CEMENT PLANT ROAD BRIDGE
Spanning Leatherwood Creek on County Road 50 South
Bedford vicinity
Lawrence County
Indiana

HAER No. IN-97

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MIDWEST SUPPORT OFFICE
National Park Service
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1709 Jackson Street
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HISTORIC AMERICAN ENGINEERING RECORD

Cement Plant Road Bridge

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Location: Over Leatherwood Creek on Cement Plant Road (County Road 50 South), approximately 1/4 mile southeast of Bedford city limit.
Bedford vicinity
Lawrence County
Indiana

Quad: Bedford East, Indiana, 1:24,000
UTM Coordinates: 16.546040.4300590

Present Owner: Lawrence County, Indiana

Present Use: Transportation, vehicular traffic.

Significance: The Cement Plant Road Bridge is significant as an early example of a reinforced concrete, continuous girder structure in Indiana. Such bridges are rare in the state. It is locally significant for its association with early concrete production in the area.

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PART I. HISTORICAL INFORMATION

The Cement Plant Road Bridge (known today as Lawrence County Bridge #172) is located in an area which is world-renowned for the quantity and quality of its fine Bedford Limestone. Indeed, this excellent stone, which was used in many important buildings, the Empire State Building for one, became the single most important industry for the community and surrounding region. The rise of this industry occurred after the 1850s, when railroad transportation made it feasible to ship the heavy stone to remote markets. Before limestone turned the town of Bedford into "Stone City", it was a small, somewhat isolated agricultural village in central Indiana. By the beginning of the first World War, there were 39 cut stone mills within the area, employing 4,000 men. Mill blocks were obtained from over 30 quarries within a five mile radius of the city. [1]

While Bedford enjoyed considerable success in the extractive limestone industry, cement and lime production were relatively small. The Cement Plant Road Bridge was constructed in 1909 by the U. S. Cement Company, which operated what is still referred to as the "old cement plant" southeast of Bedford, although today only foundations and a sole building remain to recall the complex.

The cement plant seems to have begun life as the operation of the Midland Portland Company, a New Jersey Corporation, which, in 1902 purchased land southeast of Bedford for a massive cement manufacturing plant. The owners, hired two Indiana firms, Shirk & Danner and Osborne Engineering Company to design and construct the plant. By mid-1903, equipment had been purchased, a machine shop erected and work was underway on additional buildings. A right-of-way for a switching track from the Lehman Station of the nearby B. & O. Southwestern was also purchased, to allow quick shipment from the plant. By May of the following year the plant was sold (for $1 and other considerations) or reorganized as the United States Cement Company. The officers were Elbert W. Shirk of Peru, Indiana, E. J. Fisher, Frank M. Talbott and A. Lehman, all from outside the Lawrence County area. [2]

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[1] Guthrie, James M. "City of Bedford" in Lawrence County Hist. & Gen. Soc. *History of Lawrence County, Indiana 1818-1990.* Paducah, KY: Turner Pub. Co, 1990, P. 152.

[2] James M. Guthrie, *A Quarter Century in Lawrence County, Indiana 1917-1941,* Bedford, IN: The Stone City Press, 1984, p. 117.

The U. S. Cement Company was in production by December of 1904. One year later, a company brochure announced that they had a cement capacity of 850,000 barrels annually. In addition to the Bedford Plant, the company also maintained offices in Indianapolis. The sales of cement appear to have gone well for several years, and the plant, with its large capability, produced and sold cement full-time for several years. [3] Nonetheless, by May of 1909, the company had been forced into receivership, with the president, E. W. Shirk named as receiver. In a newspaper article of that date, an unnamed source named the panic of 1907, with the resultant drop in cement prices as a cause of the company's problems. However, with a million dollars in buildings, machinery, real estate and rights of way as well as over one hundred thousand dollars in inventory and accounts receivable, the situation was not considered critical. [4]

