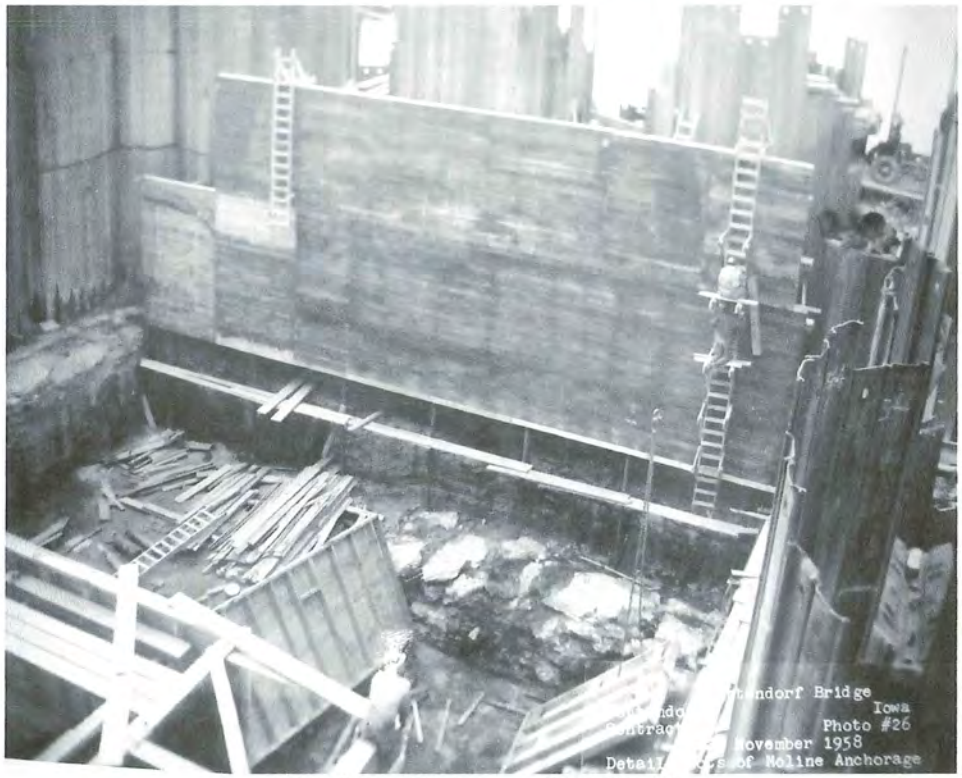


CONTRACT NO. 1 - PHOTO 23
Looking South toward River Pier E F H from Moline - October 31, 1958

CONTRACT NO. 1 - PHOTO 24
Looking South at Pier E and F - November 20, 1958



CONTRACT NO. 1 - PHOTO 25
Looking North at Bettendorf Anchorage - November 20, 1958



CONTRACT NO. 1 - PHOTO 26
Detail Shots of Moline Anchorage - November 20, 1958

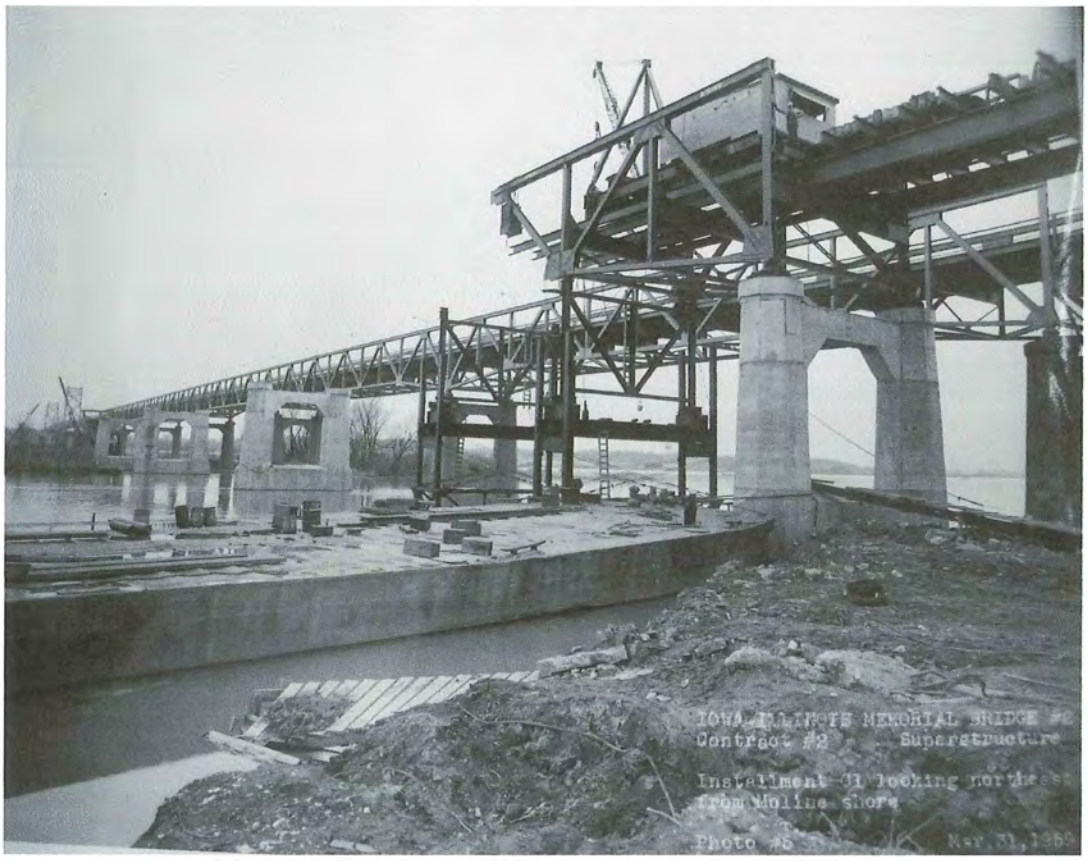
CONTRACT NO. 1 - PHOTO 27
Looking South from Pier L to Moline Approach - November 28, 1958

CONTRACT NO. 2 - SUPERSTRUCTURE – PHOTO 2
Bettendorf Approach Spans, Pier B1, Looking NE - February 25, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 3
Moline Approach Installment M1, Looking East - February 25, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE

CONTRACT NO. 1 – PHOTO 32
Looking East at Piers - March 31, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 5
Installment C1, Looking Northeast from Moline Shore - March 31, 1959

CONTRACT NO. 3 - PHOTO 1
Bettendorf Approach Upstream Side - April 2, 1959

CONTRACT NO. 3 - PHOTO 2
Bettendorf Approach, Downstream Side - April 2, 1959

CONTRACT NO. 3 - PHOTO 3
Moline Approach - April 2, 1959

CONTRACT NO. 2 – SUPERSTRUCTURE
Moline Approach Installations M4 and M5

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 6
First section B-Tower - April 13, 1959

CONTRACT NO. 1 - PHOTO 33
Looking East, Pier G through Anchorage - May 1, 1959

CONTRACT NO. 3 - PHOTO 4
Bettendorf Approach Upstream Side - April 29, 1959

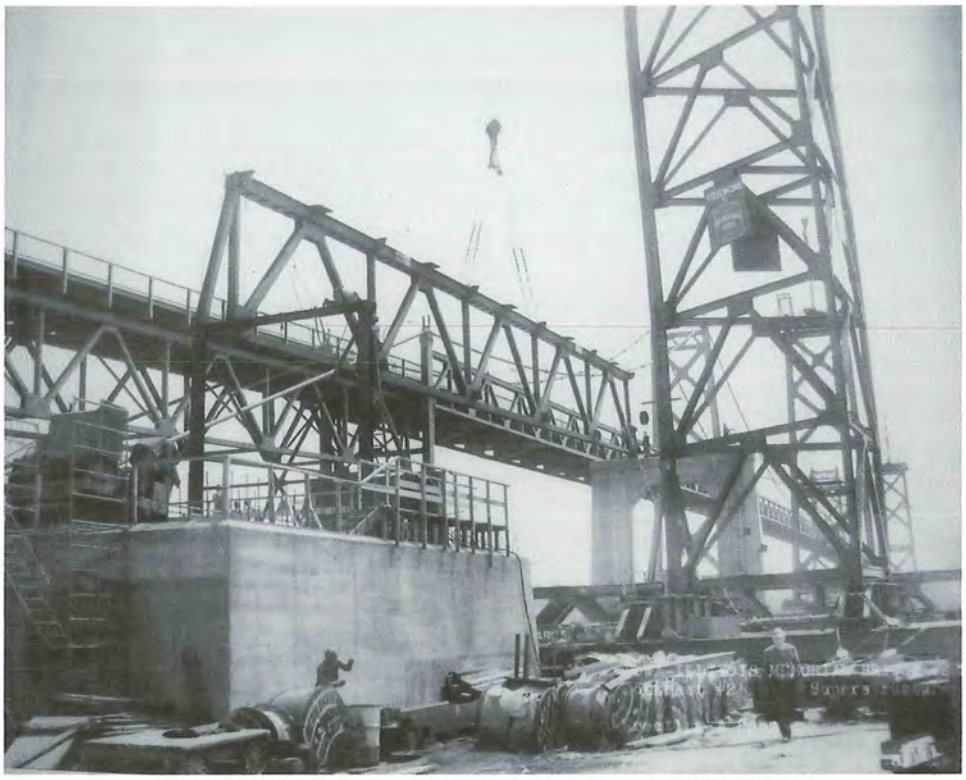
CONTRACT NO. 3 - PHOTO 5
Bettendorf Approach Downstream Side - April 29, 1959

CONTRACT NO. 1 - PHOTO 34
Looking North at Pier F, E and Moline Anchorage

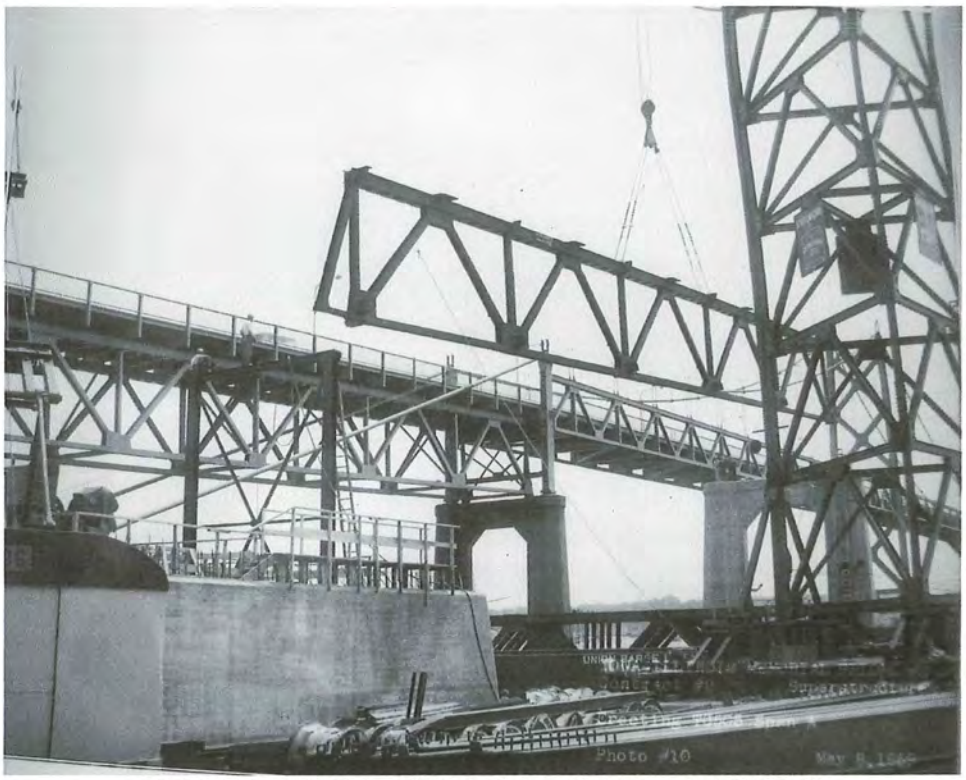
CONTRACT NO. 3 - PHOTO 6
Moline Approach - April 29, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 7
A-Span, B and C-Tower

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 8
C1 through C6, Moline Side



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 9
Erecting A-Span - May 8, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 10
Erecting A-Span - May 8, 1959

CONTRACT NO. 3 - PHOTO 7
Bettendorf Approach Upstream Side - May 27, 1959

CONTRACT NO. 3 - PHOTO 9
Moline Approach - May 27, 1959

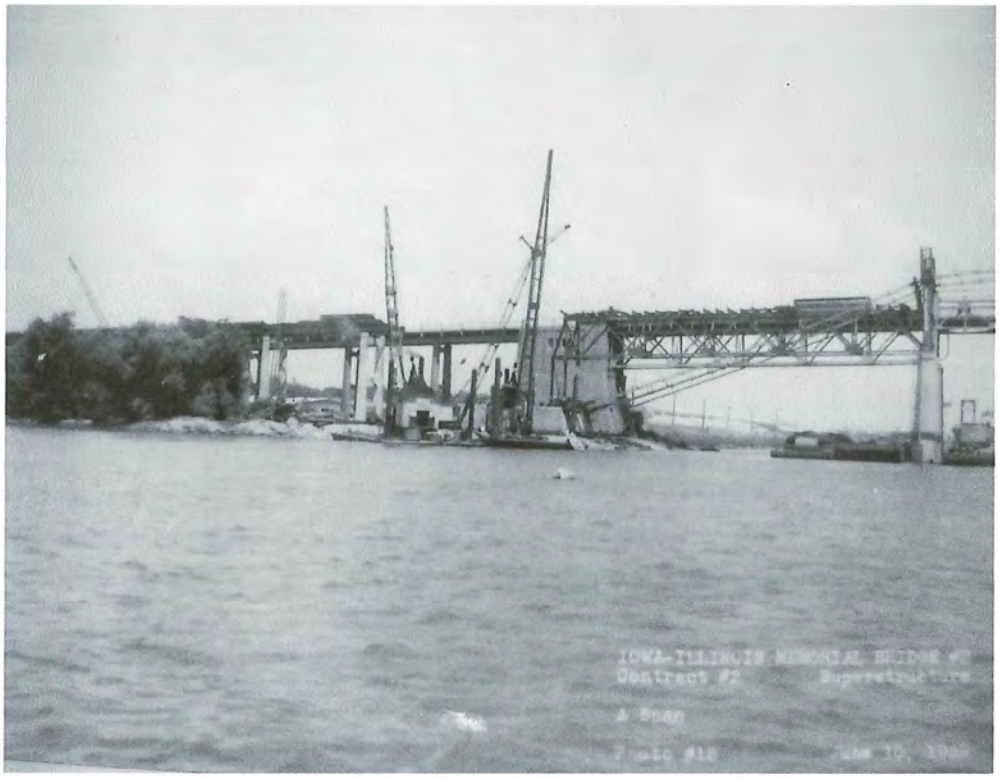
CONTRACT NO. 3 - PHOTO 8
Bettendorf Approach Downstream Side - May 27, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 11
Bettendorf Rocker, Moline Rocker, B-Tower and C-Tower - June 10, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 12
D and E-Span, Plaza Area - June 10, 1959

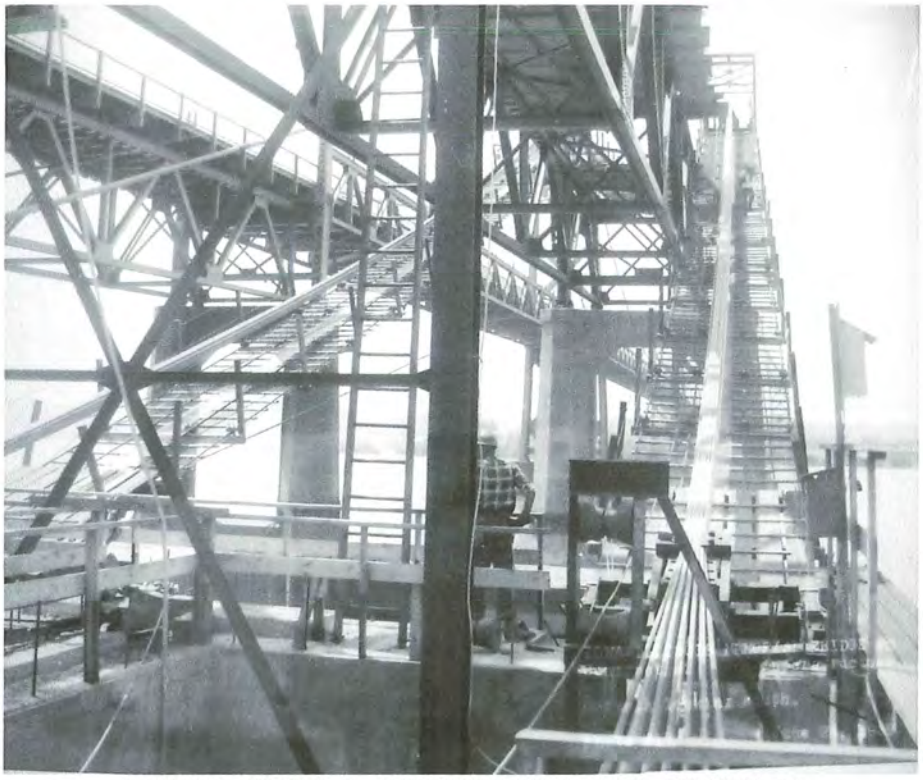
CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 13
Continuous Truss F to E - June 10, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 14
Plaza over D-Span - June 10, 1959

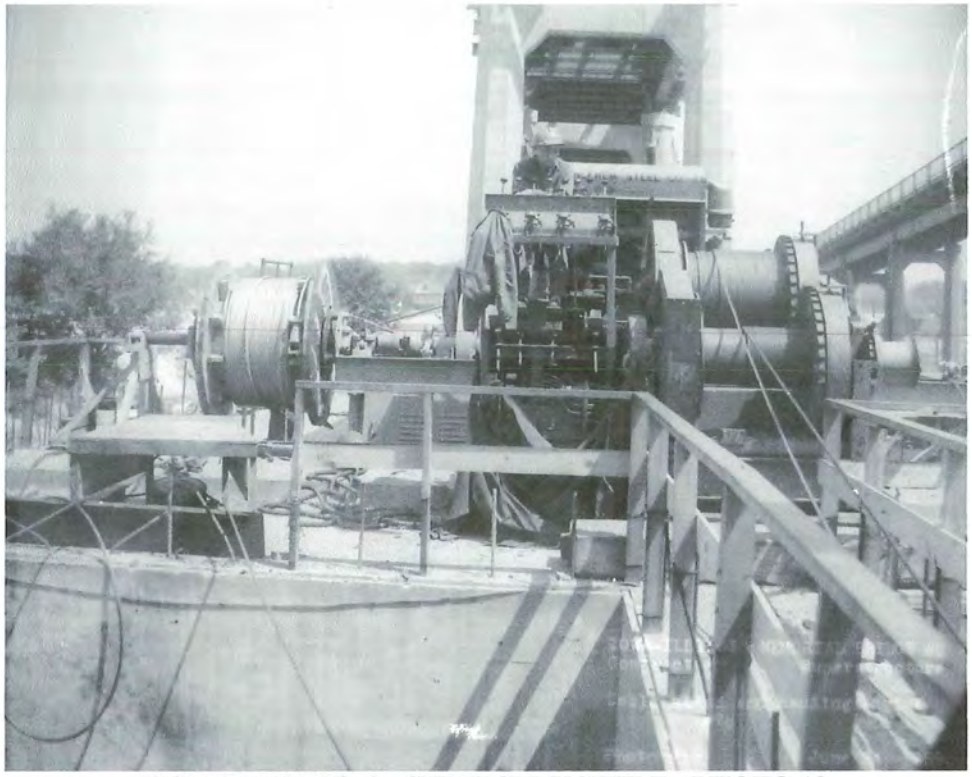


CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 15
A-Span - June 10, 1959

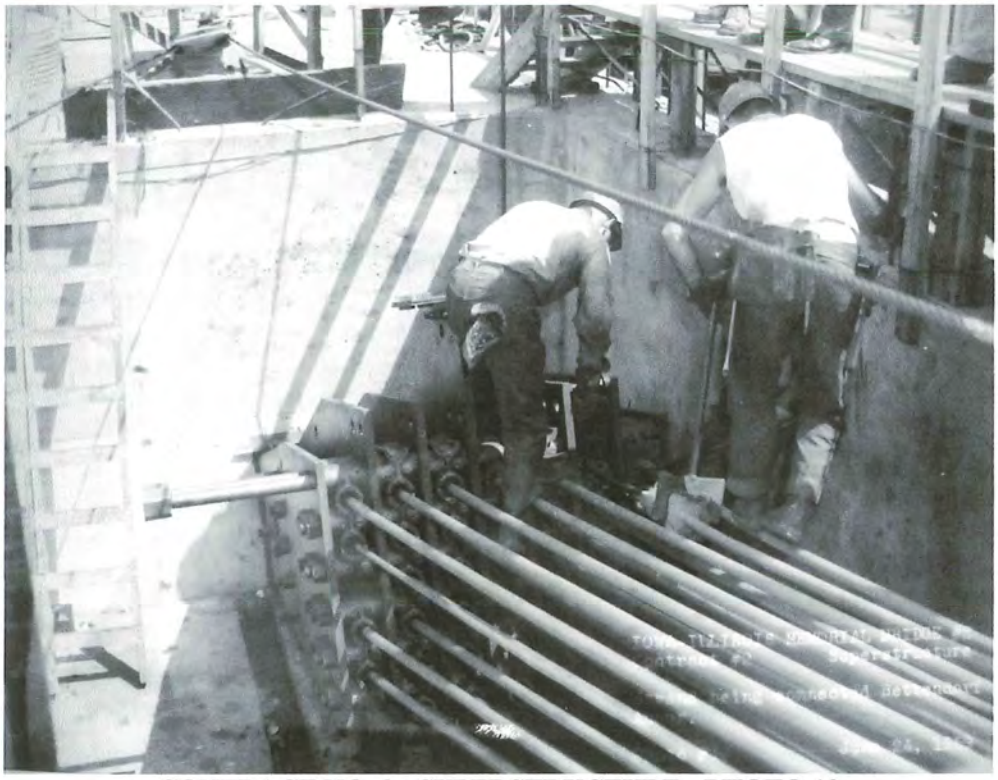
CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 16
Bettendorf Anchor Looking South - June 24, 1959



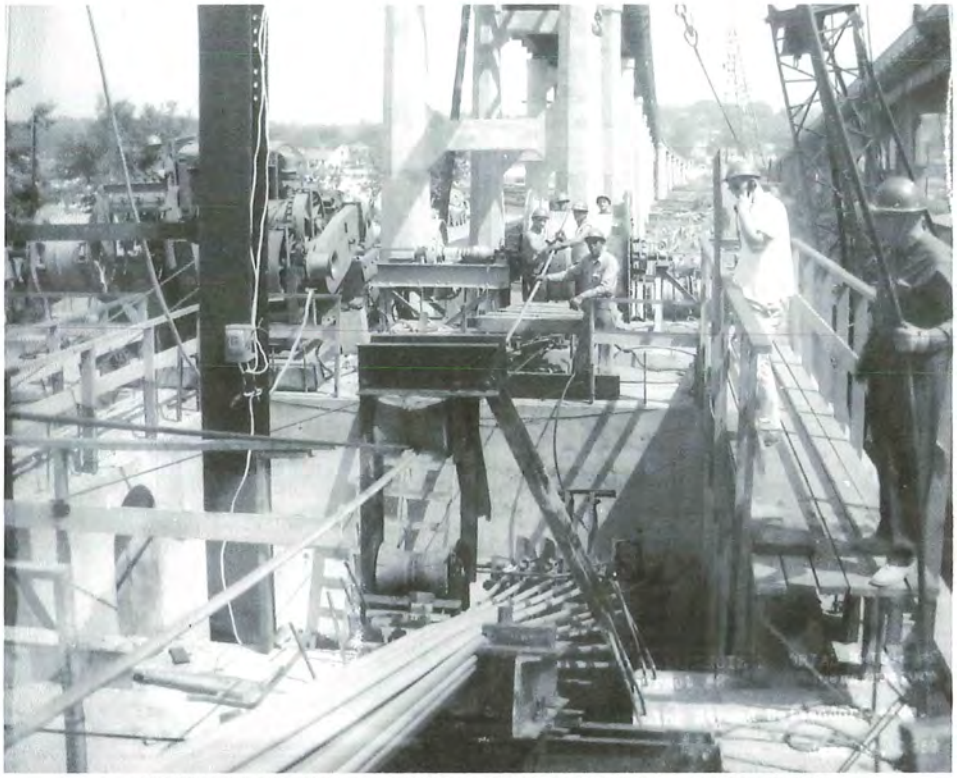
CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 17
Catwalk Looking South - June 24, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 18
Cable Strand and Hauling Engine - June 24, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 19
Strand Being Connected Bettendorf Side - June 24, 1959



CONTRACT NO. 2 – SUPERSTRUCTURE – PHOTO 20
Strand Bettendorf Pier - June 24, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 21
A-Pier Rocker Saddle - June 24, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 22
A-Rocker Looking North - June 24, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 23
Moline Toll Plaza Looking Northeast - June 25, 1959

CONTRACT NO. 3 - PHOTO 10
Bettendorf Approach Upstream Side - June 30, 1959

CONTRACT NO. 3 - PHOTO 11
Bettendorf Approach Downstream Side - June 30, 1959

CONTRACT NO. 3 - PHOTO 12
Moline Approach - June 30, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 29
B-Tower Looking North - July 13, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 30
B-Tower Looking South - July 13, 1959

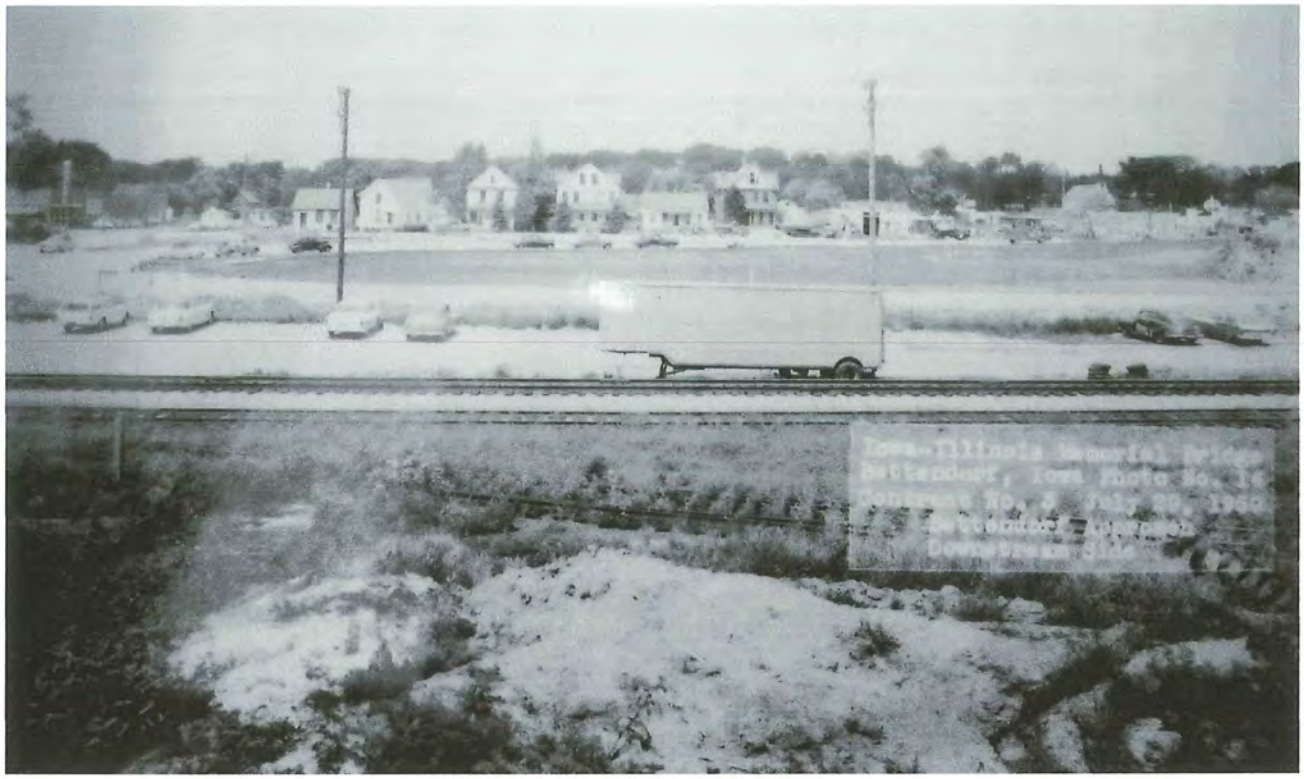
CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 31
A-Pier Looking toward B-Tower - July 13, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 32
First Truss Section Installment S1 - July 14, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE
Moline Approach, Looking from Top of LeClaire Hotel

