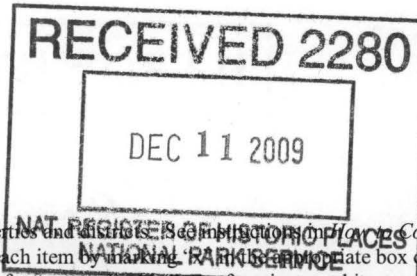


United States Department of the Interior  
National Park Service

National Register of Historic Places  
Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. *Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.



1. Name of Property

historic name Central Avenue Bridge

other names/site number AR 69 Bridge/Polk Bayou Bridge/Site #IN0260, Bridge #M1275

2. Location

street & number AR 69 over Polk Bayou

☐ not for publication

city or town Batesville

☐ vicinity

state Arkansas

code AR

county Independence

code 063

zip code 72501

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set for in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☐ statewide ☒ locally. (See continuation sheet for additional comments.)

Cathy M. [Signature]  
Signature of certifying official/Title

12/3/09  
Date

Arkansas Historic Preservation Program

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See Continuation sheet for additional comments.)

\_\_\_\_\_  
Signature of certifying official/Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☒ entered in the National Register.  
☐ See continuation sheet

☐ determined eligible for the  
National Register.

☐ See continuation sheet

☐ determined not eligible for the  
National Register.

☐ removed from the National  
Register.

☐ other, (explain:) \_\_\_\_\_

[Signature]  
Signature of the Keeper

1-26-10  
Date of Action

Edson H. Beall

Central Avenue Bridge  
Name of Property

Independence County, Arkansas  
County and State

### 5. Classification

**Ownership of Property**  
(Check as many boxes as apply)

- ☐ private  
☐ public-local  
☒ public-State  
☐ public-Federal

**Category of Property**  
(Check only one box)

- ☐ building(s)  
☐ district  
☐ site  
☒ structure  
☐ object

**Number of Resources within Property**  
(Do not include previously listed resources in count.)

Contributing

Noncontributing

	buildings
	sites
1	structures
	objects
1	Total

**Name of related multiple property listing**  
(Enter "N/A" if property is not part of a multiple property listing.)

Historic Bridges of Arkansas

**Number of Contributing resources previously listed  
in the National Register**

### 6. Function or Use

**Historic Functions**  
(Enter categories from instructions)

TRANSPORTATION/Road-Related

**Current Functions**  
(Enter categories from instructions)

TRANSPORTATION/Road-Related

### 7. Description

**Architectural Classification**  
(Enter categories from instructions)

OTHER/Deck Arch/Open Spandrel

**Materials**  
(Enter categories from instructions)

foundation CONCRETE  
walls CONCRETE  
  
roof N/A  
other

### Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 7 Page: 1

SUMMARY

The Central Avenue Bridge, or the Highway 69 Bridge, crosses Polk Bayou in central Independence County, Arkansas, in the town of Batesville. The bridge is an open-spandrel, concrete arch built in 1930. It consists of five spans with the main span being a length of approximately eighty (80) feet and with a main span width of approximately thirty (30) feet. The total length of the bridge is approximately three hundred ninety-seven (397) feet.

ELABORATION

The Luten Bridge Company of Little Rock, Arkansas, built the open-spandrel, concrete arch bridge over Polk Bayou in central Independence County in 1930. The bridge was built on the main route through Batesville, and connected the main town to its expansion on the west side of Polk Bayou. It was one of many bridges built to traverse the river, although earlier attempts have since vanished. This bridge is built in Luten's standard design with gently sloping arches; but strays from it in its open spandrel walls and open balusters with series of columns lining the railing. There are five spans supported by piers, and the bridge is three hundred ninety-seven feet long with a main span that is eighty feet long and thirty feet wide. The Highway 69 Bridge is not skewed in its construction.

Daniel B. Luten began his career in commercial bridge design in 1902 when he founded the National Bridge Company in Indianapolis, Indiana. Luten was an engineer who preached economics as well as solid engineering design. His designs consistently focused on strengthening the bridge while also reducing the amount of material needed to construct the bridge. Primarily this was accomplished by connecting the reinforcement of the piers with that of the rings while simultaneously connecting the rings to the spandrel walls. In this way, Luten increased the strength of the bridge while reducing the amount of material needed to build the bridge. It was the economical design and strength of the Luten bridges that proved their success.<sup>1</sup>

The Central Avenue Bridge currently connects the old downtown portion of Batesville to the western residential portion of the city. Highway 69 remains the main route to this area, even though a separate bridge was built in 1972 over the railroad tracks to ease congestion caused by trains. However there is no other evidence of any of the earlier crossings built before this bridge's construction in 1930.

<sup>1</sup> Van Zbinden, "Highway B-29 Bridge," National Register of Historic Places Registration Form. From the files of the Arkansas Historic Preservation Program (2008): Section 7, Page 1.

United States Department of the Interior  
National Park Service

National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 7 Page: 2

**Integrity**

The Central Avenue Bridge retains good integrity. The state has maintained the bridge well enough to allow local city traffic flow. There have been no modifications from the original, nor any major repairs. The roadway is intact and remains vital to the community of Batesville as a major passageway to a residential area of the city. The bridge is in a similar condition and setting to that of 1930.



