WEST VIRGINIA STATE-LEVEL RECORDATION

DUNLOUP CREEK BRIDGE #9
(NBI No. 10A121; Bridge No. 10-025/00.006.12)

Location: Spanning Dunloup Creek on Thurmond Road [County Route 25 (CR 25)], Thurmond vicinity, Fayette County, West Virginia

The Dunloup Creek Bridge #9 is located at latitude: 37.571047, longitude: -81.044049. The coordinates represent the center of the bridge at mid-span. The coordinates were obtained on December 3, 2024, using Google Earth. The coordinate's datum is World Geodetic System 1984 (WGS84). The bridge's location has no restriction on its release to the public.

Present Owner: West Virginia Department of Transportation (WVDOT), Division of Highways (WVDOH)
1900 Kanawha Boulevard, East, Building 5, Room 820
Charleston, West Virginia 25301

Present Use: Open to traffic.

Significance: The Dunloup Creek Bridge #9 was determined eligible for listing in the National Register of Historic Places (NRHP) under Criterion A in association with early-twentieth-century transportation improvements, the Good Roads Movement, and state-aid legislation and under Criterion C for its engineering significance and as a representative work of a master. It is a well-preserved example of a Luten Bridge Company single-span, closed-spandrel, reinforced concrete arch bridge.

Historians: Chris Halderman, Thomas Lucy, and Rebekah Perry, Architectural Historians
Michael Baker International, Inc.,
100 Airside Drive
Moon Township, Pennsylvania 15108
March 2025

Project Information: Christopher Halderman prepared the historical report, and Thomas Lucy prepared the photographic documentation. This documentation was undertaken in 2025 in anticipation of the bridge's demolition and replacement by the WVDOH utilizing Federal Highway Administration funds. This documentation is in partial fulfillment of mitigation stipulations included in a memorandum of agreement between the Federal Highway Administration, the West Virginia State Historic Preservation Officer, and WVDOH.

PART I. HISTORICAL INFORMATION

A. Physical History:

1.	Date(s) of construction:	1917
2.	Engineer:	J.K. McGrath (Fayette County Engineer)
3.	Builder:	Luten Bridge Company, York, Pennsylvania
4.	Original plans and construction:	Original drawings were not located during this effort.
5.	Alterations and additions:	No substantial additions or alterations are known to have taken place.

B. Historical Context:

General Area History and the Construction of Thurmond Road (CR 25):

Prior to the 1870s, much of the bridge's vicinity consisted of unsettled wilderness. With rugged terrain, exceptionally few improved roads, and a dearth of level or suitably arable land, the region was frequently overlooked by westward-moving settlers. Of those who did choose to settle in the region, most became farmers. Others identified as merchants and facilitated the region's early rudimentary trade network.[1]

The land on which Thurmond Road and its original nine concrete arch bridges (including the subject bridge) were constructed was part of a large tract belonging to land speculator and coal baron Thomas Gaylord McKell. Arriving in Fayette County from Chillicothe, Ohio, in 1880, McKell amassed 25,000 acres of coal and timber land along Dunloup Creek. He founded the town of Glen Jean and was responsible for the building of the nearby Collins Colliery Company drift mine. In order to transport the mined coal over the New River to the Chesapeake & Ohio Railroad (C&O) depot at the nascent town of Thurmond, McKell convinced the C&O to build a branch line between Thurmond and Glen Jean. In 1889, McKell built a triple-span iron truss railroad bridge over the New River at Thurmond, and in 1893, the C&O completed the branch line.[2]

The Thurmond Bridge and the C&O's Loup Creek Branch railroad opened up an expansive mining industry along Dunloup Creek, as well as a tourist industry. In 1901, McKell built a grand hotel called the Dun Glen at Southside on part of the land he owned on the southwest side of the New River, opposite Thurmond. Visitors arrived via the C&O main line at Thurmond, crossing Thurmond Bridge on a cantilevered walkway, which McKell had built to access his hotel. From the southwest, the hotel could be accessed by

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[1] George Bragg, *Dunloup Days: Glen Jean to Thurmond, Exciting Times and Precious Memories,* (Bridgeview, IL: Southside Imprinting, 1989), 2.

