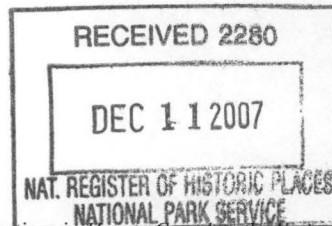


United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form



This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in 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 White River Bridge at Elkins

other names/site number Bridge #17325 / Site # WA0962

2. Location

street & number Mount Olive Road/County Road 44

☐ not for publication

city or town Elkins

☐ vicinity

state Arkansas code AR county Washington code 143 zip code 72727

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.)

Casheie Matthews

11/29/07

Signature of certifying official/Title

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 of the Keeper

Date of Action

Edson R. Beall

1-24-08

White River Bridge at Elkins

Name of Property

Washington 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/Bridge

Current Functions

(Enter categories from instructions)

TRANSPORTATION/Road-Related/Bridge

7. Description**Architectural Classification**

(Enter categories from instructions)

Other/closed-spandrel concrete arch deck

Materials

(Enter categories from instructions)

foundation Concrete, reinforced

walls N/A

roof N/A

other Concrete, reinforced/Earth

Narrative Description

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

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Summary

White River Bridge at Elkins, Bridge #17325, crosses the White River on the east side of the town of Elkins in eastern Washington County, Arkansas. The bridge is a reinforced concrete, filled-spandrel arch built in 1921. It consists of three spans of a total length of approximately 200 feet with a height above water of approximately thirty (30) feet.

Elaboration

Luten Bridge Company of Knoxville, Tennessee built the reinforced concrete, filled—or closed—spandrel arch bridge over the White River in eastern Washington County in 1921. This was one of the first of 12 bridges to be built by Luten of Knoxville in the county. The bridge is of Luten's standard design with gently sloping, shallow arches, spandrel walls topped with coping at the deck, and solid balusters with square inset detail; however, the bridge does not have rounded piers, a common trait of Luten Bridge designs. The three span bridge is approximately 192 feet long with one span of sixty-eight (68) feet and two spans of sixty-two (62) feet. The bridge is approximately thirty feet above the water and the deck is sixteen feet wide. Unlike many Luten bridges, the walls were not brush hammered nor were the rings polished for decorative effect.

Daniel B. Luten began his career in commercial bridge design in 1902 when he founded the National Bridge Company in Indianapolis, IN. 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. The Luten Bridge Company of Knoxville successfully bid on several of the filled spandrel arch bridges in Washington County and won each contract.

Bridge #17325, as numbered by the Arkansas Highway and Transportation Department, connects Elkins with rural, eastern Washington County and western Madison County on what is now known as the Mt. Olive Road, or County Road 44. This road and bridge over the White River connected eastern Richland Township with its most prominent town and provided important access to logging and timber interests in western Madison County. Though largely rural, this area, as with the rest of Washington County, has seen increased urban development, or encroachment, in recent years.

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Integrity

White River Bridge at Elkins, Bridge #17325, retains good integrity. The county transportation department has done an excellent job in maintaining the bridge. At an unknown date a section of the baluster on the northeast side was rebuilt, most likely necessitated by a vehicular accident. This repair, however, was completed to match exactly the original work. Additionally the original dirt roadway was graveled and ultimately paved with asphalt. Though the area is seeing increased urban growth, the setting remains much the same as when the bridge was constructed.

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

1921-1958

Significant Dates

1921

Significant Person (Complete if Criterion B is marked)**Cultural Affiliation** (Complete if Criterion D is marked)**Architect/Builder**

Luten Bridge Company of Knoxville, TN

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:

Washington County Archives, Fayetteville, AR

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Summary

The White River Bridge at Elkins, Bridge #17325, is being nominated to the National Register of Historic Places with **local significance** under **Criterion C** as a good example of reinforced concrete, filled-spandrel bridge construction. The bridge is also a good example of Daniel B. Luten bridge design in Washington County, Arkansas. The bridge is also being listed under **Criterion A** for its association with transportation in Washington County. Bridge #17325 is being submitted to the National Register of Historic Places under the multiple property listing "Historic Bridges of Arkansas."

Elaboration

It is easy to underestimate a bridge. We pay them little attention on our way to and from home or work. Yet, they are incredibly important aspects of our transportation networks. As Franklin D. Roosevelt once said, "There can be little doubt that in many ways the story of bridge building is the story of civilization. By it we can readily measure an important part of a people's progress."¹ Indeed bridges make our travel easier and safer. They allow us to access resources and to ship finished goods. Bridges enhance our political and social networks by connecting the people with churches, social centers, and government offices. They are more than just a crossing of a body of water or a ravine.

Yet, they are expensive. Very simply, there is a point at which traffic levels, the need for safe travel, the desire for more timely travel, population growth, and desire for public access all converge. At this convergence is the necessity for bridges. However, if there's no need for access nor a desire for timely travel there is no need for a bridge. Likewise, before a sizeable population density is achieved there is not the tax base for a public bridge. In these cases some enterprising group or individual might replace a ferry or ford with a toll bridge. Yet, as with the public bridge, there must be the population to provide the necessary income to pay for the bridge and make a profit. In this way, a bridge does become a measure of progress.

¹ Franklin D. Roosevelt quoted in Clayton B. Fraser, "Highway Bridges of Colorado" Multiple Property Nomination, (Loveland: Colorado Historical Society, 2000), E-1.