Central Avenue Bridge

Name of Property

Independence County, Arkansas

County and State

## 8. Statement of Significance

### Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- ☒ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ **B** Property is associated with the lives of persons significant in our past.
- ☒ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

### Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☐ **B.** removed from its original location.
- ☐ **C.** birthplace or grave of a historical figure of outstanding importance.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property
- ☐ **G** less than 50 years of age or achieved significance within the past 50 years.

### Levels of Significance (local, state, national)

Local

### Areas of Significance (Enter categories from instructions)

ENGINEERING

TRANSPORTATION

### Period of Significance

1930-1960

### Significant Dates

1930

### Significant Person (Complete if Criterion B is marked)

### Cultural Affiliation (Complete if Criterion D is marked)

### Architect/Builder

Luten Bridge Company

### Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

## 9. Major Bibliographical References

### Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

### Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ Previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # \_\_\_\_\_
- ☐ recorded by Historic American Engineering Record # \_\_\_\_\_

### Primary location of additional data:

- ☒ State Historic Preservation Office
- ☒ Other State Agency
- ☐ Federal Agency
- ☐ Local Government
- ☐ University
- ☐ Other

Name of repository:

Arkansas State Highway & Transportation Department

## National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 1

### SUMMARY

The Central Avenue Bridge is being nominated to the National Register of Historic Places with **local significance** under **Criterion C** as a good example of reinforced concrete arch, open-spandrel bridge construction. The bridge is also significant as a good example of the work of prominent bridge designer and builder Daniel B. Luten bridge design in Independence County, Arkansas. The bridge is also being nominated under **Criterion A** for its association with the development of improved highway infrastructure in Independence County in the 1930s. The Central Avenue Bridge is being submitted to the National Register of Historic Places under the multiple property listing "Historic Bridges in Arkansas."

### ELABORATION

The Central Avenue Bridge, also known as the Highway 69 Bridge or the Central Avenue Bridge, is located on Arkansas State Highway 69, or North Central Avenue, and crosses Polk Bayou, a tributary of the White River, in central Batesville. The bridge is oriented northwest and southeast, and is in the same location as previous bridges built, although no visual evidence remains of them.

Independence County, one of the "Mother Counties" of Arkansas, originally contained all or part of fifteen modern counties of Arkansas. The county's history ties closely to its strategic location – it sits astride the White River. The White River, which lies between the Arkansas and Missouri rivers, is one of two major drainages of the Ozarks region. That crucial geographic trait made the Independence County area, with the White River as its original western boundary, an attractive place for Native American, and future European, settlements.<sup>2</sup>

In recent years, the route of Hernando de Soto's expedition through the southeast, from 1539-1542, has been recharted by scholars, and Independence County is on the newly mapped path.<sup>3</sup> Later European exploration was dominated by French fur-trappers, with the White River Valley becoming one of the stages on which the Osage met the French to trade. Their presence in the White River Valley left French names on the land, such as Polk Bayou, the location of the future county seat, Batesville.<sup>4</sup>

In 1814, the settlement at Polk Bayou became the home of John C. Luttig, agent of one of the fur-trading firms in St. Louis, Missouri, but his death in 1815 brought the endeavor to a halt. Missouri Territory established

<sup>2</sup> Information found at <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=776> : Independence County. Accessed 09 July, 2009. Referenced through the document as (I.C.)

<sup>3</sup> I.C.

<sup>4</sup> I.C.

National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 2

Lawrence County in 1815, a huge area that encompassed most of what became north Arkansas. In an attempt to create a county seat in a townless county, the government established the new town of Davidsonville, but it was located on the Black River, an awkward distance from the increasing population in the White River drainage. When Arkansas Territory was separated out of Missouri Territory in 1819, the new territorial assembly at Arkansas Post rapidly moved to create new counties. One of them was Independence County, created in 1820 by dividing Lawrence County along the watershed between the Black and White river valleys.<sup>5</sup>

The new county would have been extremely large if it had contained all the acreage in the old Lawrence County west of the dividing line. An important national political event drastically reduced the amount of available land, however. The Treaty of 1817 made the White River in the Ozarks the northeastern boundary of the new Cherokee Nation, thus giving a great part of Lawrence County to Cherokee from the Appalachians, groups of whom had already moved west to settle in the Ozarks during the years after 1795. Although the treaty was rejected by the Eastern Cherokee, thousands more moved to Arkansas after 1817, and the United States removed American settlers from the west bank of the White River. The river became the western boundary of Independence County in 1820, making the new county a large stretch of land from the Missouri border south along the east bank of the White River. Other counties were soon formed from the original—Izard in 1825, Jackson in 1828, and others through the century. Independence County did not reach its modern dimensions until Cleburne was created in 1883.

In 1832 the county once again got involved in Indian affairs when President Andrew Jackson appointed Jesse Bean captain of the newly formed cavalry company charged to patrol the western county to keep the peace. "Bean's Rangers" comprised of mostly Independence County men, who found themselves immortalized in Washington Irving's, *A Tour on the Prairies*.<sup>6</sup>

Batesville is one of the oldest towns in Arkansas, early settlers were in the area by 1810.<sup>7</sup> By 1812, a few houses and a trading post occupied the land where Polk Bayou runs into the White River. Within six years the little community had a ferry.<sup>8</sup> The earliest documented settler is John Reed, one of the mercantilists who was living at the Polk Bayou by 1812. By 1819, when tourist Henry Row Schoolcraft visited the area, there was, "a village of a dozen houses" at Polk Bayou. He considered his arrival there from upstream a, "return to the land of civilization."<sup>9</sup> By 1822, the town was platted and granted a post office.