[2] David Fuerst, "Cultural Research Project: The New River Gorge National River, West Virginia, Vol. II: History Architecture, and Community," (Charleston, WV: Paul D. Marshall Associates, 1981).

the C&O Loup Creek Brach. The hotel was an attraction for drinking and gambling, and an entertainment district soon grew up around it at Southside, replete with saloons, gambling parlors, and brothels.[3]

With the rapid popularization of the automobile in the 1910s, Fayette County officials began collaborating with the state government to fund the building of modern paved roads in the county. The first roads constructed by Fayette County were funded by a $1.4 million bond measure approved in 1916 for 45 miles of improvements. Among the first to be built in 1917 was the Glen Jean-Thurmond road, a 7.5-mile-long and 14ft-wide road (initially referred to as the Loop Creek Road).[4]

In February 1917, the grading of the road was contracted to Henning & Magedon of Mullens, West Virginia, and Birmingham, Alabama, for $56,387.50, and nine concrete arch bridges were contracted to the Luten Bridge Company of York, Pennsylvania, for $33,225. Fayette County engineer J. K. McGrath oversaw the designs. The road paved until 1919-21, after the county was able to secure sufficient additional funding. The new road provided travelers coming from the southwest easier access to the C&O mainline at Thurmond. It also provided locals and tourists with easier access to Thomas McKell's Southside hospitality and recreation district on the south west side of the river.

By the 1930s, Thurmond's industrial and commercial vitality, including that of the adjacent Southside district, had begun a serious, extended decline. As early as 1909 with the opening of the Virginian Railway, the C&O was confronted with competition in Fayette County. Prohibition impacted the attraction of the Southside entertainment district. The Dun Glen Hotel burned in 1930. Many businesses across the river in Thurmond had also burned eight years earlier. During the Depression, Thurmond's National Bank failed. As the New River Gorge became mined out, the coal industry gradually shifted from the gorge to the New River tributaries and surrounding plateau. As Thurmond's population declined, businesses moved to Beckley and Oak Hill, which overtook Thurmond's predominance as a commercial and supply distribution center.[5] The C&O kept the town alive for another couple of decades, but after the railroad replaced its steam engines with diesel in 1949, Thurmond's population plummeted, and fires and neglect destroyed much of what was left of the physical community.

Concrete Arch Bridge Design and The Luten Bridge Company:

The use of concrete in modern bridge construction had its origins in the mid-nineteenth century when various processes of metal reinforcement were developed. Prior to that, concrete had been used in construction, but in a limited way. Its practicality was relatively poor since concrete by itself is a weak

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[3] Bragg, *Dunloup Days*; Melody Bragg, *Thurmond and Ghost Towns of the New River Gorge,* (Glen Jean, WV: GEM Publications,1995); Fuerst, "Cultural Research Project," 1981; Eugene Harper, "Thurmond Historic District National Register of Historic Places Nomination Form." (Washington DC: National Park Service, 1983).

[4] Hinton Daily News (HDN) September 11, 1913, 1; Independent Herald [IH] December 4, 1913, 1; HDN October 9, 1915, 1; HDN September 7, 1916, 3; Fayette Tribune [FT] February 22, 1917, 1; HDN February 21, 1919, 1; FT March 15, 1919, 1; Greenbrier Independent (GI) October 3:1919, 1; Charleston Daily Mail (CDM) September 19, 1920, 12.

[5] Ken Sullivan, *Thurmond: A New River Community,* (Fort Washington, PA: Eastern National Park & Monument Association,1989).

building material; it has good compressive strength, but low tensile strength. From the 1880s through the 1920s, designers experimented with competing systems of metal reinforcement in concrete bridge building. The two most common schemes were those developed by Ernest Ransome, who patented the twisted steel reinforcing bar in 1884 (based on the earlier principals of iron mesh reinforcement pioneered by French designer Joseph Monier), and Joesph Melan, who patented a competing and more conservative method of reinforcement in 1893 using parallel I-beams in the arch ring, which also had a structural function. The Melan system of reinforcement was eclipsed by the more economical Ransome system by 1920.[6]

By the turn of the twentieth century, growth in the domestic production of Portland cement enabled concrete construction to become less expensive than traditional stone or brick masonry. As concrete became economical, its advantages were publicized and promoted by a number of bridge engineers who relied on patents to protect their design innovations. A major figure was engineer Daniel B. Luten, a pioneer in concrete arch design with a background in research. After receiving his Bachelor of Science in Civil Engineering in 1894 from the University of Michigan, Luten taught at the university for a year while working as an assistant to Professor Charles E. Greene, an authority on arch analysis. Luten then taught arch design, stereotomy, and hydraulics theory at Purdue University for five years. During this time, he experimented with arch designs. He published his findings in professional journals and received multiple patents.[7]