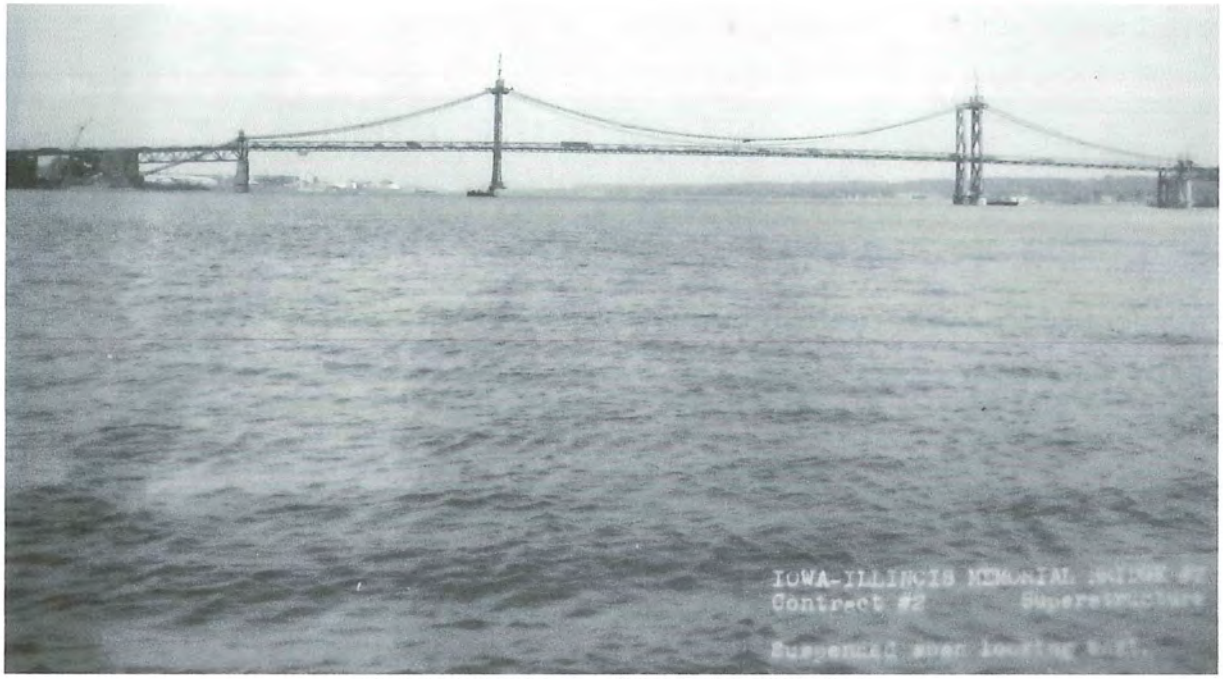
CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 33
Installing S1-S2 part of 3 - July 20, 1959

CONTRACT NO. 3 - PHOTO 13
Bettendorf Approach Upstream Side - July 29, 1959



CONTRACT NO. 3 - PHOTO 14
Bettendorf Approach Downstream Side - July 29, 1959

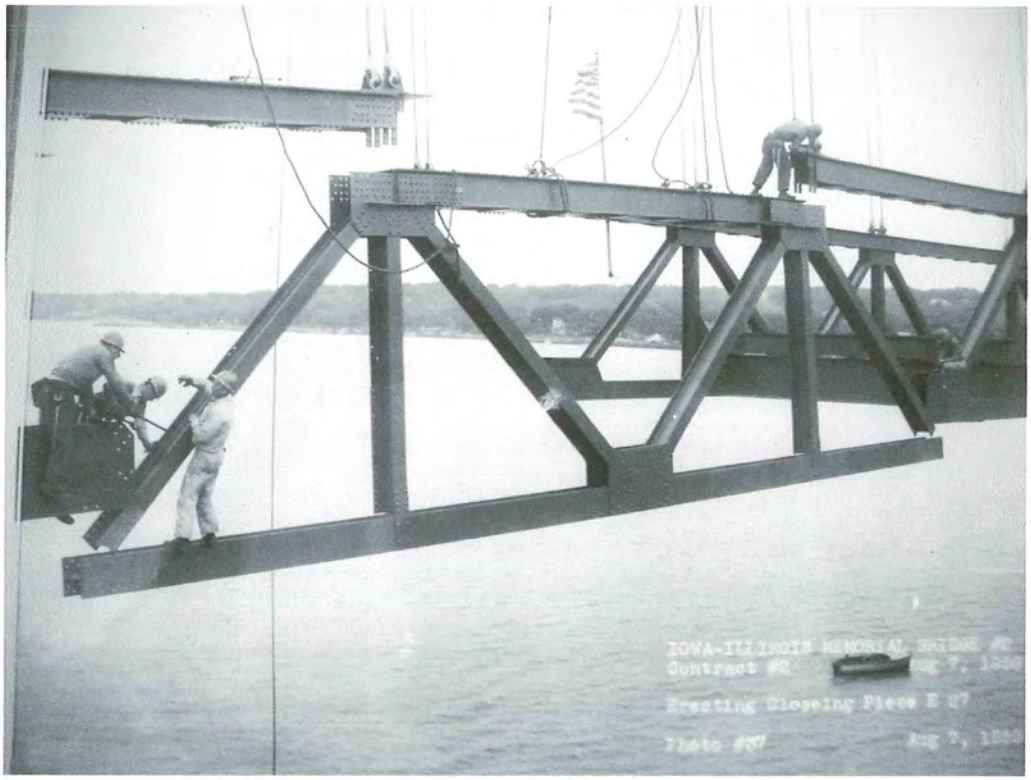
CONTRACT NO. 3 - PHOTO 15
Moline Approach - July 29, 1959



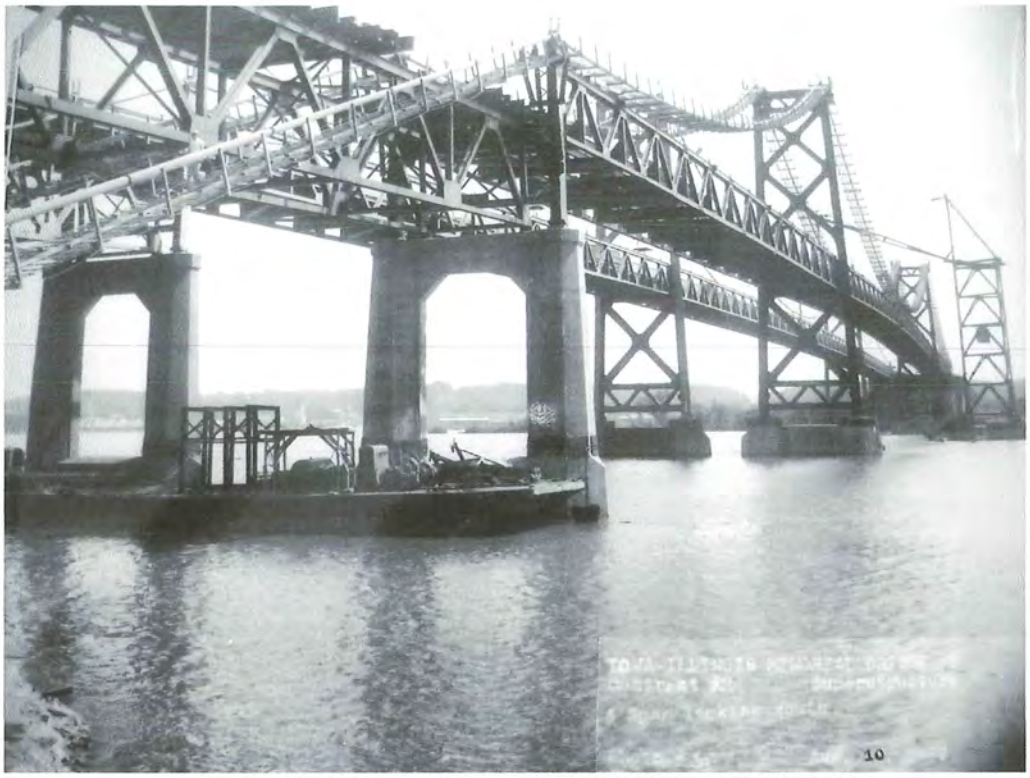
CONTRACT NO. 2 – SUPERSTRUCTURE
Suspended Span Looking East

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 35
Erecting Closing Piece E 27 - August 7, 1959

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 36
Erecting Closing Piece E 27 - August 7, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 37
Erecting Closing Piece E 27 - August 7, 1959

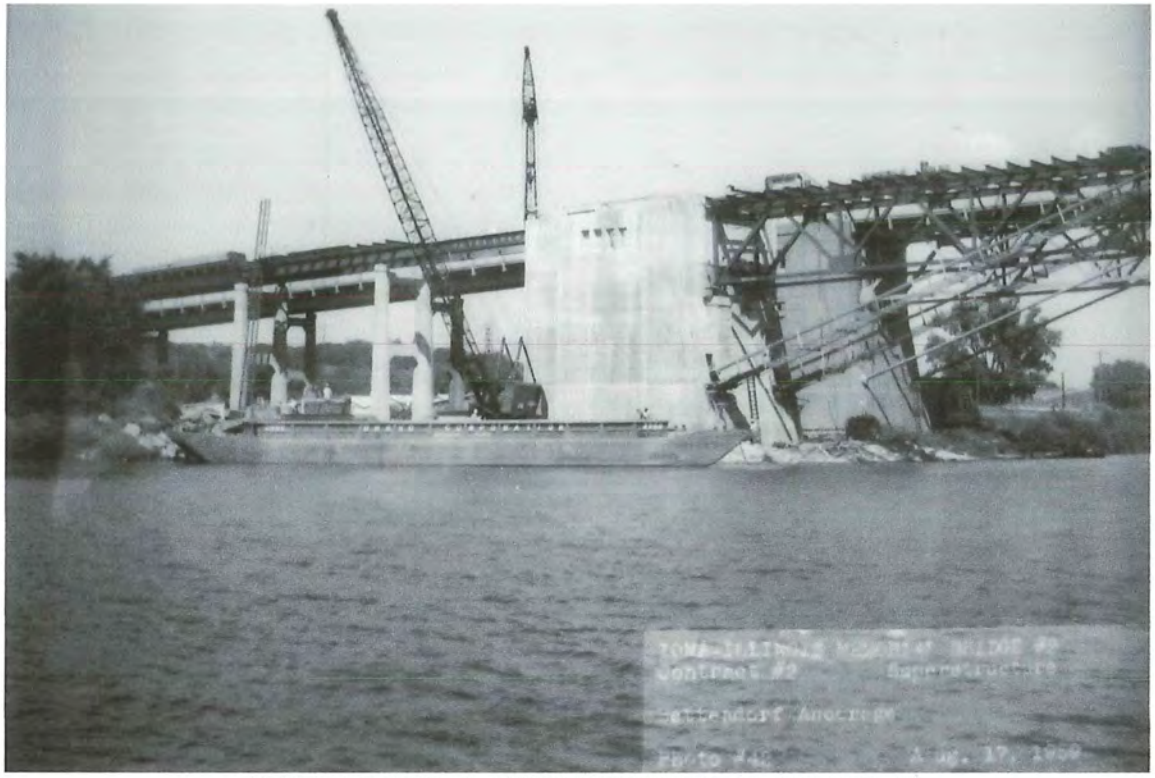


CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 38
A-Span Looking South - August 10, 1959

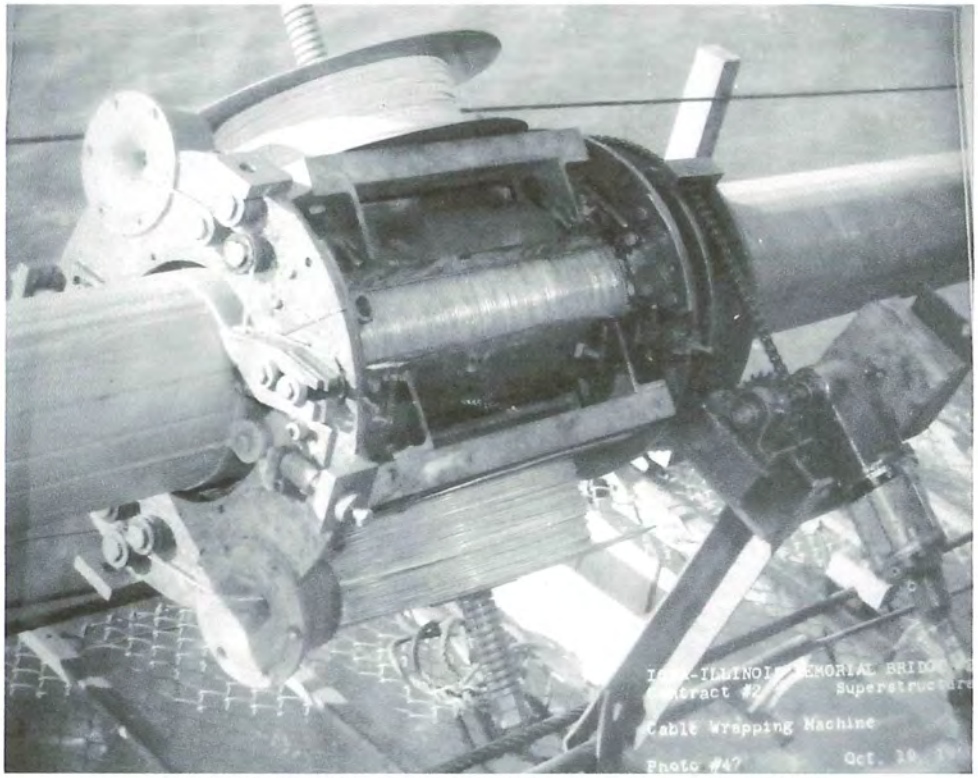
CONTRACT NO. 2 - SUPERSTRUCTURE

CONTRACT NO. 2 - SUPERSTRUCTURE
Looking Southeast

CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 41
B1 Steel to Bettendorf Anchorage - August 17, 1959



CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 42
Bettendorf Anchorage - August 17, 1959

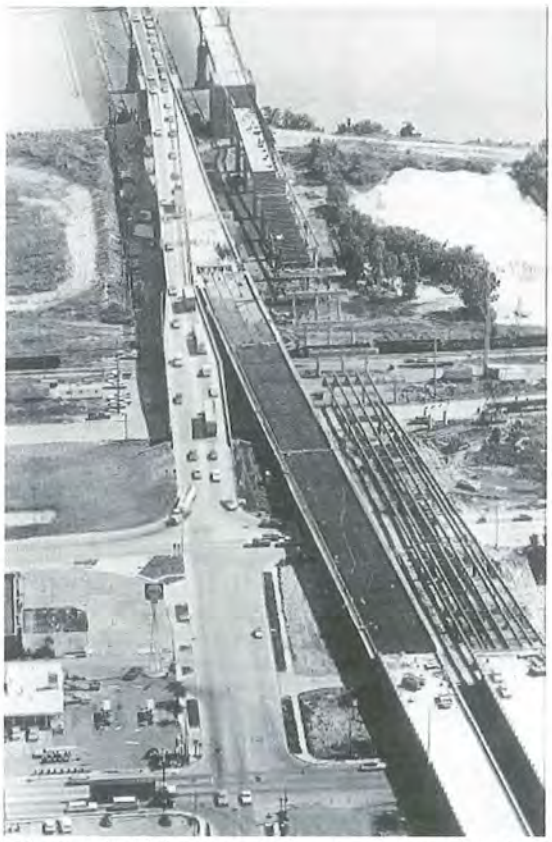


CONTRACT NO. 2 - SUPERSTRUCTURE - PHOTO 47
Cable Wrapping Machine - October 19, 1959

PHOTOGRAPHS OF THE I-74 BRIDGE ADAPTATION, 1973-75

Source: Bill Fisher Archives, Moline Illinois Flashback. Obtained at http://www.captainerniesshowboat.com/moline.html in March 2011 (except where noted)

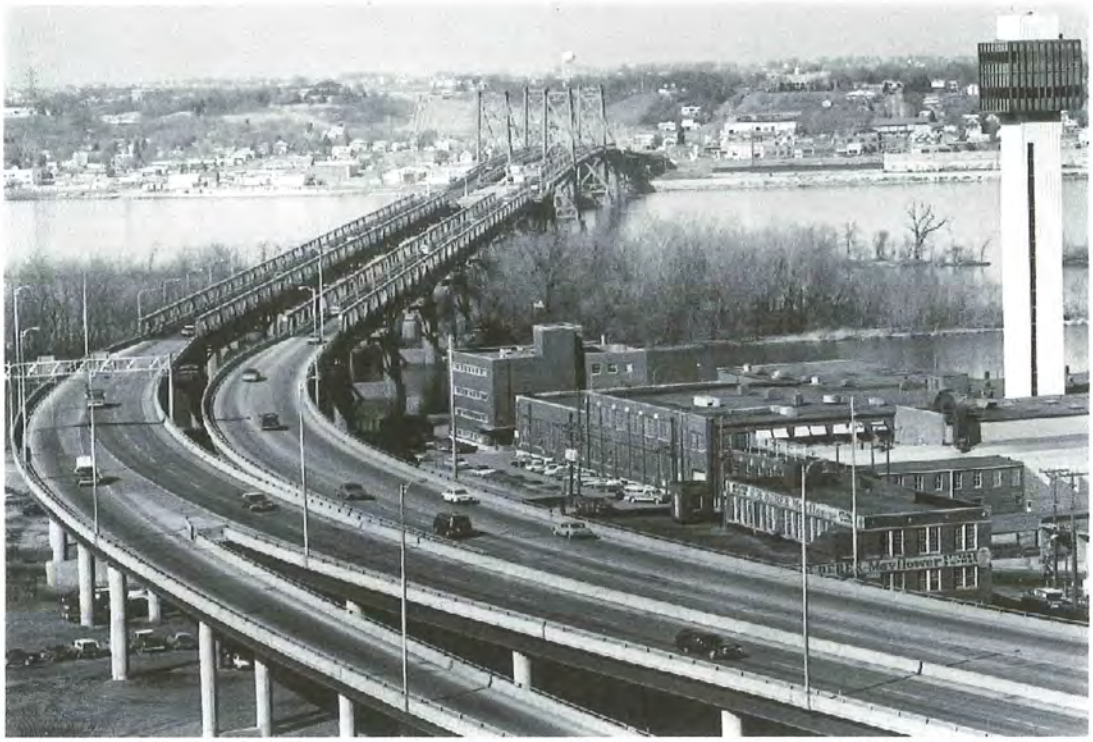
Bettendorf approach to bridge during I-74 construction, October 1973



Construction of I-74 elevated highway and new approaches to bridges, June 1974

Source: Collins et al 2000

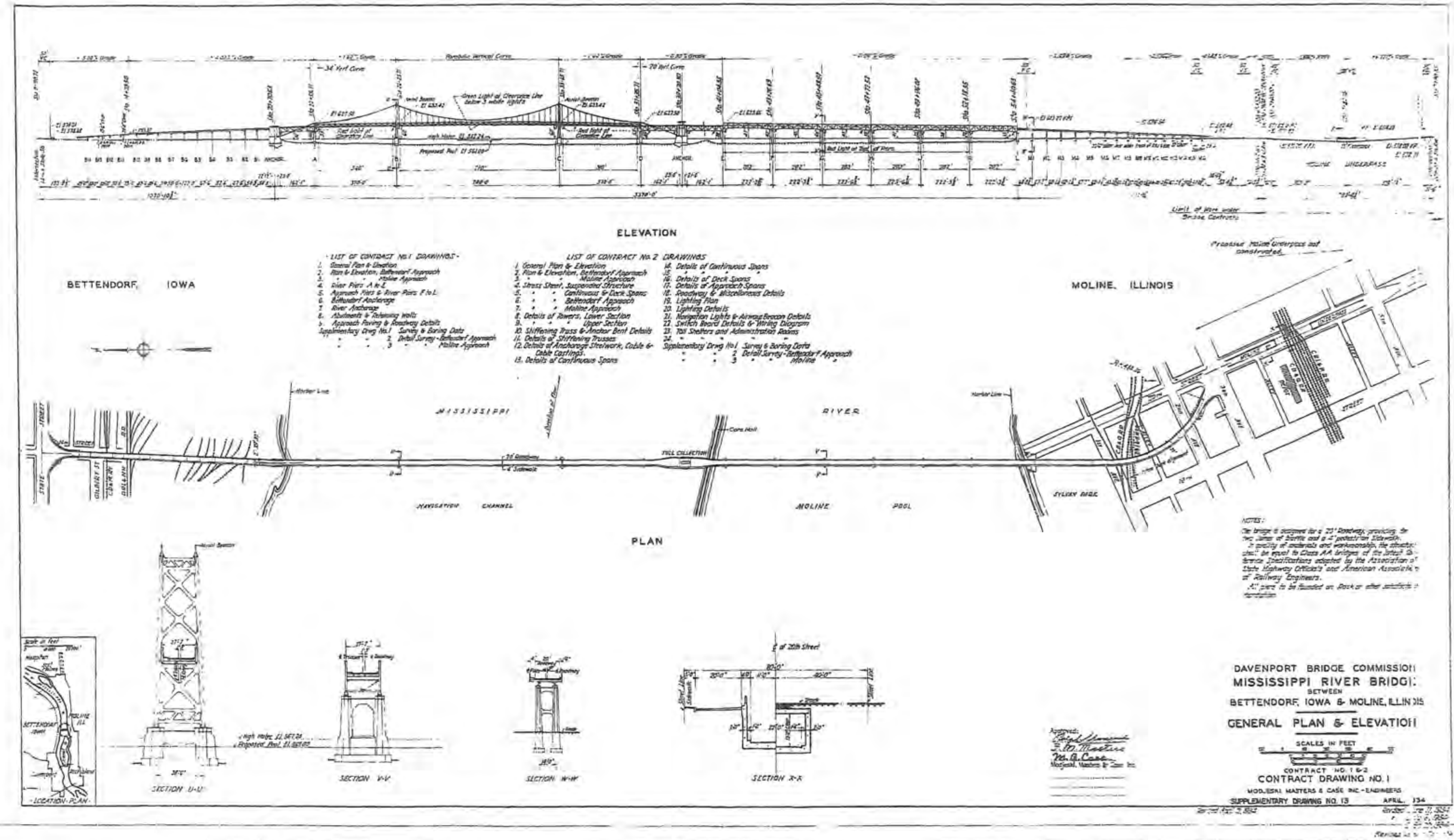
Ceremonial opening of the I-74 bridges with Iowa and Illinois officials, Moline side, December 2, 1975

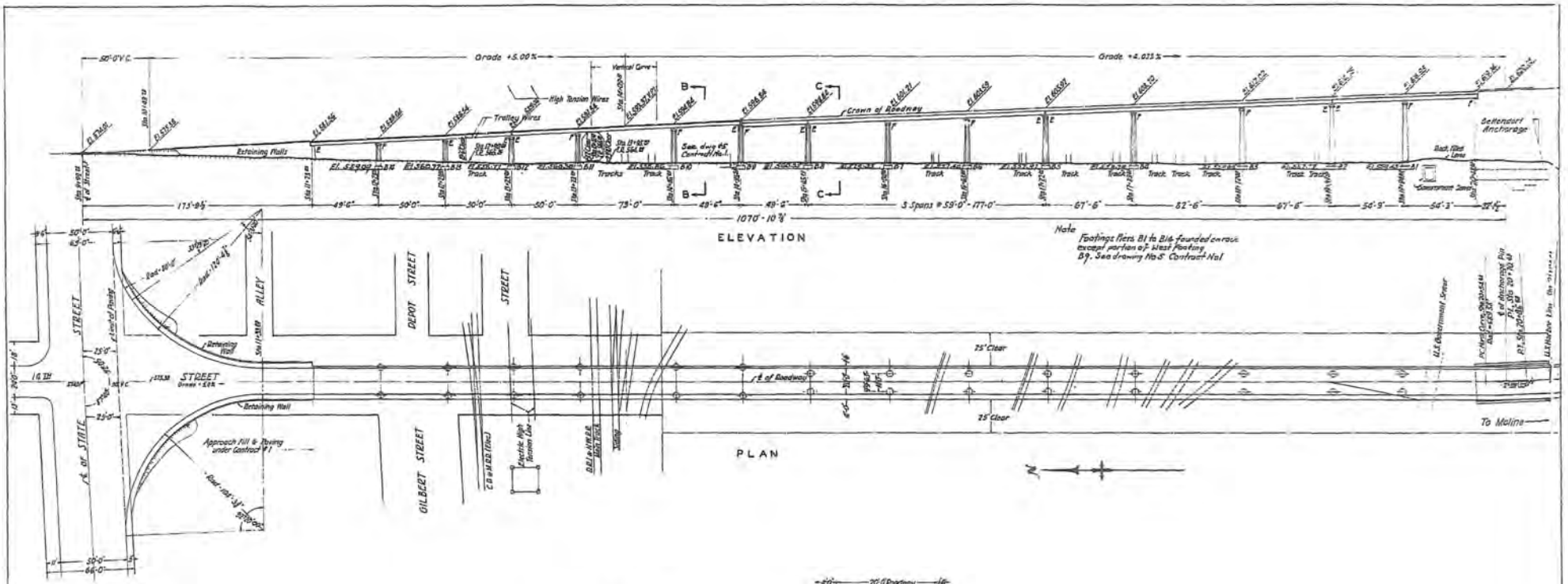


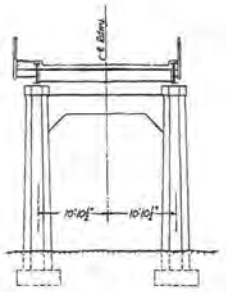
Completed I-74 bridges, looking north-northeast toward Bettendorf, March 1976

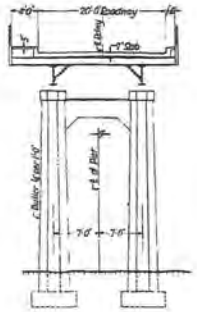
Original Plans for the Iowa-Illinois Memorial Bridge
April 1934

Copy provided by the Iowa Department of Transportation, Ames


ELEVATION
BETTENDORF, IOWA
MOLINE, ILLINOIS
- LIST OF CONTRACT No. 1 DRAWINGS -
1. General Plan & Elevation
2. Plan & Elevation, Bettendorf Approach
3. " " " Moline Approach
4. River Piers A to E
5. Approach Piers & River Piers F to L
6. Bettendorf Anchorage
7. River Anchorage
8. Abutments & Retaining Walls
9. Approach Paving & Roadway Details
Supplementary Drwg No. 1 Survey & Boring Data
" " " 2 Detail Survey - Bettendorf Approach
" " 3 " " Moline Approach
LIST OF CONTRACT No. 2 DRAWINGS
1. General Plan & Elevation
2. Plan & Elevation, Bettendorf Approach
3. " " " Moline Approach
4. Stress Sheet, Suspended Structure
5. " " Continuous & Deck Spans
6. " " Bettendorf Approach
7. " " Moline Approach
8. Details of Towers, Lower Section
9. " " " Upper Section
10. Stiffening Truss & Anchor Bent Details
11. Details of Stiffening Trusses
12. Details of Anchorage Steelwork, Cable & Cable Castings.
13. Details of Continuous Spans
14. Details of Continuous Spans
15. " " " "
16. Details of Deck Spans
17. Details of Approach Spans
18. Roadway & Miscellaneous Details
19. Lighting Plan
20. Lighting Details
21. Navigation Lights & Airway Beacon Details
22. Switch Board Details & Wiring Diagram
23. Toll Shelters and Administration Rooms
24. " " " " "
Supplementary Drwg No. 1 Survey & Boring Data
" " 2 Detail Survey - Bettendorf Approach
" " 3 " " Moline "
MISSISSIPPI RIVER
NAVIGATION CHANNEL
MOLINE POOL
TOLL COLLECTION
PLAN
SECTION U-U
SECTION V-V
SECTION W-W
SECTION X-X
- LOCATION - PLAN -
NOTES:
The bridge is designed for a 20' Roadway, providing for two lanes of traffic and a 4' pedestrian Sidewalk.
In quality of materials and workmanship, the structure shall be equal to Class AA bridges of the latest Conference Specifications adopted by the Association of State Highway Officials and American Association of Railway Engineers.
All piers to be founded on Rock or other satisfactory foundation.
Modjeski, Masters & Case Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
GENERAL PLAN & ELEVATION
SCALES IN FEET
CONTRACT NO. 1 & 2
CONTRACT DRAWING NO. 1
MODJESKI MASTERS & CASE INC. - ENGINEERS
SUPPLEMENTARY DRAWING NO. 13
APRIL, 1934







Approved:
Joseph Mayo
F. M. Masters
M. B. Case
Modjeski, Masters & Case, Engrs.