The Lawrence County Commissioners must have thought that the cement company would survive. On May 3, the same day that president Shirk was announced as receiver, the Commissioners ordered the board to advertise for sealed bids for several bridges, among them a bridge over Leatherwood Creek on the road to the cement plant. [5] On July 19th, it awarded a contract for the construction of the bridge to Mr. Shirk, as receiver for the U.S. Cement Company, in the amount of $1,200. The bridge was to be built on the "cement plant plan", "in strict accordance with the plans and specifications now on file in the auditor's office" and to be of the "girder pattern." Mr. Shirk and his cement plant were given until the first day of November, 1909 to complete the structure. [6]

Transportation of cement products from the plant was arranged, from its inception, through a right-of-way and switch track which carried the material directly from the plant to the B & O Southwestern station, and on to its destination. Unless they came by rail, visitors to the plant from the town of Bedford were forced to negotiate Leatherwood Creek via a foot bridge or ford. According to a local historian, the cement company had tried for several years to get the county to construct a bridge across the creek at the present site.

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[3] Ibid.

[4] *Bedford Times Mail* May 3, 1909, p. 1 and Guthrie, p. 117.

[5] Lawrence County Commissioners Minutes, Book R, p. 259, May 3, 1909.

[6] Ibid, pp. 273-4

The low price for construction of the Cement Plant Road Bridge implies that the company may have contributed much of the material for the reinforced concrete structure. Certainly, the company provided the plans and specifications, as indicated in the Commissioners minutes. [7]

By December 6, 1909, the bridge was complete and all inspections proved satisfactory. The Lawrence County Commissioners officially accepted the structure and ordered Mr. Shirk to be paid in full for the efforts of the company. Unfortunately, the U. S. Cement Company was not destined to recover from its fiscal difficulties so easily. By 1911, it was shut down and the property purchased by Mr. Shirk. During the next six years he sold off equipment and metal salvage. By 1918, the community had hopes that the plant, with its large buildings, railroad spur, power and storage facilities would attract a major manufacturing establishment. But this was not to be realized. By late summer, more of the buildings were razed, with their components sold for salvage and tons of brick sold locally for use in homes and business buildings. Still, two large structures and the office building remained. A machinery company from Pittsburgh purchased the site and mined it for scrap, including about $3,000 worth of valuable copper, which was sold locally. Finally, in 1922, the B & O Railroad abandoned the line which connected to the cement plant spur and all hope of revitalizing the plant died. During the next decade, fires and further salvage operations decimated most of the remaining buildings, leaving only the remains of foundations and one structure. [8]

The modest bridge which the cement company built over Leatherwood Creek was an efficient solution to the problem of concrete spans. The continuous beam or girder system allowed longer length bridges to be built, without the difficulties of joints over piers. Such beams required less reinforcing steel and concrete, allowing a narrower elevation and eliminated the worry of moisture deteriorating the bearing points atop piers. Continuity of structural design had many advantages, a fact which was recognized, early in the twentieth century by railroad engineers. Many used reinforced concrete continuous-beam

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[7] James Guthrie, *Thirty-three years in the History of Lawrence County, Indiana, 1884-1917.* Greenfield, IN: Mitchell Printing Co., 1958, P. 106. & County Commissioners Minutes, Book R. pp. 173-4.

[8] Lawrence County Commissioners Minutes, Book R, p. 326; Guthrie, *A Quarter Century...* p. 118.

structures to carry elevated roadways over their rail lines in Indiana, especially during the first two decades of this century. [9]

But the use of this method of construction was by no means universal in the Hoosier state. The simple bridge near Bedford is unusual in its use of continuous-beam construction largely because the state agencies which were exerting increased influence over bridge design took a conservative approach to such innovations. Although Hoosiers had pioneered in the manufacture of early automobiles, they were reluctant to join the national move toward federally-funded (and coordinated) highway systems. But the early twentieth century trend toward modernization, streamlining and greater efficiency through standardization would be stronger than Indiana's stance for conservative independence. In 1917, one year after Congress passed the landmark Federal-Aid Road Act which inaugurated a program of federal matching grants for highway design and construction, every state in the union except Indiana had established a federally certified highway department. The deficiency was corrected that year, however, with the creation of the Indiana State Highway Commission. [10] As in other states, this body would eventually control the design of nearly all of the state's bridges.