Luten patented a design for concrete bridges reinforced with longitudinal tension rods known as "filled spandrel" or "barrel arches." This design had a solid barrel vault flanked by solid spandrel walls filled with rocks and/or earth. The vault and spandrel walls served as the foundation for the roadbed, and the abutments could be constructed of stone or concrete. Parapets were typically solid and sometimes functioned as structural load-bearing members. The parapets often had some type of decorative incised ornamentation, usually rectangular in shape.[8]

Luten left the academic world in 1903 and founded the National Bridge Company. Specializing in steel-reinforced concrete-arch bridges, the firm dominated the field of small-scale bridges for the first two decades of the twentieth century. The firm was a national leader in promoting concrete arches over steel trusses, claiming that concrete bridges were practically indestructible, unaffected by weather; constructable with local labor and materials, and lacking in need for periodic painting.[9]

The National Cooperative Highway Research Program's (NCHRP's) Context for Common Historic Bridge Types explains just how forward-thinking Luten was for his time:

> As James L. Cooper has stated, "Daniel B. Luten did more than any other single person to advance the movement from concrete-steel to reinforced concrete bridge design…." What Cooper means by this is that Luten diverged from the relatively conservative Melan/von Emperger/Thacher line of development that placed the importance of steel

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[6] TDOT, *Tennessee's Survey Report for Historic Highway Bridges*, (Nashville: Ambrose Printing Company, 2008).

[7] TDOT 2008; WVDOT, *West Virginia Statewide Historic Bridge Survey: Final Survey Report*, (Charleston, WV: WVDOT, 2015).

[8] TDOT, 2008; WVDOT, 2015.

[9] TDOT, 2008.

> (or iron) as a load-bearing element in bridge arches above that of concrete, and aggressively promoted a system that stemmed more from the Monier [and Ransome] methodology that gave primacy to concrete in load bearing, with metal as a strengthening element. And he did so with great success.[10]

By 1907, Daniel Luten's National Bridge Company (Indianapolis, Indiana) claimed to have erected more than 700 such bridges and had representatives working alone or through established companies in Los Angeles, Topeka, Chicago, Philadelphia, Connecticut, and Iowa. By the early 1910s, the firm had designed and erected more than 4,000 concrete arch bridges and had 24 engineers located throughout the United States. The National Bridge Company advertised bridges by mailing postcards featuring its designs to county commissioners.

By 1915, Luten held 39 patents and had designed over 6,000 bridges in the United States, Canada, and Mexico.[11] Luten often provided agents and builders with drawings and a license to construct bridges based on his plans for a set price. Luten offered two pricing schemes: working drawings and a license were offered for 10 percent of a contractor's bid price, or, for about 15 percent, Luten offered drawings, a license, engineering advice, and the necessary specified reinforcing steel for the proposed structure.[12]

A prominent agent was Alex B. Whittaker, a former stone mason who transitioned to concrete work and founded the Luten Bridge Company of York, Pennsylvania, in 1909 with his brother John and a partners Lucius G. Brown and G.W. Drury. Alex had formerly worked for the Ferro-Concrete Company, which was an early Luten agent in Pennsylvania. The Luten Bridge Company was established to construct "bridges, buildings, and other structures of similar kind out of iron, steel, and reinforced concrete."[13] The firm opened several branch offices and obtained bridge construction contracts throughout the eastern and southern United States, including in Clarksburg, West Virginia; Atlanta, Georgia; Syracuse, New York; Concord, New Hampshire; Palatka, Florida. By 1913, the company was selling between 50 and 100 Luten-designed bridges annually in West Virginia.[14] The Luten Bridge Company sold Luten designs, as well as its own designs based on Luten's original prototype. It marketed its bridges to county governments with brochures featuring its designs.[15]

An engineer who worked for the Luten Bridge Company in the 1920s shared a description of how the company operated:

> They would send a representative out to the various Counties on County Court days—he would show a few photos as specimens of their work. They would visit a site where a

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[10] Parsons Brinckerhoff, and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types: NCHRP Project 25-25, Task 15* (National Cooperative Highway Research Program, Transportation Research Council, and National Research Council, October 2005), 3.58.