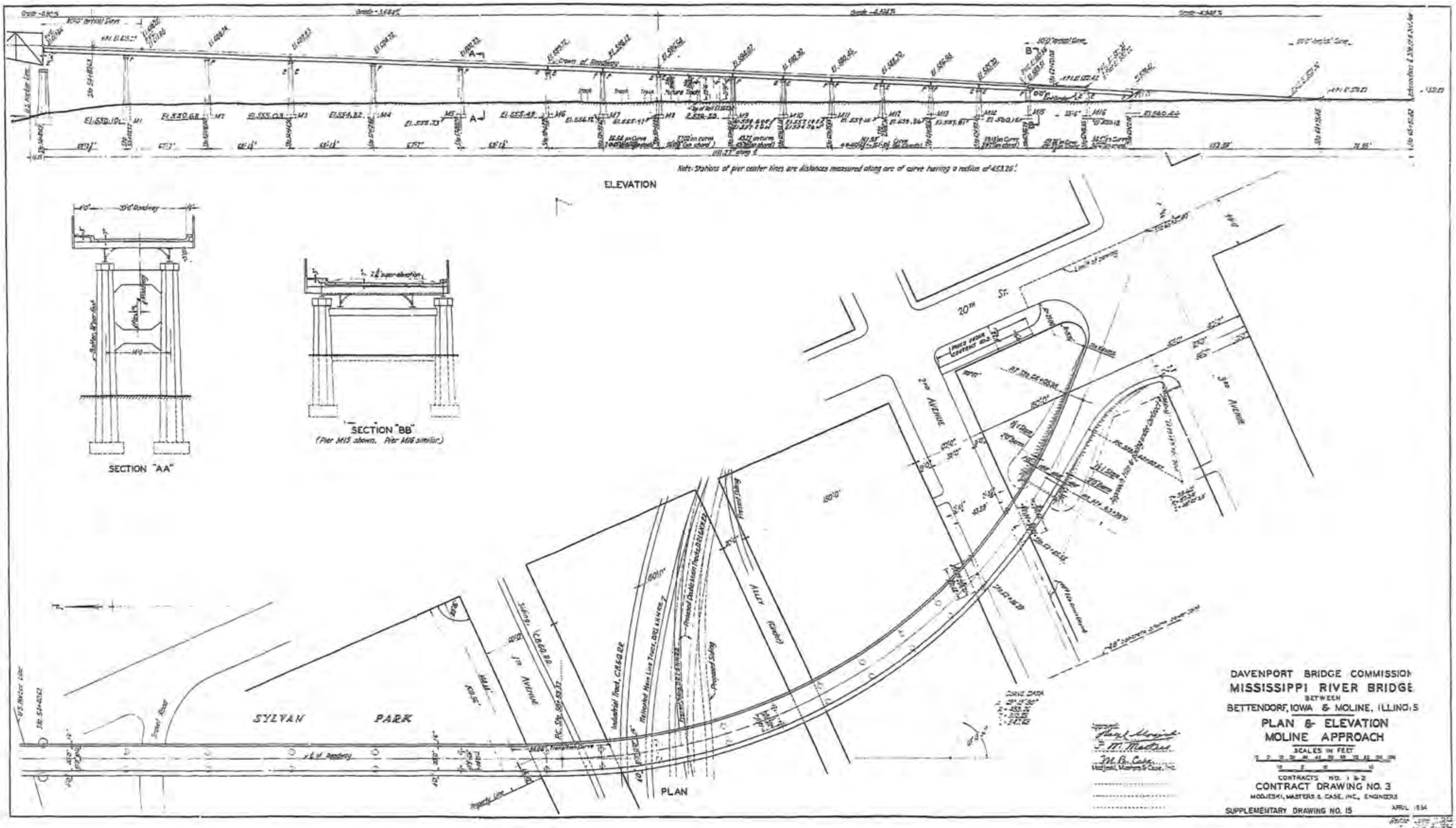
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

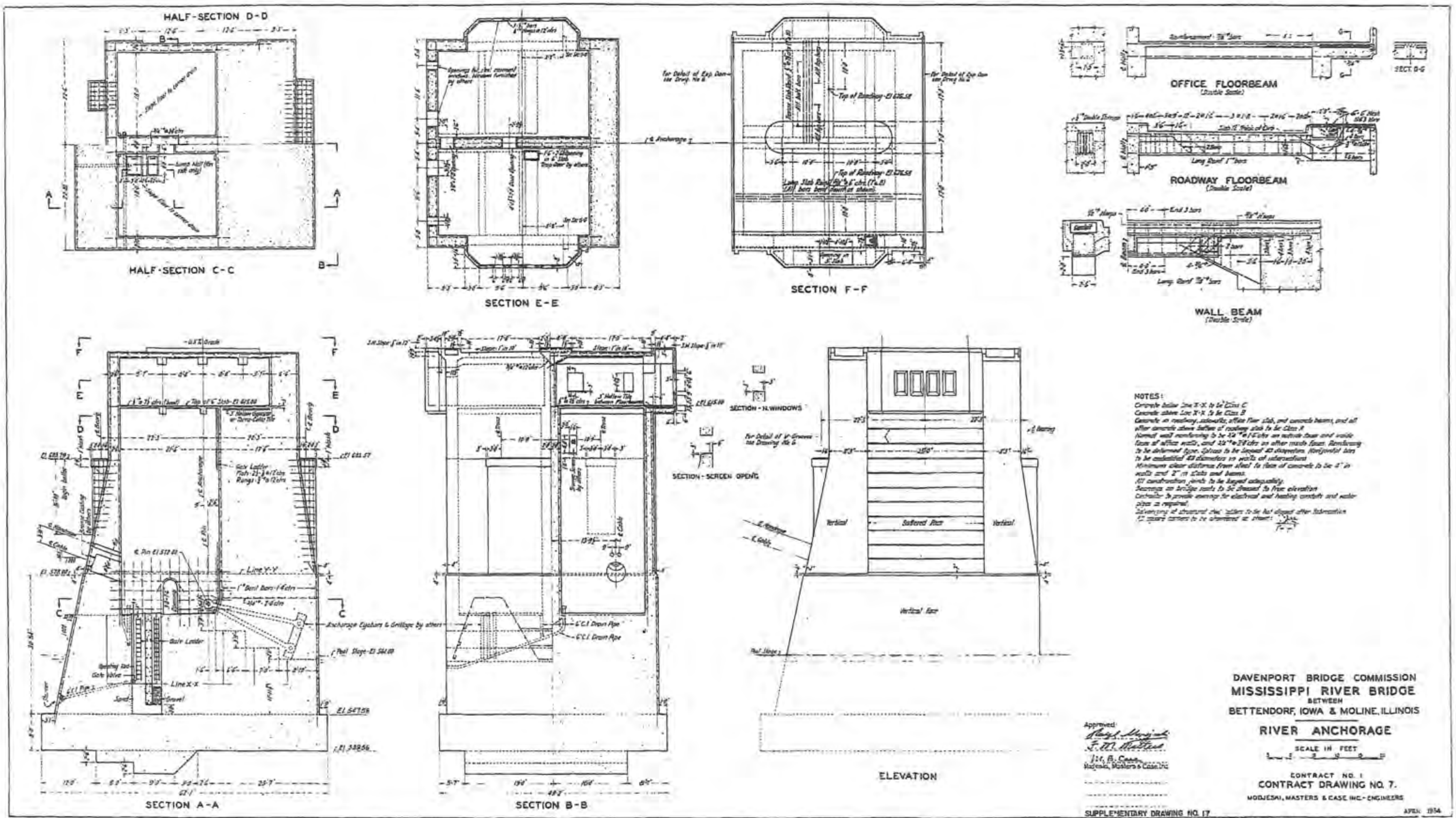
PLAN & ELEVATION
BETTENDORF APPROACH

SCALES IN FEET
0 2 4 6 8 10 20 30 40
0 5 10 15 20

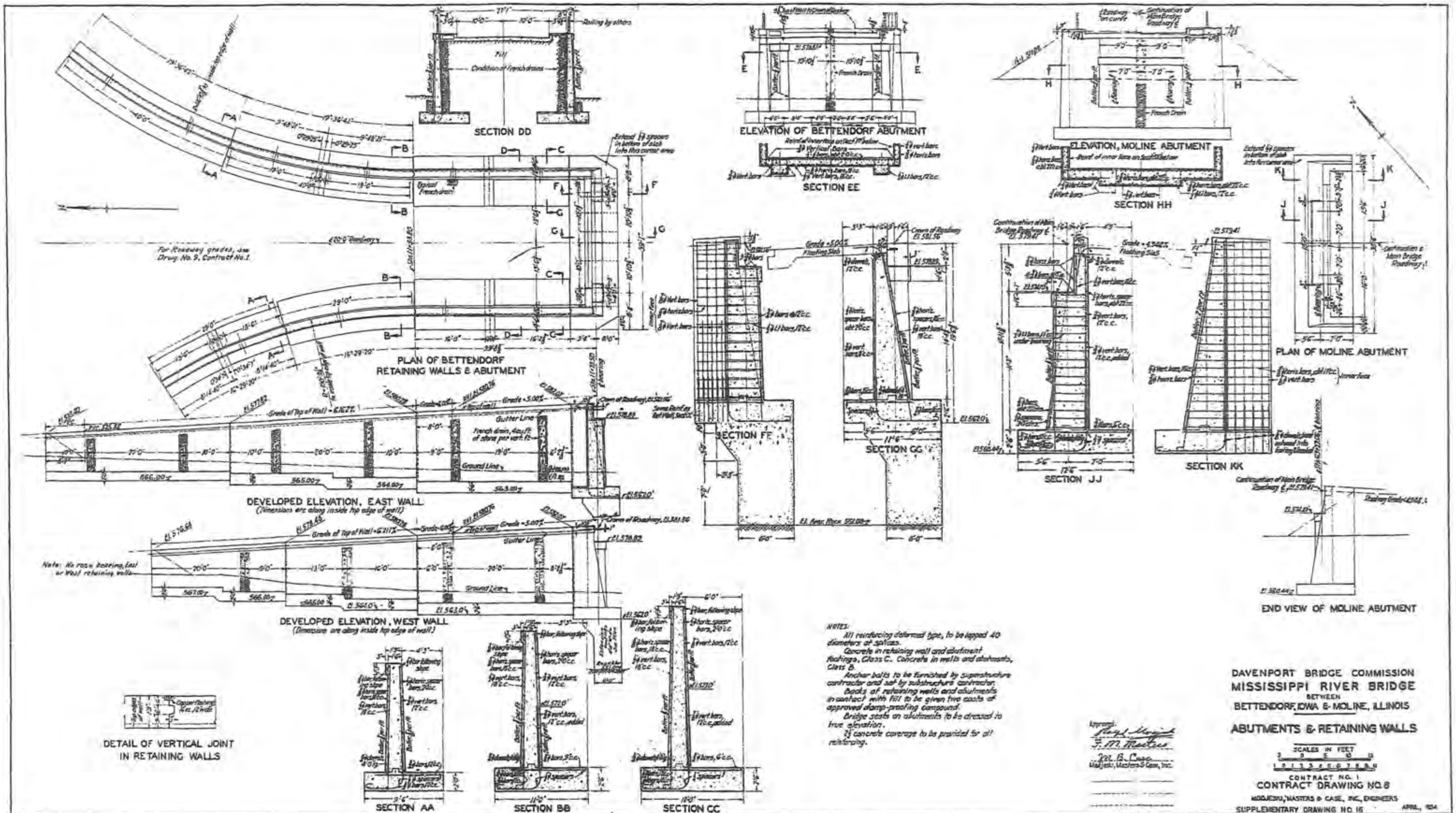
CONTRACTS NO. 1 & 2.
CONTRACT DRAWING NO. 2

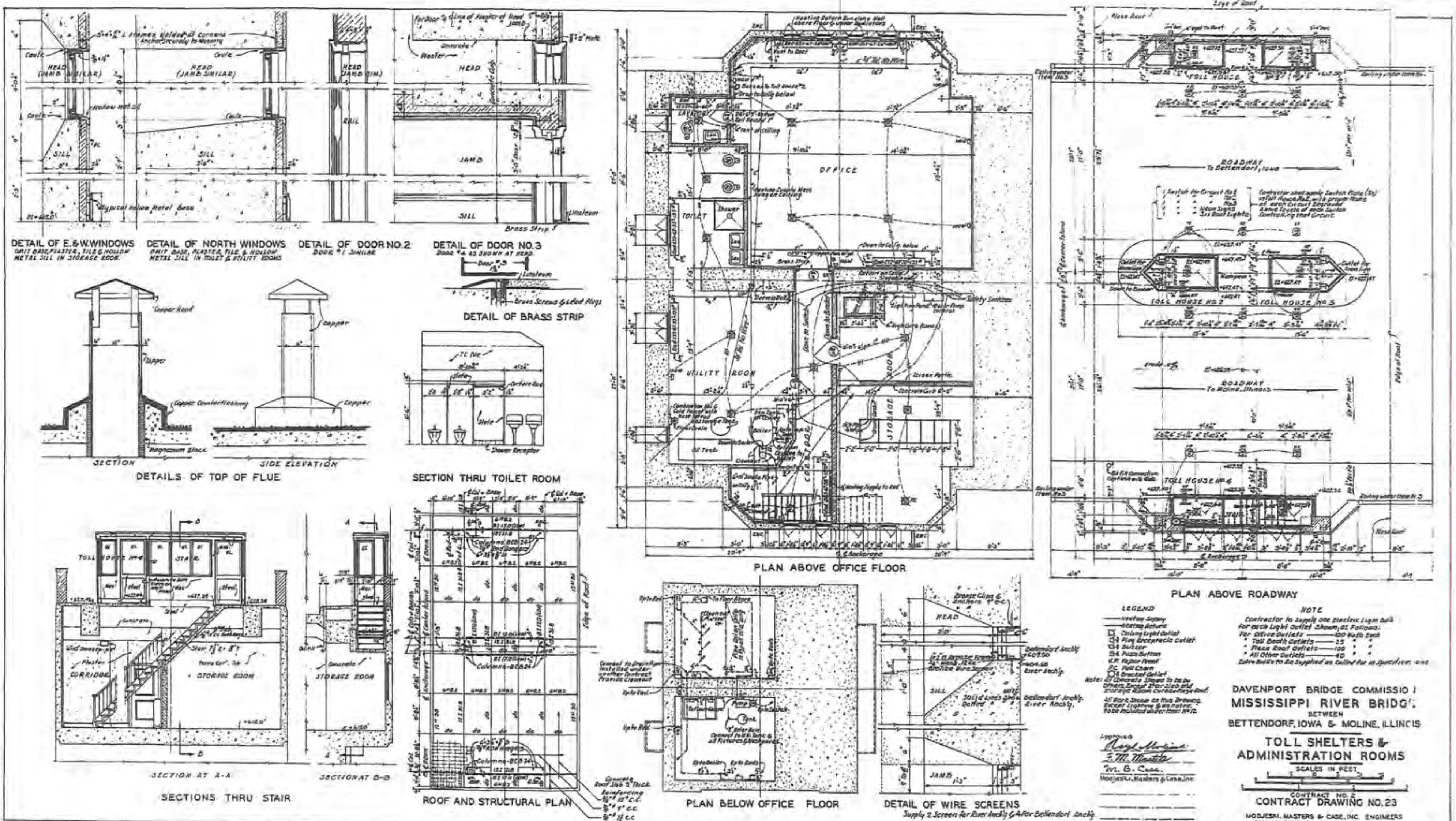
MODJESKI, MASTERS & CASE, INC. - ENGINEERS
APRIL, 1934
SUPPLEMENTARY DRAWING NO. 14

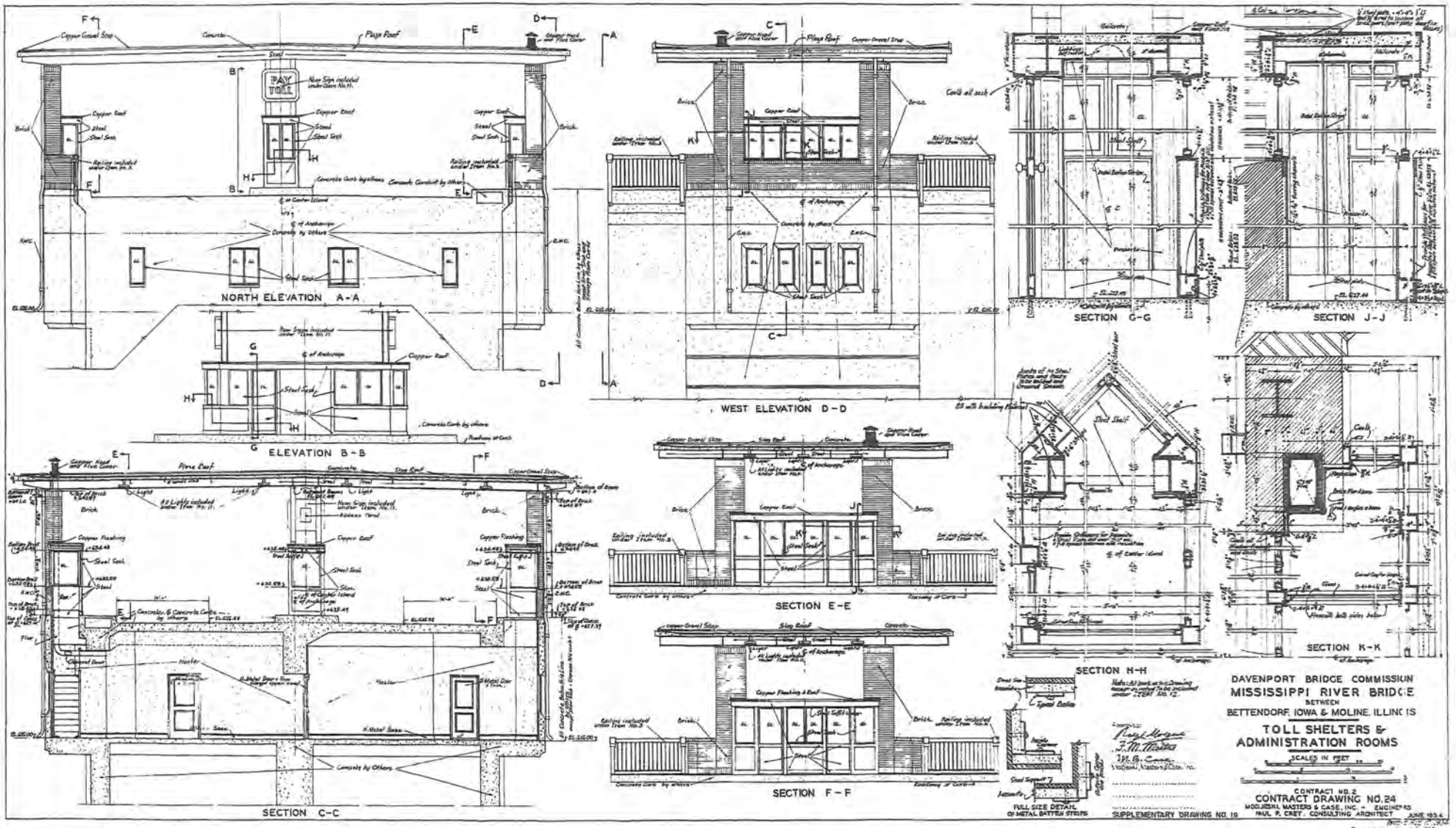

ELEVATION
Note: Stations of pier center lines are distances measured along arc of curve having a radius of 453.26'.
SECTION "AA"
SECTION "BB"
(Pier M15 shown. Pier M16 similar.)
20th St.
2nd AVENUE
3rd AVENUE
ALLEY
SYLVAN PARK
PLAN
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
PLAN & ELEVATION
MOLINE APPROACH
SCALES IN FEET
CONTRACTS NO. 1 & 2
CONTRACT DRAWING NO. 3
MODJESKI, MASTERS & CASE, INC., ENGINEERS
SUPPLEMENTARY DRAWING NO. 15
APRIL 1934

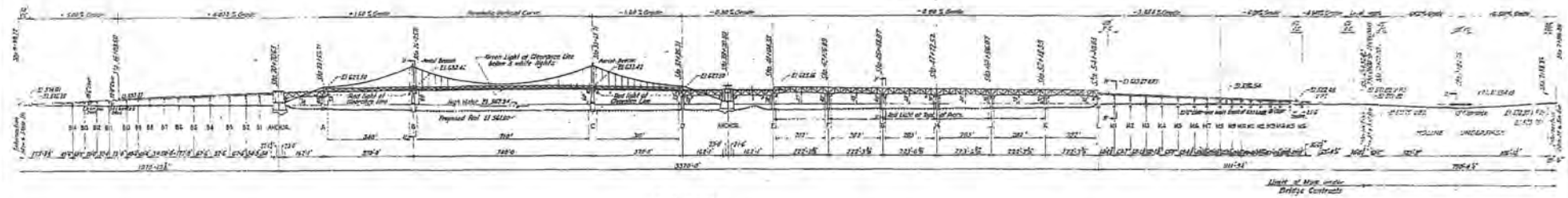


HALF-SECTION D-D
HALF-SECTION C-C
SECTION E-E
SECTION F-F
OFFICE FLOORBEAM
(Double Scale)
ROADWAY FLOORBEAM
(Double Scale)
WALL BEAM
(Double Scale)
SECTION A-A
SECTION B-B
ELEVATION
SECTION - H. WINDOWS
SECTION - SCREEN OPEN'G
NOTES:
Approved:
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
RIVER ANCHORAGE
SCALE IN FEET
CONTRACT NO. 1
CONTRACT DRAWING NO. 7.
MODJESKI, MASTERS & CASE INC.- ENGINEERS
SUPPLEMENTARY DRAWING NO. 17
APRIL 1934
Revised as built, Dec 1935.


SECTION DD
ELEVATION OF BETTENDORF ABUTMENT
SECTION EE
ELEVATION, MOLINE ABUTMENT
SECTION HH
For Roadway grades, see Drwg. No. 9, Contract No. 1.
PLAN OF BETTENDORF RETAINING WALLS & ABUTMENT
SECTION FF
SECTION GG
SECTION JJ
SECTION KK
PLAN OF MOLINE ABUTMENT
DEVELOPED ELEVATION, EAST WALL
(Dimensions are along inside top edge of wall)
Note: No rocker bearing, East or West retaining walls.
DEVELOPED ELEVATION, WEST WALL
(Dimensions are along inside top edge of wall)
END VIEW OF MOLINE ABUTMENT
DETAIL OF VERTICAL JOINT IN RETAINING WALLS
SECTION AA
SECTION BB
SECTION CC
NOTES:
All reinforcing deformed type, to be lapped 40 diameters at splices.
Concrete in retaining wall and abutment footings, Class C. Concrete in walls and abutments, Class B.
Anchor bolts to be furnished by superstructure contractor and set by substructure contractor.
Backs of retaining walls and abutments in contact with fill to be given two coats of approved damp-proofing compound.
Bridge seats on abutments to be dressed to true elevation.
2" concrete coverage to be provided for all reinforcing.
Approved:
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
ABUTMENTS & RETAINING WALLS
SCALES IN FEET
CONTRACT NO. 1
CONTRACT DRAWING NO. 8
MODJESKI, MASTERS & CASE, INC., ENGINEERS
SUPPLEMENTARY DRAWING NO. 16
APRIL, 1934


DETAIL OF E.&W. WINDOWS
OMIT BASE, PLASTER, TILE & HOLLOW METAL SILL IN STORAGE ROOM.
DETAIL OF NORTH WINDOWS
OMIT BASE, PLASTER, TILE & HOLLOW METAL SILL IN TOILET & UTILITY ROOMS
DETAIL OF DOOR NO.2
DOOR #1 SIMILAR
DETAIL OF DOOR NO.3
DETAIL OF BRASS STRIP
DETAILS OF TOP OF FLUE
SECTION
SIDE ELEVATION
SECTION THRU TOILET ROOM
PLAN ABOVE OFFICE FLOOR
OFFICE
TOILET
UTILITY ROOM
STORAGE
PLAN ABOVE ROADWAY
ROADWAY
To Bettendorf, Iowa
To Moline, Illinois
TOLL HOUSE
TOLL HOUSE NO.2
TOLL HOUSE NO.5
TOLL HOUSE NO.4
SECTION AT A-A
SECTION AT B-B
SECTIONS THRU STAIR
CORRIDOR
STORAGE ROOM
ROOF AND STRUCTURAL PLAN
PLAN BELOW OFFICE FLOOR
DETAIL OF WIRE SCREENS
Supply 2 Screen for River Anch'g & 4 for Bettendorf Anch'g.
LEGEND
NOTE
Contractor to supply one Electric Light Bulb for each Light outlet shown, as follows:
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
TOLL SHELTERS & ADMINISTRATION ROOMS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO.23
MODJESKI, MASTERS & CASE, INC. ENGINEERS
PAUL P. CRET, CONSULTING ARCHITECT
Approved
Modjeski, Masters & Case, Inc.
SUPPLEMENTARY DRAWING NO. 18

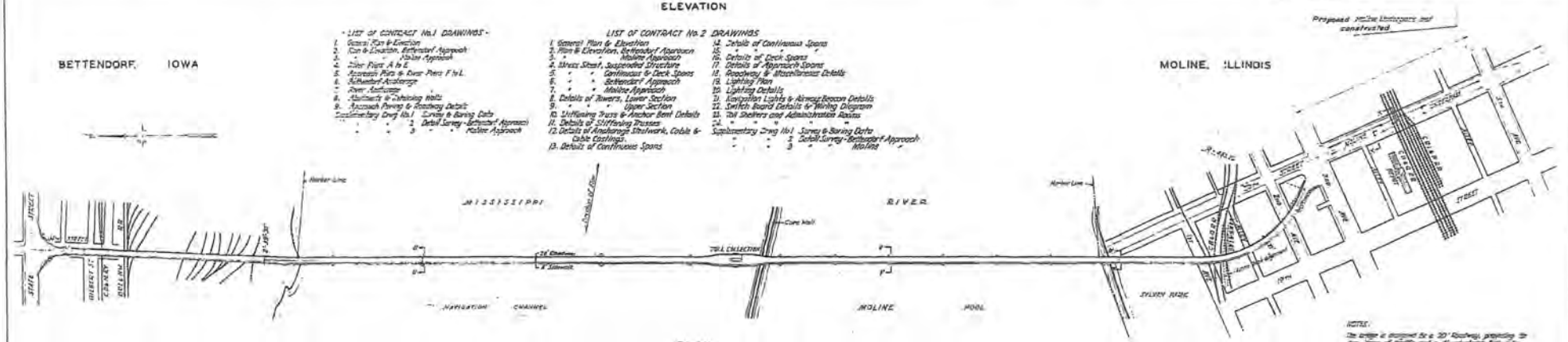

NORTH ELEVATION A-A
ELEVATION B-B
WEST ELEVATION D-D
SECTION C-C
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
SECTION J-J
SECTION K-K
FULL SIZE DETAIL OF METAL BATTEN STRIPS
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
TOLL SHELTERS & ADMINISTRATION ROOMS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 24
SUPPLEMENTARY DRAWING NO. 19
MODJESKI, MASTERS & CASE, INC. - ENGINEERS
PAUL P. CRET, CONSULTING ARCHITECT
JUNE 1934



ELEVATION

BETTENDORF, IOWA

MOLINE, ILLINOIS



PLAN

- LIST OF CONTRACT No.1 DRAWINGS -

1. General Plan & Elevation
2. Iowa Elevation, Bettendorf Approach
3. " " Moline Approach
4. Pier Plans A to E
5. Approach Plans & Cross Plans F to L
6. Bluebird Anchorage
7. River Anchorage
8. Abutments & Retaining Walls
9. Approach Paving & Roadway Details
- Supplementary Dwg No.1 Survey & Boring Data
- " " 2 Detail Survey - Bettendorf Approach
- " " 3 " " Moline Approach

LIST OF CONTRACT No.2 DRAWINGS

1. General Plan & Elevation
2. Plan & Elevation, Bettendorf Approach
3. " " Moline Approach
4. Stress Sheet, Suspended Structure
5. " " Continuous & Deck Spans
6. " " Bettendorf Approach
7. " " Moline Approach
8. Details of Towers, Lower Section
9. " " Upper Section
10. Stiffening Truss & Anchor Bent Details
11. Details of Stiffening Trusses
12. Details of Anchorage Steelwork, Cables & Cable Coatings.
13. Details of Continuous Spans
14. Details of Continuous Spans
15. " " "
16. Details of Deck Spans
17. Details of Approach Spans
18. Roadway & Miscellaneous Details
19. Lighting Plan
20. Lighting Details
21. Navigation Lights & Airway Beacon Details
22. Switch Board Details & Wiring Diagram
23. Toll Shelters and Administration Rooms
24. " " "
- Supplementary Dwg No.1 Survey & Boring Data
- " " 2 Detail Survey - Bettendorf Approach
- " " 3 " " Moline

NOTES.

The bridge is proposed for a 20' Roadway, providing for two lanes of traffic and a 4'-0 pedestrian Sidewalk.

In quality of materials and workmanship, the structure shall be equal to Class AA bridges of the latest Standard Specifications adopted by the American Association of State Highway Officials and American Association of Railway Engineers.

All piers to be founded on Rock or other suitable bearing formations.