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Washington County was formed from Lovely County on 17 October 1828. In the 1830 census the population was 2,182. By 1840, that population had grown an astonishing 327 percent to 7,148 people.² This early settlement was primarily in the prairies of the Springdale Plateau and in the valleys along the county's rivers and creeks. The first county record shows the appointment of overseers to layout two separate roads. One from Franklin to Damon's Lick on Lee Creek and the other from Fayetteville to the southern boundary of the county, "at or near Cove Creek."³

From its beginning the Washington County Court was involved with some aspect of roadways. They were appointing overseers, viewers, and commissioners to maintain, change, or layout roads in every session of the Court from the first onward. In July of 1837, the Court appointed commissioners to oversee construction of one of the first public bridges in the county over the dam at Dugan's Mill on the White River.⁴ In October of that year they ordered construction of a bridge across the mill dam at Fisher's Mill, also on the White River.⁵

As settlement of the county pushed east and south the demand for roads into those areas grew. On 12 October 1838 the Court appointed overseers and established a road fifteen feet wide from Fayetteville to John Still's saw mill on the West Fork of the White River. Prior to the establishment of Still's Mill Road, the county ordered the establishment of a Fayetteville & Richland Creek Road and Fayetteville & Middle Fork of White River Road.⁶ This early establishment of roads, particularly the Fayetteville & Middle Fork of White River Road, was in response to settlement in eastern Washington County along the White River. Nevertheless, the majority of early settlement was in the northern half of the county. The central-eastern and southeastern sections of Washington County remained sparsely settled.

The Boston Mountains dominate the topography of central, southern, and eastern Washington County. These mountains are old mountains generally more similar in nature to a plateau. However, they are deeply dissected and have very steep sides with differences in elevation from valley floor to mountain top nearing 500 feet. As a result early settlement was largely limited to the valley floors along the flood plains of rivers such as the White River, Richland Creek, or the Illinois River. The promise of these mountains was its forests and ultimately it would be these forests that most dramatically changed this eastern section of Washington County.

² Mathew Bryan Kirkpatrick, "Washington County," *The Encyclopedia of Arkansas History and Culture* online at <http://encyclopediaofarkansas.net/> accessed 17 September 2007.

³ Goodspeed Publishing Company, *The Goodspeed Biographical and Historical Memoirs of Northwestern Arkansas* (Chicago: Goodspeed Publishing Co., 1889; reprint Easley, SC: The Southern Historical Press, 1971), 163, 164.

⁴ Washington County Court, Court Record Book A, 140.

⁵ Ibid., 203.

⁶ Ibid. Fayetteville & Richland Creek was established in 1836 and the Fayetteville & Middle Fork of the White River Road was established in January 1838. See Washington County Court, Court Record Book A, 32, 177.

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Between 1828 and 1860, the majority of settlers in the Boston Mountains of eastern Washington County were American born or of western European descent. Such was the influx of settlers that by 1840 Washington County was the state's most productive agricultural county. However, settlement and agricultural production remained heavily focused in a few areas of the county until after 1840.⁷ After the large population increase between 1830 and 1840, settlement in the county slowed but remained robust, doubling by 1860 and doubling again by 1900.⁸ A result of this influx was that in the twenty years between 1840 and 1860 the interior areas of the Boston Mountains attracted greatly increased settlement. Richland Township, created in 1829, had a population of 871 in 1850.⁹ By 1870 that number had grown to 1,156.¹⁰

Richland Township is primarily a mountainous township divided by the White River. The Middle Fork of the White River forms its western boundary and the Madison County line forms the eastern boundary of the township. Early settlement in the township was in the river valleys and along the waterways. Richland Creek was one of the first post offices established in the township in 1832.¹¹ As settlement along the White River and the Middle Fork of the White River increased in the 1850s, villages like Boone's Grove, Maguire's Store, and Hood were created. These towns served as the political, social, and economic centers of their communities.

Historian Brooks Blevins notes that antebellum farming in the Boston Mountains of Washington County was largely subsistence agriculture. The yeoman farmer who settled in the Ozarks between 1840 and 1860 settled on the hillsides and in hollows. Many worked farms that were only fifty to ninety acres.¹² Though some farmers in the lowlands did grow cotton, the primary cash crop for the yeoman, if he bothered with a cash crop, was tobacco or livestock.¹³ The Civil War brought dramatic changes to the county and left many communities in ruin; however the greatest changes would follow the arrival of the railroad in the 1880s.

⁷ Brooks Blevins, *Hill Folks: A History of Arkansas Ozarkers and Their Image* (Chapel Hill: University of North Carolina Press, 2001), 18-24.

⁸ The population of Washington County reached 14,673 in 1860. Subsequent population census for 1870, 1880, 1890, and 1900 are respectively: 17,266; 23,844; 32,024; 34,256. United States Department of the Interior, Bureau of the Census, *Statistics of the Population at the Tenth Census* (Washington, DC: GPO, 1880), 50. Hereafter referred to as Census, *Tenth*. United States Department of the Interior, Bureau of the Census, *Twelfth Census of the United States, Census Reports, Volume I—Population, Part I* (Washington, DC: GPO, 1901), 11. Hereafter referred to as Census, *Twelfth*.

⁹ Goodspeed, 164. United States Department of the Interior, Bureau of the Census, *Seventh Census of the United States—1850* (Washington, DC: GPO, 1851), 546.

¹⁰ Census, *Tenth*, 106.