[11] James L. Cooper, *Artistry and Ingenuity in Artificial Stone: Indiana's Concrete Bridges, 1900-1942,* (Greencastle, Indiana: James L. Cooper, 1997), 65.

[12] Cooper, 62.

[13] Cooper, 63-64.

[14] Cooper, 64.

[15] TDOT, 2008.

> County needed a bridge and would propose a concrete arch or series of arches from here to here and so many feet in width good for so many tons for a flat sum of so many dollars. They would start on the structure immediately and build it in a short time.[16]

Luten's designs were so influential that many people used the term "Luten Arch" for any filled spandrel concrete bridge; in recent years, this has led to some confusion regarding accurate bridge attribution. Some competitors merely copied Daniel Luten's designs, prompting Luten to file suits that forced competitors to pay him royalties. In 1918, Luten lost a high-profile court case that found his patents invalid, thus depriving his firm of exclusive use of many design features; however, the firm continued to operate through the first half of the twentieth century.[17]

The outcome of the 1918 patent case led to the expansion of concrete arch bridge construction. Engineers, recognizing the versatility of concrete as an architectural material, experimented with new, innovative designs. According to historian Carl Condit, "The main line of evolution was moving away from massive construction, with its echoes of the masonry tradition, toward the flattened parabolic curves of narrow ribs, the slender spandrel posts, and the minimal piers that scientific reinforcing was to make possible."[18]

The 1910s and 1920s two important concrete arch design innovation proliferated: the open-spandrel arch and the filled-spandrel-ribbed arch. Luten was awarded patents related to both of these bridge types in 1907. The open-spandrel arch, instead of having solid spandrel walls, had an open spandrel area filled with columns. Many also had open parapet railings that were not load bearing but rather functioned as safeguards for vehicles and pedestrians. These bridges used less material, eliminated the need for roadway fill, and required smaller footings, but they were more labor intensive to build than filled-spandrel arches. Therefore, filled-spandrel bridges were more economical for shorter spans, while open-spandrel arches were better for longer spans or high crossings.[19]

A variation of the open-spandrel arch was a through or pony arch, which located the arch above the roadway. This design was patented by James Marsh of Des Moines, Iowa, who called it a "Marsh Rainbow Arch." Marsh's design was essentially a steel bridge encased in concrete. Since the design was comparatively expensive to build, it enjoyed popularity mostly in the Iowa region.

The filled-spandrel ribbed bridge typically had two parallel ribs along the outside edges of the arch that were flush with the spandrel walls. This gave a hollow look to the underside of the bridge. While this type of arch required more reinforcing materials and labor, it required less concrete than a barrel arch.[20]

As the idea of building concrete arch bridges with ribs succeeded, it led to the development of the haunched girder, which has a hybrid structural support system of girders underneath the road deck combined with curved haunches at the exterior corners of the bridge (the spandrels). This design reflected a change in philosophy and served as a transitional design between the concrete arch bridges of the early-twentieth

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[16] TDOT, 2008.

[17] TDOT, 2008.

[18] TDOT, 2008.

[19] TDOT, 2008.

[20] TDOT, 2008; WVDOT, 2015.

century and modern bridges. This evolution resulted in the increased use of concrete for long- and short-girder spans. These new forms of concrete bridges were more economical and practical for longer spans and soon replaced concrete arches of any style. "The experimentation that brought concrete arches into their own as a form paradoxically led to their demise as more efficient and cost-effective concrete designs replaced them."[21]

In 1917 and 1918 (the window during which the subject bridge was built), concrete arch bridges were overwhelmingly more popular than concrete girders, concrete slabs, or steel bridges, according to the *West Virginia Statewide Historic Bridge Survey: Final Survey Report*.[22] The oldest example in West Virginia, the Looneyville Arch Bridge over the Pocatalico River in Roane County, was constructed in 1900.[23] At the time of survey completion in 2015, there were 453 extant concrete deck arch bridges in West Virginia constructed prior to 1965; they are located throughout the state and typically range between 20 and 100 feet in length. Concrete arch bridges were very popular in West Virginia during the 1910s and 1920s and were constructed steadily throughout the 1930s.[24]