SECTION U-U

SECTION V-V

SECTION S-S

DAVENPORT BRIDGE COMMISSION

MISSISSIPPI RIVER BRIDGE

BETWEEN

BETTENDORF, IOWA & MOLINE, ILLINOIS

GENERAL PLAN & ELEVATION

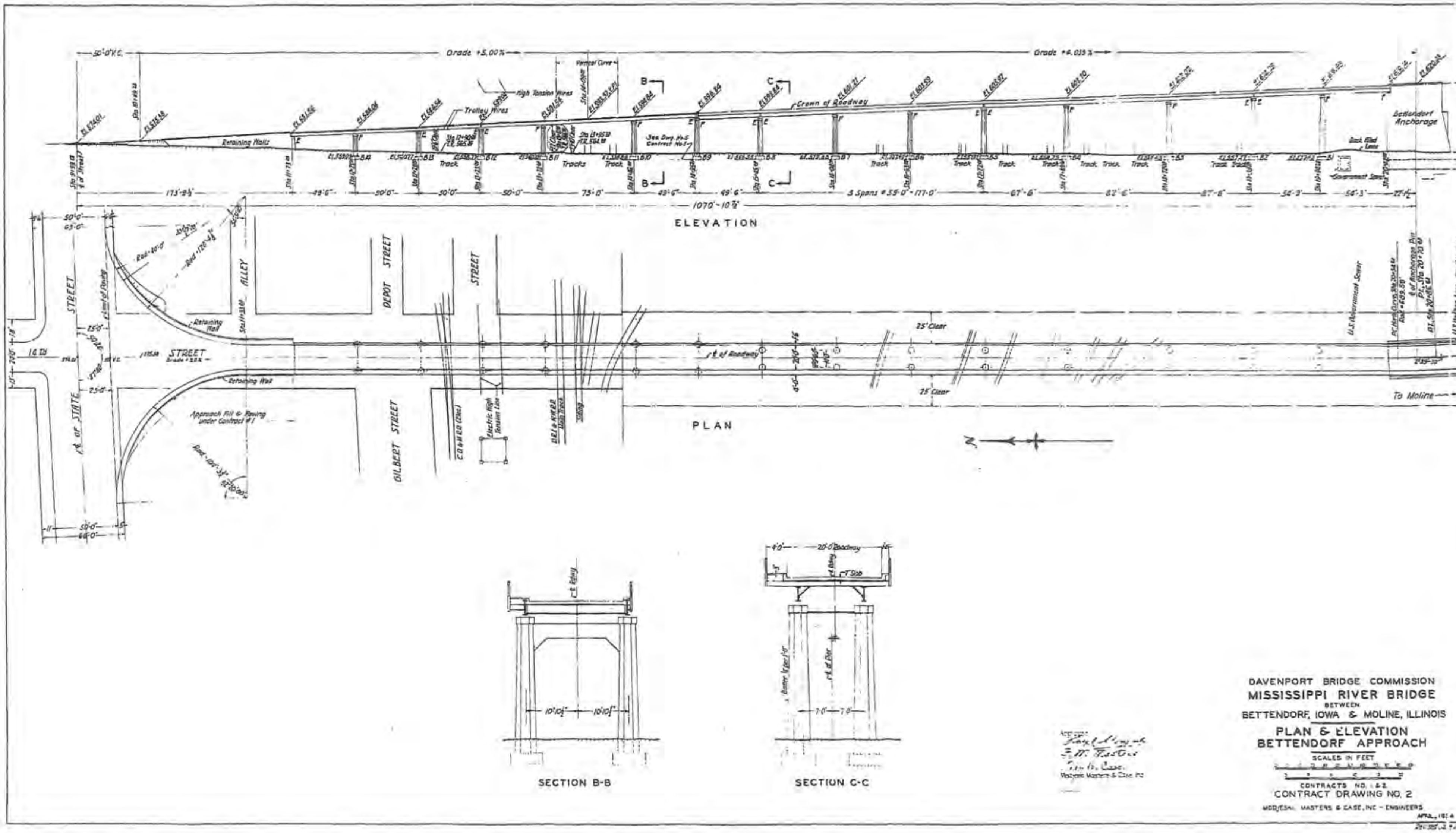
SCALES IN FEET

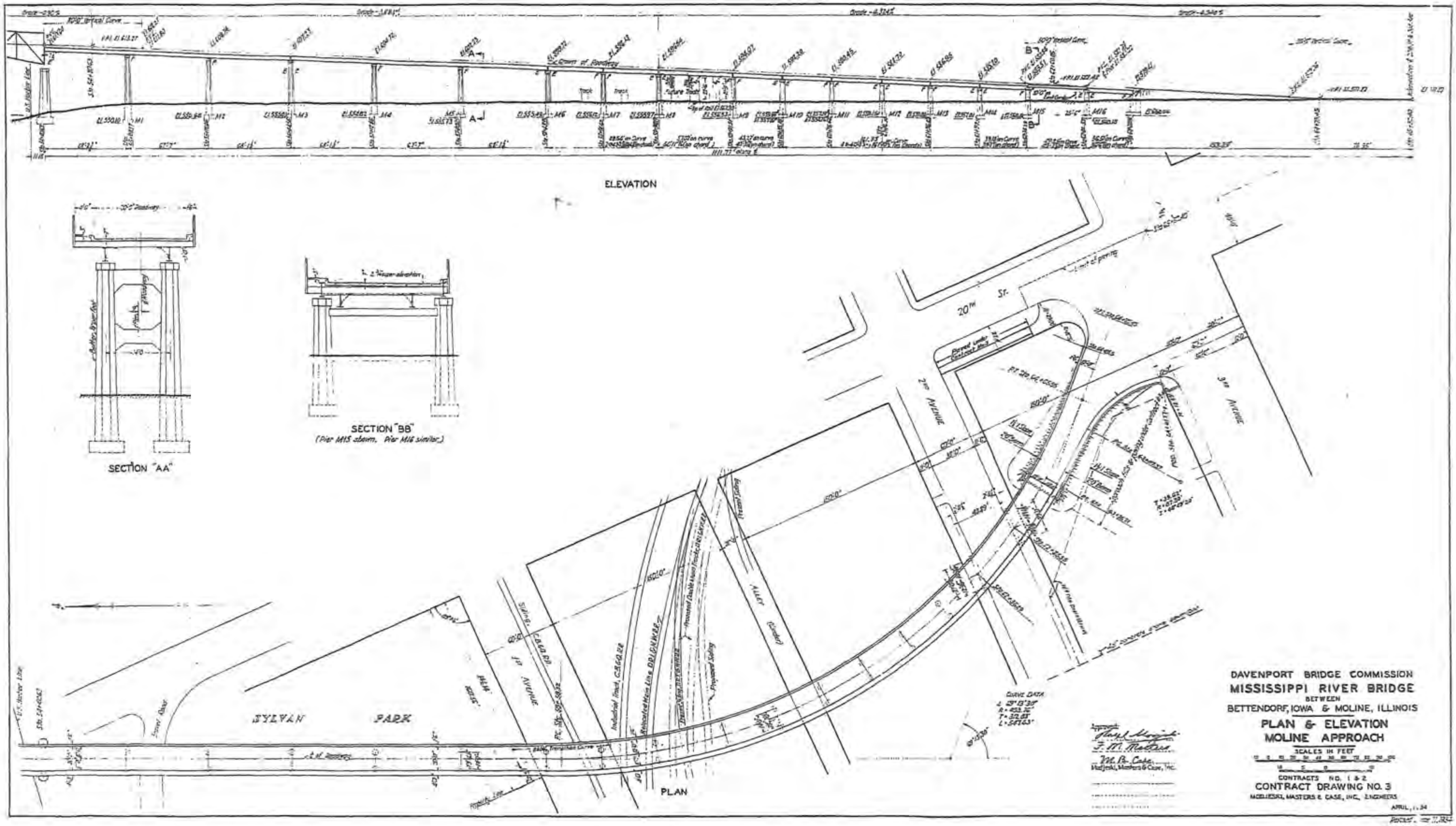
CONTRACT NO. 1 & 2

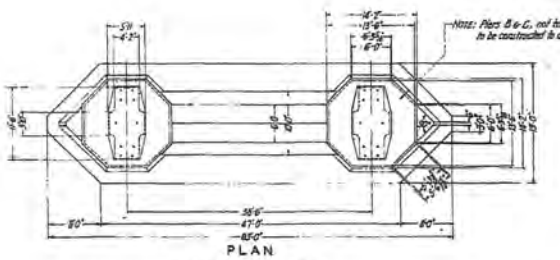
CONTRACT DRAWING NO. 1

MODJESKI MASTERS & CASE INC-ENGINEERS

APRIL 1934

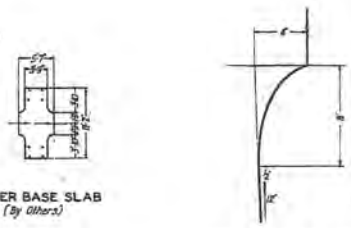

Grade +5.00%
Grade +4.035%
Vertical Curve
High Tension Wires
Trolley Wires
Crown of Roadway
Retaining Walls
Bettendorf Anchorage
Back Filled Levee
Government Sewer
Track
Tracks
See Dwg No. 5 Contract No. 1
173'-8½"
50'-0"
73'-0"
49'-6"
3 Spans @ 59'-0" = 177'-0"
67'-6"
82'-6"
54'-3"
1070'-10⅞"
ELEVATION
STREET
STATE
ALLEY
DEPOT STREET
GILBERT STREET
STREET
Retaining Wall
Approach Fill & Paving under Contract #1
℄ of Roadway
25' Clear
U.S. Government Sewer
To Moline
PLAN
N
C.D. & M.R.R. (Elec.)
Electric High Tension Line
SECTION B-B
20'-0" Roadway
7" Slab
SECTION C-C
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
PLAN & ELEVATION
BETTENDORF APPROACH
SCALES IN FEET
CONTRACTS NO. 1 & 2
CONTRACT DRAWING NO. 2
MODJESKI, MASTERS & CASE, INC. - ENGINEERS
Modjeski Masters & Case, Inc.


ELEVATION
SECTION "AA"
SECTION "BB"
(Pier M15 shown. Pier M16 similar.)
20TH ST.
2ND AVENUE
3RD AVENUE
1ST AVENUE
SYLVAN
PARK
PLAN
Approved:
F. M. Masters
M. B. Case
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
PLAN & ELEVATION
MOLINE APPROACH
SCALES IN FEET
CONTRACTS NO. 1 & 2
CONTRACT DRAWING NO. 3
MODJESKI, MASTERS & CASE, INC., ENGINEERS



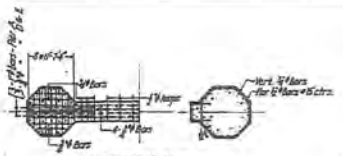
PLAN

TOWER PIERS B & C

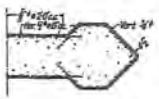


DETAIL OF CAP FILLET

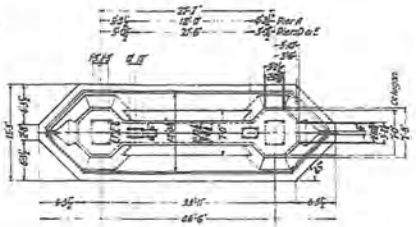
TOWER BASE SLAB
(By Others)



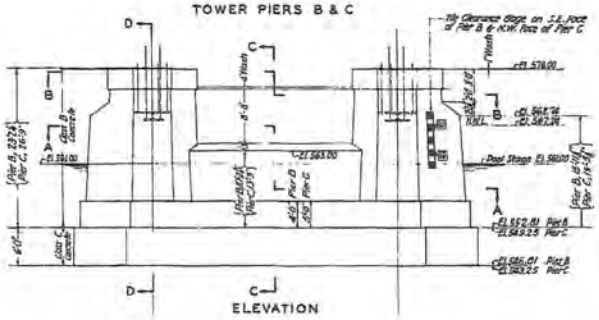
SECTION H-H



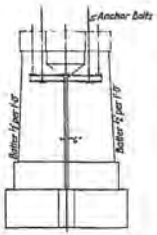
SECTION J-J



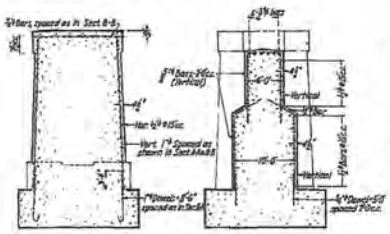
PLAN
PIERS A, D & E



ELEVATION

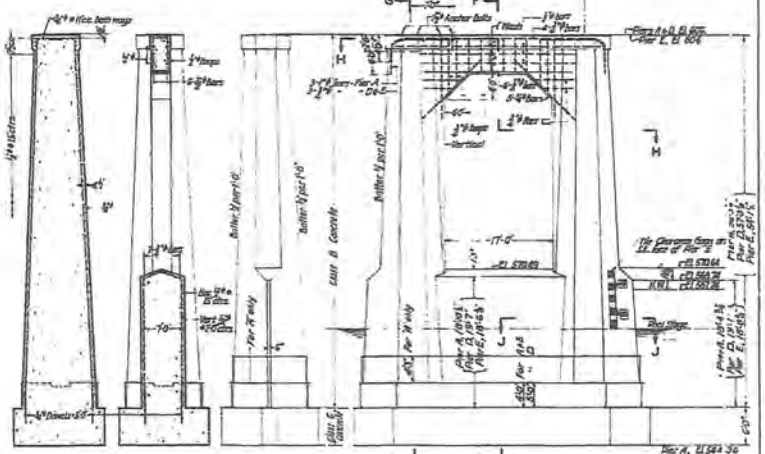


ELEVATION



SECTION D-D

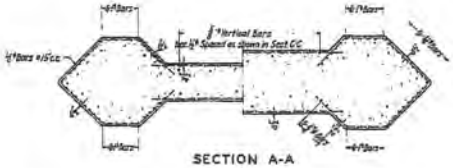
SECTION C-C



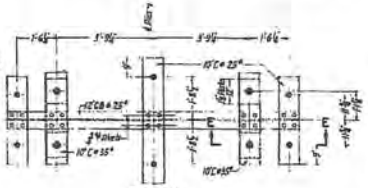
SECTION G-G

SECTION F-F

ELEVATION

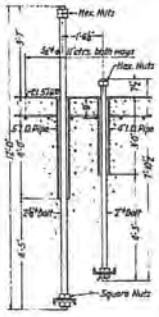


SECTION A-A

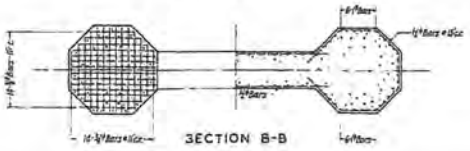


PLAN

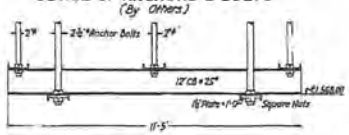
DETAIL OF ANCHORS & BOLTS
(By Others)



SECTION E-E



SECTION B-B



ELEVATION

Notes: Anchor bolts and anchor bolt frames to be furnished by superstructure Contractor and set by sub-structure Contractor.
For details of clearance gages see Continued Drwg No 5.
Tops of piers at bridge seats to be dressed to true elevation.
All reinforcing bars to be of deformed type lapped 40 diameters at splices. Crosswall reinforcement to extend 40 diameters into seats, except as shown.
All construction joints to be adequately keyed.

Approved:
Ralph Modjeski
F. M. Masters
W. B. Case
Modjeski, Masters & Case, Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS.

RIVER PIERS A TO E

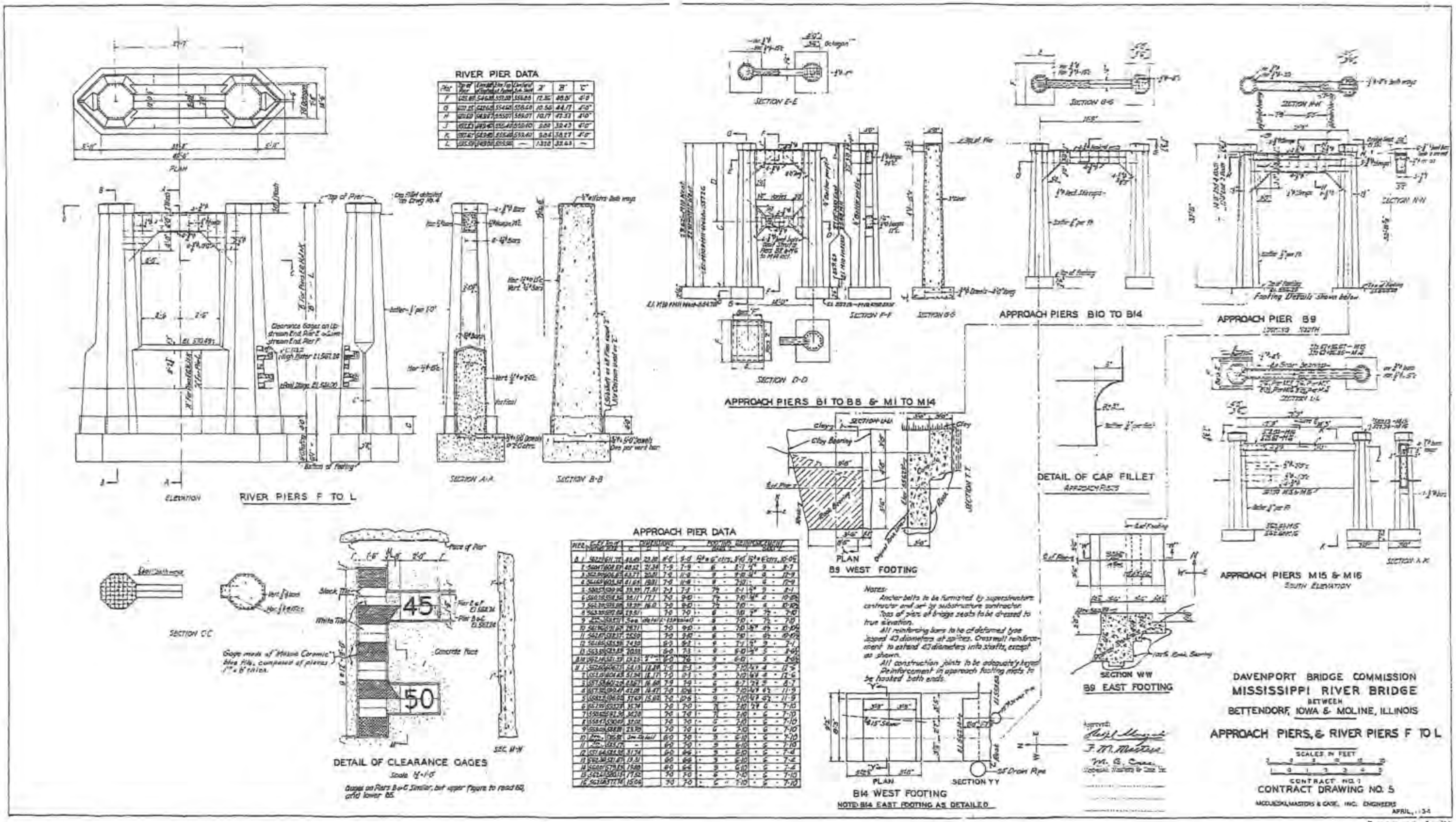
SCALES IN FEET

CONTRACT NO. 1
CONTRACT DRAWING NO. 4

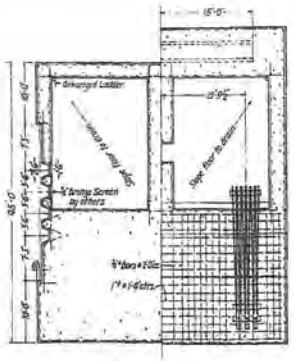
MODJESKI, MASTERS & CASE, INC. - ENGINEERS

APRIL, 1934

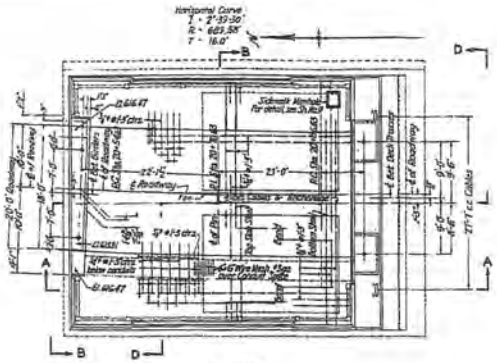
Revised as built Dec. 1935



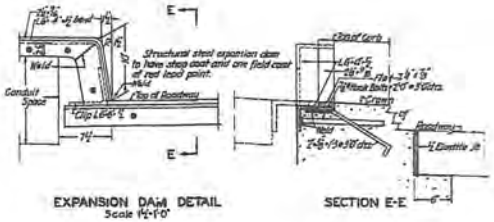
PLAN
RIVER PIER DATA
ELEVATION
RIVER PIERS F TO L
SECTION A-A
SECTION B-B
SECTION C-C
DETAIL OF CLEARANCE GAGES
45
50
APPROACH PIER DATA
SECTION E-E
SECTION D-D
SECTION F-F
SECTION G-G
APPROACH PIERS B1 TO B8 & M1 TO M14
SECTION G-G
SECTION H-H
APPROACH PIERS B10 TO B14
APPROACH PIER B9
DETAIL OF CAP FILLET
SECTION T-T
PLAN
B9 WEST FOOTING
Notes:
Anchor bolts to be furnished by superstructure contractor and set by substructure contractor.
Tops of piers at bridge seats to be dressed to true elevation.
All reinforcing bars to be of deformed type lapped 40 diameters at splices. Crosswall reinforcement to extend 40 diameters into shafts, except as shown.
All construction joints to be adequately keyed.
Reinforcement in approach footing mats to be hooked both ends.
PLAN
SECTION YY
B14 WEST FOOTING
NOTE: B14 EAST FOOTING AS DETAILED
SECTION WW
B9 EAST FOOTING
APPROACH PIERS M15 & M16
SOUTH ELEVATION
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
APPROACH PIERS, & RIVER PIERS F TO L
SCALES IN FEET
CONTRACT NO. 1
CONTRACT DRAWING NO. 5
MCCLINTIC, MASTERS & CASE, INC. ENGINEERS



SECTION C-C

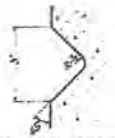


PLAN



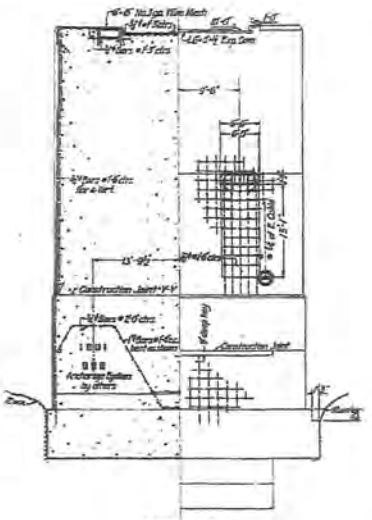
EXPANSION DAM DETAIL
Scale 1½"-1'0"

SECTION E-E

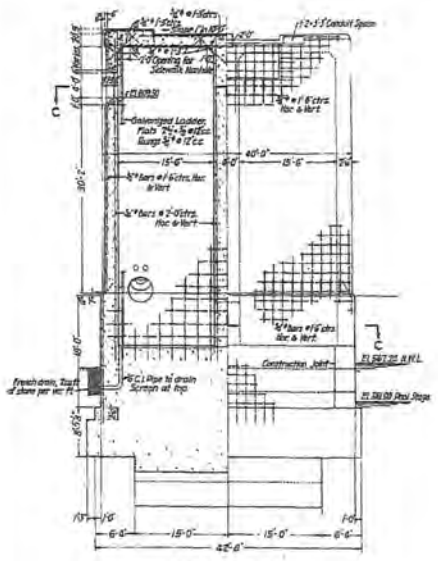


DETAIL OF V-GROOVE

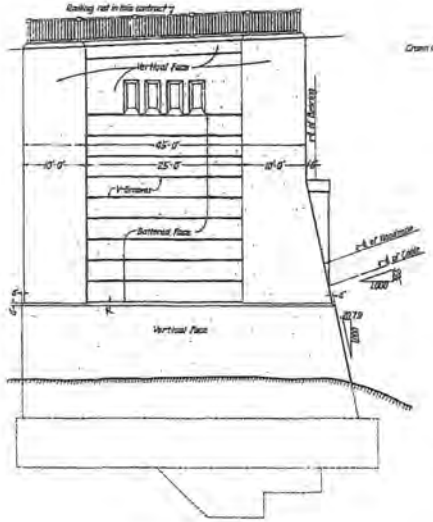
Concrete below Line K-K to be Class C.
Concrete above Line K-K to be Class B.
Concrete in slab supporting roadway, top 7" of roadway and 4'-0" sidewalk, over mass concrete, to be Class A.
Normal wall reinforcing to be ¾" @ 12" ctrs. on inside faces, and ¾" @ 12" on outside faces. Reinforcing to be deformed type, and splices are to be lapped 40 diameters. Horizontal bars to be embedded 40 diameters, in walls at intersections.
Minimum clear distance from steel to face of concrete to be 4" in walls, and 2" in slab supporting roadway.
All construction joints to be adequately keyed.
Bearing on bridge seats to be dressed to true elevation.
Galvanizing of structural steel ladders to be hot dipped after fabrication.
All square corners to be chamfered as shown.



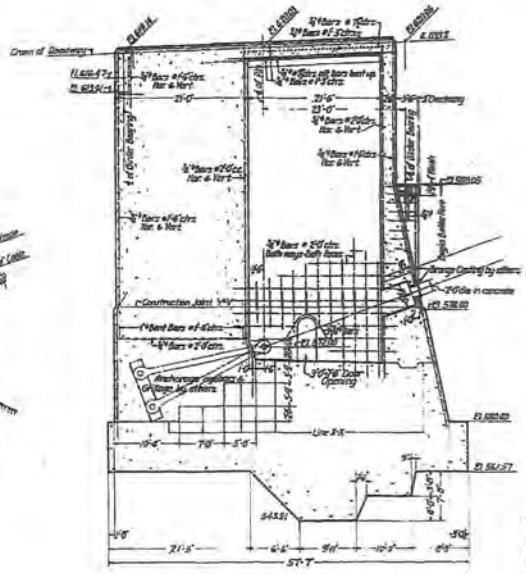
SECTION D-D



SECTION B-B



WEST ELEVATION



SECTION A-A

Approved:
Ralph Modjeski
F. Hill Hinchcliff
Wm. B. Case
Modjeski, Masters & Case, Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

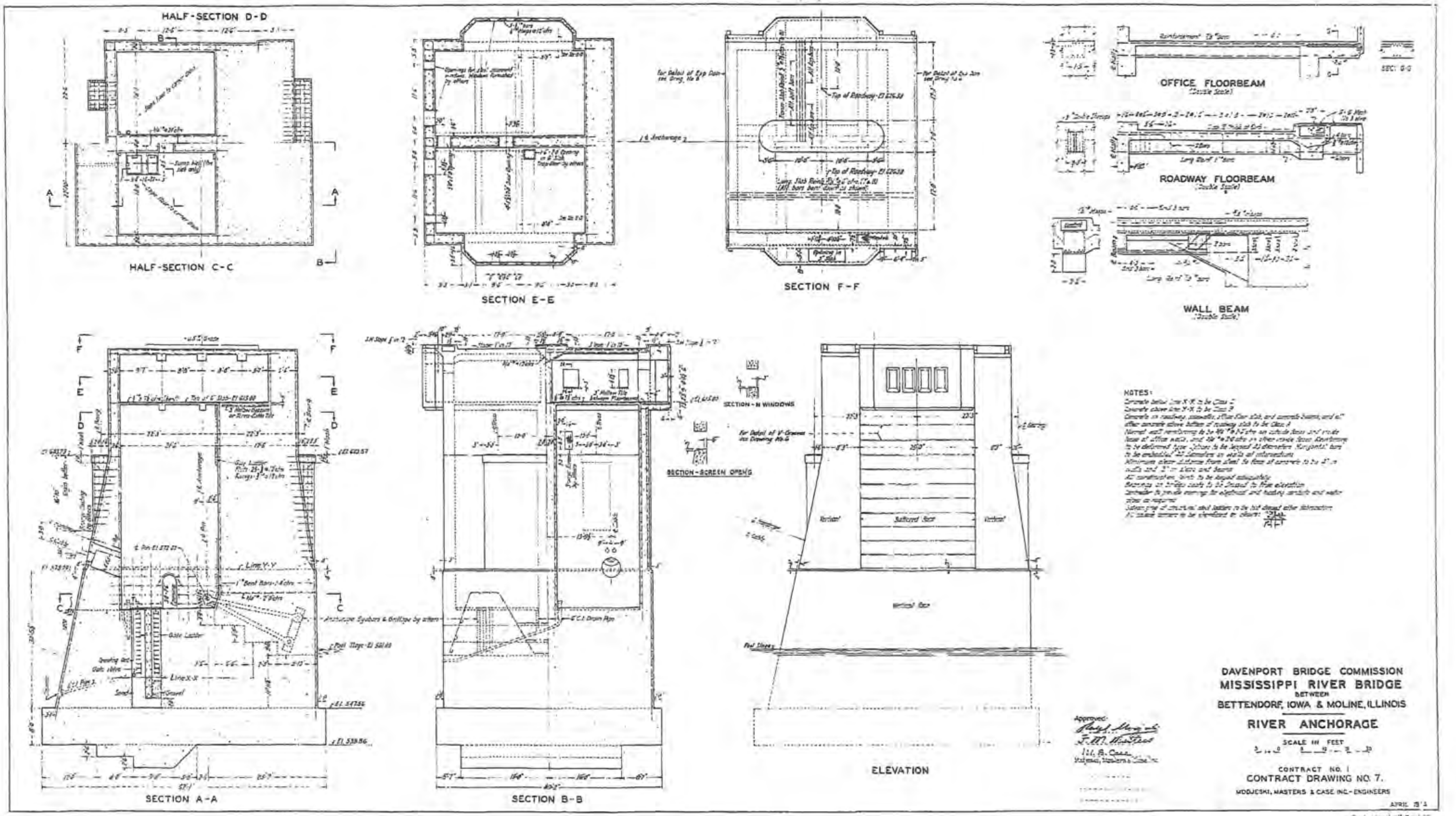
BETTENDORF ANCHORAGE

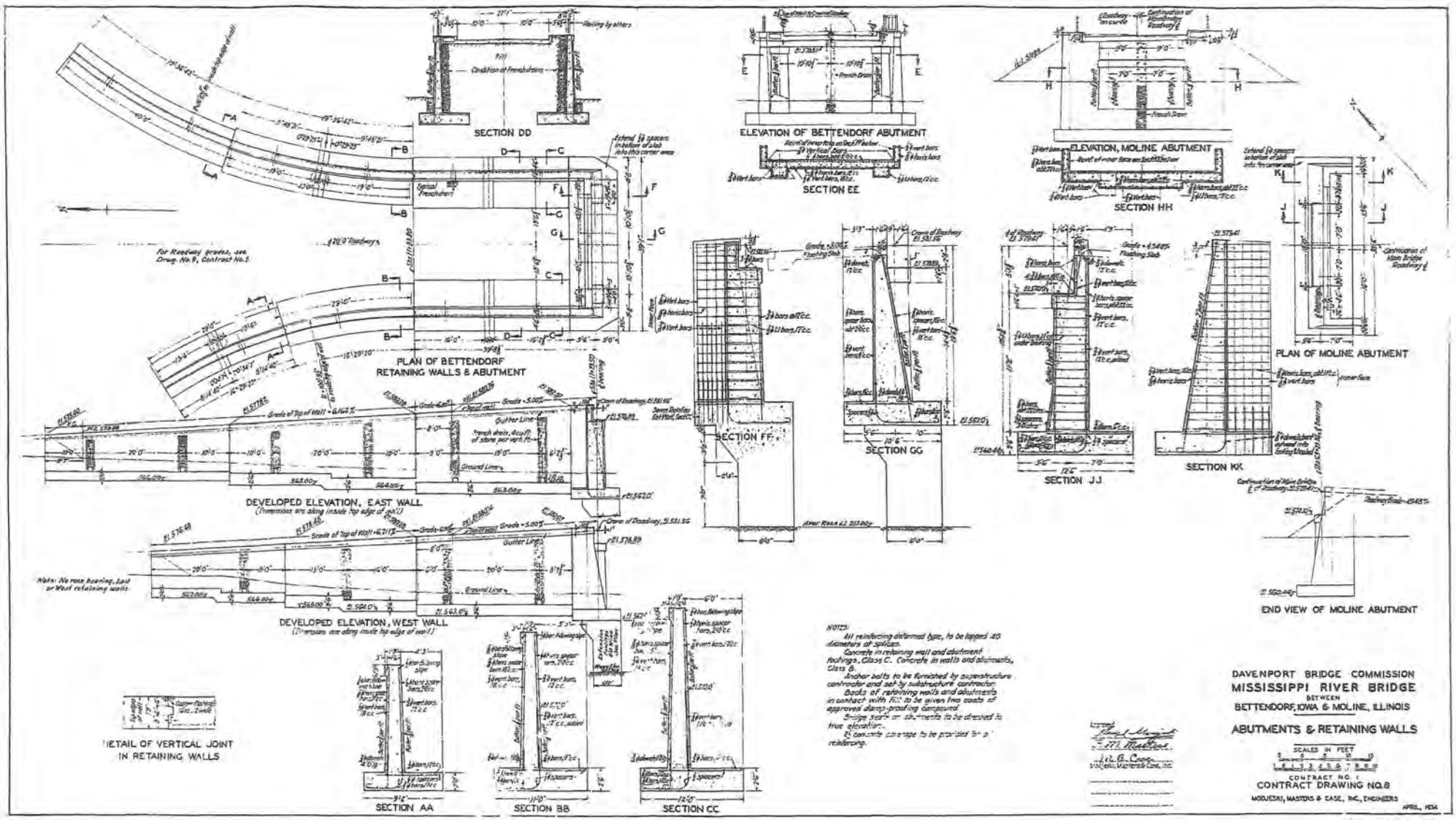
SCALES IN FEET

CONTRACT NO. 1
CONTRACT DRAWING NO. 6

MODJESKI, MASTERS & CASE, INC.- ENGINEERS
APRIL 1934.