<sup>5</sup> I.C.

<sup>6</sup> I.C.

<sup>7</sup> Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984) p. 1

<sup>8</sup> Nancy Britton, "Nineteenth Century Homes of Batesville, Arkansas," *The Independence County Chronicle* Volume XX, No. 2 (January 1979): p. 4.

<sup>9</sup> Information found at: <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=900> : Batesville (Independence County). Accessed July 9, 2009. Referenced through document as (B.I.C.)



National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 3

The town grew rapidly and, from 1830 to 1860, it was as cosmopolitan a place as could be found in the state. In fact, it must have been one of the most impressive towns west of the Mississippi and between St. Louis and New Orleans, for it had an academy, a jockey club, and two newspapers before 1840. As one writer put it, "for more than twenty years Batesville was the leading town in Arkansas, excelling every other in population, wealth, cultivation, schools, and regard for the law. Each and every one of its first settlers had been in the territory since 1815, and each and all centered their endeavors on the development of a great and thriving town."<sup>10</sup>

Long before the term "suburb" came into common use, Batesville had one. Blocked from expanding north or west by the navigable stream called Polk Bayou, the town grew eastward, then south towards the White River. As the town grew, it was inevitable that the land across the bayou, lying northwest but traditionally referred to as the West Side, would become attractive because of its proximity to the original commercial area of the town.<sup>11</sup> Some farms had been established on the West Side by very early settlers of Independence County. There was apparently a ford of the bayou at the present Central Avenue crossing. It is Charles B. Magruder must be given credit for being the father of West Batesville, he first appears on the tax rolls of Independence County in 1844. By 1848 Magruder had acquired the property which formed the original plat of West Batesville. The plat was filed with the County Clerk on June 21, 1850; and described as "The Town of Charleston, C.B. Magruder, Proprietor." The streets were laid out to match the lines of Batesville's north-south streets across the bayou; Broad Street on the west lined up with Spring on the east. These two streets now form Central Avenue, which has always been the connecting artery between the two sides of the town.<sup>12</sup>

A bridge had been built across the bayou as early as 1857, again Charles B. Magruder seems to have been the originator and prime mover of the project. According to the County Court records for the January term, 1850, Magruder had personally applied for a charter to build a toll bridge "across the Polk Bayou connecting the public road on the west bank with Spring Street." The bridge was never completed and a separate toll bridge was built around Chestnut Street, completed in 1857. Apparently this bridge was never very substantial, consisting of brick pillars crossed by wooden planks. Repairs were ordered as soon as 1860 and again in 1867.<sup>13</sup>

When the Civil War broke out, the county found itself divided in political sympathies; by war's end, twenty-eight companies had been raised locally—twenty-three Confederate and five Union. The strategic location of the county along the White River brought military occupation, and Batesville and the floodplain became a bivouac

<sup>10</sup> Nancy Britton, "Nineteenth Century Homes of Batesville, Arkansas," *The Independence County Chronicle* Volume XX, No. 2 (January 1979): p. 4.

<sup>11</sup> Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984) p. 1

<sup>12</sup> Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984) p. 2

<sup>13</sup> Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984) p. 4

National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 4

for five campaigns during the war, two by Union forces and three by Confederates.<sup>14</sup> Batesville was a prosperous mercantile and cultural center for northeastern Arkansas, but when the war was over, the town was destitute, and it took decades for recovery. Even so, Arkansas College and many fine homes were built in the 1870s.<sup>15</sup>

As the local economy struggled to recover, the county provided leadership for both sides during Reconstruction. After the assassination of a Federal registrar in Fulton County in 1868, local leadership of the Ku Klux Klan convened an army at Oil Trough to march on Little Rock, but the threat was solved by negotiation.<sup>16</sup> Reconstruction in Batesville saw the building of a Freedmen's Bureau school and some Ku Klux Klan resistance. Elisha Baxter, a Batesville resident and Union officer during the war, became the state's tenth governor, though he was soon ousted and had to fight to regain his governorship in the conflict known as the Brooks-Baxter War.<sup>17</sup>

The county moved into the modern era with an economy based on agriculture, timber, and timber products such as railroad ties, wheel hubs, excelsior, and staves. The mercantile sector was aided by steamboat transportation through the nineteenth century.<sup>18</sup> River traffic flourished until it was slowed by the building of the first three of ten projected locks and dams, and then replaced in the opening decades of the twentieth century by railroads. The St. Louis, Iron Mountain, and Southern Railroad first arrived in 1883 and was extended up the White River valley in 1905.<sup>19</sup> Batesville continued to be the mercantile center of the county, and the post-bellum decades saw the creation of large, locally owned stores and banks. In the early years of the twentieth century, there were brief economic experiments with shell, pearls, and manganese, but the major additions were the cattle and poultry industries.<sup>20</sup>

In 1881, a new bridge was already needed to replace the one repaired in 1867. Lockie Ball Barnett, a resident of Batesville, described in a manuscript the coming of the iron bridge, "The finest iron bridge in the state was completed across Polk Bayou, connecting Charleston and Batesville. Previous to this we had a ferry when the water was high—but we always did have a foot bridge for pedestrians across this stream."<sup>21</sup> On April 14, 1884, a petition was brought before the County Court by Dr. William M. Lawrence and sixteen others, being a majority of the real estate owners in Charleston, requesting annexation of that area to the Town of Batesville. At

<sup>14</sup> (I.C.)