¹¹ Russell Pierce Baker, *From Memdag to Norsk: A Historical Directory of Arkansas Post Offices 1832-1971* (Hot Springs: Arkansas Genealogical Society, 1988), 189.

¹² The average farm size for Washington County according to the 1890 census was 119 acres. There were 1,094 farms of 50 to 100 acres and 1,962 farms of 100 to 500 acres. United States Department of the Interior, Bureau of the Census, *Report on the Statistics of Agriculture in the United States at the Eleventh Census: 1890* (Washington, DC: GPO, 1895), 124.

¹³ Blevins, 22-29.

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Washington and Benton Counties, as early as 1869, accounted for half of the state's fruit production, producing a combined \$68,000 dollar harvest. However shipping the fruits to market proved uneconomical in that relatively small amounts of fruit could be shipped by wagon and the distance shipped was limited by rot; which in-turn limited market availability.¹⁴ The lack of markets and the inability to capitalize on large shipments resulted in a decline in the fruit harvest, reaching a low point in 1879, when only \$20,000 dollars of fruit was harvested.¹⁵ The arrival of the railroad in Washington County made it possible to reach significantly larger markets and to get the produce to those markets while it was still fresh. In speaking of Washington County fruits, particularly apples, Goodspeed's entry on Washington County notes, "These, heretofore raised for home consumption, have, since the advent of the Frisco Railway, been raised almost exclusively for commercial purposes, and become famous throughout the country."¹⁶

In 1881, the St. Louis and San Francisco Railroad (the Frisco) completed its line from Springfield, MO to Fort Smith, AR through Benton and Washington Counties. Within five years of completion, canneries, cold storage warehouses, and packing houses opened in Springdale, Fayetteville, Rogers and other cities along the railroad. By 1889, Washington County's apple harvest was 200,000 bushels. Of course apples were not the only produce grown by Washington County farmers; grapes, tomatoes, and strawberries made significant harvests as well.¹⁷ Farmers in Richland Township near the village of Hood also began growing apples and other produce as evidenced by Garland V. Skelton's *Real Estate Atlas for Washington County*.¹⁸ J. Morrison, along with neighbors J. Ray and R. A. Dodd operated sizeable orchards on top of the mountain southwest of Hood. J. F. Hood also maintained orchards on the mountain and in the valley near Hood.¹⁹ Though the farmers of Richland Township contributed to Washington County's fruit harvest and certainly saw economic and population growth as a result, the arrival of the railroad brought more significant changes to their community in the way of a timber boom.

¹⁴ Ibid., 42.

¹⁵ Ibid.

¹⁶ Goodspeed, 140.

¹⁷ Ibid., 42-44; For more on the fruit harvest see also, Thomas Rothrock, "A King that Was" *Arkansas Historical Quarterly*, Volume XXXIII, No. 4 (Winter 1974), 326-33; and Carl H. Moneyhon, *Arkansas and the New South, 1874-1929* (Fayetteville: University of Arkansas Press, 1997), 63.

¹⁸ Garland V. Skelton, *Real Estate Atlas for Washington County, Arkansas* (Fayetteville, AR: privately printed, 1894).

¹⁹ Ibid.

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Hugh F. McDaniel was a timber buyer and contractor for the Union Tie and Lumber Company. McDaniel moved to Fayetteville to provide ties for the extension of the Frisco to Fort Smith. It was here that he saw the opportunity to begin his own business. Using his own money, McDaniel purchased large timber reserves in the Boston Mountains of eastern Washington County and western Madison County; at least 75,000 acres in Madison County alone.²⁰

To reach his newly purchased timber reserves, McDaniel undertook the construction of a new railroad from Fayetteville up the White River into Madison County. After securing the backing of several investors, the Fayetteville & Little Rock Railroad (F&LR) began construction in December 1886 with the goal of reaching the St. Louis, Iron Mountain & Southern Railroad near Morrilton. The railroad quickly attracted the attention of the Frisco and on February 23, 1887 the Fayetteville & Little Rock became a subsidiary of the Frisco. Construction progressed quickly and the railroad was completed to St. Paul in Madison County, a distance of forty-five miles, in only six months. The first train to St. Paul ran July 1887. In conjunction with the completion of the St. Paul Branch, as the F&LR was known, McDaniel won the contract to supply White Oak ties to the Atchison, Topeka, and Santa Fe Railroad and in 1887 shipped 15,000 carloads worth approximately \$2,000,000 dollars.²¹

Almost immediately new sawmills opened along the tracks of the F&LR and also in Fayetteville at the railroad's terminus. In Madison County, along the route of the railroad, new mills were built along Davney and Delaney Creeks near the new town of Delaney. The construction of the railroad resulted in the opening of two steam-sawmills in Comb's Station in Madison County—also known as Combs. J. W. Phipps came to the woods of eastern Washington County as a lumberjack and soon began his own mill operation. His business continued a quick growth and in a relatively short amount of time J. W. Phipps Lumber Company operated several mills, employing almost 200 men in the Fayetteville mill alone. These mills produced ties, bridge timbers, staves, wagon wheels, wagon spokes, and wagon bows.²²

²⁰ Carol Whittmore, ed., *Fading Memories, Volume II: Stories of Madison County People and Places* (Huntsville, AR: by the author, 1992), 48.

²¹ Shiloh Museum, *History of Washington County Arkansas* (Springdale, AR: Shiloh Museum, 1989) 245; Blevins, 73; Whittmore, 48.