Revised as built, Dec. '35.


HALF-SECTION D-D
HALF-SECTION C-C
SECTION E-E
SECTION F-F
OFFICE FLOORBEAM
ROADWAY FLOORBEAM
WALL BEAM
SECTION-N WINDOWS
SECTION-SCREEN OPEN'G
NOTES:
SECTION A-A
SECTION B-B
ELEVATION
Approved:
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
RIVER ANCHORAGE
SCALE IN FEET
CONTRACT NO. 1
CONTRACT DRAWING NO. 7.
MODJESKI, MASTERS & CASE INC.-ENGINEERS



NOTES:
All reinforcing deformed type, to be lapped 40 diameters at splices.
Concrete in retaining wall and abutment footings, Class C. Concrete in walls and abutments, Class B.
Anchor bolts to be furnished by superstructure contractor and set by substructure contractor.
Backs of retaining walls and abutments in contact with fill to be given two coats of approved damp-proofing compound.
Bridge seats on abutments to be dressed to true elevation.
2" concrete coverage to be provided for all reinforcing.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

ABUTMENTS & RETAINING WALLS

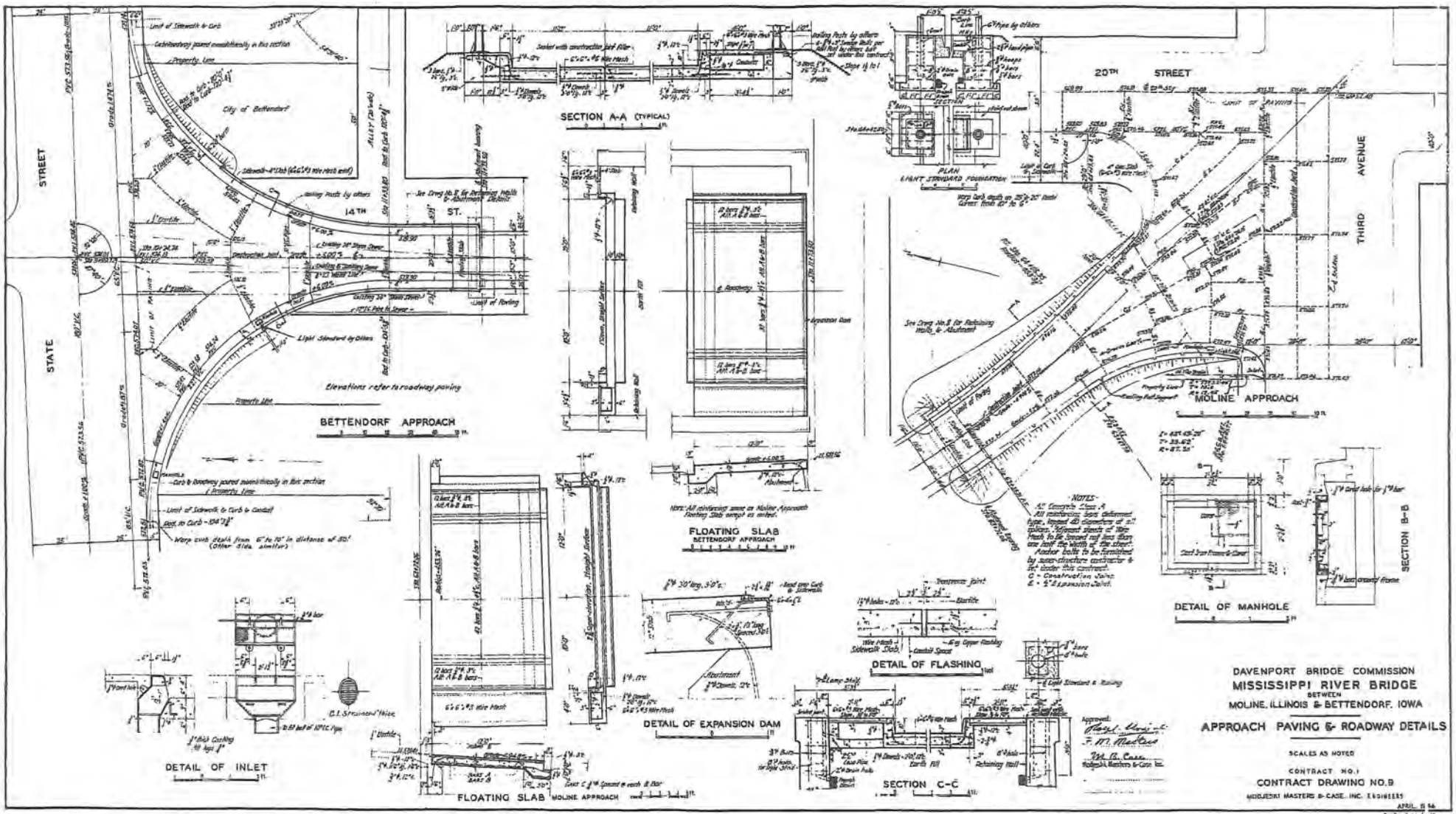
SCALES IN FEET
0 5 10 15
1 6 1 3 2 5 6 7 8 9 10

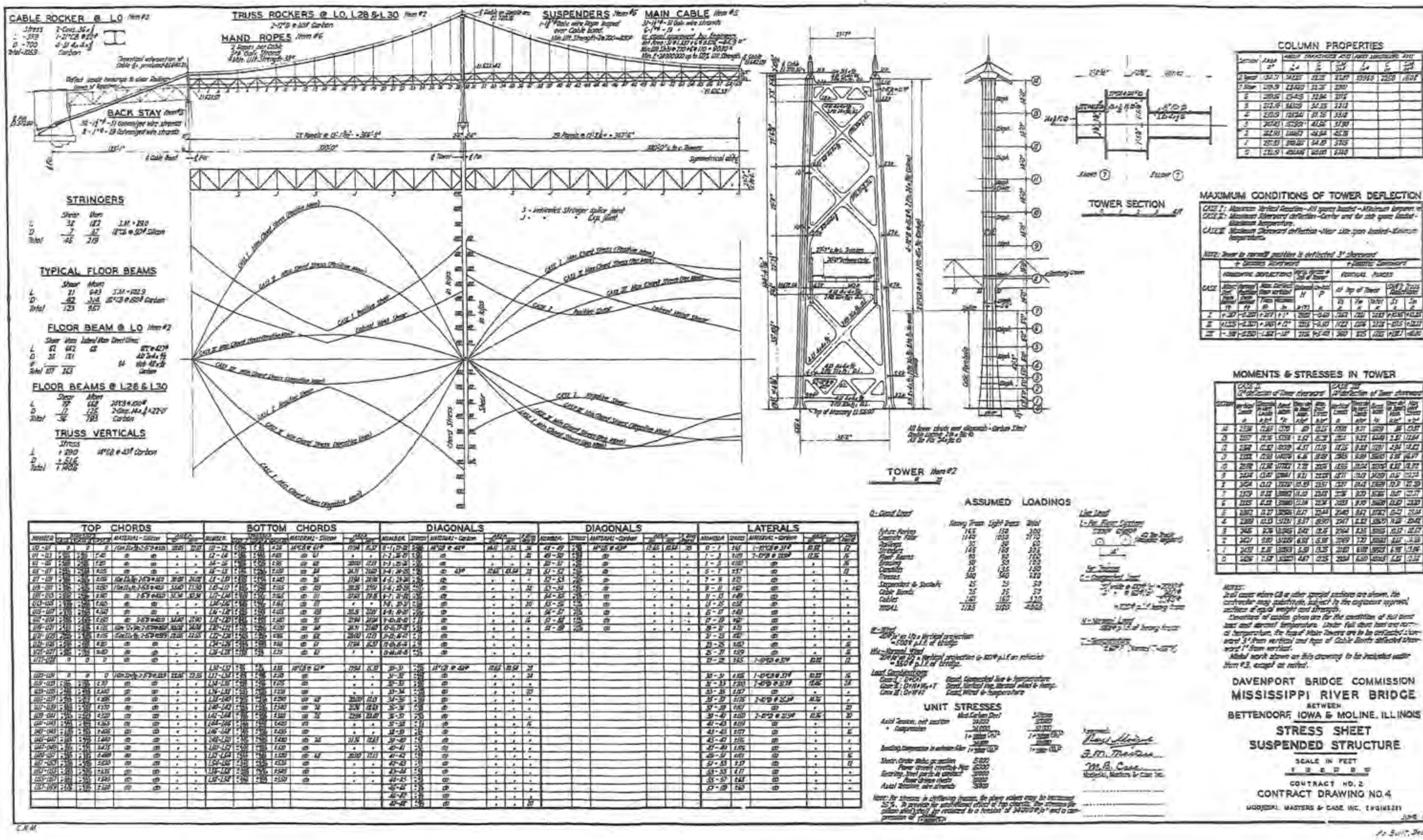
CONTRACT NO. 1
CONTRACT DRAWING NO. 8

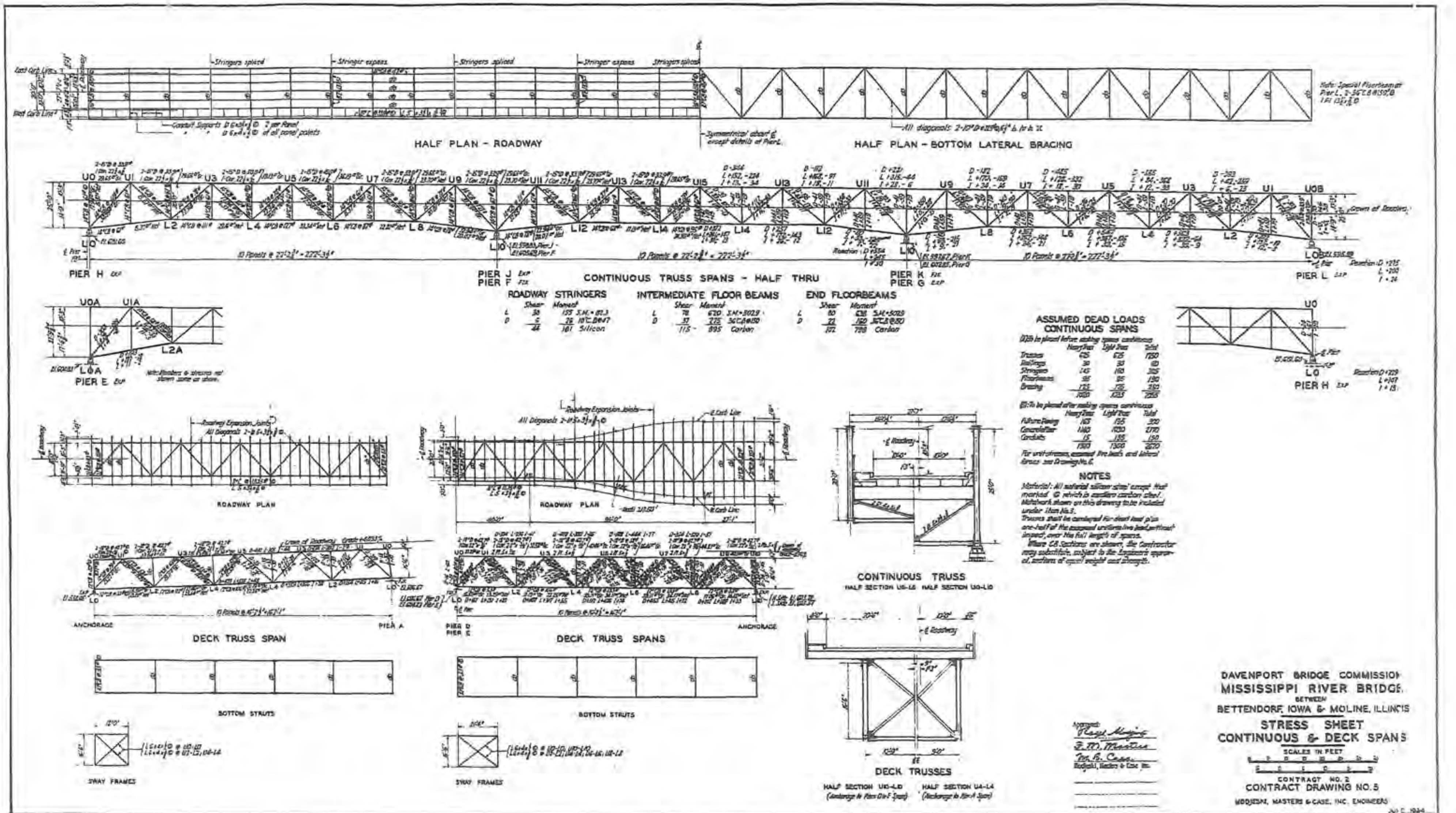
MODJESKI, MASTERS & CASE, INC., ENGINEERS

APRIL, 1934

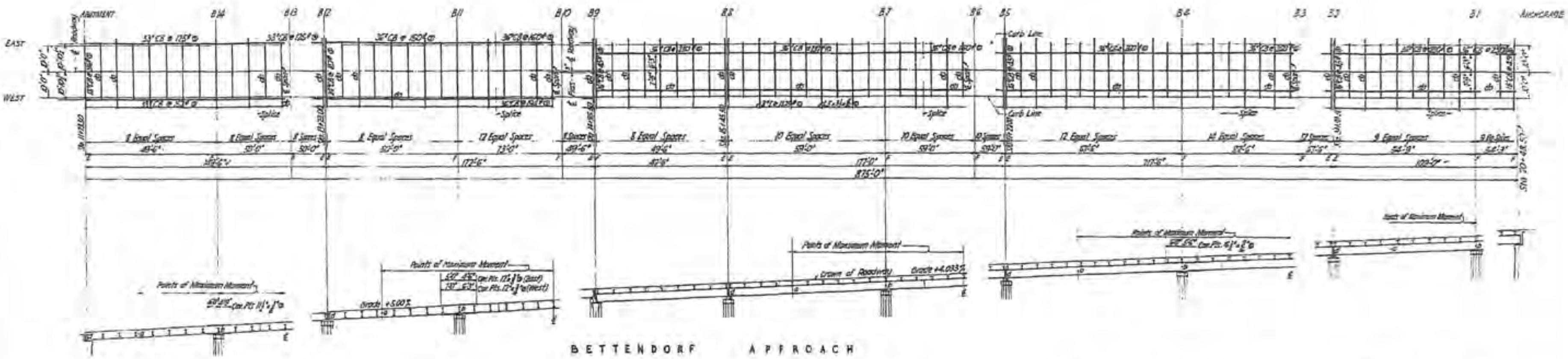
Approved as built Dec. 1935


STATE STREET
14TH ST.
20TH STREET
THIRD AVENUE
City of Bettendorf
BETTENDORF APPROACH
MOLINE APPROACH
SECTION A-A (TYPICAL)
PLAN
LIGHT STANDARD FOUNDATION
FLOATING SLAB
BETTENDORF APPROACH
DETAIL OF EXPANSION DAM
DETAIL OF FLASHING
DETAIL OF MANHOLE
SECTION B-B
DETAIL OF INLET
FLOATING SLAB MOLINE APPROACH
SECTION C-C
NOTES
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
MOLINE, ILLINOIS & BETTENDORF, IOWA
APPROACH PAVING & ROADWAY DETAILS
SCALES AS NOTED
CONTRACT NO.1
CONTRACT DRAWING NO.8
MODJESKI MASTERS & CASE, INC. ENGINEERS
APRIL 15 66


CABLE ROCKER @ L0
TRUSS ROCKERS @ L0, L28 & L30
HAND ROPES
SUSPENDERS
MAIN CABLE
BACK STAY
STRINGERS
TYPICAL FLOOR BEAMS
FLOOR BEAM @ L0
FLOOR BEAMS @ L28 & L30
TRUSS VERTICALS
TOWER
TOWER SECTION
COLUMN PROPERTIES
MAXIMUM CONDITIONS OF TOWER DEFLECTION
MOMENTS & STRESSES IN TOWER
TOP CHORDS
BOTTOM CHORDS
DIAGONALS
DIAGONALS
LATERALS
ASSUMED LOADINGS
UNIT STRESSES
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
STRESS SHEET
SUSPENDED STRUCTURE
SCALE IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 4
MODJESKI, MASTERS & CASE INC. ENGINEERS



HALF PLAN - ROADWAY
Stringers spliced
Stringer expans.
HALF PLAN - BOTTOM LATERAL BRACING
CONTINUOUS TRUSS SPANS - HALF THRU
PIER H
PIER J
PIER F
PIER K
PIER G
PIER L
PIER E
U0 U1 U3 U5 U7 U9 U11 U13 U15 U13 U11 U9 U7 U5 U3 U1 U0B
L0 L2 L4 L6 L8 L10 L12 L14 L14 L12 L10 L8 L6 L4 L2 L0B
U0A U1A L2A L0A
ROADWAY STRINGERS
INTERMEDIATE FLOOR BEAMS
END FLOORBEAMS
Shear Moment
ROADWAY PLAN
DECK TRUSS SPAN
DECK TRUSS SPANS
ANCHORAGE
PIER A
PIER D
PIER E
BOTTOM STRUTS
SWAY FRAMES
CONTINUOUS TRUSS
HALF SECTION U6-L6 HALF SECTION U0-L0
DECK TRUSSES
HALF SECTION U6-L6 HALF SECTION U4-L4
ASSUMED DEAD LOADS
CONTINUOUS SPANS
(1) To be placed before making spans continuous
Heavy Truss Light Truss Total
Trusses 625 625 1250
Railings 30 30 60
Stringers 145 160 305
Floorbeams 95 95 190
Bracing 125 125 250
1020 1035 2055
(2) To be placed after making spans continuous
Heavy Truss Light Truss Total
Future Paving 165 155 320
Concrete Floor 1160 1030 2190
Conduits 15 135 150
1390 1320 2670
For unit stresses, assumed live loads and lateral forces see Drawing No. 6.
NOTES
Material: All material silicon steel except that marked C which is medium carbon steel.
Metalwork shown on this drawing to be included under Item No. 3.
Trusses shall be cambered for dead load plus one-half of the assumed uniform live load without impact, over the full length of spans.
Where CB Sections are shown, the Contractor may substitute, subject to the Engineer's approval, sections of equal weight and strength.
Approved:
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
STRESS SHEET
CONTINUOUS & DECK SPANS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 5
MODJESKI, MASTERS & CASE, INC. ENGINEERS
As Built



BETTENDORF APPROACH

SUMMARY OF MOMENTS & SHEARS (49'6"-51'-50')

West Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+392	-490	+123	108	39
Live Load	+505	-455	+606	107	66
Impact	+116	-101	+141	23	14
Sidewalk Load	+16	-86	+80	18	9
Total	+1159	-1132	+940	256	128
S.M. Required ©	463	453	396		

33"CB @ 152#, Cov. Pls. 11½ x ⅜; 33"CB @ 125# ©

East Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+321	-401	+101	88	32
Live Load	+409	-376	+412	96	60
Impact	+104	-94	+117	22	14
Sidewalk Load	+77	-31	+20	6	3
Total	+921	-897	+650	212	109
S.M. Required ©	368	356	262		

33"CB @ 125#, Cov. Pls. 11½ x ⅜; 33"CB @ 125# ©

CROSS BEAM B9 to Abutment

	Shear	Mom
Dead Load	8.0	36
Live Load	52.4	309
Impact	19.1	113
Total	79.5	458
S.M. Req. ©		183

18"CB @ 90# B12 to Abutment
24"CB @ 105# B9 to B12

MOMENTS & SHEARS (50'-73'-49'6")

West Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+234	-784	+544	136	34
Live Load	+574	-647	+768	118	66
Impact	+130	-131	+194	23	15
Sidewalk Load	+77	-119	+124	22	9
Total	+1055	-1681	+1630	299	124
S.M. Required ©	421	673	652		

36"CB @ 150#, Cov. Pls. 12 x ⅜; 36"CB @ 194# ©

East Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+225	-644	+446	112	28
Live Load	+476	-536	+640	98	55
Impact	+107	-108	+161	19	12
Sidewalk Load	+77	-43	+48	8	3
Total	+835	-1330	+1291	237	98
S.M. Required ©	334	532	516		

36"CB @ 150#, Cov. Pls. 12 x ⅜; 36"CB @ 160# ©

CROSS BEAM Anchorage to B9

	Reaction	Mom
Dead Load	10	.6
Live Load	68	123
Impact	27	45
Total	105	174
S.M. Req. ©		69.5

18"CB @ 45# ©

MOMENTS & SHEARS 89'6" Span

West Girder	Reaction	Shear	Mom
Dead Load	41	36	531
Live Load	63	55	677
Impact	18	16	194
Sidewalk Load	13	11	157
Total	135	118	1529
S.M. Req. ©			765

36"CB @ 230# ©

East Girder	Reaction	Shear	Mom
Dead Load	41	36	531
Live Load	75	65	818
Impact	22	19	235
Sidewalk Load	5	4	55
Total	143	124	1609
S.M. Req. ©			804

36"CB @ 230# ©

MOMENTS & SHEARS (59'-59'-59')

West Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+462	-590	+150	111	40
Live Load	+671	-558	+567	109	66
Impact	+139	-115	+154	22	14
Sidewalk Load	+120	-140	+139	35	9
Total	+1392	-1403	+1010	277	129
S.M. Required ©	696	707	505		

36"CB @ 230#, 36"CB @ 160# ©

East Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+462	-590	+150	111	40
Live Load	+810	-635	+686	132	80
Impact	+168	-139	+185	27	16
Sidewalk Load	+41	-48	+48	9	3
Total	+1481	-1452	+1069	279	139
S.M. Required ©	741	726	535		

36"CB @ 230#, 36"CB @ 160# ©

MOMENTS & SHEARS (67'6"-75'6"-67'6")

West Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+558	-1010	+521	149	45
Live Load	+843	-837	+873	128	71
Impact	+163	-157	+217	23	14
Sidewalk Load	+163	-236	+136	35	12
Total	+1777	-2236	+1803	335	140
S.M. Required ©	939	1052	901		

36"CB @ 230#, Cov. Pls. 16½ x ⅝ ©

East Girder	Ma	Mb	Mc	Rb	Rd
Dead Load	+558	-1010	+521	149	45
Live Load	+1018	-1010	+1052	155	87
Impact	+197	-183	+254	28	17
Sidewalk Load	+53	-70	+69	10	4
Total	+1826	-2273	+1896	342	153
S.M. Required ©	913	1137	948		

36"CB @ 230#, Cov. Pls. 16½ x ⅝ ©

MOMENTS & SHEARS (54'9"-64'3")

West Girder	Ma	Mb	Ra	Rd
Dead Load	+370	-660	122	37
Live Load	+622	-510	108	58
Impact	+174	-109	23	16
Sidewalk Load	+143	-133	25	12
Total	+1309	-1412	278	123
S.M. Required ©	655	706		

36"CB @ 230# ©

East Girder	Ma	Mb	Ra	Rd
Dead Load	+370	-660	122	37
Live Load	+751	-616	130	70
Impact	+210	-132	28	19
Sidewalk Load	+60	-46	[illegible]	4
Total	+1391	-1453	[illegible]	130
S.M. Required ©	691	727		

36"CB @ 230# ©

ALLOWABLE UNIT STRESSES (pounds per sq. in.)

	Medium Carbon Steel	Silicon
Tension, net section	24 000	30 000
Axial Compression	$\frac{24000}{1+\frac{1}{13500}(\frac{l}{r})^2}$	$\frac{30000}{1+\frac{1}{13500}(\frac{l}{r})^2}$
Bending, Compression in extreme fiber	$\frac{24000}{1+\frac{1}{2000}(\frac{l}{b})^2}$	$\frac{30000}{1+\frac{1}{2000}(\frac{l}{b})^2}$
Shear - Girder Webs, gross section	15 000	
Power driven rivets	15 000	
Bearing - Steel parts in Contact	30 000	
Power driven rivets	30 000	

ASSUMED LOADING

LIVE LOAD — 17000# 48000# (14') or Concentrated Load {27000# for Mom / 39000# for Shear} 960# per lin. ft.

Above loading for 9 ft. lane of traffic

SIDEWALK LOAD — For Cross Beams 100# per sq. ft.

For Girders $P = (40 + \frac{3000}{L})(\frac{55-W}{50})$

Where P = Load - pounds per sq. ft.
L = Loaded length in ft.
W = Width of Sidewalk in ft.

IMPACT — $I = \frac{50}{L+125}$ Where I = Impact fraction of Live Load stress; L = Loaded length in ft.

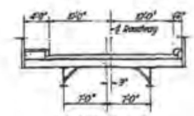
DEAD LOAD

Future Paving	300# per lin. ft.
Concrete Floor, Curb & Sidewalk	2170# "
Conduit	150# "
Railing	100# "

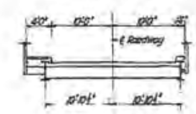
To this is added the estimated weight of steelwork.

WIND LOAD — 30# per sq. ft. on 1½ x Area of Structure + 200# p.l.f. of bridge.

CROSS BEAMS



ANCHORAGE TO B9



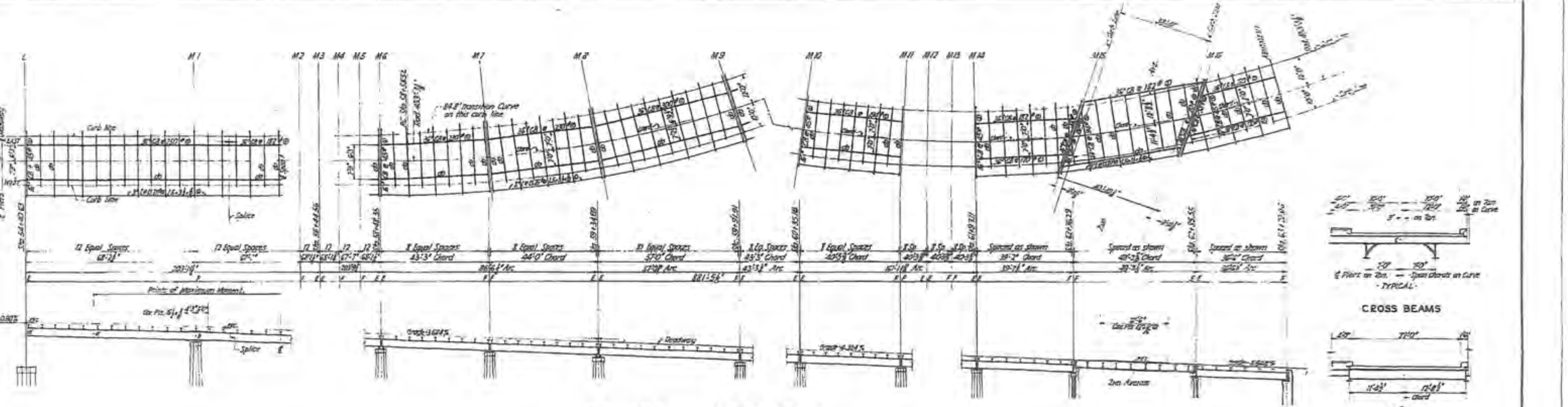
B9 TO ABUTMENT

NOTES:

Material: © indicates Silicon Steel.
© indicates Medium Carbon Steel.
Metalwork shown on this drawing to be included under Item 4C.
Longitudinal Girder Beams to be cambered for Dead Load.
Shears and Reactions given in thousands of pounds.
Moments given in thousands of foot pounds.
Where CB sections are shown, the contractor may substitute, with the engineers approval, sections of equal weight and strength.

