

WEST LANCASTER STREET BRIDGE  
(Trinity River Bridge)  
Texas Historic Bridges Recording Project  
Spanning Clear Fork of Trinity River  
at West Lancaster Street  
Fort Worth  
Tarrant County  
Texas

HAER No. TX-48

HAER  
TEX  
220-FOWOR,  
12-

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HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
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**Location:** Spanning Clear Fork of the Trinity River at West Lancaster Street, Fort Worth, Tarrant County, Texas.  
UTM: 14/654520/3624240  
USGS: Fort Worth, Texas, quadrangle.

**Date of Construction:** 1938-1939.

**Designer:** Julian Montgomery, Texas State Highway Department.

**Builder:** Russ Mitchell, Inc., Houston, Texas.

**Present Owner:** City of Fort Worth.

**Present Use:** Vehicular bridge.

**Significance:** At the time of its construction, this bridge was the largest regular federal aid highway project ever completed by the Texas Highway Department.

**Historian:** Robert W. Jackson, August 1996.

**Project Information:** This document was prepared as part of the Texas Historic Bridges Recording Project performed during the summer of 1996 by the Historic American Engineering Record (HAER). The project was sponsored by the Texas Department of Transportation (TxDOT).

## Description

The official 1939 opening of the West Lancaster Street Bridge in Fort Worth marked completion of the largest bridge project ever designed and constructed by the Texas Highway Department.<sup>1</sup> This structure, a combination bridge over the Trinity River and overpass across the tracks of the Saint Louis, San Francisco, and Texas Railroad, also spans city-owned Trinity Park.<sup>2</sup>

The 2,976'-3"-long bridge consists of approximately 1,264 feet of continuous deck trusses with curved bottom chords over the park area and river channel, and slightly more than 1,084 feet of I-beam approach spans. The deck trusses and I-beam approach spans are separated on each end of the bridge by 28'-0" concrete tower piers. The main river span is a 325'-4" three-span continuous deck truss unit.<sup>3</sup>

On the west side of the river channel there are (from east to west) three 234'-4 1/2" three-span deck truss units and one 234'-11 3/4" three-span deck truss unit between the river span and the west tower pier. These spans cross over the park area. Between the tower pier and the 43'-0" reinforced concrete western abutment there are seven 48'-1 3/4" steel I-beam spans, one 170'-0" three-span steel I-beam unit, five 42'-0" steel I-beam spans, and two 48'-1 3/4" steel I-beam spans. The western approach of the bridge was designed to cross over seven spurs and the main track of the railroad.

On the east side of the river channel there are (from west to east) one 234'-4 1/2" three-span deck truss unit and one 234'-11 3/4" three-span deck truss unit between the river span and the east tower pier. These spans cross over the Trinity River flood plain. Between the tower pier and the 52'-0" reinforced concrete eastern abutment there is one 61'-0 1/2" steel I-beam span (designed to cross over a single spur track) and five 42'-0" steel I-beam approach spans.

The trusses rest on twenty, three-column concrete piers, fifteen of which rest on precast concrete foundation piling extending from 21'-0" to 38'-0" below the footings of the piers. Five of the truss-supporting piers rest on hard limestone. The substructure for the approaches consists

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<sup>1</sup> The builder's plate on the bridge identifies it as "Trinity River Bridge," completed in 1938, but it has been called the West Lancaster Street Bridge since before it was officially opened early in 1939. The primary name by which the bridge is identified in this report is that by which it is best known and best distinguished from other Trinity River bridges.

<sup>2</sup> Texas State Highway Department, "Eleventh Biennial Report: September 1, 1936 to August 31, 1938," pp. xiv, xvi.

<sup>3</sup> Information regarding the original design of the bridge is taken from the final construction plans, identified as: Texas State Highway Department, "Plans For Proposed Trinity River Bridge, Highway No. 1-C, Tarrant Co." (Texas Department of Transportation, Records Management Division, Austin, Texas).

of twenty-one three-column concrete piers, with the four piers extending west from the eastern abutment resting on precast concrete foundation piling extending from sixteen to eighteen feet below the footings. The remainder of the approach piers rest on hard limestone. Both abutments and the eastern tower pier rest on limestone, while the western tower pier rests on 40'-0"-long precast concrete pilings.

