

OHIO DEPARTMENT OF TRANSPORTATION
HISTORIC BRIDGE SURVEY REPORT

12/29/2010



SFN #: 1502425 County: COLUMBIANA Municipality: EAST LIVERPOOL

NR Rec: Eligible Previous Inventory/Date: Status:

ODOT District: 11 Owner: PRIVATE Lat/Long: 40.371200 / 80.351800

Location: .07 MI E OF SR 7 UTM:

Feature On: NEWELL TOLL BRIDGE

Feature Intersected: OHIO RIVER/US 30

Type: SUSPENSION Design:

Material: STEEL

Railing Type: BEAM GUIDE RAILS

Spans: Overall Length: ft. Out to Out Width: 33 ft. Roadway Width: 22 ft.

Year Built: 1905 Alteration (Date): 1956 Source: ODOT Inspection Files

Designer/Builder E. K. MORSE, ENG/AMERICAN BRIDGE CO

Setting/Context:

The toll bridge carries a 2-lane road and sidewalk over the Ohio River between Newell, W.Va., and East Liverpool, Ohio. The Homer Laughlin China factory complex is on the West Virginia end of the bridge. The bridge's northern (Ohio) approach spans cross over the 4-lane US 30. Ohio DOT BMS inventories the two truss approach spans, and WVDOT inventories the main suspension span over the river, but historically they are all part of the same privately-owned toll bridge structure.

The Newell Toll Bridge's history is closely associated with that of the Homer Laughlin China Company, a company significant in the history of the region's ceramics industry and for more than a century a major employer in the region that has had a significant impact on the development of East Liverpool and Newell. The bridge was built in 1904-05 by the Newell Bridge Company, a wholly owned subsidiary of the Homer Laughlin China Company (HLC). HLC was established in 1871 by Homer & Shakespeare Laughlin as the Ohio Valley Pottery Works in East Liverpool. In 1897, the Laughlins sold control of the company to W. E. Wells, Louis I. Aaron and his sons Marcus and Charles Aaron. Wells and the Aarons raised significant capital and began expanding the company. First they built two new works (Nos. 2 & 3) in East Liverpool between 1897 and 1903, but finding no further suitable sites on the Ohio side of the river, they chose to expand to the West Virginia side in 1904. To do so, they formed the North American Manufacturing Company to build the company town of Newell. They also formed the Newell Bridge Company to build a bridge connecting Newell with the company's works and corporate offices in East Liverpool, as well as a streetcar company to operate a 3-mile-long rail line that crossed the bridge. From 1906 to 1929, the Newell Works was expanded five times with Works No. 4 to No. 8, the last built in 1929 expressly for pottery sold by Woolworths stores. By the 1920s HLC was claiming to be the largest pottery in the world. It has also abandoned its earlier smaller works in East Liverpool and concentrated its works entirely in Newell. Although the bridge no longer served to connect active works on both sides of the river, it remained a vital transportation link for HLC employees. HLC was a major economic force in its industry, and an innovator in the design of mass-produced dinnerware, with perhaps its most famous line the solid-colored Fiestaware in 1936, noted as a major departure from the European styles that had dominated the market up until the 1920s.

Physical Description:

The Newell Toll Bridge is a suspension bridge with a 750'-long main span flanked by steel truss approach spans. The cable suspension bridge has built-up steel towers and is conventionally composed of wrapped steel wire cables with wire suspenders and a stiffening truss. The stiffening truss is a riveted, double-intersection Warren configuration which transitions to simply supported thru-truss approach spans.

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Integrity:

The bridge appears to retain integrity of design and materials.

Summary of Significance:

The Newell Toll Bridge is historically significant for its associations with the development of the Homer Laughlin China Company and the company town of Newell, W.Va. (Criterion A). The Newell Bridge Company applied to the War Department for a permit to build over navigable water and was awarded the permit in 1903. The permit was modified in 1904 when the alignment of the bridge was shifted 75' north from the original proposed alignment due to difficulty acquiring clear title to the approach on the Ohio side. The bridge's design was by consulting engineer E. K. Morse of Pittsburgh. Construction contracts were awarded in May 1904 with the steel work awarded to the American Bridge Company of Pittsburgh and the substructure work to Mr. C. M. Driver, also of Pittsburgh.

The 1905 Newell Toll Bridge is one of ten suspension bridges in the inventory dated from 1867 to 1931. The bridge is not generally recognized as a technologically significant example of its type/design, but it is representative of period construction technology and is perhaps most noteworthy for its use of riveted double-intersection Warren trusses. This is technologically significant as one of two examples of the double-intersection Warren design in the inventory (July 2009), and it is among the earlier applications of riveted truss field connections (see Warren truss context) (Criterion C).

Whether a modest footbridge or a long-span highway bridge, the principles of the suspension technology are the same. A continuous cable supports the deck by means of suspenders. The cable is in tension, and thus materials such as rope, bamboo, and wire, with a high resistance in tension, are very suitable and usually quite economical. A disadvantage to the suspension technology is that the passage of moving loads causes considerable deformation and oscillations of the deck. Only when the live load is small compared with the weight of the deck is the oscillation minimized. The bridge type has thus been most suitable in modern times for long-span, heavy, highway bridges.

The suspension bridge type is of great antiquity with centuries' old examples known in China, India, Africa, and South America, using bamboo or rope made of natural materials such as hemp for the cables. The wire cable suspension bridge technology dates to the early 19th century. The first known suspension bridge in the U.S. to be built using iron wire cables was a crossing of the Schuylkill River in Philadelphia built by wire makers Josiah White and Erskine Hazard in 1816. The 'golden age' of wire cable suspension bridges commenced in the mid-19th century with the best-known builder and engineer John August Roebling. He not only constructed several monumental bridges – Niagara River (1851-55, non-extant), Cincinnati-Covington Ohio River Bridge (1856-1867), and, of course, the Brooklyn Bridge (1867-1876) – but established a successful wire cable company near Trenton, New Jersey, in 1849. The improvement of wire cable manufacturing technology was significant, because it made readily available cables for a variety of industrial applications from mining to logging, as well as bridge building. There are many distinguished examples of wire cable suspension bridges throughout the U.S., from the modest Wire Bridge in New Portland, Maine (ca. 1864-66) to the great suspension bridges of the 20th century, such as the George Washington (1927-31) and the Golden Gate (1933-37).

Reviewed By/ Date: MEM (5/09)

Notes:

The eligibility of the Newell Toll Bridge has not been previously considered by either WVDOT or ODOT (Apr. 2009) (Communication with C. Fint, WVDOT).

For Eligible Bridge:

Level of Significance: Moderate

Justification:

The bridge is one of 10 suspension bridges in the inventory. The bridge type is used for both pedestrian and vehicular bridges starting with Roebling's 1856-67 Cincinnati bridge. This later example, representative of the type/design, has a moderate level of significance.

In Management Plan (2009)? No