According to the NCHRP's *A Context for Common Historic Bridge Types*, "documented Luten arches with a high level of integrity, although quite common, are significant within the context of this study if they retain their character-defining features. Character-defining features include the arch ring, spandrels, ribs or barrel, railing or parapet, and abutments and wingwalls."[25]

Concrete Arch Bridges in West Virginia:

The largest numbers of Luten concrete arch bridges are found in California, the Midwest, and along the Atlantic Seaboard.[26] Nevertheless, West Virginia has an unusually large number of them.[27] The highest concentration is in the northeastern part of the state. In Appendix D of the *West Virginia Statewide Historic Bridge Survey: Final Survey Report*, WVDOT summarizes the prevalence, locations, and eligibility of these bridges:

> In West Virginia, there were 215 reinforced concrete arch bridges within the study period associated with the Luten Bridge Company of York, Pennsylvania, and/or possibly the direct influence of Daniel B. Luten himself. The survey pool included 174 reinforced-concrete arch bridges for evaluation. Nearly 60 percent of these bridges were located near Clarksburg, West Virginia, or in one of the seven neighboring counties.…For all of the bridges in the study pool, the Luten Bridge Company is attributed as the builder based on the presence of a plaque on the bridge or recordation in the WVDOH database or inspection files. Many of the bridges that are attributed to the Luten Bridge Company appear to be standardized with a large number being single-span structures with similar physical

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[21] WVDOT, 2015.
[22] WVDOT, 2015.
[23] WVDOT, 2015.
[24] WVDOT, 2015.
[25] Parsons Brinckerhoff, 2005.
[26] Parsons Brinckerhoff, 2005.
[27] WVDOT, 2015.

features. Of the bridges evaluated for this survey, 47 are recommended eligible and 128 are recommended not eligible for the National Register.[28]

There were nine Luten concrete bridges located along Thurmond Road (CR 25) built during the construction of the road in 1917, although the last surviving of these, Dunloup Creek Bridge #9, is planned to be demolished and replaced.

[28] WVDOT, 2015.

PART II. STRUCTURAL/DESIGN INFORMATION

A. General Statement:

1. Character

The Dunloup Creek Bridge #9 is a one-span concrete arch structure that carries Thurmond Road (CR 25) over Dunloup Creek near the town of Thurmond, West Virginia. The bridge was one of nine concrete arches built in 1917 by the Luten Bridge Company as part of the original construction of Thurmond Road between Thurmond and Glen Jean, West Virginia.

The bridge's character-defining features include its concrete arch and spandrel walls, concrete abutments and wingwalls, and paneled concrete parapets with bronze plaques.

2. Condition of Fabric:

Overall, the bridge is in good condition and retains a high degree of historical integrity, although it has suffered some deterioration with age. The underside of the arch has patches of concrete deterioration, exposing the steel reinforcement bars and rock fill. Similarly, the spandrel walls show some concrete deterioration, especially at their connections with the abutments. The parapet walls show deterioration at their connection with the roadway. There are no major additions or alterations to the bridge.

B. Description

Dunloup Creek Bridge #9 is a one-span, reinforced concrete, filled-spandrel arch structure. Its total length, inclusive of abutments and wingwalls, is about 95ft. Span length is 62ft, and maximum vertical clearance is about 10ft above the waterway. The roadway width is 15ft-5in (curb-to-curb) and 18ft-2in (out-to-out). The roadway is supported by rock and earth fill contained by the elliptical arch and spandrel walls. The face of the arch is decorated with a beveled edge. The bridge has solid parapets with incised rectangular panels on interior and exterior faces. The wing walls are constructed of concrete. The interior face of the northwest parapet contains bronze plaque reading, "County Court Advisory Committee. Philip Konrad, Pres. S. A. Scott, Chairman. R. W. Timberlane, P. M. Snyder, H. O. Boley, A. B. Abbott. J. K. McGrath, Engineer." The interior face of the southeast parapet contains a plaque reading, "1917. Luten Bridge Co., York, PA."