Approved:
[signature]
J. M. Masters
M. A. Case
Modjeski, Masters & Case Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
STRESS SHEET
BETTENDORF APPROACH
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 6
MODJESKI MASTERS & CASE, INC. ENGINEERS
JUNE 1934
Revised as built - Jan 1936



MOLINE APPROACH

SUMMARY OF MOMENTS & SHEARS (63'1½"-67'7"-63'1½")

West Girder	Ma	Mb	M℄	Ra	Rb
Dead Load	+640	-820	+100	132	48
Live Load	+762	-703	+652	120	62
Impact	+143	-137	+172	23	13
Sidewalk Load	+138	-175	+182	27	9
Total	+1678	-1830	+1172	302	135
S.M. Required ©	839	915	586		
	36"CB @ 230# Cov. Pls. 16 x ⅝" 36"CB @ 182# ©				

East Girder	Ma	Mb	M℄	Ra	Rb
Dead Load	+446	-810	+190	132	38
Live Load	+520	-554	+795	145	83
Impact	+178	-125	+207	38	16
Sidewalk Load	+44	-61	+53	9	3
Total	+1282	-1690	+1245	324	149
S.M. Required ©	641	945	622		
	36"CB @ 230# Cov. Pls. 16 x ⅝" 36"CB @ 192# ©				

MOMENTS & SHEARS (43'3" Span)

West Girder	Reaction	Mom.
Dead Load	23	434
Live Load	67	676
Impact	20	199
Sidewalk Load	17	130
Total	139	1439
S.M. Required ©		720
		36"CB @ 230# ©

East Girder	Reaction	Mom.
Dead Load	40	406
Live Load	78	770
Impact	23	229
Sidewalk Load	4	47
Total	145	1452
S.M. Required ©		726
		36"CB @ 230# ©

MOMENTS & SHEARS (57'-0" Span)

West Girder	Reaction	Mom.
Dead Load	52	734
Live Load	77	910
Impact	21	250
Sidewalk Load	15	212
Total	163	2106
S.M. Required ©		1053
		36"CB @ 300# ©

East Girder	Reaction	Mom.
Dead Load	50	692
Live Load	89	1075
Impact	25	295
Sidewalk Load	6	76
Total	170	2138
S.M. Required ©		1069
		36"CB @ 300# ©

MOMENTS & SHEARS (40'5⅝" Spans)

West Girder	Reaction	Mom.
Dead Load	36	381
Live Load	66	612
Impact	20	186
Sidewalk Load	11	109
Total	133	1268
S.M. Required ©		634
		36"CB @ 194# ©

East Girder	Reaction	Mom.
Dead Load	35	380
Live Load	77	693
Impact	24	212
Sidewalk Load	4	30
Total	140	1284
S.M. Required ©		642
		36"CB @ 194# ©

MOMENTS & SHEARS (39'2" Span)

West Girder	Reaction	Mom.
Dead Load	33	297
Live Load	66	566
Impact	21	172
Sidewalk Load	10	82
Total	130	1117
S.M. Required ©		559
		36"CB @ 170# ©

East Girder	Reaction	Mom.
Dead Load	37	381
Live Load	77	736
Impact	23	221
Sidewalk Load	4	44
Total	141	1382
S.M. Required ©		552
		36"CB @ 182# ©

MOMENTS & SHEARS (48'3⅞" Span)

West Girder	Shear	Mom.
Dead Load	54	620
Live Load	72	734
Impact	21	224
Sidewalk Load	10	126
Total	157	1704
S.M. Required ©		712
		36"CB @ 182# Cov. Pls. 13⅝ x 3/4" ©

East Girder	Shear	Mom.
Dead Load	43	550
Live Load	65	752
Impact	20	234
Sidewalk Load	4	45
Total	132	1539
S.M. Required ©		615
		36"CB @ 182# Cov. Pls. 12⅝ x 3/4" ©

MOMENTS & SHEARS (36'4" Span)

West Girder	Reaction	Mom.
Dead Load	31	383
Live Load	67	644
Impact	20	194
Sidewalk Load	17	118
Total	135	1339
S.M. Required ©		534
		33"CB @ 120# ©

East Girder	Reaction	Mom.
Dead Load	29	317
Live Load	75	544
Impact	24	171
Sidewalk Load	3	36
Total	131	968
S.M. Required ©		434
		36"CB @ 150# ©

CROSS BEAM

	Reaction	Mom℄
Dead Load	7	6
Live Load	68	123
Impact	27	45
Total	105	173
S.M. Required ©		69
		18"CB @ 55# ©

CROSS BEAM (49'2⅞" Span)

	Shear	Mom℄
Dead Load	9	52
Live Load	37	365
Impact	11	133
Total	57	550
S.M. Required ©		220
		24"CB @ 94# ©

NOTES:

For unit stresses and assumed loadings see Drwg No. 6

Material: Ⓢ indicates Silicon Steel
Ⓜ indicates Medium Carbon Steel

Metalwork shown on this drawing to be included under Item #2

Longitudinal Girder Beams to be cambered for Dead Load

Shears and Reactions given in thousands of pounds.
Moments given in thousands of foot pounds.

Where CB sections are shown, the contractor may substitute, with the engineers approval, sections of equal weight and strength.

Ralph Modjeski
F. M. Masters
M. B. Case
Modjeski, Masters & Case, Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA. & MOLINE, ILLINOIS

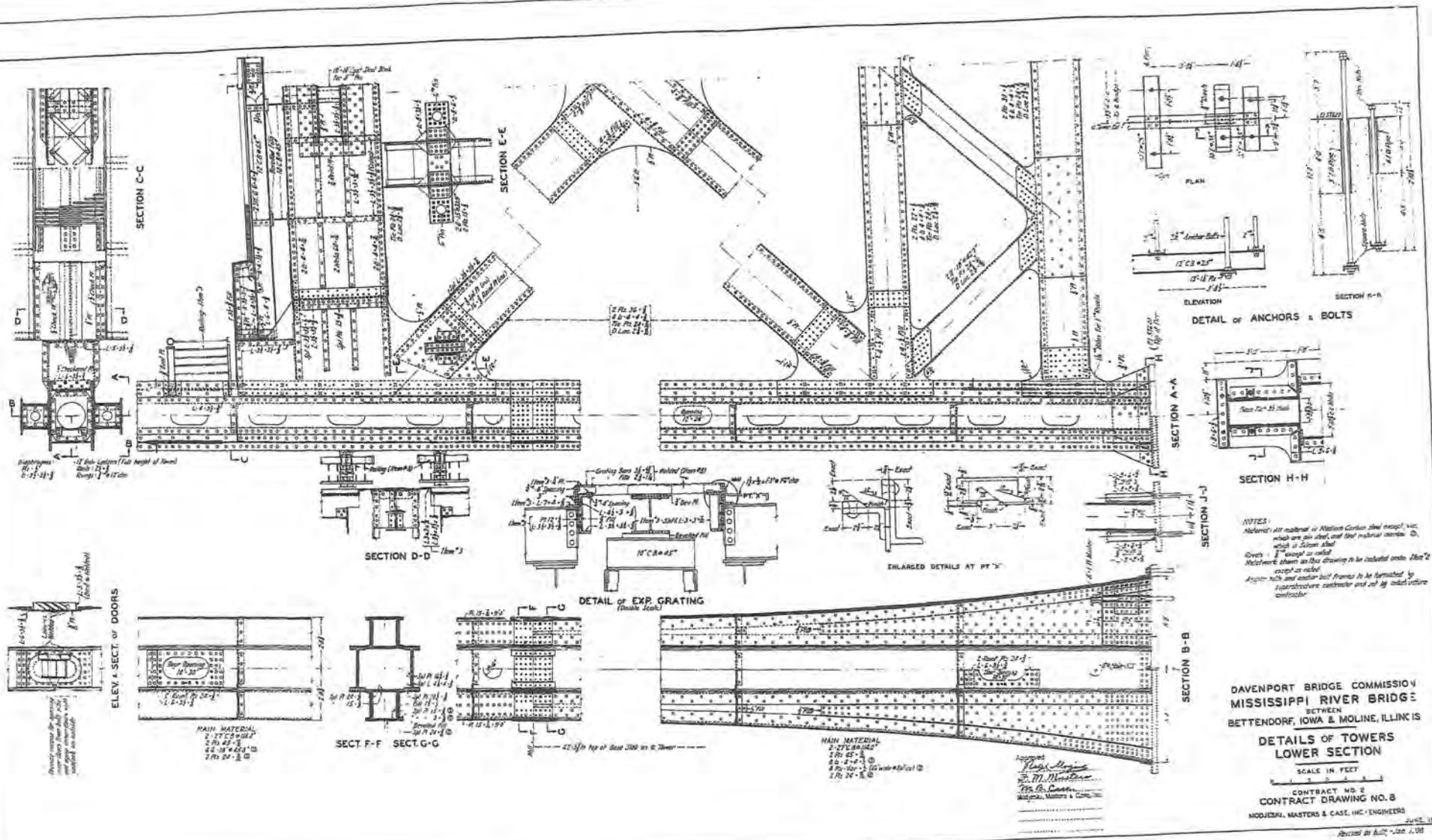
STRESS SHEET
MOLINE APPROACH

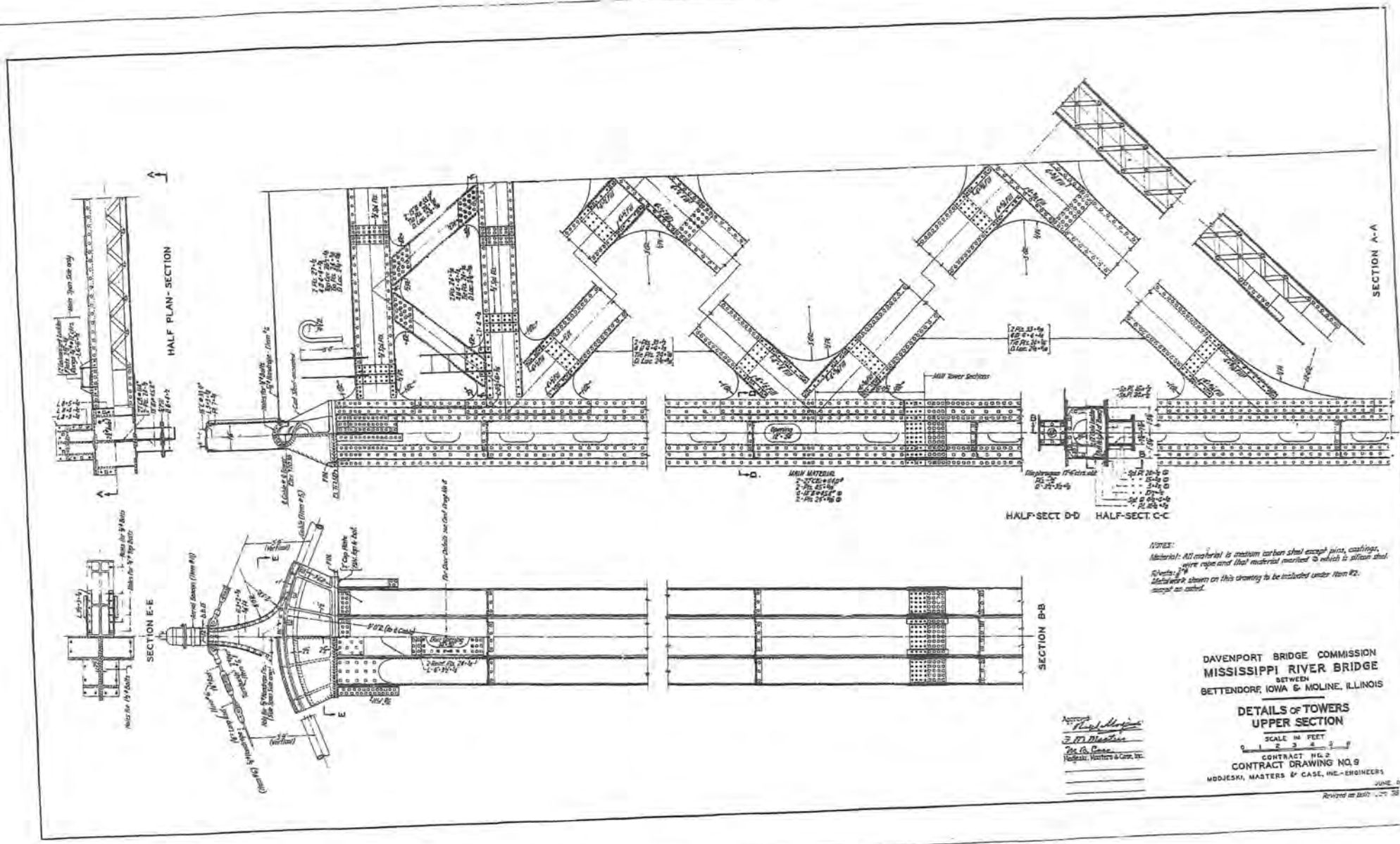
SCALES IN FEET

CONTRACT NO. 2
CONTRACT DRAWING NO. 7
MODJESKI, MASTERS & CASE, INC. ENGINEERS

JUNE 1934

Revised as built, Jan. 1936


SECTION C-C
SECTION E-E
SECTION D-D
SECTION A-A
SECTION B-B
SECTION H-H
SECTION J-J
PLAN
ELEVATION
SECTION K-K
DETAIL OF ANCHORS & BOLTS
DETAIL OF EXP. GRATING
ENLARGED DETAILS AT PT "X"
ELEV. & SECT. OF DOORS
SECT. F-F
SECT. G-G
MAIN MATERIAL
NOTES:
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
DETAILS OF TOWERS
LOWER SECTION
SCALE IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 8
MODJESKI, MASTERS & CASE, INC. - ENGINEERS
JUNE, 1934



NOTES:
Material: All material is medium carbon steel except pins, castings, wire rope and that material marked S which is silicon steel.
Rivets: 7/8"
Metalwork shown on this drawing to be included under Item #2, except as noted.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

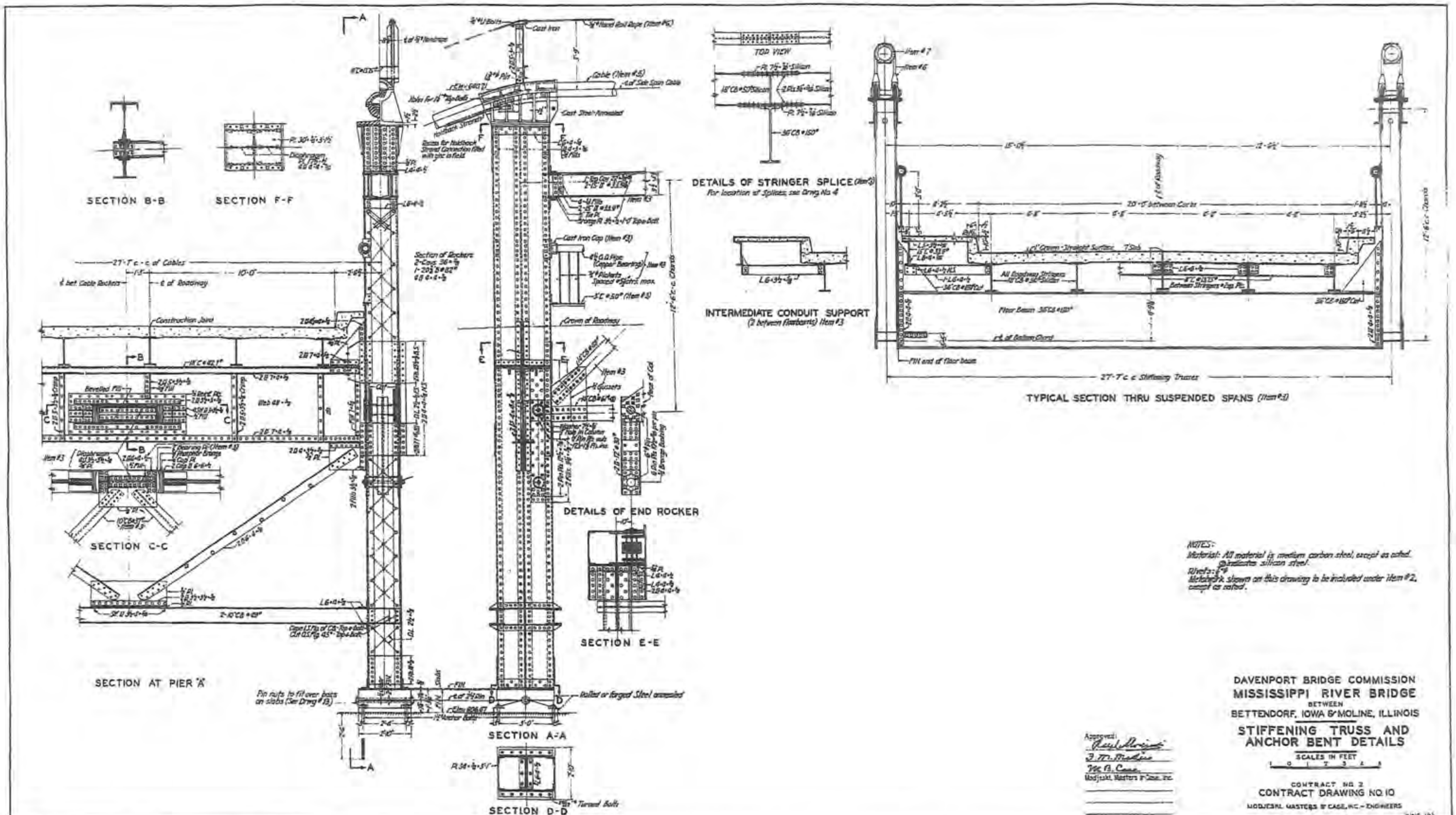
DETAILS OF TOWERS
UPPER SECTION

SCALE IN FEET
0 1 2 3 4 5 6

CONTRACT NO. 2
CONTRACT DRAWING NO. 9
MODJESKI, MASTERS & CASE, INC.-ENGINEERS
JUNE 1934

Approved
Modjeski, Masters & Case, Inc.

Revised as built



NOTES:
Material: All material is medium carbon steel, except as noted. ⓢ indicates silicon steel.
Rivets: ⅞"
Metalwork shown on this drawing is to be included under Item #2, except as noted.

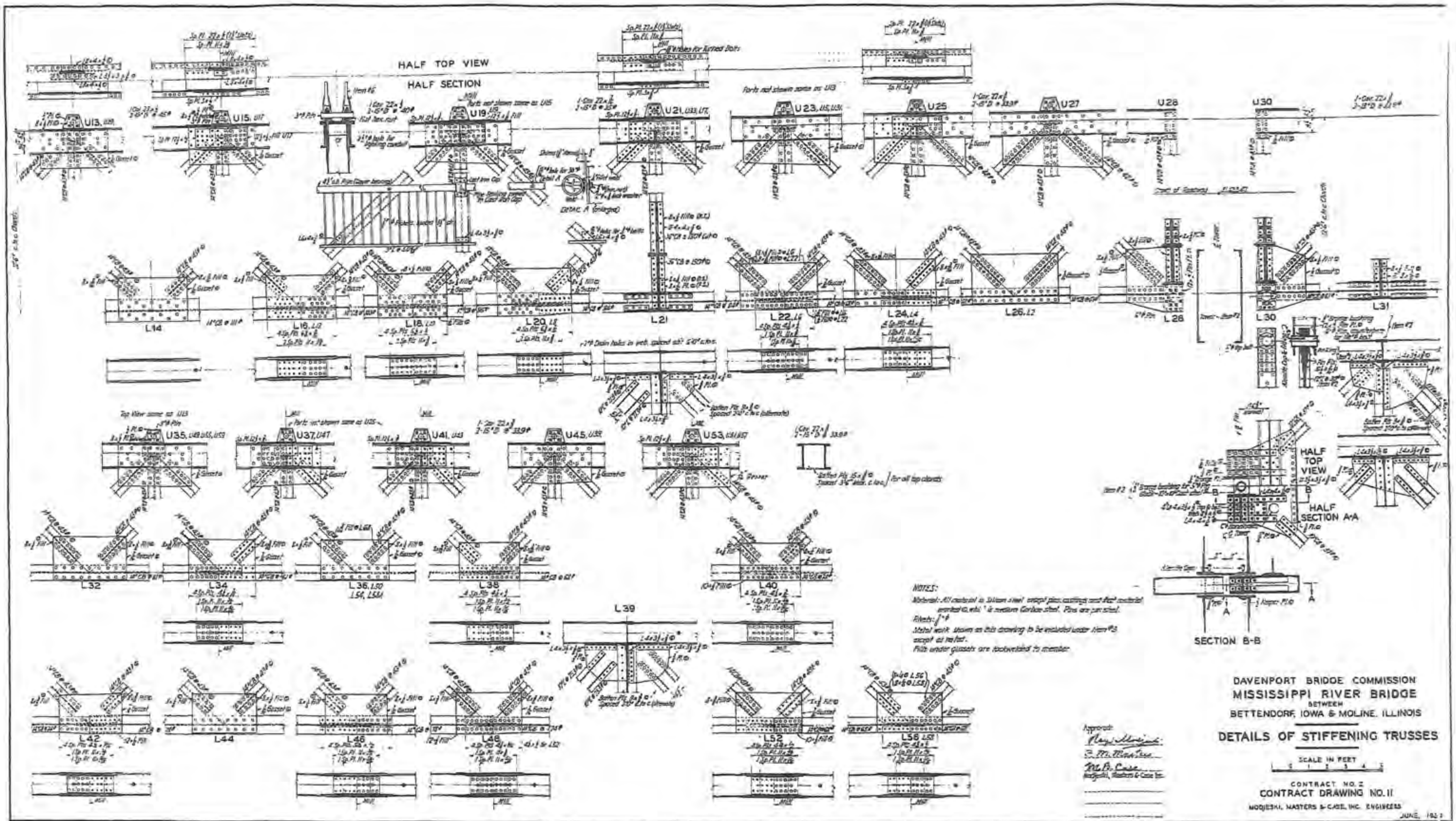
Approved:
Ralph Modjeski
F. M. Masters
C. H. Case
Modjeski, Masters & Case, Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

STIFFENING TRUSS AND
ANCHOR BENT DETAILS

SCALES IN FEET

CONTRACT NO. 2
CONTRACT DRAWING NO. 10
MODJESKI, MASTERS & CASE, INC. – ENGINEERS
JUNE, 193_
Revised as built – Jan. 1936



NOTES:

Material: All material is Silicon steel except pins, castings and that material marked thus * is medium Carbon steel. Pins are pin steel.

Rivets: 7/8"

Metal work shown on this drawing to be included under Item #3 except as noted.

Fills under gussets are tackwelded to member.

Approved:

Modjeski, Masters & Case Inc.

DAVENPORT BRIDGE COMMISSION

MISSISSIPPI RIVER BRIDGE

BETWEEN

BETTENDORF, IOWA & MOLINE, ILLINOIS

DETAILS OF STIFFENING TRUSSES

SCALE IN FEET

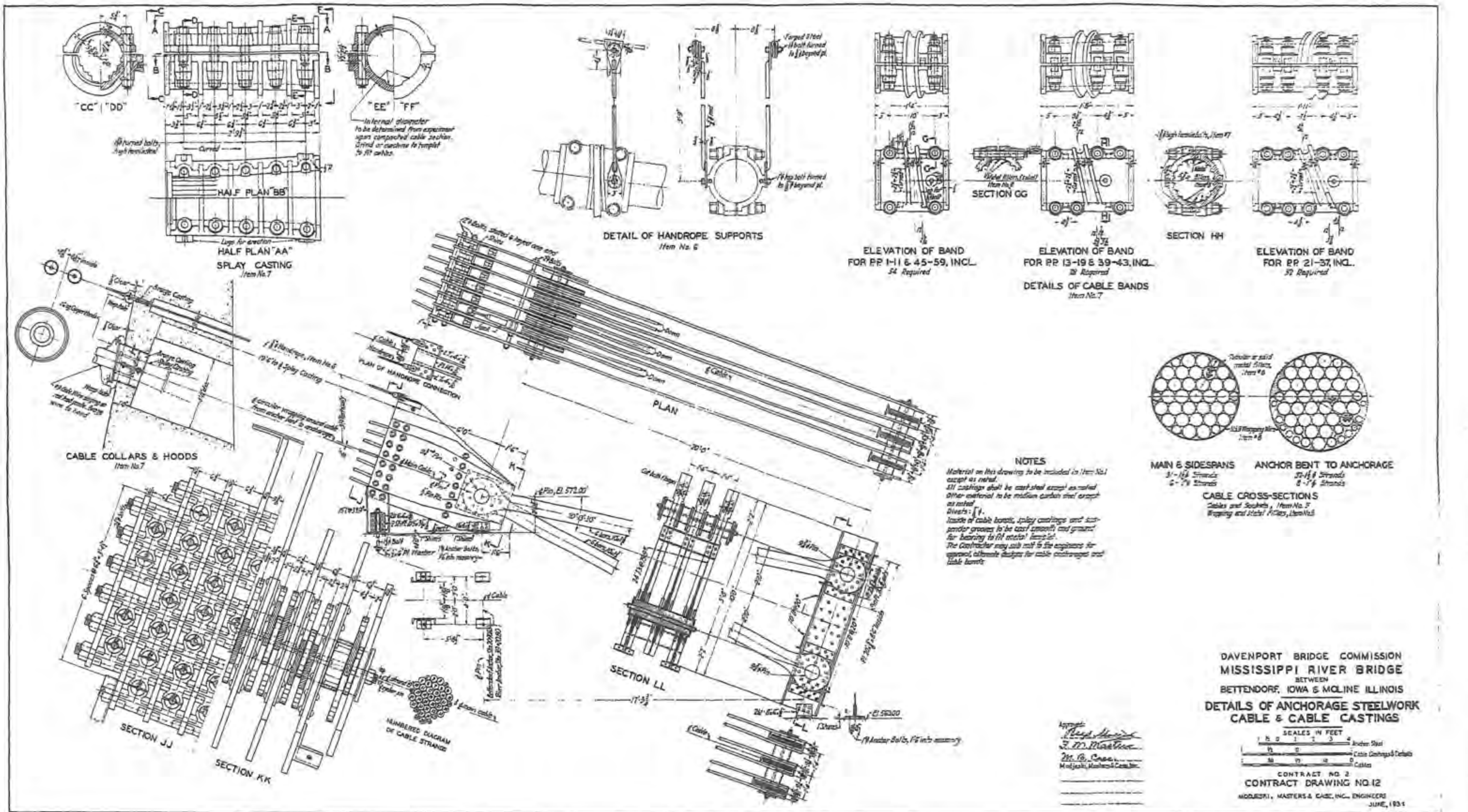
CONTRACT NO. 2

CONTRACT DRAWING NO. 11

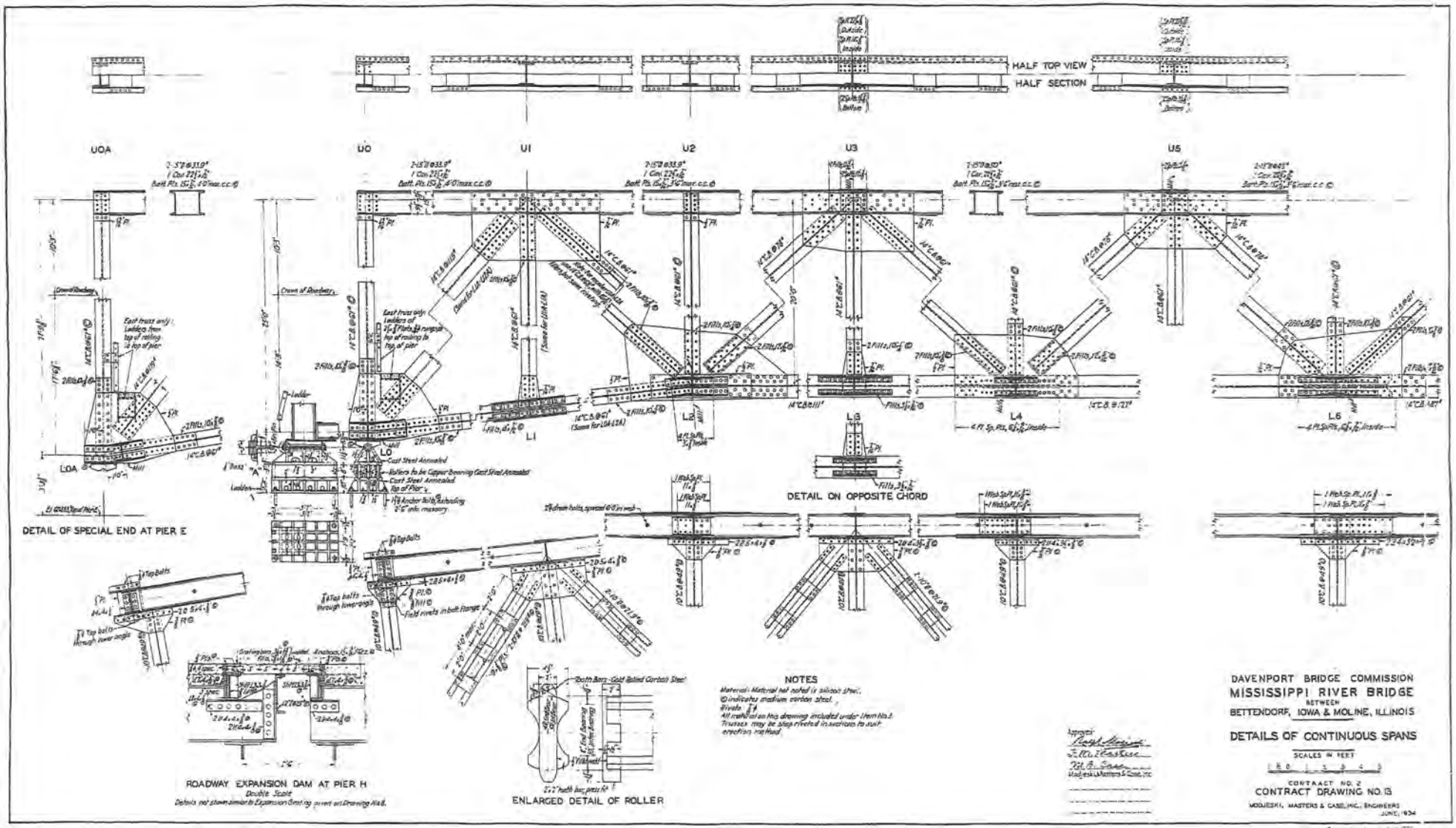
MODJESKI, MASTERS & CASE, INC. ENGINEERS

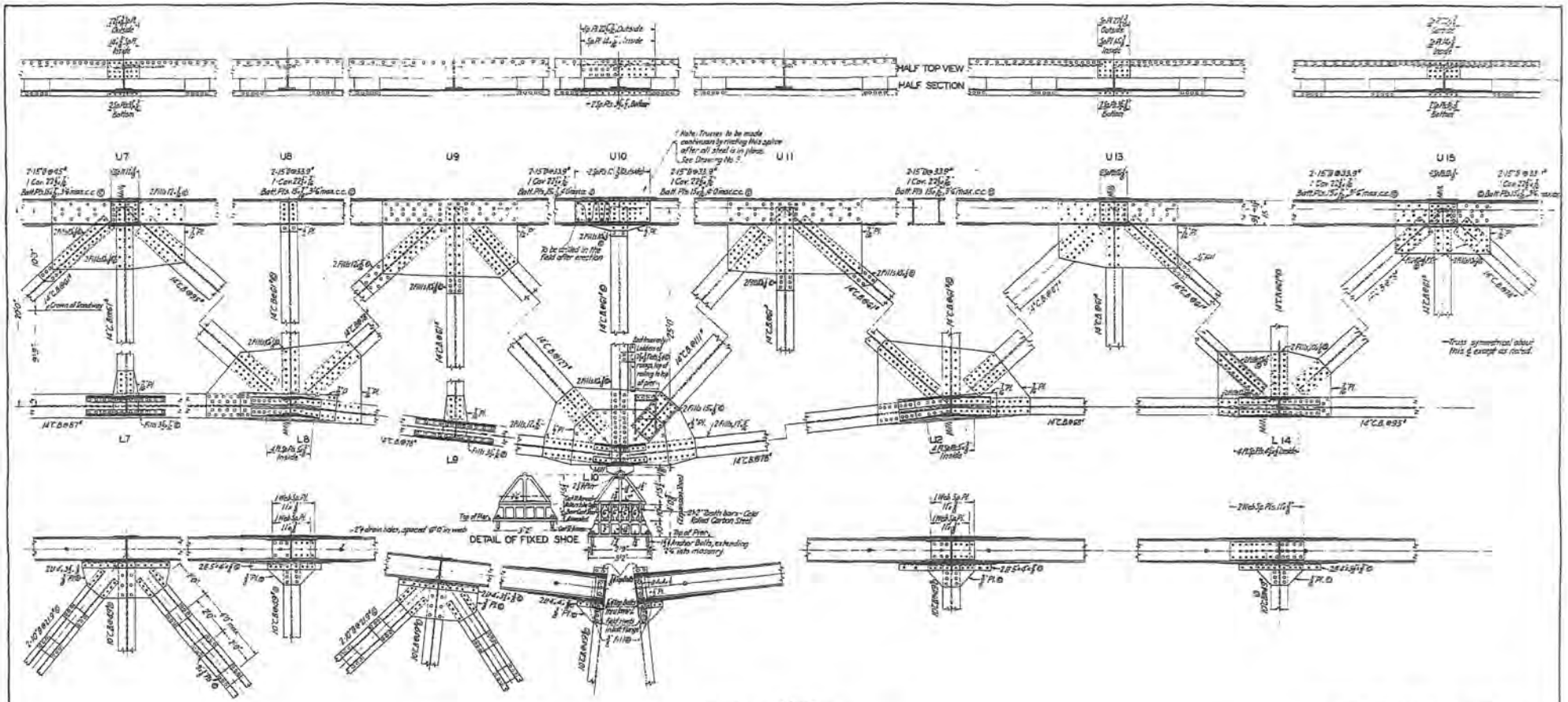
JUNE, 193[illegible]

Revised as built [illegible]



"CC" | "DD"
"EE" "FF"
HALF PLAN "BB"
HALF PLAN "AA"
SPLAY CASTING
Item No. 7
DETAIL OF HANDROPE SUPPORTS
Item No. 6
ELEVATION OF BAND
FOR PP 1-11 & 45-59, INCL.
54 Required
SECTION GG
ELEVATION OF BAND
FOR PP 13-19 & 39-43, INCL.
DETAILS OF CABLE BANDS
Item No. 7
SECTION HH
ELEVATION OF BAND
FOR PP 21-37, INCL.
32 Required
PLAN OF HANDROPE CONNECTION
PLAN
CABLE COLLARS & HOODS
Item No. 7
NOTES
MAIN & SIDESPANS
ANCHOR BENT TO ANCHORAGE
CABLE CROSS-SECTIONS
SECTION LL
SECTION JJ
SECTION KK
NUMBERED DIAGRAM OF CABLE STRANDS
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE ILLINOIS
DETAILS OF ANCHORAGE STEELWORK
CABLE & CABLE CASTINGS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 12
MODJESKI, MASTERS & CASE, INC., ENGINEERS
JUNE, 1934


HALF TOP VIEW
HALF SECTION
U0A
U0
U1
U2
U3
U5
L0A
L0
L1
L2
L3
L4
L6
DETAIL OF SPECIAL END AT PIER E
DETAIL ON OPPOSITE CHORD
ROADWAY EXPANSION DAM AT PIER H
Double Scale
Details not shown similar to Expansion Joint as given on Drawing No 8.
ENLARGED DETAIL OF ROLLER
NOTES
Material: Material not noted is silicon steel.
© indicates medium carbon steel.
Rivets
All rivets shall on this drawing included under Item No 3.
Trusses may be shop riveted in sections to suit erection method.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
DETAILS OF CONTINUOUS SPANS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 13
MODJESKI, MASTERS & CASE, INC., ENGINEERS
JUNE, 1934



NOTES

Material: Material not noted is silicon steel.
© indicates medium carbon steel.
Rivets: ⅞ ø
All material on this drawing included under Item No. 3
Trusses may be shop riveted in sections to suit erection method.

