

HISTORIC AMERICAN ENGINEERING RECORD

WABASH RIVER BRIDGE

HAER No. IN-64

Location: Spanning the Wabash River on U.S. Route 40 in
Terre Haute, Vigo County, Indiana.

UTM: 16.463855.4368420
Quad: Terre Haute, Indiana

Date of
Construction: Construction began June 20, 1903
Dedication Ceremony October 17, 1905
Design Engineering Firm: Malverd A. Howe and
J. E. Starbuck
Constructed by: Lafayette Engineering Company
Resident Engineer: Frank Hanna
Steel Fabricator: American Bridge Company

Present Owner: Indiana Department of Transportation
State Office Building
Indianapolis, Indiana 46204

Present Use: Vehicular and pedestrian bridge

Significance: This is one of the two most significant deck
truss bridges in the state. It was designed
and built by Indiana engineers and spans a
major crossing on the old National Road. The
design of the bridge is unique and the
original members are still intact. It is
eligible for inclusion in the National
Register of Historic Places.

Project
Information: This documentation was undertaken in March, 1989
in accordance with the Memorandum of Agreement
between the Indiana Department of Highways, The
Advisory Council on Historic Preservation, The
Federal Highway Administration, and The Indiana
State Historic Preservation Officer as a
mitigative measure prior to the demolition of
the bridge.

Clay Whitmire, Chief
Division of Program Development
Indiana Department of Transportation
Indianapolis, Indiana

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The U.S. 40 (Wabash Avenue) bridge spans a major crossing on the old National Road. (5) It replaced an old wooden Burr truss bridge which was erected in 1864 by a private company and operated as a toll bridge until bought by Vigo County in 1874. (2) The old bridge had five truss spans and a short draw span of the tipping type. (2) The stratified limestone masonry piers became so badly weather checked that the bridge had to be condemned. (2)

Professor Malverd A. Howe of Rose Polytechnic Institute in Terre Haute and J.E. Starbuck of the Vandalia Railway Engineering Department, designed a replacement bridge about 1901. (4)(2) The proposed bridge was a deck truss with eight spans (3 @ 120', 1 @ 75', 2 @ 120', 2 @ 90'). (2) The Vigo County Commissioners accepted the plans and advertised for bids. (2) All bids received were above the estimated costs and were rejected. (2) About two years later the plans were revised by reducing the bridge to seven spans (6 spans exactly alike with a draw span in the middle) and lowering the east approach. (2) This time the lowest bid was accepted and work began on June 20, 1903. (2)

The U.S. 40 (Wabash River) bridge was constructed by the Lafayette Engineering Company of Lafayette, Indiana. (1)(2)(4)(5) The company president was Wallace Marshall, the general manager at Terre Haute was Frank Hanna and the superintendent of erection was O.G. Wright. (2) The steel was fabricated at the Detroit branch of the American Bridge Company. (2) The Pittsburgh Testing Laboratory provided mill and shop testing. (2) The designers, Malverd A. Howe and J.E. Starbuck, also served as superintendents of construction, representing Vigo County. (2)

The U.S. 40 (Wabash River) bridge is a seven span (3 @ 120', 1 @ 75', 3 @ 120') deck truss and girder bridge, 795 feet long. (1)(2) The center span was designed to be a draw span but the operating machinery was never installed. (2) Originally, there was 50'-0" clear roadway (2 lanes each direction with rails for interurban rail cars in the center lanes) and an 8'-0" sidewalk each side. (2)

All of the substructure elements bear on green hardwood timber piles (84 west abutment, 88 each pier, 116 east abutment). (2) The bottoms of the concrete pier footings are 9 feet below the low water level. (2) The pier shafts are faced with Bedford limestone starting at the low water level. (2) The abutments extend 2 feet below the low water level and are also faced with ashlar limestone veneer. (2)