The deck of the bridge was designed with a clear roadway width of 40'-0" and paved with a concrete floating slab of variable thickness. There are two sidewalks of 5'-0" width, one located on each side of the roadway. The railing which extends across the entire structure, with the exception of the towers and abutments, was made of ornamental steel with 3 1/2"-diameter standard black pipe for handrails. The bridge features a steel and concrete stairway on either side of that portion of the bridge over Trinity Park, with each stairway having three flights and 2 1/2"-diameter standard black pipe for handrails. Provisions were made at the time of construction for the City of Fort Worth to install lighting units, but electrical conductors, light standards and wedges were not part of the contract for construction.

In planning the bridge, the Texas Highway Department collaborated with the Park Board of the City of Fort Worth in providing for an aesthetically pleasing structure that would be in harmony with the environment of Trinity Park. The architectural aspects of the piers and abutments were designed with beauty as well as functionality in mind. As the Texas Highway Department's Eleventh Biennial Report put it,

This Department has been concerned chiefly with the utility and appearance of underpass structures and much progress has been made in the architectural treatment by careful attention to such features as the continuity of lines and the appearance of railing.<sup>4</sup>

On the outside of each abutment and tower there are abstract decorative features in the concrete surfaces. Pedestrian seats located at the top of the tower piers are flanked by 4'-0"-wide glazed polychrome terra cotta panels featuring the artistically rendered heads of longhorn steer. And, as writer Charles Simons asked in "Spanning the Trinity," an article on the bridge published in the May 1938 issue of *Texas Parade* magazine, "what could be more appropriate than a Longhorn on Cow Town's newest and greatest bridge?"<sup>5</sup>

### **Julian Montgomery**

The bridge was designed by Julian Montgomery, head of the Texas Highway Department. Montgomery, born in Whitewright, Texas, on May 2, 1889, received a B.S. degree from Grayson

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<sup>4</sup> Texas State Highway Department, pp. xvi-xvii; Charles E. Simons, "Spanning the Trinity," *Texas Parade*, May 1938, p. 7.

<sup>5</sup> Simons, p. 7.

College in Sherman, Texas in 1908. He then attended the University of Texas at Austin, receiving a degree in civil engineering in 1912.<sup>6</sup> After graduation, he worked for a little more than a year as assistant city engineer in Austin before receiving a research fellowship at the University of Illinois, where he received a M.S. in theoretical and applied mechanics in 1915. He returned to Sherman in 1915 and was briefly in charge of paving and sewers for that city before once again accepting the duties of assistant city engineer for the city of Austin. In July 1917 he became chief office engineer for the Texas Highway Department, and was promoted to division engineer in 1919. He only served four months in that capacity before accepting the position of county engineer for Rockwall County, Texas. After slightly more than one year at that job he became city engineer for Wichita Falls, Texas, where he worked for almost two years.

From May 1922 to October 1934, Montgomery was the senior member of Montgomery and Ward, Construction Engineers, Wichita Falls, Texas. This period marks his only significant experience in the private sector. Early in 1934, while still in private practice, he was appointed state advisor for the National Planning Board. Shortly thereafter, he returned to full-time public service by accepting the position of state engineer and state director for the Public Works Administration (PWA) for Texas, a position he held from October 1934 until July 1937.

After resigning from the PWA, Montgomery was general manager and consulting engineer for Willacy County Improvement District No. 1 in Raymondville, Texas for three months before being selected to replace Gibb Gilchrist as state highway engineer, the chief executive position for the Texas Highway Department. Due to ill health, Montgomery resigned from the department June 1940.

Despite the constraints of his administrative duties, Montgomery managed to remain directly involved in highway and bridge design while serving as head of the department, and he continued to think of himself throughout the remainder of his career as primarily a design engineer. The exact extent of his involvement with the design of the West Lancaster Street Bridge is unknown, but it is likely that he depended heavily upon the advice and assistance of E. C. Woodward, division state highway engineer, C. A. Chipley, resident highway engineer, and L. C. Elliot, division engineer for the United States Bureau of Public Roads.

### **Design and Construction, 1938-1939**

Woodward and Chipley made the final inspection for the state in April 1939 and accepted the contract on behalf of the state highway department. The contractor for the project was Russ

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<sup>6</sup> Most of the information in this report concerning Montgomery is obtained from his "Application For Registration To Practice Professional Engineering," 1937 (Texas State Board of Registration for Professional Engineers, Austin, Texas). See also "The New Highway Engineer," *Texas Parade*, September 1937, pp. 18-19.