²² Ibid., 246, 247; Clifton E. Hull, *Shortline Railroads of Arkansas* (Norman: University of Oklahoma Press, 1969), 350; Goodspeed, 462, 463.

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With new mills came new towns. Hood, the largest town in Richland Township, took a new name in 1892 and became Elkins. Maguirestown moved to Elkins in 1888 to be on the railroad. In Madison County, Delaney, St. Paul, and Combs were all settled between 1887 and 1888. The first business in Delaney was a dry goods merchant operating out of a tent. Two years later there were three stores, a druggist, and a blacksmith. In the early winter of 1887, the town site of St. Paul was nothing more than the farm of J. P. Salyer and by 1889 the town had a population of 300 with twelve merchants, one livery, one wagon manufacturer, two blacksmiths, three hotels, and one combination lumber and grist mill.²³

Paradoxically, while the population of Elkins grew in the last decade of the nineteenth century the population of Richland Township remained relatively stable. The greatest change however, was in western Madison County. Hillburn Township and the town of St. Paul grew significantly between 1880 and 1900. St. Paul didn't exist in 1880 and by 1890 the census recorded a population of 417. The township grew by a modest 333 individuals, to 1,325, in the decade between 1880 and 1890. Madison County's Richland Township grew by over 400 and mountainous Lamar Township on the western edge of Madison County grew by 100 in the years between 1880 and 1890.²⁴

This population growth, and attendant economic growth, associated with the timber boom of the 1890s necessitated further road construction. There were few roads in the area prior to the arrival of the railroad and the majority of the roads that did exist were minor roads in rough condition. Many of them led only to one home or farm. These roads connected the farms of Lamar Township, Richland Township, and Hillburn Township of Madison County with Richland Township of Washington County. Lamar Township adjoins, on the east, Richland Township of Washington County. To the east of Lamar Township is Madison County's Richland Township and south of both Lamar and Richland is Hillburn Township. Each of these townships were rural and heavily wooded when the railroad arrived. Elkins, St. Paul and other towns became important shipping points on the railroad. Logging interest would bring raw timber to the railhead to be shipped to a mill or they would bring the raw timber to the mill and ship the finished lumber at the railroad.

Towns like Elkins and St. Paul also served as the centers of larger communities. Railroad towns became the centers of news and culture; where the newspaper was printed or the books were purchased. If your wagon was broken the blacksmith at the railroad town could make the repairs. It was in Elkins and St. Paul that you could order your Sears catalog merchandise and where it would arrive by rail. The population working and living in the mountains of eastern Washington County and western Madison County needed access to the towns along the railroad. As a result, the Elkins to Wesley Road was created to connect those living in rugged eastern Richland Township to the township's largest town.

²³ Hull, 350; Shiloh, 245; Goodspeed, 460, 468.

²⁴ Department of the Interior, Bureau of the Census, *Report on Population of the United States at the Eleventh Census: 1890* (Washington, DC: GPO, 1895), 65; Census, *Twelfth*, 70.

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Maps from the late 1890s don't show the Elkins to Wesley Road however, the first mention of the road in County Court records—in 1906—is only a change in the road's route. Therefore the date of creation of the road is unknown but similar roads from Elkins were established in 1906 and 1907. This was a period of high demand for good roads in the county. The fruit and vegetable harvests were growing significantly at the turn of the twentieth century and of course the timber industry was booming. County Judge George Appleby commented, "There is a general demand for good roads in Washington County and nearly all the principal roads have been graded and culverts placed."²⁵

Act 338 of 1915, more commonly known as the Alexander Law, enabled counties to form local road districts for improvement and construction of roads. Under this act Washington County formed several road districts to assess property taxes for road improvements.²⁶ These road districts continued to actively improve roads throughout the county. Through the early twentieth century the demand for good roads in Washington County continued to grow. This was the result of several factors, primarily the economic growth in both the farming and logging industries. However demand for good roads was also spurred by the increase in automobile and truck ownership. The Arkansas Highway Commission's 1920 report shows a growth in automobile licensure of 13 percent between 1919 and 1920. In 1920 there was one car for every 13 people in the county, bringing over \$27,000 dollars of revenue to the county for road improvements.²⁷

One of the most important areas needing road improvements was apparently the bridges. Appleby noted in 1918 that Washington County's streams were well bridged. The state engineers however, felt differently, "the great majority of bridges in the State were designed for loads far below those passing over them."²⁸ The report further recommended replacement of inadequate bridges to withstand heavier vehicles and loads. Indeed, though the County Judge claimed in 1918 that the county's streams were well bridged, the citizens of the county petitioned for construction of thirteen new bridges on October 27, 1921.²⁹

²⁵ Arkansas Highway Commission, *Third Biennial Report of the Department of State Lands, Highways, and Improvements for the Period Ending November Thirtieth, Nineteen Eighteen* (Little Rock: privately printed, 1918), 86.

²⁶ A brief discussion of the legislative history of road law in Arkansas can be found in Arkansas Highway Commission, *Eighth Biennial Report of the Department of State Lands, Highways, and Improvements for the Period Ending June 30, 1928, Supplemented to the Period Ending September 30, 1928* (Little Rock: H. G. Pugh & Co., 1929). There were at least ten separate road districts formed in Washington County between 1907 and 1920. For more see Washington County, Court Record Books U, V, and W.

²⁷ Arkansas Highway Commission, *Fourth Biennial Report of the Department of State Lands, Highways, and Improvements for the Period Ending September Thirtieth Nineteen Twenty* (Little Rock: privately printed, 1921), 171.