<sup>15</sup> (B.I.C.)

<sup>16</sup> (I.C.)

<sup>17</sup> (B.I.C.)

<sup>18</sup> (I.C.)

<sup>19</sup> (B.I.C.)

<sup>20</sup> (I.C.)

<sup>21</sup> Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984) p. 5



National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 5

the hearing the annexation was approved and the Town of Charleston became officially Charleston Addition to the Town of Batesville. The 1883 bridge was later replaced by a steel structure which was turned over to the City of Batesville in 1921. The present concrete structure was completed and dedicated in 1930.<sup>22</sup>

Concrete, open or closed, spandrel arch bridges were the specialty of the Luten Bridge Company. In fact they were of particular interest to Daniel B. Luten, the civil engineer who designed the bridges. Luten specialized in reinforced concrete bridges. His designs and innovations led to a number of patents and for many years in the early twentieth century, an almost complete monopoly on concrete arch bridge construction.<sup>23</sup>

By the 1920s, concrete was very commonly used in bridge construction. Concrete is a mixture of an aggregate—usually sand, gravel, or both—cement, and some amount of water. The cement holds everything together. Portland Cement is the cement most often used in concrete construction. It was first patented in 1848 in Portland, England. The first use of it in the United States is generally attributed to David O. Saylor who, in 1871, patented the American equal to Portland cement and began a manufacturing plant. Frederick Law Olmstead is credited with the first design of a concrete-arch bridge for his Central Park in New York.<sup>24</sup>

Portland cement was widely used in the United States for concrete construction by the early 1890s.<sup>25</sup> The Columbian Exhibition of 1893 though, brought concrete to the fore. This exhibition depended heavily on the use of concrete in its classical designs and bridges. The bridges were based heavily on Roman designs and featured filled spandrels, ornate balustrades, and façades designed to simulate real stone. From the exhibition grew a demand for design of buildings and structures that were elegant, fit naturally into their surroundings, and yet had a feel of grandeur. The imprint of the exhibition on the American landscape would be felt for many years to come.

In bridge and road design, the post Columbian Exhibition movement toward classical designs was called the City-Beautiful movement.<sup>26</sup> One of the critics of the City-Beautiful movement was Daniel B. Luten. In opposition to his peers who supported the City-Beautiful movement Luten once noted, “A concrete arch, in harmony with its surroundings, but without ornamentation is an exceedingly beautiful structure.”<sup>27</sup>

<sup>22</sup> Nancy Britton, “Historic Overview of the West Side Neighborhood of Batesville, Arkansas,” (August 1984) p. 6

<sup>23</sup> Van Zbinden, “Highway B-29 Bridge,” National Register of Historic Places Registration Form. From the files of the Arkansas Historic Preservation Program (2008): Section 8, Page 9.

<sup>24</sup> James L. Cooper, *Artistry and Ingenuity in Artificial Stone: Indiana's Concrete Bridges 1900-1942* (Greencastle, IN: privately printed, 1997), 9.

<sup>25</sup> Ibid.

<sup>26</sup> Two, of many, good books on the City-Beautiful movement are William H. Wilson, *The City Beautiful Movement* (Baltimore: Johns Hopkins Press, 1989) and Jon A. Peterson, *The Birth of City Planning in the United States, 1840-1917* (Baltimore: Johns Hopkins Press, 2003).

<sup>27</sup> Daniel B. Luten, “Bridges” in *Proceedings of the Eight Annual Convention of the National Association of Cement Users, Vol. III* by the American Concrete Institute (Detroit, MI: American Concrete Institute, 1912), 631.

## National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 6

Luten was a civil engineer who received his engineering training at the University of Michigan. He graduated in 1894 and then was asked to teach in the engineering staff of the university. In 1895, he took a position in the engineering school at Purdue University where he taught Architectural and Sanitary engineering.<sup>28</sup> Several years of teaching left Luten dissatisfied with what he perceived as the academic professionals' lack of empirical knowledge about engineering. As he once noted, "College professors, 'are not leaders in engineering,'" and that in fact, they are, "almost always years behind the practical men of the profession."<sup>29</sup> This dissatisfaction led Luten to resign his post at Purdue to become a practical man.<sup>30</sup>

As reinforced concrete construction gained notoriety and acceptance Luten made it his material of choice. He noted in *The Railroad Gazette* in 1902 that, "A concrete arch is a structure that grows continually stronger with age, both because of the continual increase in strength of concrete and because of the impacting of earth filling on the arch and back of the abutments."<sup>31</sup> Basing his future on the superiority of concrete, Luten made his name by changing the way bridges—especially reinforced concrete bridges—were designed in the United States.

In an article published in 1902 Luten questioned the practicality of John C. Trautwine's theorems on arch, culvert, and bridge design. Trautwine's works *Curves, Excavations and Embankments*, and *The Civil Engineer's Pocket Book* were widely accepted in American engineering practice as the standard to follow.<sup>32</sup> On the offensive, Luten noted that the majority of the reinforced concrete structures being built in the United States were being built using Trautwine's antiquated formulas—in the standards and designs of stone bridges.