Approved
Ralph Modjeski
D. M. Masters
M. G. Case
Modjeski, Masters & Case Inc.

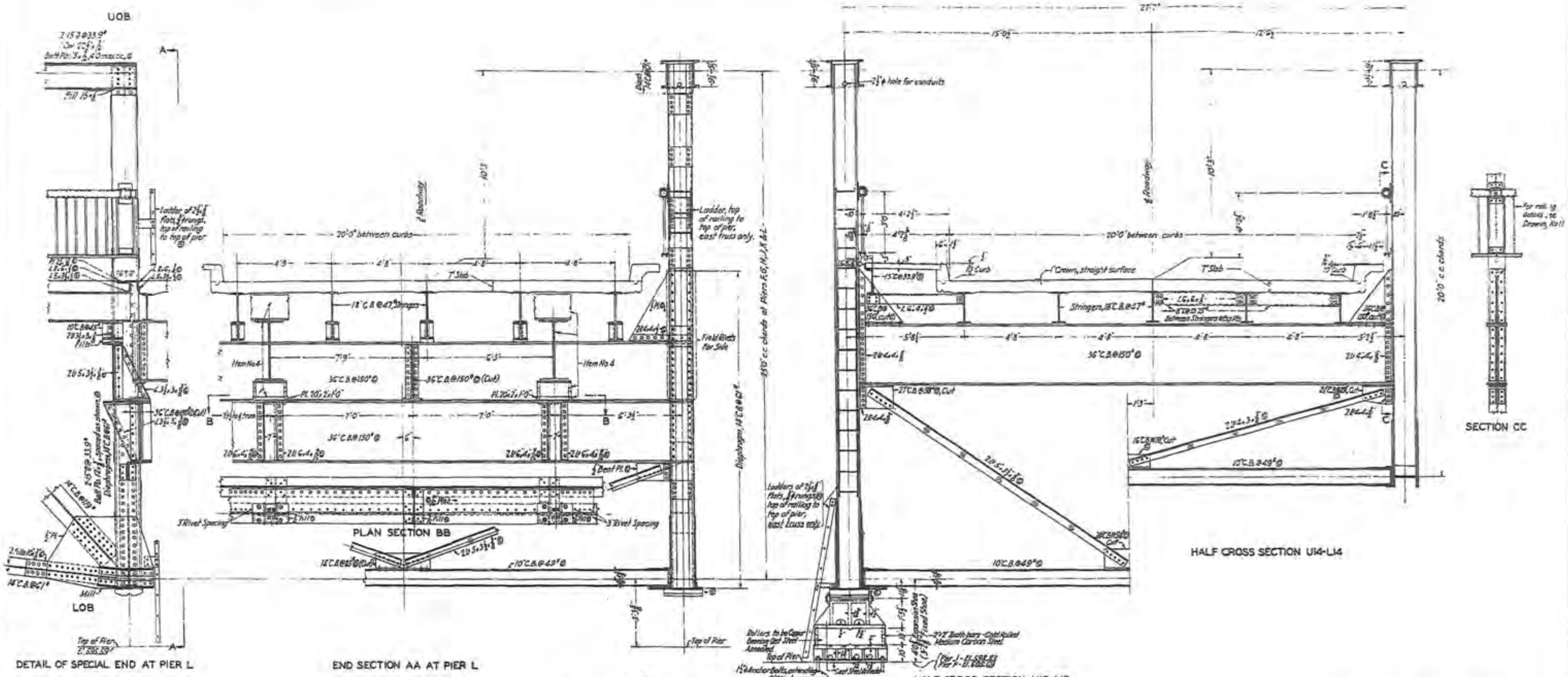
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

DETAILS OF CONTINUOUS SPANS

SCALES IN FEET
0 1 2 3 4 5

CONTRACT NO. 2
CONTRACT DRAWING NO. 14
MODJESKI, MASTERS & CASE, INC., ENGINEERS
JUNE, 1934

Revised as Built - Jan 1936



NOTES

Material: Material not noted is silicon steel.
@ indicates medium carbon steel.
Rivets: ⅞" φ.
All material on this drawing included under Item No. 3 except as noted.

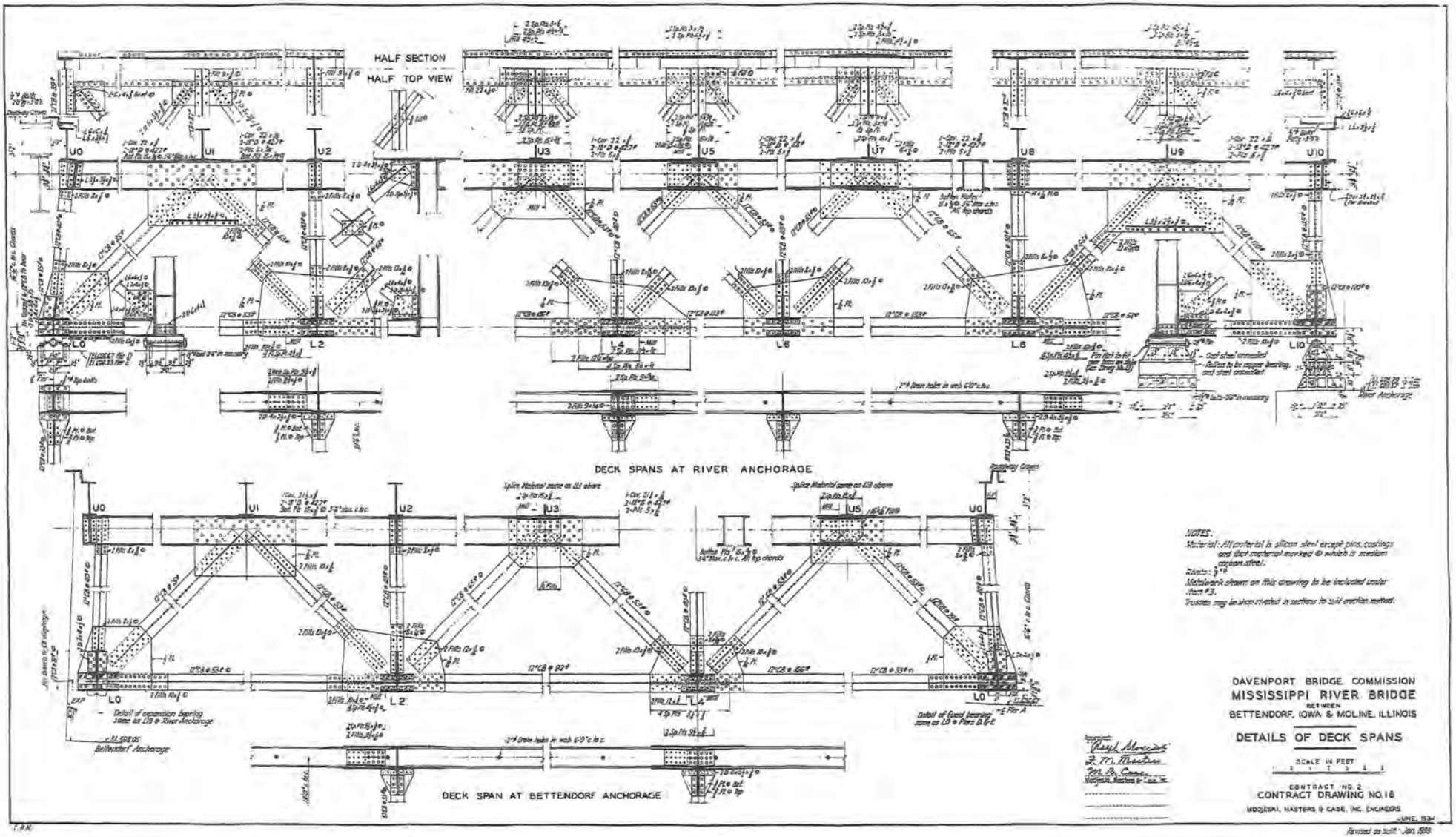
Approved:
Ralph Modjeski
F. M. Masters
M. B. Case
Modjeski, Masters & Case, Inc.

DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

DETAILS OF CONTINUOUS SPANS

SCALES IN FEET
1 ½ 0 1 2 3 4 5

CONTRACT NO. 2
CONTRACT DRAWING NO. 15
MODJESKI, MASTERS & CASE, INC., ENGINEERS
JUNE, 1934



NOTES:
Material: All material is silicon steel except pins, castings and that material marked © which is medium carbon steel.
Rivets: 7/8"
Metalwork shown on this drawing to be included under Item #3.
Trusses may be shop riveted in sections to suit erection method.

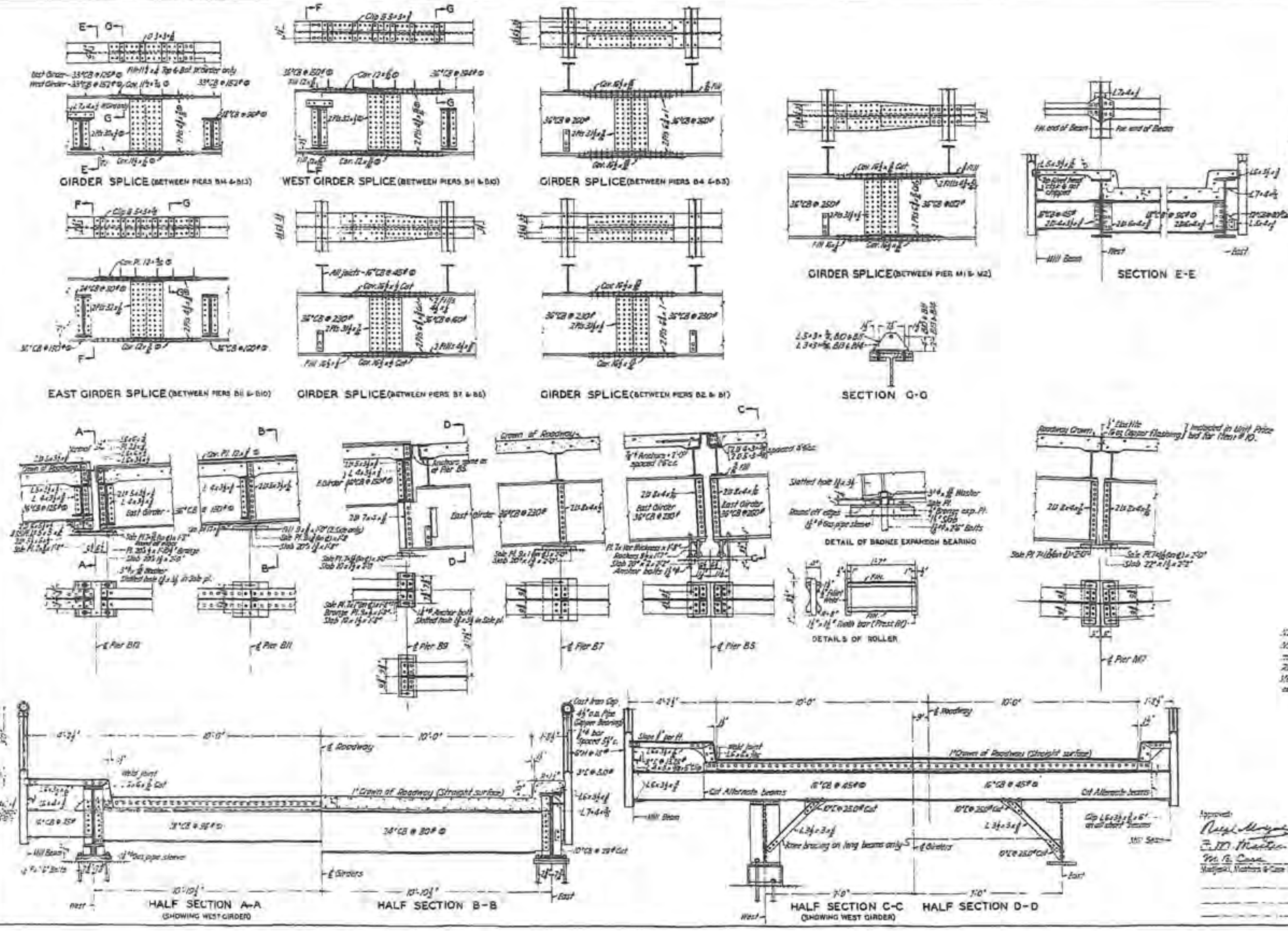
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

DETAILS OF DECK SPANS

SCALE IN FEET
0 1 2 3 4 5

CONTRACT NO. 2
CONTRACT DRAWING NO. 18
MODJESKI, MASTERS & CASE, INC. ENGINEERS
JUNE, 1934

Revised as built - Jan. 1935


GIRDER SPLICE (BETWEEN PIERS B14 & B13)
WEST GIRDER SPLICE (BETWEEN PIERS B11 & B10)
GIRDER SPLICE (BETWEEN PIERS B4 & B3)
GIRDER SPLICE (BETWEEN PIER M1 & M2)
SECTION E-E
SECTION F-F
EAST GIRDER SPLICE (BETWEEN PIERS B11 & B10)
GIRDER SPLICE (BETWEEN PIERS B7 & B6)
GIRDER SPLICE (BETWEEN PIERS B2 & B1)
SECTION G-G
DETAIL OF BRONZE EXPANSION BEARING
DETAILS OF ROLLER
HALF SECTION A-A
(SHOWING WEST GIRDER)
HALF SECTION B-B
HALF SECTION C-C
(SHOWING WEST GIRDER)
HALF SECTION D-D

NOTES:
Material: All material is medium carbon steel except that marked ⊙ which is silicon steel.
Rivets: 7/8"φ
Metalwork shown on this drawing to be included under Item A4, except as noted.

Approved:
Modjeski, Masters & Case Inc.

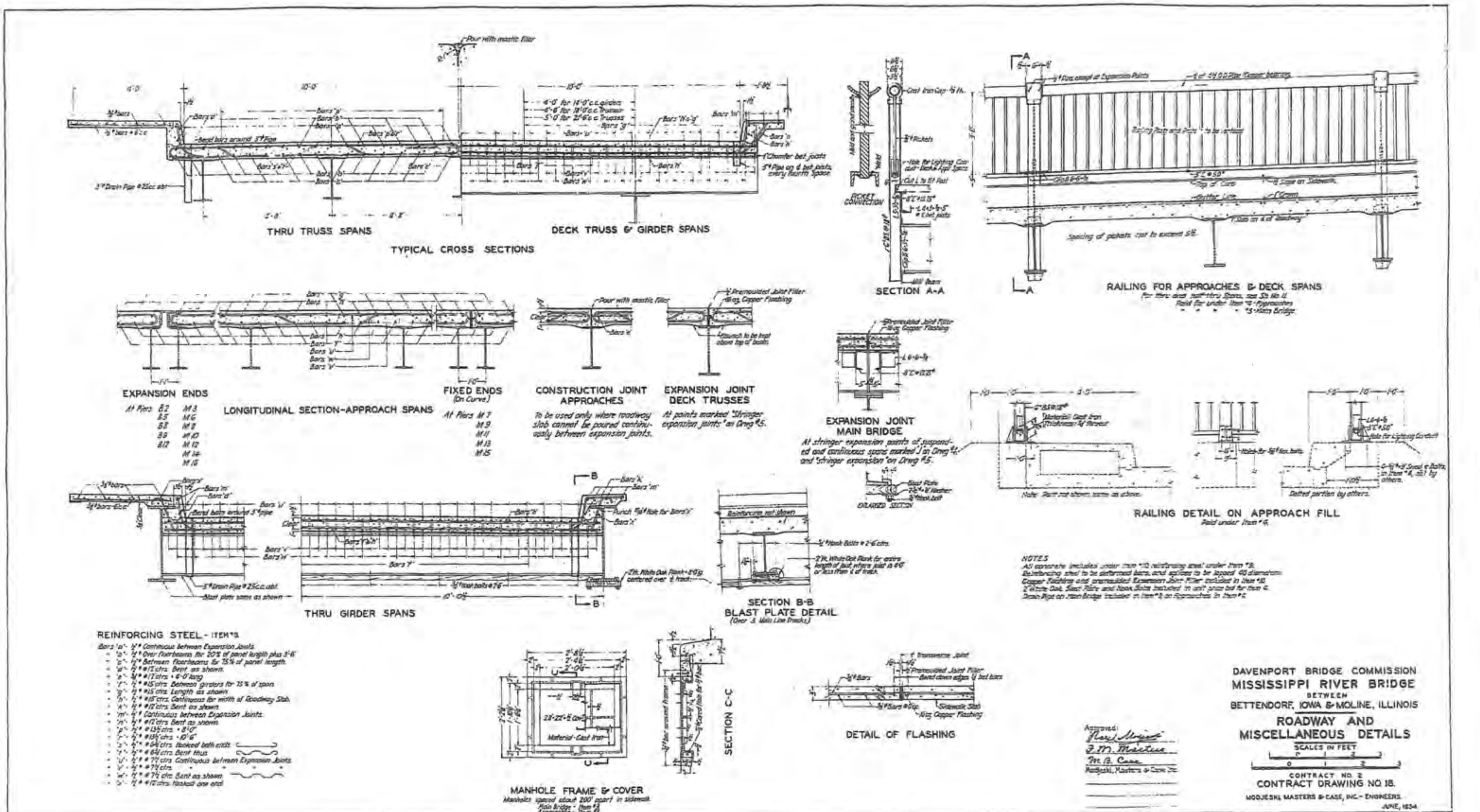
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

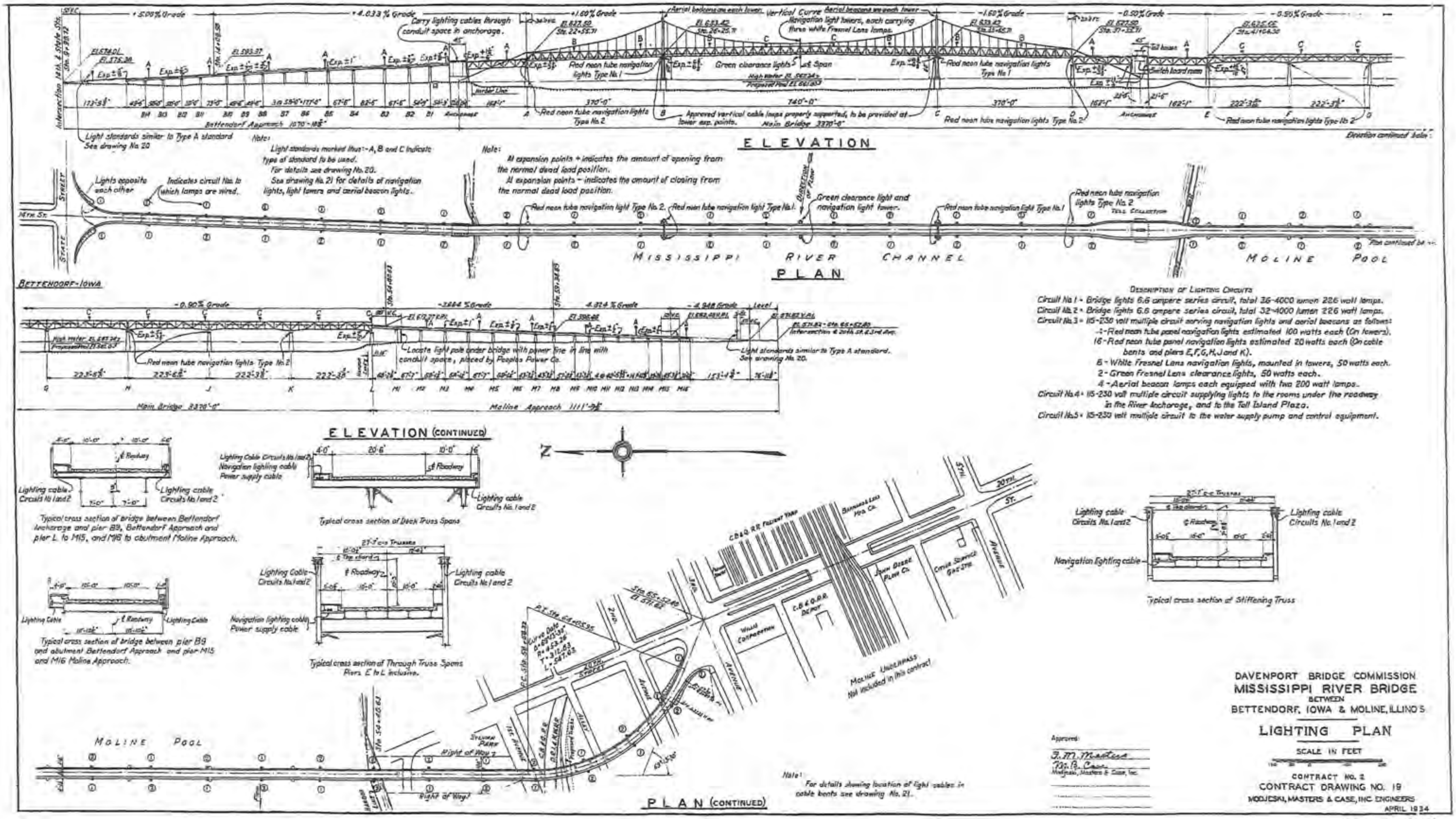
DETAILS OF APPROACH SPANS

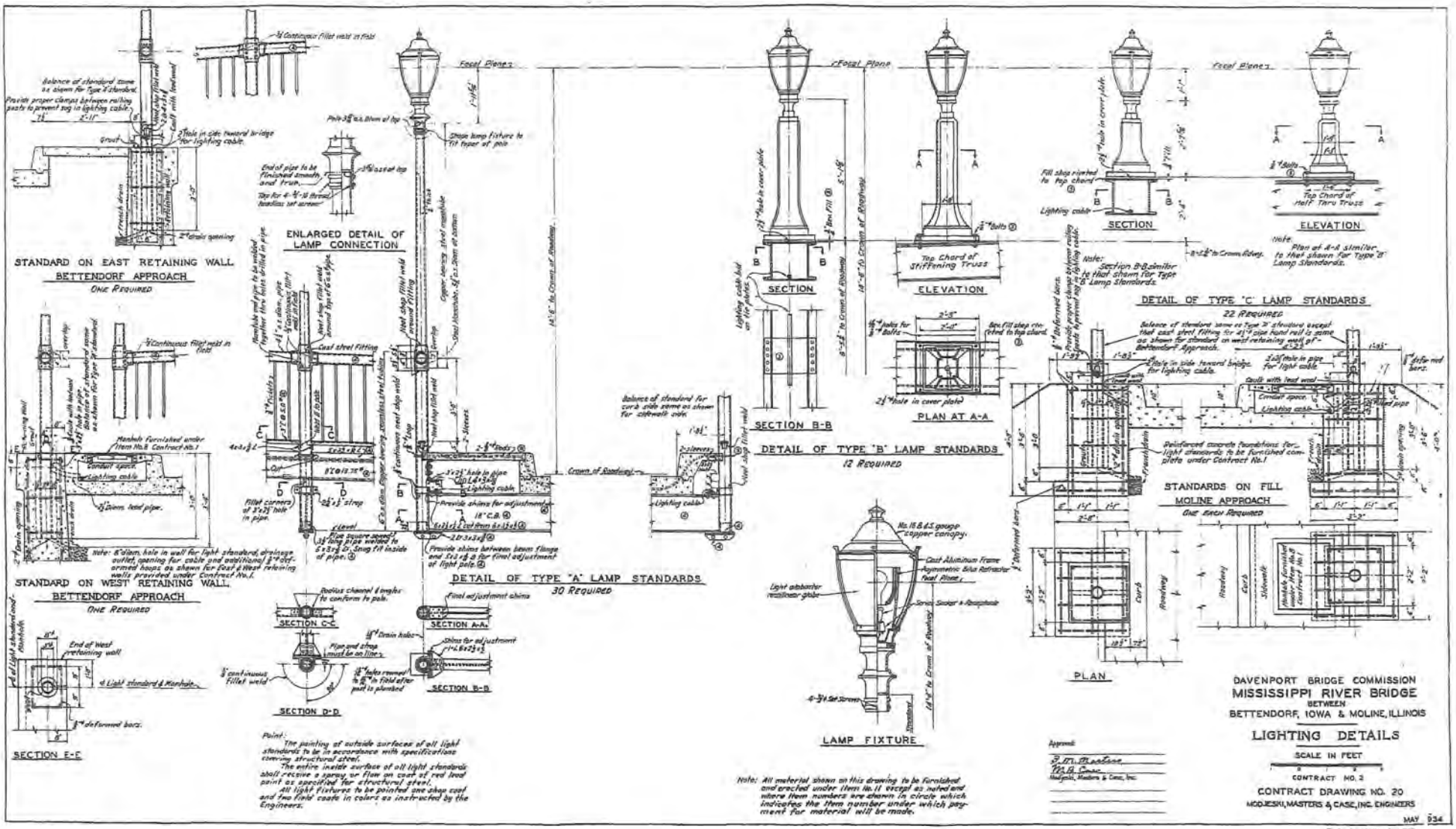
SCALE IN FEET

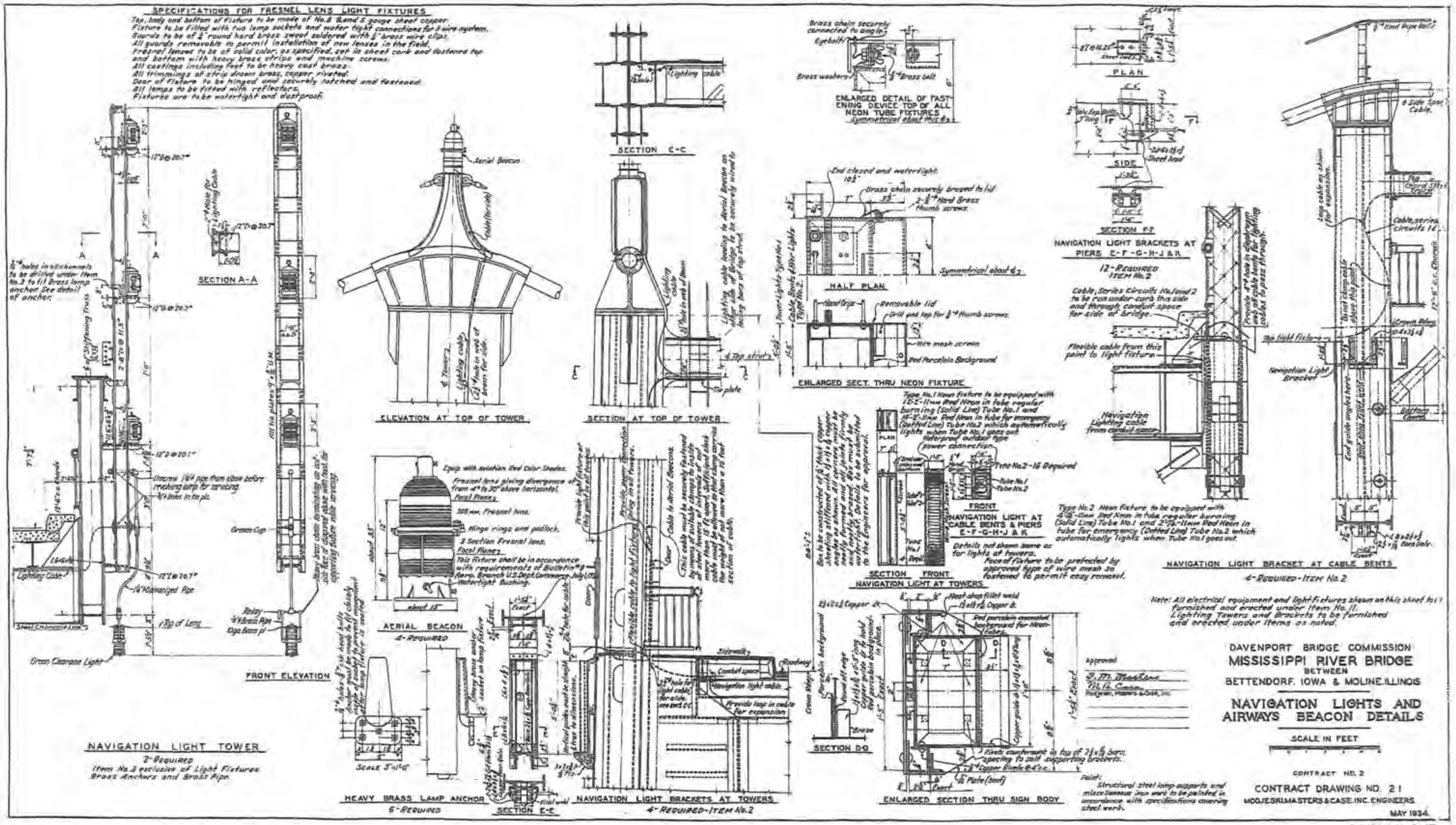
CONTRACT NO. 2
CONTRACT DRAWING NO. 17
MODJESKI, MASTERS & CASE INC., ENGINEERS
JUNE, 1934