²⁸ Ibid.

²⁹ Washington County Court, Court Record Book V, 69.

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The bridge over the White River at Elkins was built in 1921 and it is unknown if the bridge was the first built of these thirteen bridges requested. However, the remaining bridges requested in 1921 were later constructed. Regardless the Elkins bridge was constructed by the Luten Bridge Company of Knoxville, TN, builders of at least twelve filled-spandrel arch bridges in the county.

The bridge was built along the Elkins to Wesley Road heading east of Elkins. Three spans make up the arched bridge; two of the spans are sixty-two feet and one is sixty-eight feet in length. To complete the bridge at a lower cost the original deck was not concrete but dirt covered in gravel. It is said, though undocumented, that the county had the concrete work done by the Luten Bridge Company but that local citizens and contractors were responsible for filling the spandrels and finishing the roadway.

Filled—or closed—spandrel arch bridges were the specialty of the Luten Bridge Company of Knoxville. In fact they were the specialty of 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.

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.³⁰

Portland cement was widely used in the United States for concrete construction by the early 1890s.³¹ 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 facades 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.

³⁰ James L. Cooper, *Artistry and Ingenuity in Artificial Stone: Indiana's Concrete Bridges 1900-1942* (Greencastle, IN: privately printed, 1997), 9.

³¹ Ibid.

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In bridge and road design, the post Columbian Exhibition movement toward classical designs was called the City-Beautiful movement.³² One of the staunchest critics of the City-Beautiful movement was Daniel B. Luten. 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, after only a year at Michigan, he took a position in the engineering school at Purdue University where he taught Architectural and Sanitary engineering.³³ 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."³⁴ This dissatisfaction led Luten to resign his post at Purdue to become a practical man.

Luten was indeed a practical man. He made his name by dramatically changing the way bridges—especially reinforced concrete bridges—were designed in the United States. Luten used the nineteenth century designs of 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; their designs were in-turn, an adaptation of earlier French, *Breton Arme* or armed concrete, designs by Joseph Monier. Melan's designs however could more correctly be called metal bridges encased in concrete as they were constructed with rolled I-beam girders supporting the weight of the bridge.³⁵

Thacher took Melan's designs and decreased the amount of metal used in the reinforcing by using flat bars or rods. Thacher also redesigned the location of the bars in the top and bottom of the ring. In this way the 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 toward a more vertical thrust giving the bridge greater carrying capacity while using less material.³⁶

³² 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).

³³ Cooper, 38.

³⁴ Daniel B. Luten quoted in Cooper, 38.

³⁵ Cooper, 14-6.

³⁶ Ibid., 39-41.

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Section number 8 Page 10

Luten took all of these designs and pushed them further. Luten focused on empirical design. Yet, he felt that determining calculations for each specific job was a waste of time. Luten developed a series of calculations that he applied to each bridge saving time and cost by not having to do multiple calculations for similar bridge applications. With these standard 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.

One of the earliest changes Luten made to arch bridge design was with the spandrel walls, once seen as only necessary to hold dirt fill. In Luten's designs the spandrel walls were connected to the arch rings and extended beyond the abutments.³⁷ 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.³⁸

The bridge over the White River at Elkins was one of three Arkansas bridges advertised in Luten's internationally distributed 1924 catalog (see Figure 1, 8-11). The catalog featured seventy-eight newly constructed bridges across the United States. Along with the Elkins bridge the catalog featured the Clear Creek Bridge, also in Washington County, and the Navy Memorial Bridge over the Arkansas River in Little Rock.³⁹ The Elkins bridge is one of several Luten designed bridges built in Washington County. The majority of these bridges were Luten's most common filled-spandrel arch design. By 1940, the county was home to more Luten bridges than any other in the state.

³⁷ Ibid., 44-50.

³⁸ 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/ [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.

³⁹ Daniel B. Luten, *Reinforced Concrete Bridges* (Indianapolis: privately printed, 1924), 4, 23, 39.

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Statement of Significance

The White River Bridge at Elkins, Bridge #17325, is being nominated to the National Register of Historic Places with **local significance** under **Criterion C** as a good example of reinforced concrete, filled-spandrel bridge construction and as a good example of Daniel B. Luten bridge design in Washington County, Arkansas. The bridge is also being listed under **Criterion A** for its association with transportation in Washington County. Bridge #17325 is being submitted to the National Register of Historic Places under the multiple property listing "Historic Bridges of Arkansas."



ELKINS BRIDGE OVER WHITE RIVER, WASHINGTON COUNTY, ARKANSAS
Three spans of 62 to 68 feet. Roadway 16 feet. Footings on rock.
For the Board of Commissioners of Washington County, Fayetteville, Arkansas.

Figure 1: Daniel B. Luten's 1924 Catalog, *Reinforced Concrete Bridges* featured the White River Bridge at Elkins as one of the company's more attractive designs. Daniel B. Luten, *Reinforced Concrete Bridges* (Indianapolis: privately printed, 1924), 39.