This, Luten noted, "[Results] in a clumsy, awkward section that is far from efficient when concrete is the material used."<sup>33</sup> Instead of accepting Trautwine's empirical formulas Luten used the nineteenth century designs of Viennese Professor, Joseph Melan, and the American, Edwin Thacher as the basis for his innovations. Both Melan and Thacher used reinforcing metal to provide support for their concrete arches. Melan's designs however could more correctly be called metal bridges encased in concrete; with rolled I-beam girders supporting the weight of the bridge and the concrete serving as decorative and protective coatings.<sup>34</sup>

<sup>28</sup> Cooper, 38.

<sup>29</sup> Daniel B. Luten quoted in Cooper, 38.

<sup>30</sup> Van Zbinden, "Highway B-29 Bridge," National Register of Historic Places Registration Form. From the files of the Arkansas Historic Preservation Program (2008): Section 8, Page 10.

<sup>31</sup> Daniel B. Luten, "Design of a Concrete-Steel Arch Culvert," *Railroad Gazette*, 1 August 1902, 608.

<sup>32</sup> John C. Trautwine, *The Field Practice of Laying Out Circular Curves for Railroads* (Philadelphia: R. W. Barnard, 1851); *A New Method of Calculating the Cubic Contents of Excavations and Embankments, By the Aid of Diagrams* (Philadelphia: R. W. Barnard & Sons, 1851); *The Civil Engineer's Pocket Book of Mensuration, Trigonometry, Surveying, Hydraulics* (Philadelphia: Claxton, Remsen & Haffelfinger, 1871).

<sup>33</sup> Daniel B. Luten, "Warped Ends for Concrete Arch Culverts," *Railroad Gazette*, 3 October 1902, 761.

<sup>34</sup> Cooper, 15, 16.

## National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 7

Thacher took Melan's designs and decreased the amount of metal used in the reinforcing by substituting flat bars or rods. Thacher also redesigned the location of the bars in the top and bottom of the ring. In this way the reinforcing courses acted independently of one another and provided additional strength. Thacher also designed his system to have smaller piers and anchors by carrying the reinforcing metal into the abutment. This small design change redirected the thrust of the ring more toward vertical giving the bridge greater carrying capacity while using less material.<sup>35</sup>

Luten took all of these designs and pushed them further. Like all engineers, Luten focused on empirical design; however, he felt that determining calculations for each specific job was a waste of time and money. Luten developed a series of calculations that he applied to each bridge. With these calculations Luten developed a set of two corollaries both of which stressed that the bridge should be assessed as a whole and not as pieces. Luten's corollaries led him to integrate the bridge components more completely than had his predecessors.<sup>36</sup>

Assessing the bridge as a whole unit led Luten to better utilize the entire bridge structure. The spandrel walls, which once were designed to only hold dirt fill, were connected in Luten design to the arch rings and extended beyond the abutments.<sup>37</sup> In this way, Luten placed more weight on the ends of the bridge and increased leverage to support more weight in the middle. Increasing the spandrel wall height and weaving the reinforcing rods through the bridge helped add strength across the bridge and allowed for less concrete in the spandrel walls. By reducing the material and adding strength Luten was able to reduce the size of his piers and abutments. Between 1902 and 1911 Luten received seven patents including the steel-tied arch, the ring-stiffening spandrel, and the arch-ring reinforcing method. By 1915, Luten held 39 U.S. Patents and designed over 6,000 bridges in the U.S., Mexico, Canada, and Japan.<sup>38</sup>

The Central Avenue Bridge replaced the only standing structure crossing the Polk Bayou, a tributary of the White River, through Batesville in 1930. The need for expansion and a dependable crossing of the river was a driving factor in Batesville's active bridge building history. This allowed Batesville to become the burgeoning community that still serves as the county seat for Independence County, as its history as a hub of commerce in Arkansas's past

<sup>35</sup> Ibid., 39-41.

<sup>36</sup> Van Zbinden, "Highway B-29 Bridge," National Register of Historic Places Registration Form. From the files of the Arkansas Historic Preservation Program (2008): Section 8, Page 11.

<sup>37</sup> Ibid., 44-50.

<sup>38</sup> Jayne H. Feigle, *Andrew J. Sullivan Memorial Bridge, Spanning Cumberland River, Williamsburg vicinity, Whitley County, KY*, Historic American Engineering Record No. KY-31 (July 2000), [http://memory.loc.gov/ammem/collections/habs\\_haer/](http://memory.loc.gov/ammem/collections/habs_haer/) [Accessed 06/21/2007]. One of Luten's business related innovations that had a more dramatic effect on the history of engineering in the United States was his licensing program. Luten used his corollaries and established computations to apply bridge design to multiple locations. In this way he was able to license, for a fee, his design to independent companies who built Luten bridges. Ultimately Luten was taken to court for this practice and in several high profile cases ultimately had his patents stripped from him.



## National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 8 Page: 8

depended on the city's geographic location and ability to accomodate new settlers.