True to the Hoosier conservative nature, the ISHC stuck to traditional bridge design ideas for its first two decades. Although designs for continuous beam and rigid frame bridges were known much earlier, the Indiana State Highway Commission, did not construct such a span until well into the 1930s. [11] Thus, the small bridge on Cement Plant Road near Bedford survives in its bucolic setting as an example of the early use of continuous beam construction. But it is also a picturesque reminder of an ambitious (although failed) attempt to establish a massive concrete industry, near a town which was internationally known for its huge stone resources.

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[9] Cooper, p. 163.

[10] Cooper, pp. 97, 109

[11] Cooper, pp. 168-171.

PART II. DESCRIPTIVE INFORMATION

The Cement Plant Road Bridge is a continuous reinforced concrete beam structure 73 feet four inches long located approximately one quarter of a mile southeast of the city limit of Bedford, Indiana. The single, central pier, of reinforced concrete is 12 feet nine inches high from approximate ground line. The roadbed is approximately 12 feet wide and the walls of the bridge are fifteen inches thick.

The bridge was constructed perpendicular to the flow of Leatherwood Creek, which at this point runs in a northeast/southwest direction. Thus, the bridge roadway runs northwest/southeast. However, for purposes of simplicity, we have identified this as a generally north/south direction. Thus the two entries are referred to as "north" and "south" and the elevations of the bridge as "east" and "west."

The bridge is surrounded by well-kept private homes, with long, mowed lawns leading down to the creek. The banks of Leatherwood Creek are lined with large trees, and many of these also grace the back yards of the homes along the waterway. To the north of the bridge, the ground rises sharply, creating a steep bluff, which Cement Plant Road (CR 50 South) ascends as it climbs toward the edge of the City of Bedford. South of the bridge, the road turns sharply and then continues, with a slight rise in grade, to the site of the old cement plant.

The bed of Leatherwood Creek is of limestone, laid in even bedding planes, which form the nearly smooth base of the waterway. In some places (especially downstream of the bridge), these planes have deteriorated and broken up, creating riffles and rock beds in which sandbars have collected. Overall, the ambiance of the bridge, along this section of Leatherwood Creek, is very picturesque, with extensive overhanging trees, on both sides, and small woodlots and sprout areas interspersed. The water is clean, clear and free from debris. The banks are also pristine and extremely clean.

The Cement Plant Road Bridge is a simple structure, of fairly straight lines, and unadorned. The central pier which divides the span into two sections, is battered and has a shearwater (or starling) on the upstream side, sharply pointed against the current. On the downstream side, the end of the pier is flat. Approximately two to three feet above the low water line, a horizontal joint in the concrete is visible, with regularly spaced weep holes, possibly to relieve pressure on the structure. Above this joint, the construction is uniform.

At the four points where the upper girder meets the pier, simple concrete brackets, cast at the time of construction, add emphasis to the central pier and, probably, strengthen the structure.

The continuous concrete beam is set into identical abutments, each with angled wing walls. These walls slope from approximately the level of the roadbed down to a point approximately two to three feet above the river bank, where they form a retaining wall. The angle of the walls is the same on both ends of the bridge. On the south abutment wall, at or below low water line, the concrete has deteriorated, revealing large aggregate rip-rap which was used as a base along the water's edge. Graffiti adorns some of the wing walls.

The bridge parapet is even and straight, with only a slight cap, at the top of the solid concrete rail for decoration. The horizontal beam of the bridge, projects along the entrados, expressing the beam construction in concrete. The underside of the bridge is smooth concrete, with no other decoration except the projecting "beams" which, as previously mentioned, form "brackets" at the point where the central pier is constructed. The construction date, 1909, is cast in the concrete rail, on the northwest entrance, inside portion of the solid rail of the bridge. The roadbed of the bridge is of asphalt over concrete, in several layers. This has deteriorated, so that the present surface is, in some places asphalt and in others, concrete. The bridge is elevated slightly above the level of the road on both approaches, although the elevation is considerably higher on the north side, as the road is only slightly higher than the creek bank at that point. (The road ascends to the bluff somewhat farther north.)