Mitchell, Inc., of Houston, with Ed Abbott serving as project superintendent. The contract amount was \$557,000, although the estimated final cost was slightly more than \$600,000.<sup>7</sup>

The bridge was built as part of the relocation of U.S. Route 80 (State Route 1) through Fort Worth. This new alignment grew out of a survey made in 1938 by the Texas Highway Department in conformance with a three-year program of road improvements in the Fort Worth area. The bridge was designed to provide a connection with a section of highway built in 1937, thus alleviating congestion on West Lancaster Street and facilitating the flow of traffic on one of the most heavily traveled highways in the state. This new alignment permitted a direct routing of traffic on U.S. Route 80 (State Route 1) both east and west and also served westbound traffic on State Route 10.<sup>8</sup>

### Federal Aid

The availability of federal funds for construction of the West Lancaster Street Bridge was a crucial factor in the state's ability to carry the project forward. The construction specifications of the bridge, identified as Federal Aid Project No. 956-C, were originally approved by the Chief of the U.S. Bureau of Public Roads February 26, 1926, and subsequently approved in terms of specific design aspects in 1931 and again in 1937. The plans were let on March 22, 1938, and by August 31, 1938, the cost of active construction projects in Tarrant County, including the West Lancaster Street Bridge, totaled \$863,282. Of that amount, \$485,795 was covered by federal funds.<sup>9</sup> During this period, the State Highway Department awarded contracts on federal projects involving fifteen different federal programs, the most important being the Federal Aid Program.<sup>10</sup>

The first Federal Aid Road Act was passed by Congress in 1916. Although this was a little-noticed measure at the time, it provided the framework for road building in the twentieth century. As one history of the United States has stated it, this act removed control over large road projects from county governments, and

Required every state desiring federal funds to establish a highway department to plan routes, oversee construction, and maintain roads. In states that had such

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<sup>7</sup> *Engineering News-Record*, 21 September 1939, p. 7; Texas State Highway Department, "Record of State Control Numbers, Sections and Jobs," Texas Highway Department Form 421, Control No. 504, Section 1 (Texas Department of Transportation, Environmental Affairs Division, Austin, Texas).

<sup>8</sup> Charles E. Simons, "Progress," *Texas Parade*, April 1938, p. 14; Texas State Highway Department, p. xvi.

<sup>9</sup> Texas State Highway Department, p. 123.

<sup>10</sup> *Ibid.*, p. xvii.

departments, the federal government paid half the cost of building the roads. Providing for a planned highway system, the act produced a national network of two-lane, all-weather intercity roads.<sup>11</sup>

The 1916 Federal Aid Road Act established a prerequisite for the receipt of Federal-aid funds that encouraged the development of highway departments staffed with a corps of trained highway engineers. To spread the mileage of improved roads over the greatest possible area of the country, the act established a maximum Federal aid contribution of "10,000 per mile, exclusive of the cost of bridges of more than twenty feet clear span." This meant that bridges such as the West Lancaster Street Bridge were exempt from the funding limitation.

Subsequent Federal Aid Acts made additional contributions to the ability of the Texas State Highway Department to construct bridges and other road improvements. The Act of 1934, for example, permitted a state to use up to 1.5 percent of construction funds for planning and economic evaluation.<sup>12</sup> This action made a direct contribution to the planning for Fort Worth area highway improvements which were part of the effort resulting in the construction of the West Lancaster Street Bridge.

By 1938, with the initial surfacing virtually completed on the federal-aid highway system, consisting of the principal state and Interstate highways, there arose a widespread demand for the extension of these main roads into and through centers of population by means of trans-city arteries and belt-line distribution thoroughfares. This demand was met by the Federal Aid Programs of 1938 and 1939.

## Conclusion

In summary, it may be said that the West Lancaster Street Bridge would probably not have been built if it were not for the considerable amount of federal funding provided for its planning and construction. As built, it represents an important improvement in the local arterial road system of Fort Worth and a vital link in both the state and federal highway systems. It survives today as one of the most impressive and attractive bridges constructed in the Fort Worth area.

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<sup>11</sup> Robert A. Divine, ed., *America, Past and Present*, 2nd ed. (Glenview, Illinois: Scott, Foresman and Company, 1987), p. 645.

<sup>12</sup> Frank So, ed., *The Practice of Local Government Planning* (Washington: American Planning Association, 1971), p. 147.

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## APPENDIX: Suggestions For Further Research

Due to limitations in the scope of the Texas Historic Bridges Recording Project, several questions which arose during the research and writing of this report remain unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. What other bridges were designed by Julian Montgomery?
2. Who was responsible for the design of the Longhorn steer heads placed at the pedestrian seats?
3. What other bridges were constructed by Russ Mitchell, Inc.?