### Statement of Significance

The Central Avenue Bridge —also known as the Highway 69 Bridge or Bridge #M1275—is a good example of the deck arch bridge design in Arkansas. It was built by the City of Batesville in 1930 and retains good integrity of setting and remains unaltered. As one of Daniel B. Luten designs, the bridge is exemplary not only of Luten's engineering design but for the development of improved roads and bridges in the state.

The Central Avenue Bridge is being nominated to the National Register of Historic Places with **local significance** under **Criterion C** as a good example of reinforced concrete arch, open-spandrel bridge construction. The bridge is also significant as a good example of the work of prominent bridge designer and builder Daniel B. Luten bridge design in Independence County, Arkansas. The bridge is also being nominated under **Criterion A** for its association with the development of improved highway infrastructure in Independence County in the 1930s. The Central Avenue Bridge is being submitted to the National Register of Historic Places under the multiple property listing "Historic Bridges in Arkansas."

National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 9 Page: 1

BIBLIOGRAPHY

Batesville (Independence County). <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=900> : Accessed July 9, 2009.

Daniel B. Luten, "Bridges" in *Proceedings of the Eight Annual Convention of the National Association of Cement Users, Vol. III* by the American Concrete Institute (Detroit, MI: American Concrete Institute, 1912), 631.

Daniel B. Luten, "Design of a Concrete-Steel Arch Culvert," *Railroad Gazette*, 1 August 1902, 608.

Daniel B. Luten, "Warped Ends for Concrete Arch Culverts," *Railroad Gazette*, 3 October 1902, 761.

Independence County. <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=776> : Accessed 09 July, 2009.

James L. Cooper, *Artistry and Ingenuity in Artificial Stone: Indiana's Concrete Bridges 1900-1942* (Greencastle, IN: privately printed, 1997), 9.

Jayne H. Feigle, *Andrew J. Sullivan Memorial Bridge, Spanning Cumberland River, Williamsburg vicinity, Whitley County, KY*, Historic American Engineering Record No. KY-31 (July 2000), [http://memory.loc.gov/ammem/collections/habs\\_haer/](http://memory.loc.gov/ammem/collections/habs_haer/) [Accessed 06/21/2007].

John C. Trautwine, *The Field Practice of Laying Out Circular Curves for Railroads* (Philadelphia: R. W. Barnard, 1851); *A New Method of Calculating the Cubic Contents of Excavations and Embankments, By the Aid of Diagrams* (Philadelphia: R. W. Barnard & Sons, 1851); *The Civil Engineer's Pocket Book of Mensuration, Trigonometry, Surveying, Hydraulics* (Philadelphia: Claxton, Remsen & Haffelfinger, 1871).

Nancy Britton, "Historic Overview of the West Side Neighborhood of Batesville, Arkansas," (August 1984).

Nancy Britton, "Nineteenth Century Homes of Batesville, Arkansas," *The Independence County Chronicle* Volume XX, No. 2 (January 1979).

Van Zbinden, "Highway B-29 Bridge," National Register of Historic Places Registration Form. From the files of the Arkansas Historic Preservation Program (2008).



Central Avenue Bridge  
Name of Property

Independence County, Arkansas  
County and State

## 10. Geographical Data

Acreage of Property Less than one

### UTM References

(Place additional UTM references on a continuation sheet.)

1 15 621549 3959404  
Zone Easting Northing  
2

3  
Zone Easting Northing  
4

☐ See continuation sheet

### Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

### Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

## 11. Form Prepared By

name/title Evan Silva, Intern, Edited by Ralph S. Wilcox, National Register & Survey Coordinator  
organization Arkansas Historic Preservation Program date June 29, 2009  
street & number 1500 Tower Building, 323 Center Street telephone (501) 324-9787  
city or town Little Rock state AR zip code 72201

## Additional Documentation

Submit the following items with the completed form:

### Continuation Sheets

### Maps

A USGS map (7.5 or 15 minute series) indicating the property's location

A Sketch map for historic districts and properties having large acreage or numerous resources.

### Photographs

Representative black and white photographs of the property.

### Additional items

(Check with the SHPO or FPO for any additional items.)

## Property Owner

(Complete this item at the request of SHPO or FPO.)

name  
street & number telephone  
city or town state AR zip code

**Paperwork Reduction Act Statement:** This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listing. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*)

**Estimated Burden Statement:** Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P. O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20303.

## National Register of Historic Places Continuation Sheet

Name of Property: Central Avenue Bridge

County and State: Independence County, Arkansas

Name of multiple property listing (if applicable):  
Historic Bridges of Arkansas

Section number: 10 Page: 1

### Verbal Boundary Description

Beginning at a point ten feet northwest of the northwest end of the Central Avenue Bridge, proceed southeasterly to a point ten feet southeast of the southeast end of the bridge. The boundary includes twenty feet on each side of the highway centerline.

### Boundary Justification

The boundary encompasses all of the land historically associated with the Central Avenue Bridge and its immediate surroundings.