PART III. BIBLIOGRAPHY

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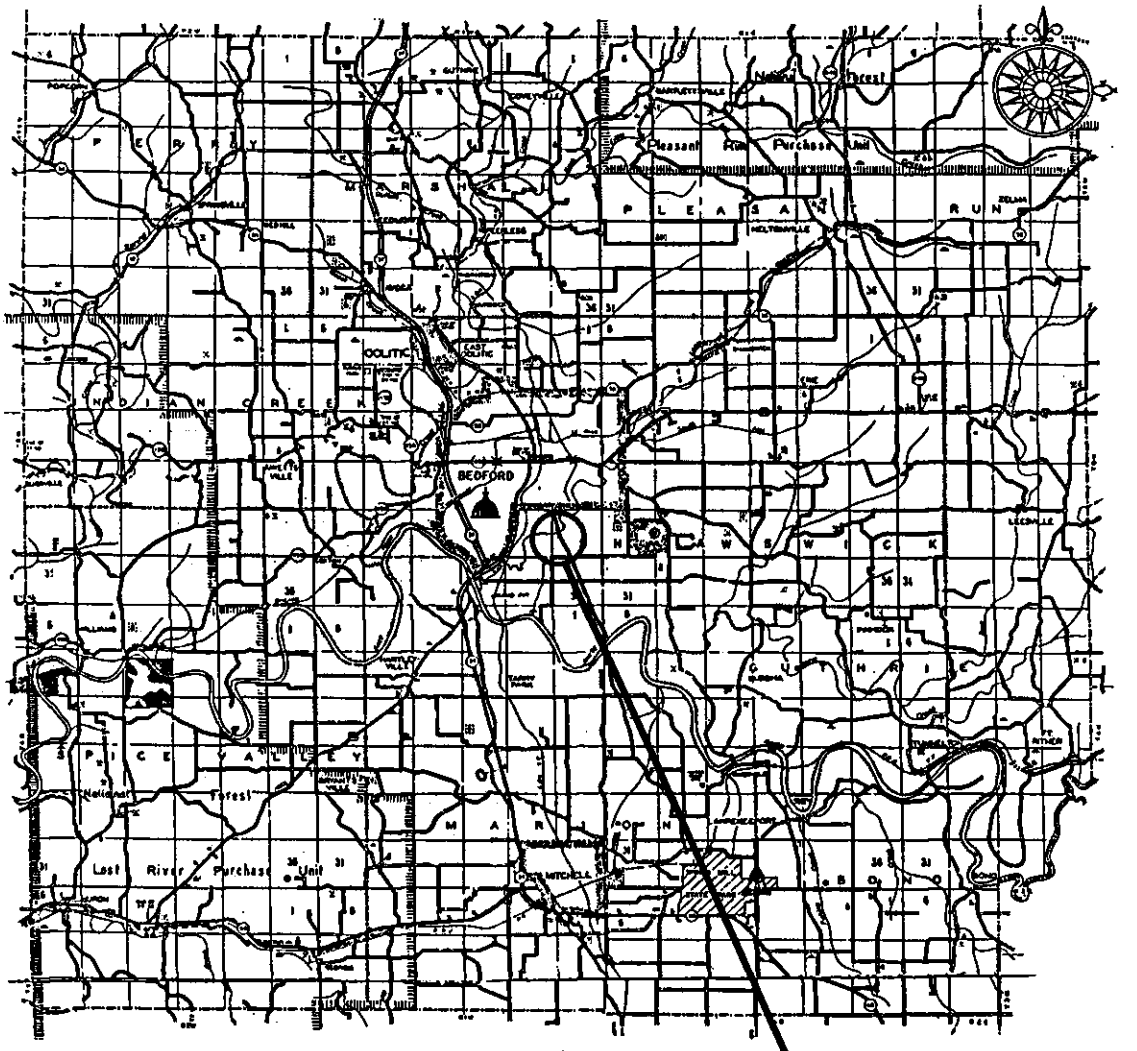
Location Map



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Sketch Map