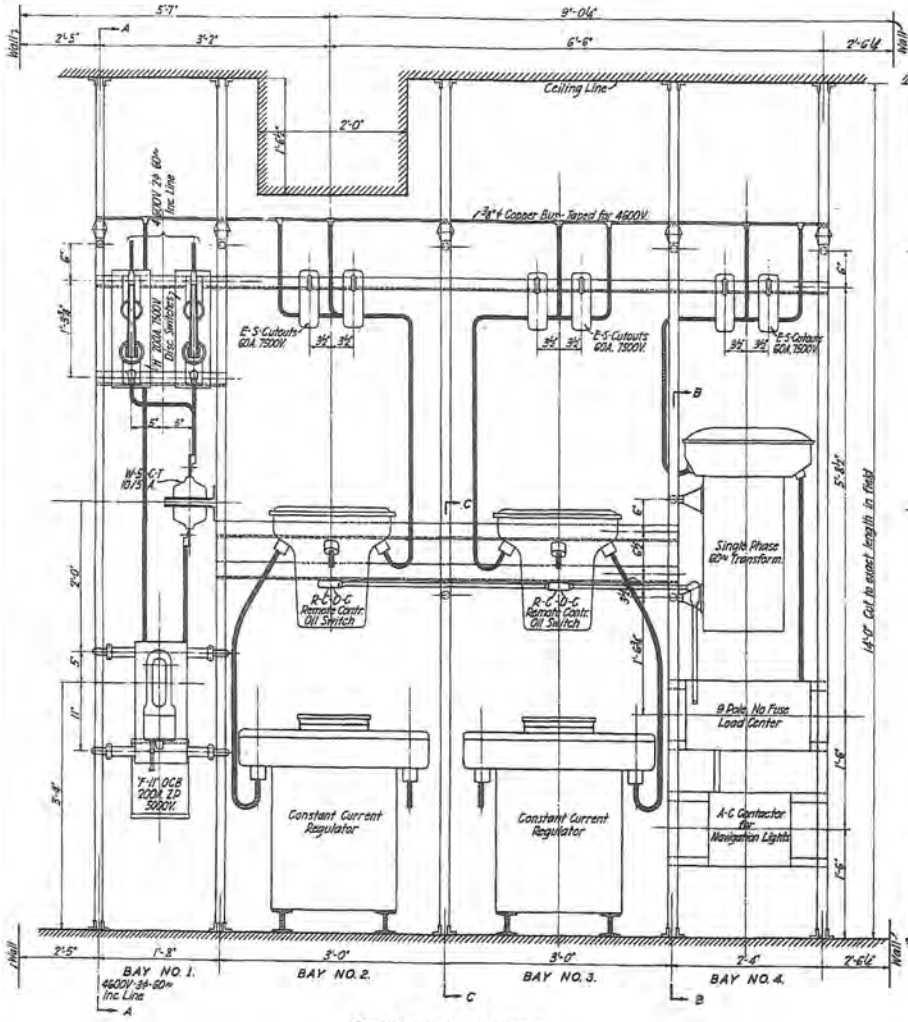
Revised as built, Jan. 1935

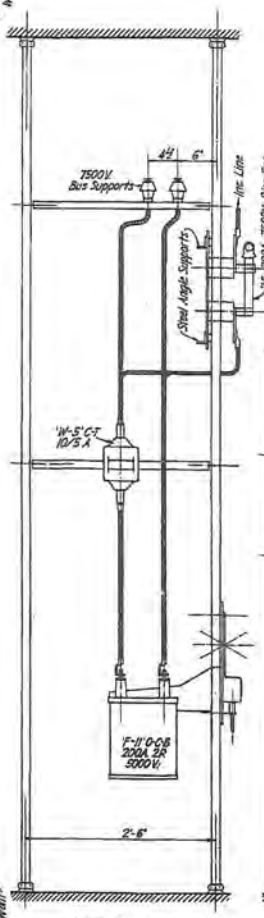

THRU TRUSS SPANS
DECK TRUSS & GIRDER SPANS
TYPICAL CROSS SECTIONS
SECTION A-A
RAILING FOR APPROACHES & DECK SPANS
EXPANSION ENDS
LONGITUDINAL SECTION-APPROACH SPANS
FIXED ENDS (On Curve)
CONSTRUCTION JOINT APPROACHES
To be used only where roadway slab cannot be poured continuously between expansion joints.
EXPANSION JOINT DECK TRUSSES
EXPANSION JOINT MAIN BRIDGE
RAILING DETAIL ON APPROACH FILL
Paid under Item #6.
NOTES
THRU GIRDER SPANS
SECTION B-B
BLAST PLATE DETAIL
REINFORCING STEEL - ITEM #9
MANHOLE FRAME & COVER
SECTION C-C
DETAIL OF FLASHING
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
ROADWAY AND
MISCELLANEOUS DETAILS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 18.
MODJESKI, MASTERS & CASE, INC. - ENGINEERS.
JUNE, 1934
Approved:
Modjeski, Masters & Case Inc.

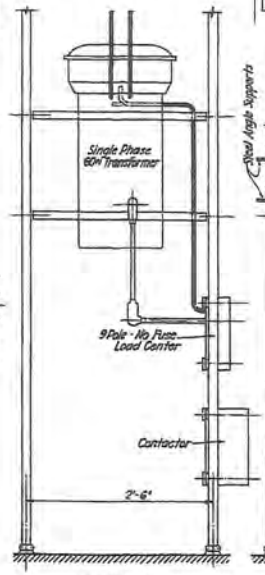

ELEVATION
PLAN
ELEVATION (CONTINUED)
PLAN (CONTINUED)
MISSISSIPPI RIVER CHANNEL
MOLINE POOL
BETTENDORF-IOWA
Note:
Light standards marked thus: - A, B and C indicate type of standard to be used.
For details see drawing No. 20.
See drawing No. 21 for details of navigation lights, light towers and aerial beacon lights.
Note:
At expansion points + indicates the amount of opening from the normal dead load position.
At expansion points − indicates the amount of closing from the normal dead load position.
Light standards similar to Type A standard
See drawing No. 20
Lights opposite each other
Indicates circuit No. to which lamps are wired.
Red neon tube navigation lights Type No. 1
Red neon tube navigation lights Type No. 2
Green clearance lights
Approved vertical cable loops properly supported, to be provided at lower exp. points.
Main Bridge 3370'-0"
Bettendorf Approach 1070'-10⅝"
Moline Approach 1111'-9⅝"
Carry lighting cables through conduit space in anchorage.
Aerial beacons on each tower
Navigation light towers, each carrying three white Fresnel Lens lamps.
Locate light pole under bridge with power line in line with conduit space, placed by Peoples Power Co.
Elevation continued below
Plan continued below
DESCRIPTION OF LIGHTING CIRCUITS
Circuit No. 1 - Bridge lights 6.6 ampere series circuit, total 36-4000 lumen 226 watt lamps.
Circuit No. 2 - Bridge lights 6.6 ampere series circuit, total 32-4000 lumen 226 watt lamps.
Circuit No. 3 - 115-230 volt multiple circuit serving navigation lights and aerial beacons as follows:
4 - Red neon tube panel navigation lights estimated 100 watts each (On towers).
16 - Red neon tube panel navigation lights estimated 20 watts each (On cable bents and piers E, F, G, H, J and K).
6 - White Fresnel Lens navigation lights, mounted in towers, 50 watts each.
2 - Green Fresnel Lens clearance lights, 50 watts each.
4 - Aerial beacon lamps each equipped with two 200 watt lamps.
Circuit No. 4 - 115-230 volt multiple circuit supplying lights to the rooms under the roadway in the River Anchorage, and to the Toll Island Plaza.
Circuit No. 5 - 115-230 volt multiple circuit to the water supply pump and control equipment.
Typical cross section of bridge between Bettendorf Anchorage and pier B9, Bettendorf Approach and pier L to M15, and M16 to abutment Moline Approach.
Typical cross section of Deck Truss Spans
Typical cross section of bridge between pier B9 and abutment Bettendorf Approach and pier M15 and M16 Moline Approach.
Typical cross section of Through Truss Spans Piers E to L inclusive.
Typical cross section of Stiffening Truss
Lighting cable Circuits No. 1 and 2
Navigation lighting cable
Power supply cable
Moline Underpass Not included in this contract
C.B.&Q. R.R. Freight Yard
C.B.&Q. R.R. Depot
John Deere Plow Co.
Note: For details showing location of light cables in cable bents see drawing No. 21.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
LIGHTING PLAN
SCALE IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 19
MODJESKI, MASTERS & CASE, INC. ENGINEERS
APRIL 1934
Approved:
Modjeski, Masters & Case, Inc.

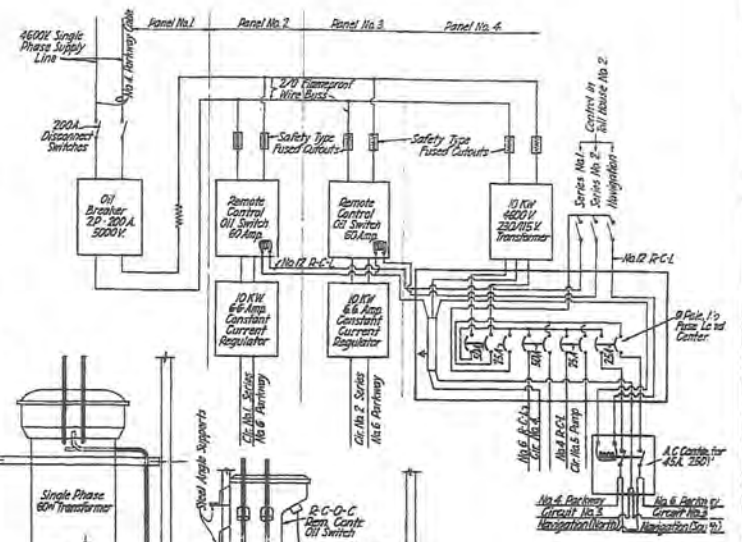

STANDARD ON EAST RETAINING WALL
BETTENDORF APPROACH
ONE REQUIRED
STANDARD ON WEST RETAINING WALL
BETTENDORF APPROACH
ONE REQUIRED
SECTION E-E
ENLARGED DETAIL OF LAMP CONNECTION
SECTION C-C
SECTION D-D
SECTION A-A
SECTION B-B
DETAIL OF TYPE "A" LAMP STANDARDS
30 REQUIRED
SECTION
SECTION B-B
ELEVATION
PLAN AT A-A
DETAIL OF TYPE "B" LAMP STANDARDS
12 REQUIRED
LAMP FIXTURE
SECTION
ELEVATION
DETAIL OF TYPE "C" LAMP STANDARDS
22 REQUIRED
PLAN
STANDARDS ON FILL
MOLINE APPROACH
ONE EACH REQUIRED
Focal Plane
Crown of Roadway
Point:
The painting of outside surfaces of all light standards to be in accordance with specifications covering structural steel.
The entire inside surface of all light standards shall receive a spray or flow on coat of red lead paint as specified for structural steel.
All light fixtures to be painted one shop coat and two field coats in colors as instructed by the Engineers.
Note: All material shown on this drawing to be furnished and erected under Item No. 11 except as noted and where item numbers are shown in circle which indicates the item number under which payment for material will be made.
Approved:
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
LIGHTING DETAILS
SCALE IN FEET
0 1 2 3
CONTRACT NO. 2
CONTRACT DRAWING NO. 20
MODJESKI, MASTERS & CASE, INC. ENGINEERS
MAY 1934
Revised as built - Jan 1935

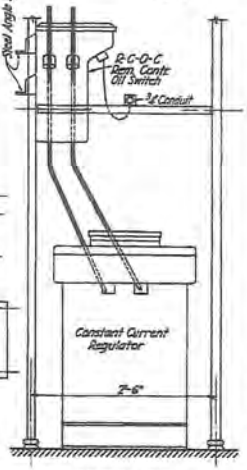

SPECIFICATIONS FOR FRESNEL LENS LIGHT FIXTURES
Top, body and bottom of Fixture to be made of No.8 B.and S. gauge sheet copper.
Fixture to be fitted with two lamp sockets and water tight connections for 3 wire system.
Guards to be of ¼" round hard brass sweat soldered with ⅛" brass wire clips.
All guards removable to permit installation of new lenses in the field.
Fresnel lenses to be of solid color, as specified, set in sheet cork and fastened top and bottom with heavy brass strips and machine screws.
All castings including feet to be heavy cast brass.
All trimmings of strip drawn brass, copper riveted.
Door of Fixture to be hinged and securely latched and fastened.
All lamps to be fitted with reflectors.
Fixtures are to be watertight and dustproof.
SECTION A-A
FRONT ELEVATION
NAVIGATION LIGHT TOWER
2-REQUIRED
ELEVATION AT TOP OF TOWER
SECTION C-C
SECTION AT TOP OF TOWER
AERIAL BEACON
4-REQUIRED
HEAVY BRASS LAMP ANCHOR
6-REQUIRED
SECTION E-E
NAVIGATION LIGHT BRACKETS AT TOWERS
4-REQUIRED-ITEM No.2
ENLARGED DETAIL OF FASTENING DEVICE TOP OF ALL NEON TUBE FIXTURES
HALF PLAN
ENLARGED SECT. THRU NEON FIXTURE
SECTION FRONT
NAVIGATION LIGHT AT TOWERS
NAVIGATION LIGHT AT CABLE BENTS & PIERS E-F-G-H-J & K
SECTION D-D
ENLARGED SECTION THRU SIGN BODY
PLAN
SIDE
SECTION F-F
NAVIGATION LIGHT BRACKETS AT PIERS E-F-G-H-J & K
12-REQUIRED ITEM No.2
NAVIGATION LIGHT BRACKET AT CABLE BENTS
4-REQUIRED-ITEM No.2
Note: All electrical equipment and light fixtures shown on this sheet to be furnished and erected under Item No.11. Lighting Towers and Brackets to be furnished and erected under Items as noted.
Paint: Structural steel lamp supports and miscellaneous iron work to be painted in accordance with specifications covering steel work.
Approved
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
NAVIGATION LIGHTS AND AIRWAYS BEACON DETAILS
SCALE IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 21
MODJESKI MASTERS & CASE, INC. ENGINEERS
MAY 1934
Revised as built - Jan. 1936











Approved:
Modjeski, Masters & Case, Inc.

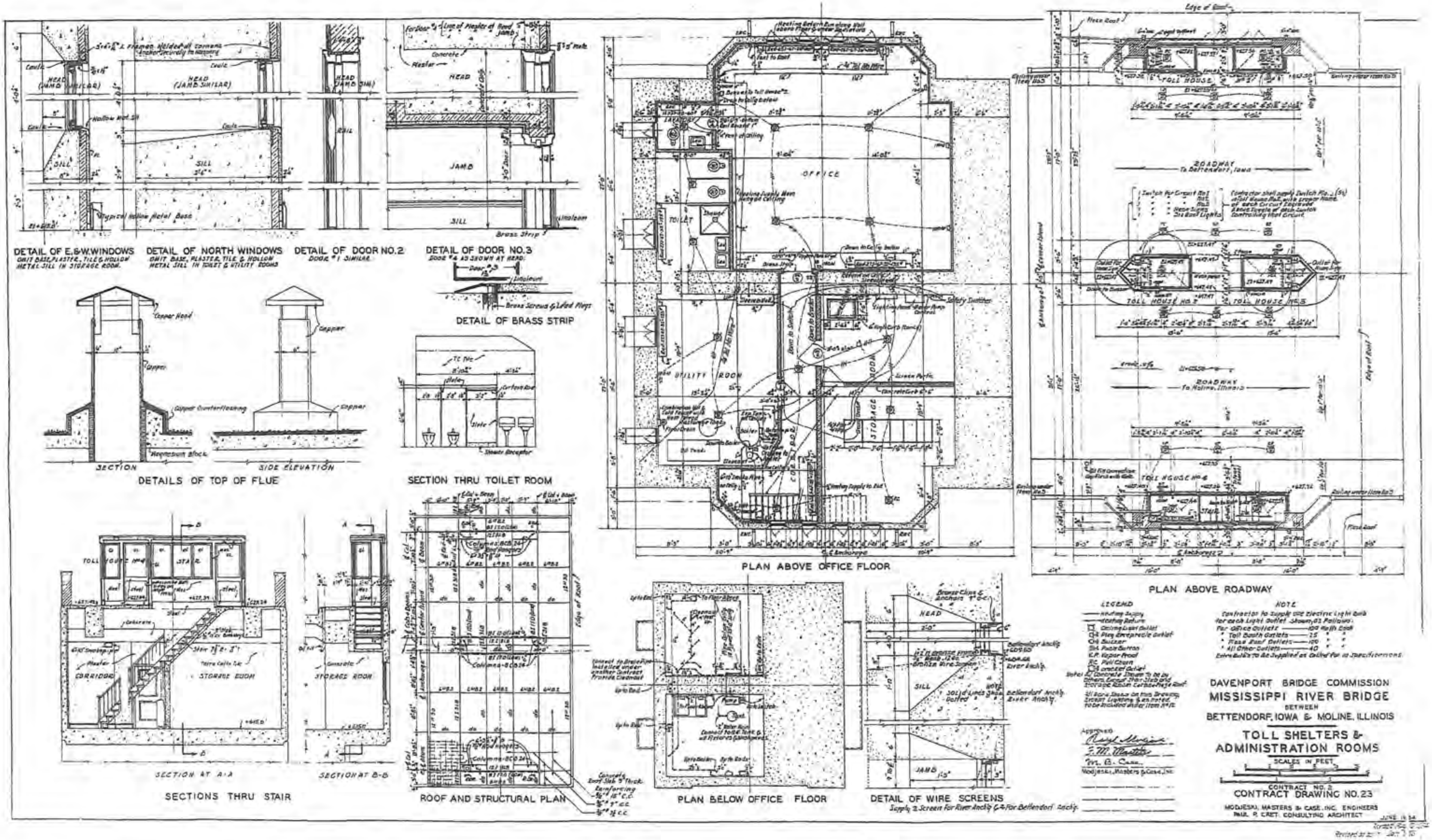
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS

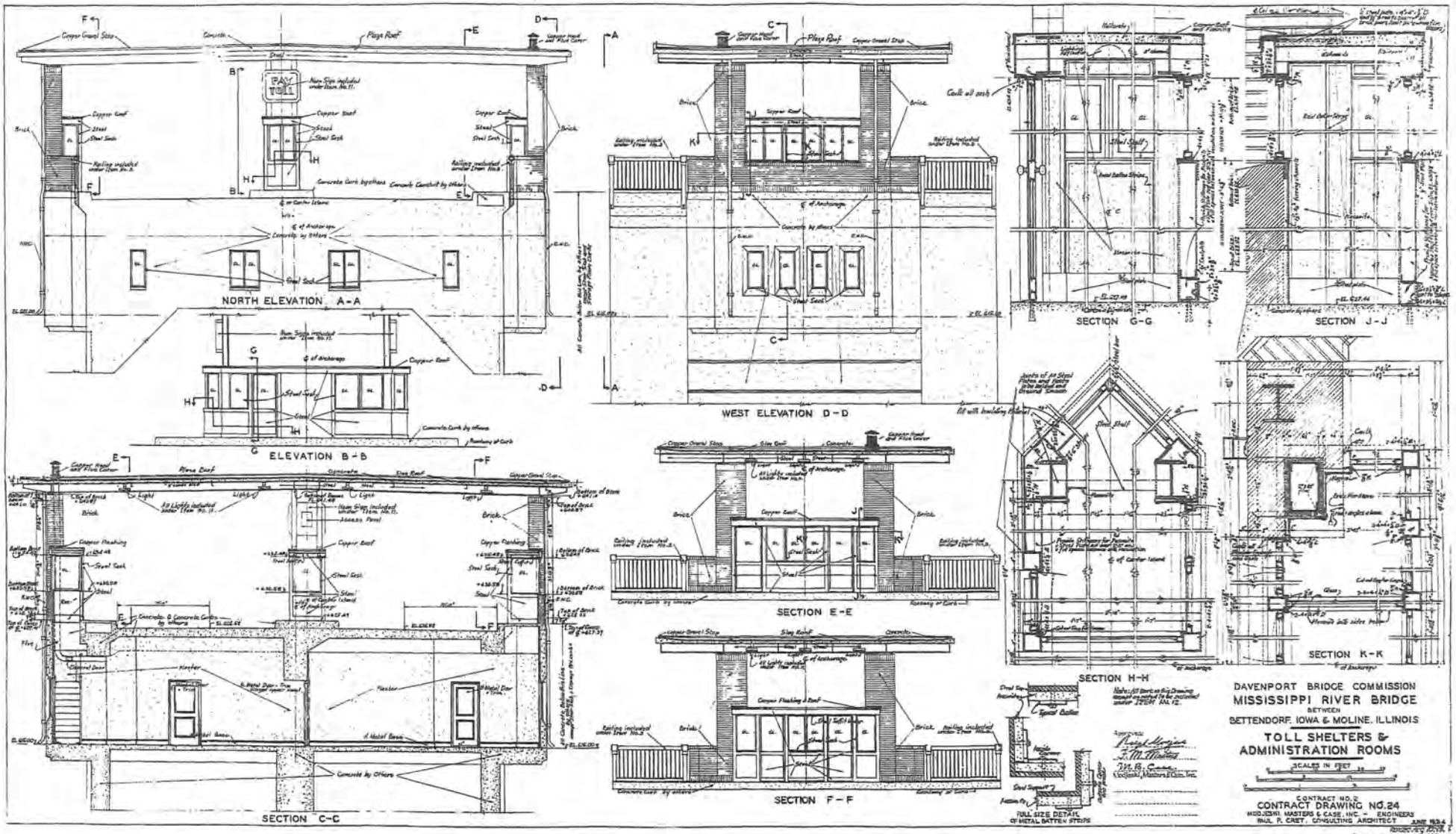
SWITCHBOARD DETAILS AND WIRING DIAGRAM

SCALE IN FEET
0

CONTRACT NO. 2.
CONTRACT DRAWING NO. 22.

MODJESKI, MASTERS & CASE, INC. — ENGINEERS


DETAIL OF E.&W. WINDOWS
DETAIL OF NORTH WINDOWS
DETAIL OF DOOR NO. 2
DETAIL OF DOOR NO. 3
DETAIL OF BRASS STRIP
DETAILS OF TOP OF FLUE
SECTION
SIDE ELEVATION
SECTION THRU TOILET ROOM
PLAN ABOVE OFFICE FLOOR
PLAN ABOVE ROADWAY
OFFICE
TOILET
UTILITY ROOM
STORAGE
TOLL HOUSE NO. 4
ROADWAY
SECTIONS THRU STAIR
SECTION AT A-A
SECTION AT B-B
CORRIDOR
STORAGE ROOM
ROOF AND STRUCTURAL PLAN
PLAN BELOW OFFICE FLOOR
DETAIL OF WIRE SCREENS
LEGEND
NOTE
Contractor to supply one electric light bulb for each light outlet shown, as follows:
For office outlets — 100 watt each
" Toll booth outlets — 25 " "
" Plaza roof outlets — 100 " "
" All other outlets — 40 " "
Extra bulbs to be supplied as called for in specifications.
Approved:
Modjeski, Masters & Case, Inc.
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
TOLL SHELTERS &
ADMINISTRATION ROOMS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 23
MODJESKI, MASTERS & CASE, INC. ENGINEERS
PAUL P. CRET, CONSULTING ARCHITECT
JUNE 1934


NORTH ELEVATION A-A
ELEVATION B-B
WEST ELEVATION D-D
SECTION C-C
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
SECTION J-J
SECTION K-K
FULL SIZE DETAIL OF METAL BATTEN STRIPS
DAVENPORT BRIDGE COMMISSION
MISSISSIPPI RIVER BRIDGE
BETWEEN
BETTENDORF, IOWA & MOLINE, ILLINOIS
TOLL SHELTERS & ADMINISTRATION ROOMS
SCALES IN FEET
CONTRACT NO. 2
CONTRACT DRAWING NO. 24
MODJESKI, MASTERS & CASE, INC. – ENGINEERS
PAUL P. CRET, CONSULTING ARCHITECT
JUNE 1934
Revised as built Jan. 1935

Historical Architectural Data Base

Data Entry Form for Studies and Reports

Doc. No.: 82-061

Source of Study: ☐ Certified Local Government Project ☒ Section 106 Review & Compliance Project
☐ Historical Resource Development Program Project ☐ Other

Project Reference #: _____

Authors/Editor/Compiler/Originator:
Price, Jennifer A., and Leah D. Rogers

Author Role: ☒ Consultant ☐ Private Researcher/Writer ☐ Teacher ☐ Student
☐ Project employee/volunteer ☐ Site Administrator ☐ Other: _____

Title of Work:
Iowa Historic Property Study: Iowa-Illinois Memorial Bridge carrying I-74 and U.S. 6 over Mississippi River between Bettendorf, Scott County, Iowa and Moline, Rock Island County, Illinois

Year Issued: 2012

Type of Work Performed:
(*check one only*)

Survey:
- ☐ Windshield survey minimum level documentation
- ☐ Reconnaissance survey to make recommendations for intensive survey(s).
- ☐ Intensive survey
- ☐ Mixed intensive and reconnaissance survey

Plan:
- ☐ Planning for Preservation/Survey
- ☐ Community Preservation Plan

Property Study:
- ☒ Iowa Historic Property Documentation Study
- ☐ Historic American Building Survey (HABS)
- ☐ Historic American Engineering Record (HAER)
- ☐ Management or Master Plan
- ☐ Historic Structure Report
- ☐ Feasibility/Re-use Study
- ☐ Architectural/Engineering Plans and Specs.

National Register:
- ☐ Multiple Property Documentation Form

Other (e.g., private research, school project, video): _____

Iowa Historic Property Study: Iowa-Illinois Memorial Bridge carrying I-74 and U.S. 6 over Mississippi River between Bettendorf, Scott County, Iowa and Moline, Rock Island County, Illinois 82-061

Kind of Work Produced:
(fill in one section only: Report or Monograph or Chapter, etc.)

Report: Published/produced by: Tallgrass Historians L.C., Iowa City, IA

Place issued: Iowa City

Client: Iowa Department of Transportation, Ames

If applicable, include:

Series Title: _____

Volume #: _____ Report #: _____

Monograph: Publisher Name: _____

Place: _____

Chapter: In: _____ First pg. #: _____ Last pg. #: _____

Journal: Name: _____ Vol. _____ No. _____ Pages: _____ to _____

Thesis: Degree (check one): ☐ Ph.D. ☐ LL.D. ☐ M.A. ☐ M.S. ☐ B.A. ☐ B.S.

Name of College/University: _____

Paper: Meeting: _____

Place: _____

Other: _____

Geographic Scope of Study:

☒ City/town ☒ Township(s) ☒ County ☒ Region of Iowa ☒ Statewide ☐ Other: _____

State:	IA	IL	__	__
County:	Scott	Rock Island	_____	_____
Town:	Bettendorf	Moline	_____	_____
Township:	78N	____	____	____
Range:	4E	___	___	___

Time Focus: (check any decades that receive particular attention)

☐ before 1830 ☐ 1830s ☐ 1840s ☐ 1850s ☐ 1860s ☐ 1870s ☐ 1880s ☒ 1890s

☒ 1900s ☒ 1910s ☒ 1920s ☒ 1930s ☒ 1940s ☒ 1950s ☒ 1960s ☒ 1970s ☐ 1980/later

Keyword: (Index of any subjects, topics, or people given prominent attention in the report)

Iowa-Illinois Memorial Bridge	Davenport Bridge Commission
Bettendorf, IA	Moline, IL
Quad Cities	toll bridge
suspension bridge	twin bridge
Modjeski and Masters	Ralph Modjeski
Frank M. Masters	Mississippi River
Davenport, IA	Rock Island, IL

Iowa Historic Property Study: Iowa-Illinois Memorial Bridge carrying I-74 and U.S. 6 over Mississippi River between Bettendorf, Scott County, Iowa and Moline, Rock Island County, Illinois 82-061

U.S. Highway 6 Interstate 74