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The six 120 foot spans consist of two all-riveted Pratt-variant deck trusses 53 feet apart on centers and three plate girders equally spaced between the trusses. (2) The center, 75 foot span has only the two truss girders. (2) The trusses extend 4.5 feet above the top of curbs and served as a barrier to protect pedestrians on the sidewalks. (2) The trusses are built up using channels, angles, and plates riveted together for stiffness. (2) The bottom chord was curved for appearance and to provide the same clearance under the structure as the plate girders. (2) The 75 foot draw span trusses have straight bottom chords with end posts that extend downward to form legs footing on the piers. (2)

The steel plate girders between the trusses were 121 feet 6 inches long, the longest ever used on a highway bridge at that time. (2) The 60,500 pound girders were shipped to the construction site in pairs on 3 railroad cars. (2) The stringers rest on top of the floor beams between the girders but are riveted to the floor beams between the trusses and girders. (2) Buckle plates were placed over the stringers and a concrete deck was poured over them. (2) A layer of brick was placed over the concrete for a wearing surface. (2)

Provision for longitudinal expansion was by means of 8 inch segmental cast-steel rollers on T-rails, which extend under the fixed end bearing of the adjacent spans. (2) The deck and sidewalk expansion openings were covered by checkered steel plates riveted to one side and sliding over the other side. (2)

The American Bridge Company, which fabricated the steel, designed the very stiff light and trolley poles. (2) The handrail was an old Keystone design, with modifications in a few places. (2)

The superstructure steel was erected by constructing a single railway track between two of the plate girder positions. (2) Single girders were transported on two standard railroad cars, by means of tackles, to the appropriate substructures. (2) The girders were then placed on blocking and moved sideways to their permanent position. (2) After the girders for a span were in position, the floor beams, stringers, and sway bracing were moved into position and bolted in place. (2) The riveted trusses were assembled on the plate girder portion of the bridge, then moved sideways and lowered to their permanent positions. (2) After half of the bridge was erected, the falsework was moved to the other half with the railway track shifted to the lower flanges of the plate girders in place. (2)

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Some of the quantities and statistics for this bridge include:

- . 718 green hardwood timber piles were driven to attain required bearing (2)
- . 6,230 cubic yards of concrete and stone were placed in the substructure elements (2)
- . 125,000 rivets were driven in the superstructure (2)
- . the superstructure steel weighs 4,000,000 pounds (2)
- . three people were killed and several were injured during construction (2)
- . The construction cost was \$271,200 (3)(2)

Construction was completed and the bridge was accepted by the Vigo County Commissioners on August 9, 1905. (2) A formal dedication ceremony was held on the bridge on October 17, 1905. (4)

The bridge has had at least five major repairs/revisions over the years. The revisions include:

- . Removal of the trolley tracks
- . Replacing the original brick wearing surface with bituminous
- . Removal of original sidewalks
- . Reducing roadway to two traffic lanes (one each direction)

The bridge has been known by various names since its construction. The construction plans were called "Wabash River Bridge". It has since been identified as "Wabash Avenue Bridge" and is currently listed in the Indiana Department of Transportation's Inventory of Bridges as Structure No. 40-84-564C, U.S. 40 over the Wabash River.

In the opinion of the State Historic Preservation Officer, the existing bridge is of statewide significance. The bridge has played a very important role in both the local and regional transportation system. It provided convenient access between Terre Haute and nearby portions of Indiana and Illinois west of the Wabash River. It was also a vital link in the old National Road, which was the major east-west route prior to construction of the interstate system. The bridge has been used for many modes of transportation including: auto, bus, truck, interurban trolley, horse drawn vehicles, bicycles, pedestrian and horseback. For many years this was the only vehicular bridge crossing on the Wabash River for many miles both upstream and downstream.

BIBLIOGRAPHY

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pp. 273-275
3. "New Bridge over Wabash River at Terre Haute is 795
Feet Long, has Seven Spans, and Cost \$271,000", the
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4. Dedication Ceremony Program, October 17, 1905
5. Letter, from James M. Ridenour, Director, Indiana
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Division Administrator, U.S. Department of Transportation,
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SITE PLAN