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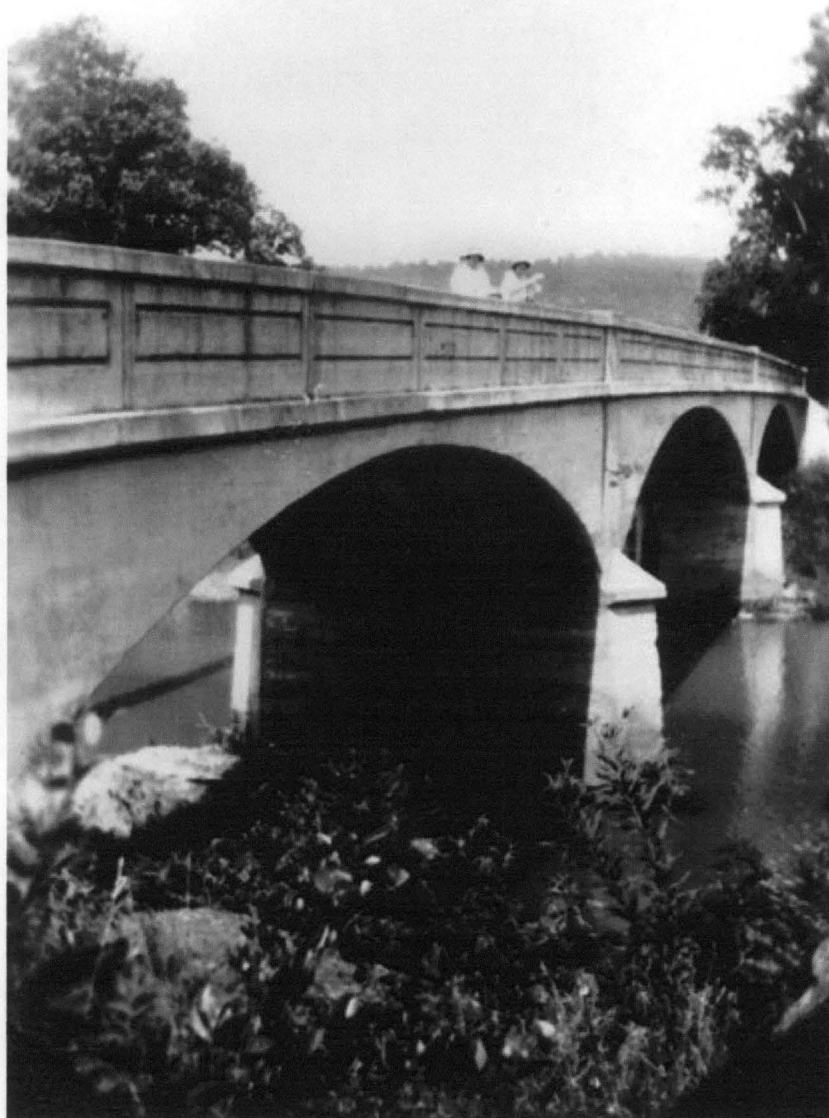


Figure 2: Two unknown women pose on the White River Bridge at Elkins in this photograph taken in the 1920s. After construction, the bridge became a place to visit on relaxed Sunday afternoon trips. *Courtesy Shiloh Museum of Ozark History / Gary King & Reba Ferris Lawson Collection (S-93-73-227).*

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Section number 9 Page 1

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White River Bridge at Elkins

Name of Property

Washington 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 409530 3984511
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 Van Zbinden, National Register Historian

organization Arkansas Historic Preservation Program

date 10 September 2007

street & number 1500 Tower Building, 323 Center Street

telephone 501.324.9880

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 Washington County, Judge Jerry Hunton

street & number 280 North College Street, Suite 500

telephone 479.444.1700

city or town Fayetteville

state AR

zip code 72701

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.

United States Department of the Interior
National Park Service

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Section number 10 Page 1

Verbal Boundary of Description

Beginning thirty (30) feet on the west side of Bridge #17325 and running in an east-northeast direction for two hundred and thirty (230) feet. Extending fifteen (15) feet from the centerline to the north and south of Bridge #17325 for a total width of thirty (30) feet.

Boundary Justification

The boundary encompasses all of the land historically associated with the White River Bridge at Elkins, Bridge #17325.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY White River Bridge at Elkins
NAME:

MULTIPLE Historic Bridges of Arkansas MPS
NAME:

STATE & COUNTY: ARKANSAS, Washington

DATE RECEIVED: 12/11/07 DATE OF PENDING LIST: 1/03/08
DATE OF 16TH DAY: 1/18/08 DATE OF 45TH DAY: 1/24/08
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 07001437

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 1.24.08 DATE

ABSTRACT/SUMMARY COMMENTS:

~~Entered in the~~
~~National Register~~

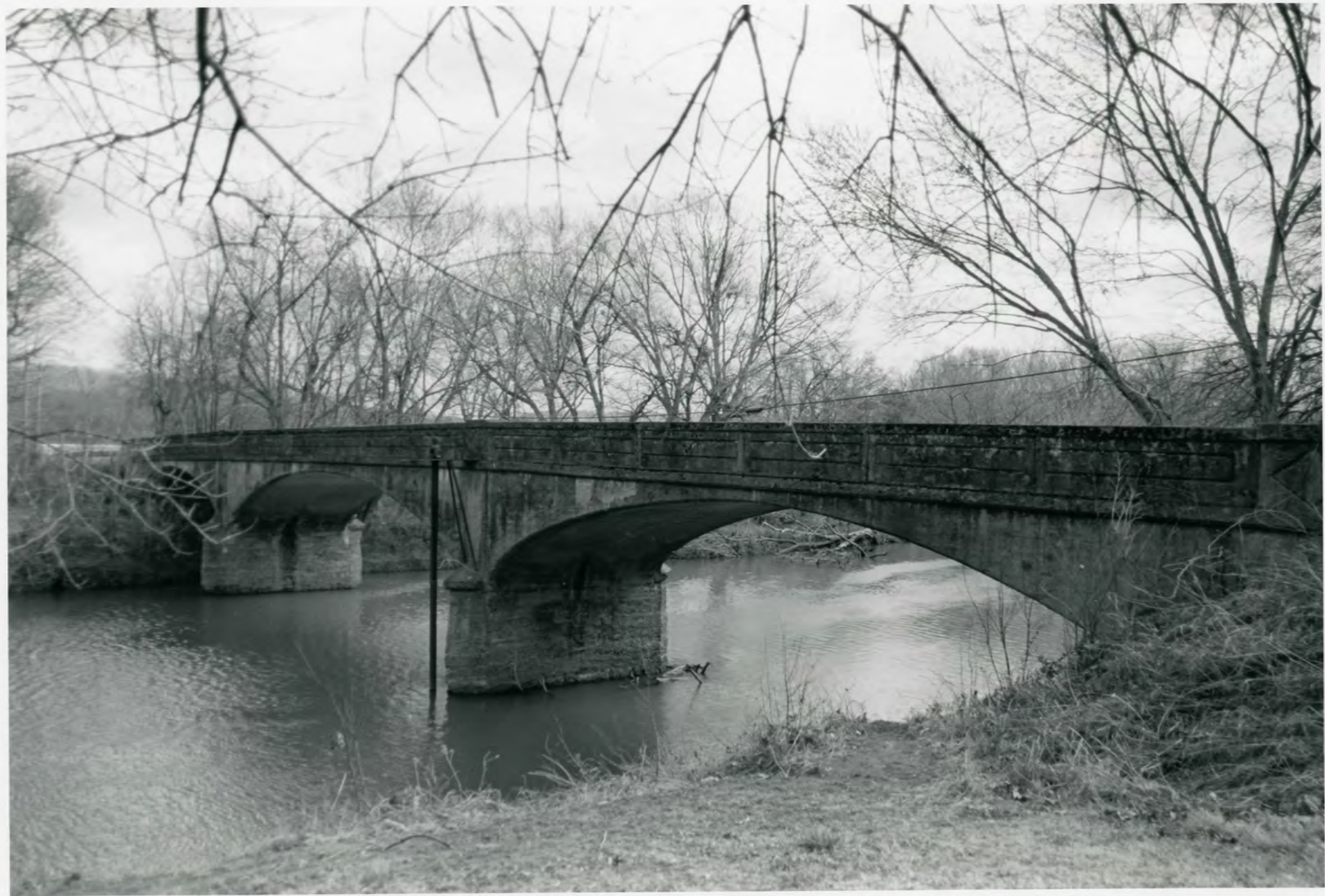
RECOM./CRITERIA _____

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.



1 WHITE RIVER BRIDGE AT ELKINS

2 WASHINGTON COUNTY, AR

3 RALPH WILCOX

4 MARCH 2007

5. ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR

6. NORTH ELEVATION looking southeast


7. #1



1. ~~TEXARKAN~~ WHITE RIVER BRIDGE AT ELIKINS
2. WASHINGTON County, AR
3. RALPH WILCOX
4. MARCH 2007
5. ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR
6. ROADWAY, Looking EAST
7. # 2



1. WHITE RIVER BRIDGE AT ELIKINS
2. WASHINGTON COUNTY, AR
3. RALPH WILCOX
4. MARCH 2007
5. ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR
6. ROADWAY Looking West
7. # 3

A black and white photograph of a stone bridge pier. The pier is made of rough-hewn stone blocks. A rectangular plaque is mounted on the face of the pier. The plaque has a slightly weathered appearance with some discoloration. The text on the plaque is embossed or carved into the metal. The background shows the texture of the stone and some shadows from the surrounding environment.