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES  
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY Central Avenue Bridge  
NAME:

MULTIPLE Historic Bridges of Arkansas MPS  
NAME:

STATE & COUNTY: ARKANSAS, Independence

DATE RECEIVED: 12/11/09 DATE OF PENDING LIST: 12/30/09  
DATE OF 16TH DAY: 1/14/10 DATE OF 45TH DAY: 1/25/10  
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 09001248

REASONS FOR REVIEW:

APPEAL: N DATA PROBLEM: N LANDSCAPE: N LESS THAN 50 YEARS: N  
OTHER: N PDIL: N PERIOD: N PROGRAM UNAPPROVED: N  
REQUEST: N SAMPLE: N SLR DRAFT: N NATIONAL: N

COMMENT WAIVER: N

☒ ACCEPT ☐ RETURN ☐ REJECT 1-21-10 DATE

ABSTRACT/SUMMARY COMMENTS:

Entered in  
The National Register  
of  
Historic Places

RECOM./CRITERIA \_\_\_\_\_

REVIEWER \_\_\_\_\_ DISCIPLINE \_\_\_\_\_

TELEPHONE \_\_\_\_\_ DATE \_\_\_\_\_

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.





CENTRAL AVENUE BRIDGE

INDEPENDENCE COUNTY, AR

RALPH S. WILCOX

NOVEMBER 2006

ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR

VIEW OF THE BRIDGE LOOKING SOUTH





CENTRAL AVENUE BRIDGE

INDEPENDENCE COUNTY, AR

RALPHS. WILCOX

NOVEMBER 2006

ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR  
VIEW OF THE BRIDGE LOOKING EAST





CENTRAL AVENUE BRIDGE  
INDEPENDENCE COUNTY, AR  
RALPH S. WILCOX

NOVEMBER 2006

ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR  
VIEW OF THE BRIDGE LOOKING NORTHWEST







CENTRAL AVENUE BRIDGE

INDEPENDENCE COUNTY, AR

RALPH S. WILCOX

NOVEMBER 2006

ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR

BUILDER'S PLATE LOOKING NORTH





CENTRAL AVENUE BRIDGE  
INDEPENDENCE COUNTY, AR

RALPH S. WILCOX

NOVEMBER 2006

ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR  
GUARDRAIL DETAIL LOOKING EAST

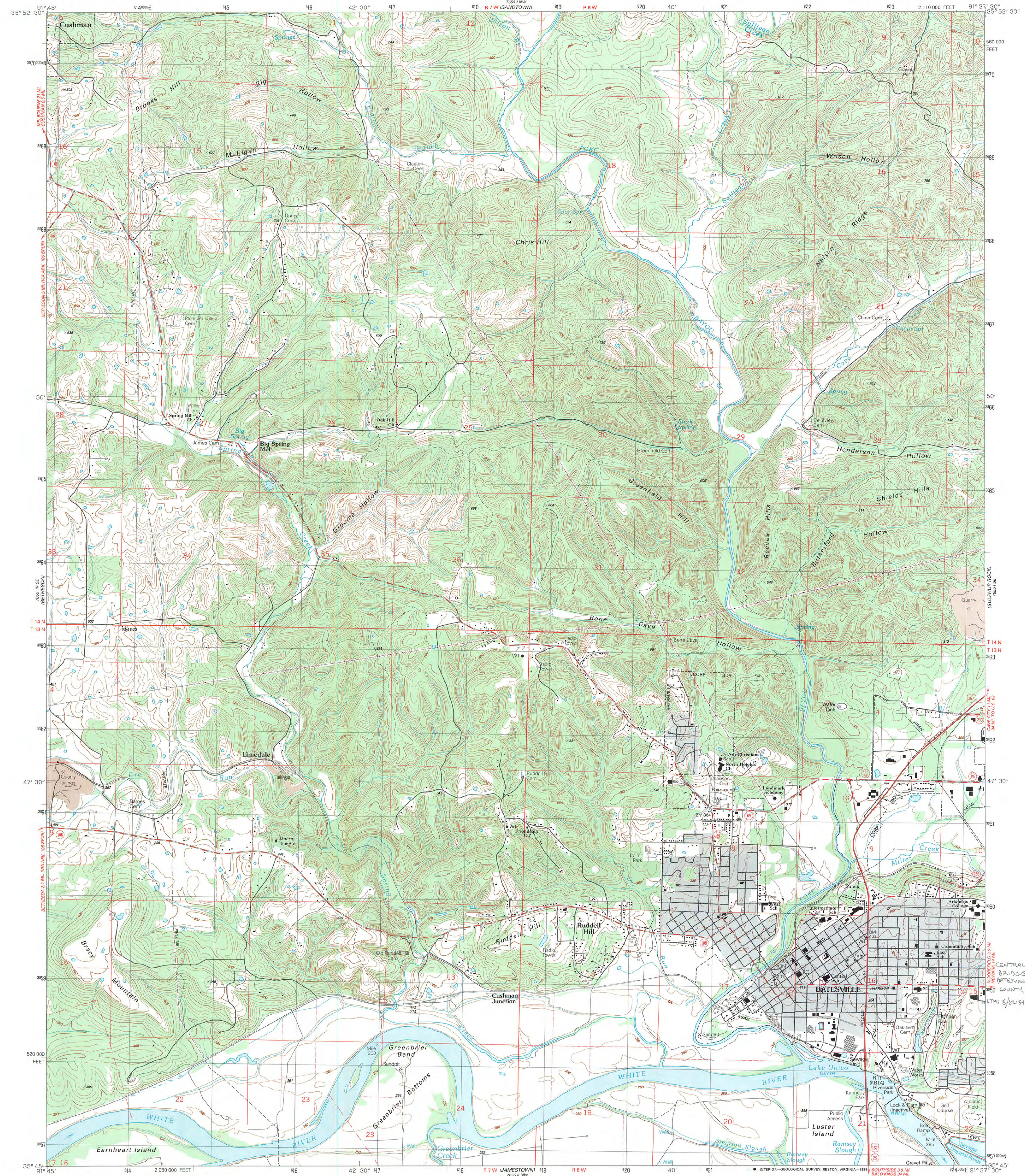


2881' NE  
(MT. PLEASANT)