DESIGNED AND BUILT
BY
LUTEN BRIDGE CO.
KNOXVILLE TENN.
1927

1, WHITE RIVER BRIDGES AT ELKINS

2, WASHINGTON COUNTY, AR

3, RALPH WILCOX

4, MARCH 2007

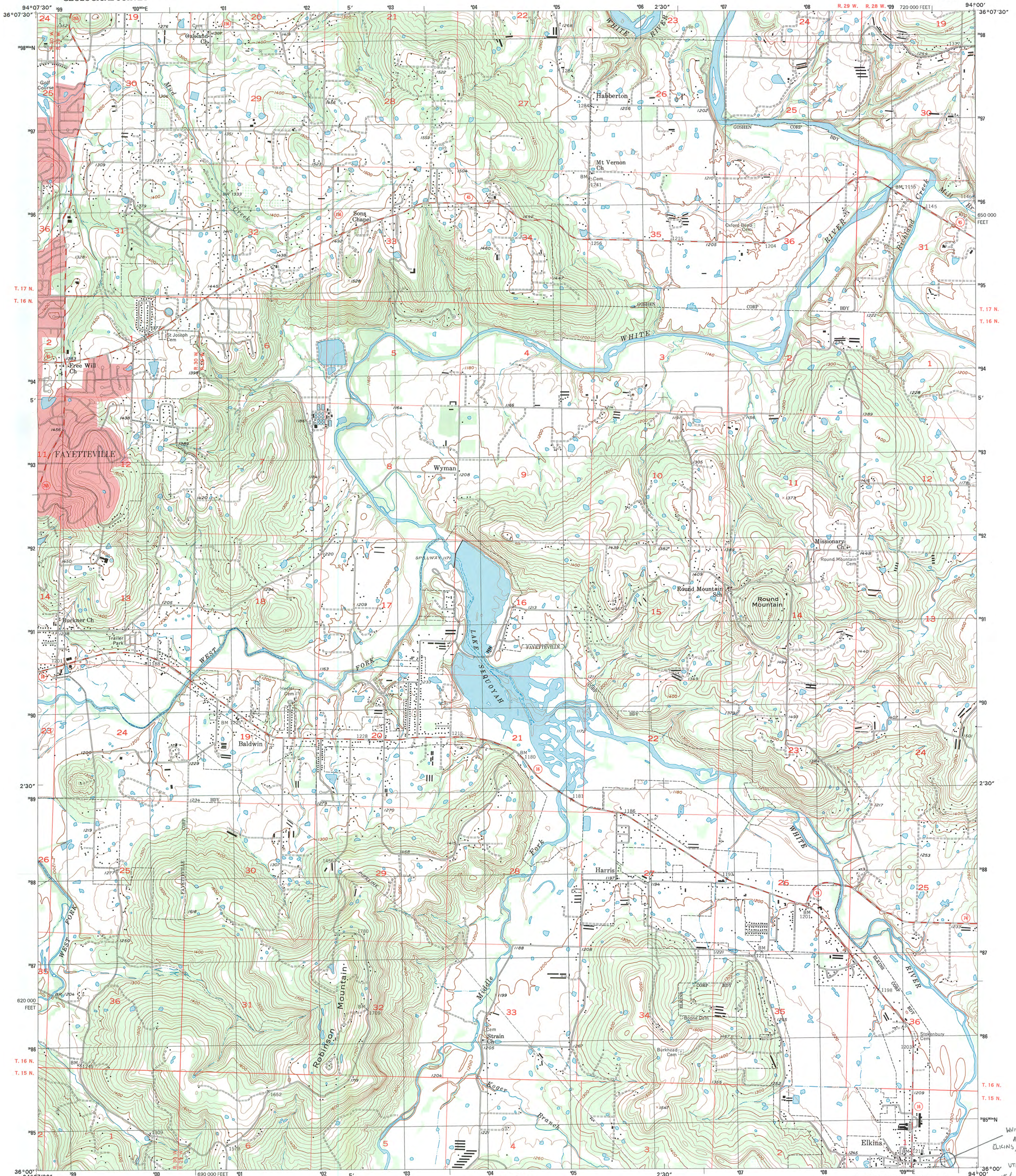
5, ARKANSAS HISTORIC PRESERVATION PROGRAM, LITTLE ROCK, AR

6, PLAQUE ON NORTHWEST CORNER looking North

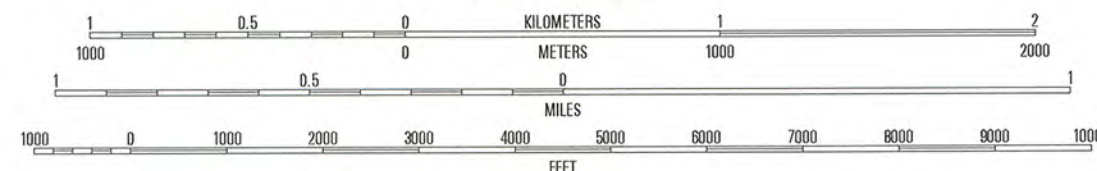
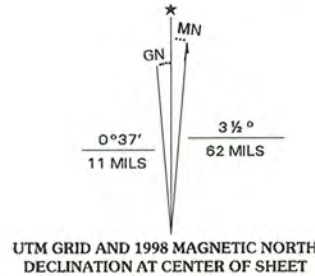
7, #4

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ELKINS QUADRANGLE
ARKANSAS-WASHINGTON CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey
Topography compiled 1957. Planimetry derived from imagery
taken 1994. Public Land Survey System and survey control
current as of 1958
North American Datum of 1983 (NAD 83). Projection and
1 000-meter grid: Universal Transverse Mercator, zone 15
10 000-foot ticks: Arkansas Coordinate System of 1983
(north zone)
North American Datum of 1927 (NAD 27) is shown by dashed
corner ticks. The values of the shift between NAD 83 and
NAD 27 for 7.5-minute intersections are obtainable from
National Geodetic Survey NADCON software
There may be private inholdings within the boundaries of the
National or State reservations shown on this map
Landmark buildings verified 1958



CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
AND ARKANSAS GEOLOGICAL COMMISSION, LITTLE ROCK, ARKANSAS 72204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



QUADRANGLE LOCATION

1	2	3	1 Springdale
4	5	6	2 Sumner
7	8	9	3 Spring Valley
			4 Fayetteville
			5 Goshen
			6 West Fork
			7 Sulphur City
			8 Durham

ADJOINING 7.5' QUADRANGLE NAMES

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

ELKINS, AR
1994

NIMA 7156 II SE-SERIES V884

WHITE RIVER BRIDGE
AT ELKINS
ELKINS, WASHINGTON CO.
AR
UTM REFERENCES:
1540530/
384511



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

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www.arkansaspreservation.com

An Equal Opportunity Employer



December 6, 2007

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, D.C. 20005

RE: Bridge over the White River at Elkins; Elkins, Washington County

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 Van Zbinden of my staff at (501) 324-9789. Thank you for your cooperation in this matter.

Sincerely,

Cathie Matthews
State Historic Preservation Officer

CM:vz

Enclosure