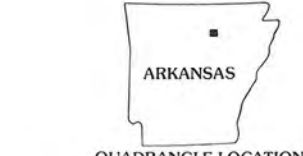
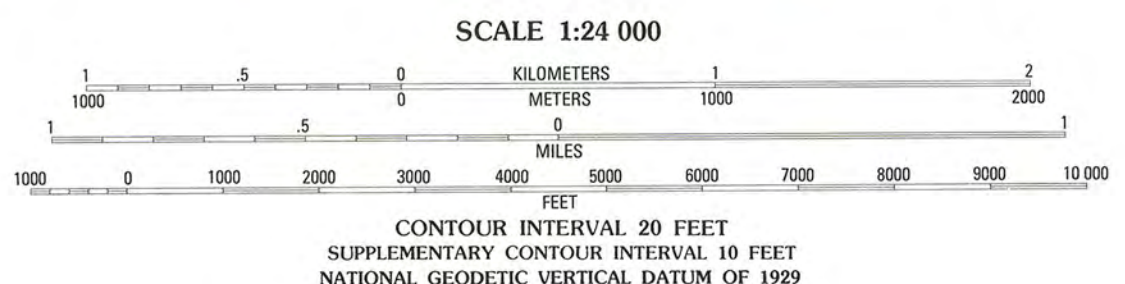
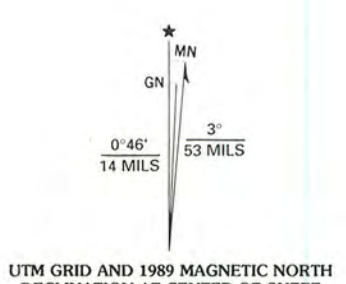
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

BATESVILLE QUADRANGLE  
ARKANSAS-INDEPENDENCE CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)

2881' NE  
(CAVE CITY)



Produced by the United States Geological Survey  
Control by USGS and NOS/NOAA  
Topography by photogrammetric methods from aerial photographs taken 1986. Field checked 1987. Map edited 1989  
Supersedes Batesville map dated 1943  
Projection and 10,000-foot grid ticks: Arkansas coordinate system, north zone (Lambert conformal conic)  
1000-meter Universal Transverse Mercator grid, zone 15  
1927 North American Datum  
To place on the predicted North American Datum 1983, move the projection lines 5 meters south and 13 meters east as shown by dashed corner ticks  
Gray tint indicates areas in which only landmark buildings are shown  
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked



ROAD CLASSIFICATION

Primary highway, hard surface .....	Light-duty road, hard or improved surface .....
Secondary highway, hard surface .....	Unimproved road .....
Interstate Route	U. S. Route
	State Route

BATESVILLE, ARK.

35091-G6-TF-024

1989

DMA 7655 1 SW-SERIES V884

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092  
AND ARKANSAS GEOLOGICAL COMMISSION, LITTLE ROCK, ARKANSAS 72204  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST





The Department of  
**Arkansas  
Heritage**

Mike Beebe  
Governor

Cathie Matthews  
Director

Arkansas Arts Council

\*

Arkansas Natural Heritage  
Commission

\*

Delta Cultural Center

\*

Historic Arkansas Museum

\*

Mosaic Templars  
Cultural Center

\*

Old State House Museum



Arkansas Historic  
Preservation Program

1500 Tower Building

323 Center Street

Little Rock, AR 72201

(501) 324-9880

fax: (501) 324-9184

tdd: (501) 324-9811

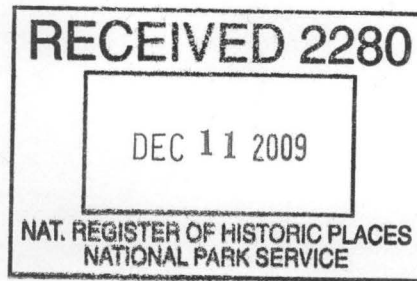
e-mail:

[info@arkansaspreservation.org](mailto:info@arkansaspreservation.org)

website:

[www.arkansaspreservation.com](http://www.arkansaspreservation.com)

An Equal Opportunity Employer



December 2, 2009

Dr. Janet Matthews  
Chief of Registration  
United States Department of the Interior  
National Register of Historic Places  
National Park Service  
8th Floor  
1201 Eye Street, NW  
Washington, DC 20005

RE: Central Avenue Bridge – Batesville, Independence County,  
Arkansas

Dear Dr. Matthews:

We are enclosing for your review the above-referenced nomination. The Arkansas Historic Preservation Program has complied with all applicable nominating procedures and notification requirements in the nomination process.

If you need further information, please call Ralph S. Wilcox of my staff at (501) 324-9787. Thank you for your cooperation in this matter.

Sincerely,

Cathie Matthews  
State Historic Preservation Officer

CM:rsw

Enclosure