C. Site Information

Dunloup Creek Bridge #9 is located in south-central Fayette County near the east end of Thurmond Road (CR 25). Thurmond Road is a seven-mile road running parallel to Dunloup Creek between Thurmond on the east side of the New River Gorge and Glen Jean to the west. From Thurmond, the road is carried west over the New River via the cantilevered vehicular/pedestrian deck of the former C&O Loup Creek Branch Railroad bridge (Thurmond Bridge) and climbs a steep, rugged path to Glen Jean, located on an elevated plateau where Dunloup Creek converges with White Oak Creek. From there, Thurmond Road connects with the north-south US 19 immediately to the west of Glen Jean. Along the majority of its length, the road is surrounded by undeveloped, forest. The road has nine bridges that span Dunloup Creek or its tributaries.

The area immediately to the north of Dunloup Creek Bridge #9, at the western edge of the gorge, is a tourist and recreation entry point for the New River Gorge National River and Thurmond.

PART III. SOURCES OF INFORMATION

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Bragg, George. *Dunloup Days: Glen Jean to Thurmond, Exciting Times and Precious Memories*. South Side Imprinting: Bridgeview, IL, 1989.

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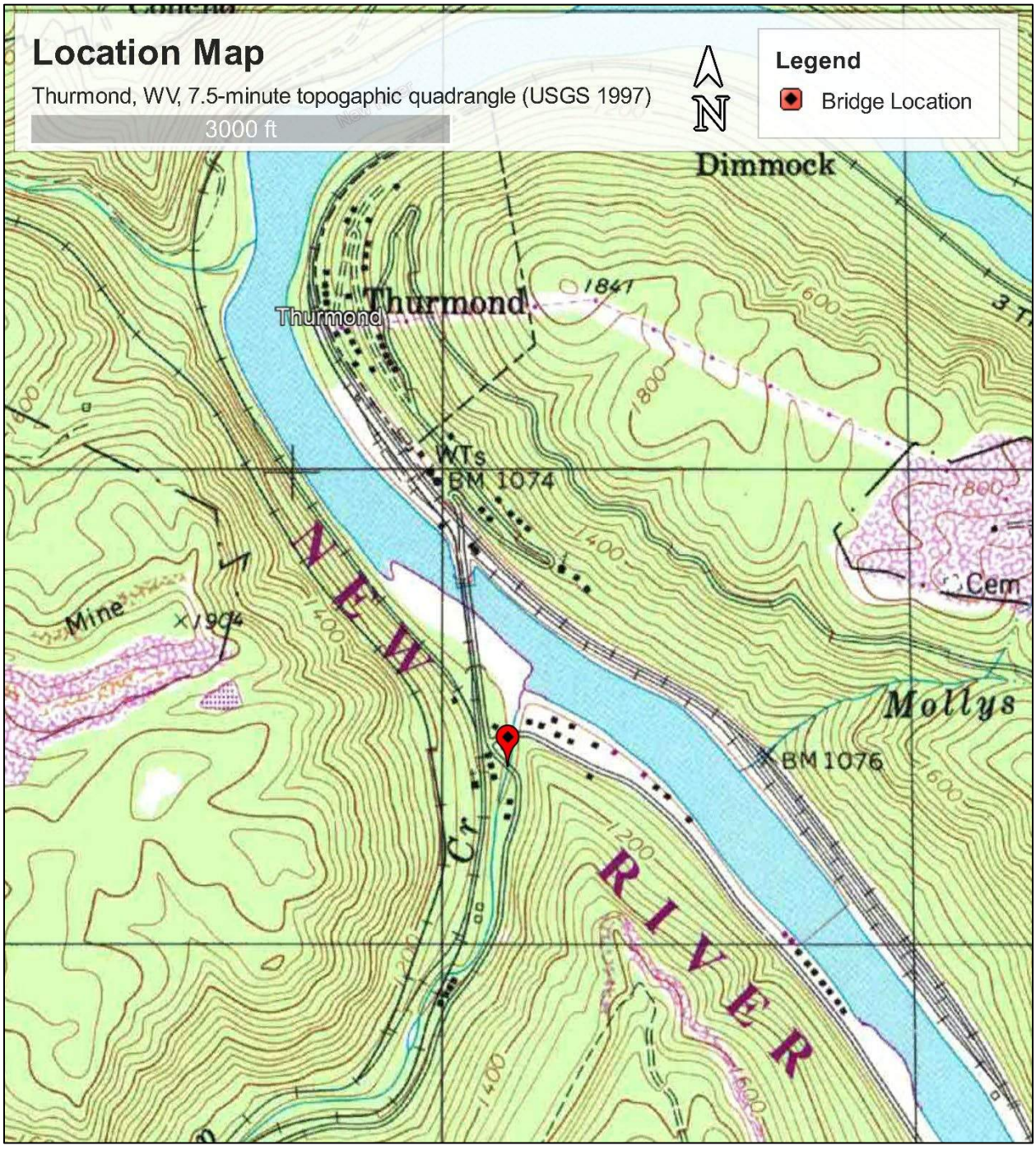
Repositories and Collections Consulted:

Fayette County Library, Oak Hill, West Virginia

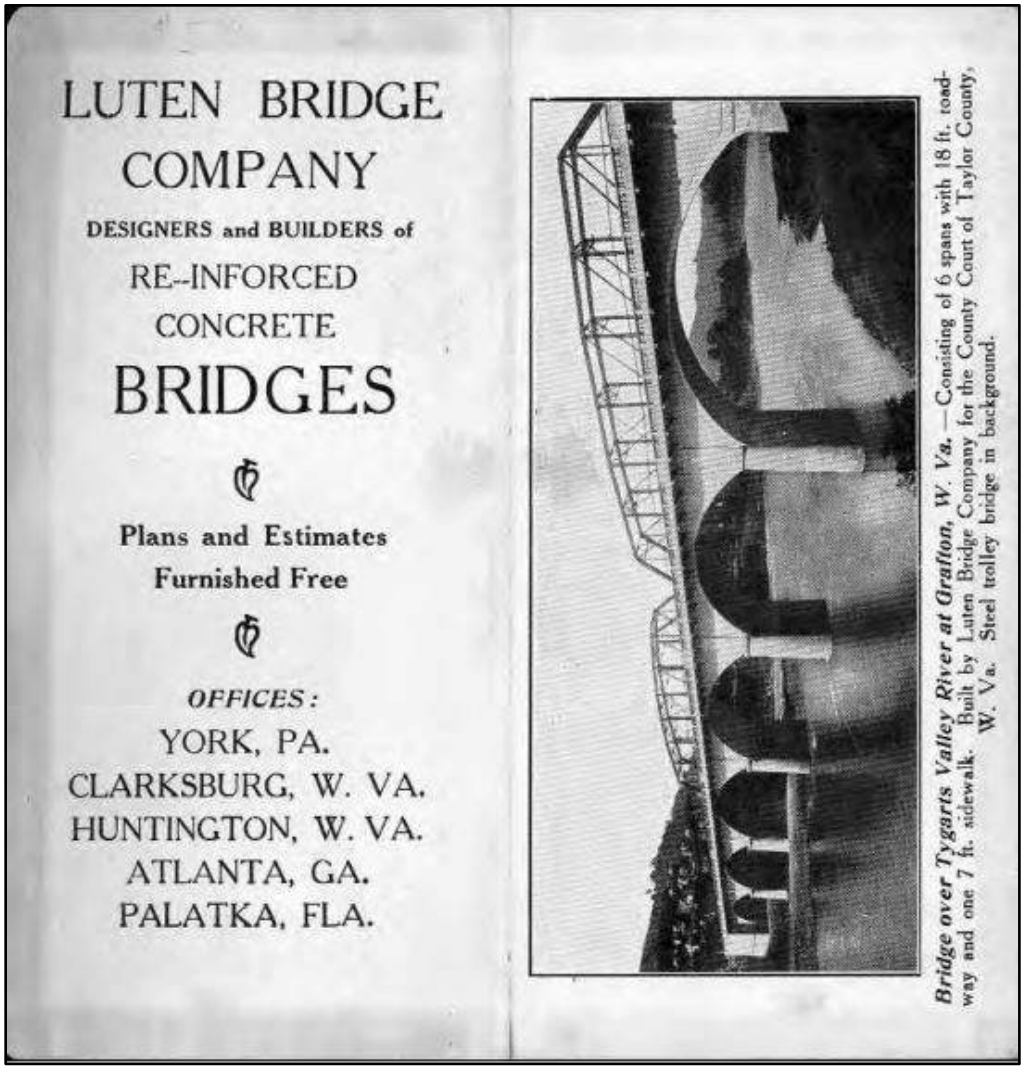
West Virginia University, West Virginia and Regional History Center Photographic Collection, Morgantown, West Virginia

Library of Congress Map Collection, Washington DC.

APPENDIX A: PROJECT MAPPING

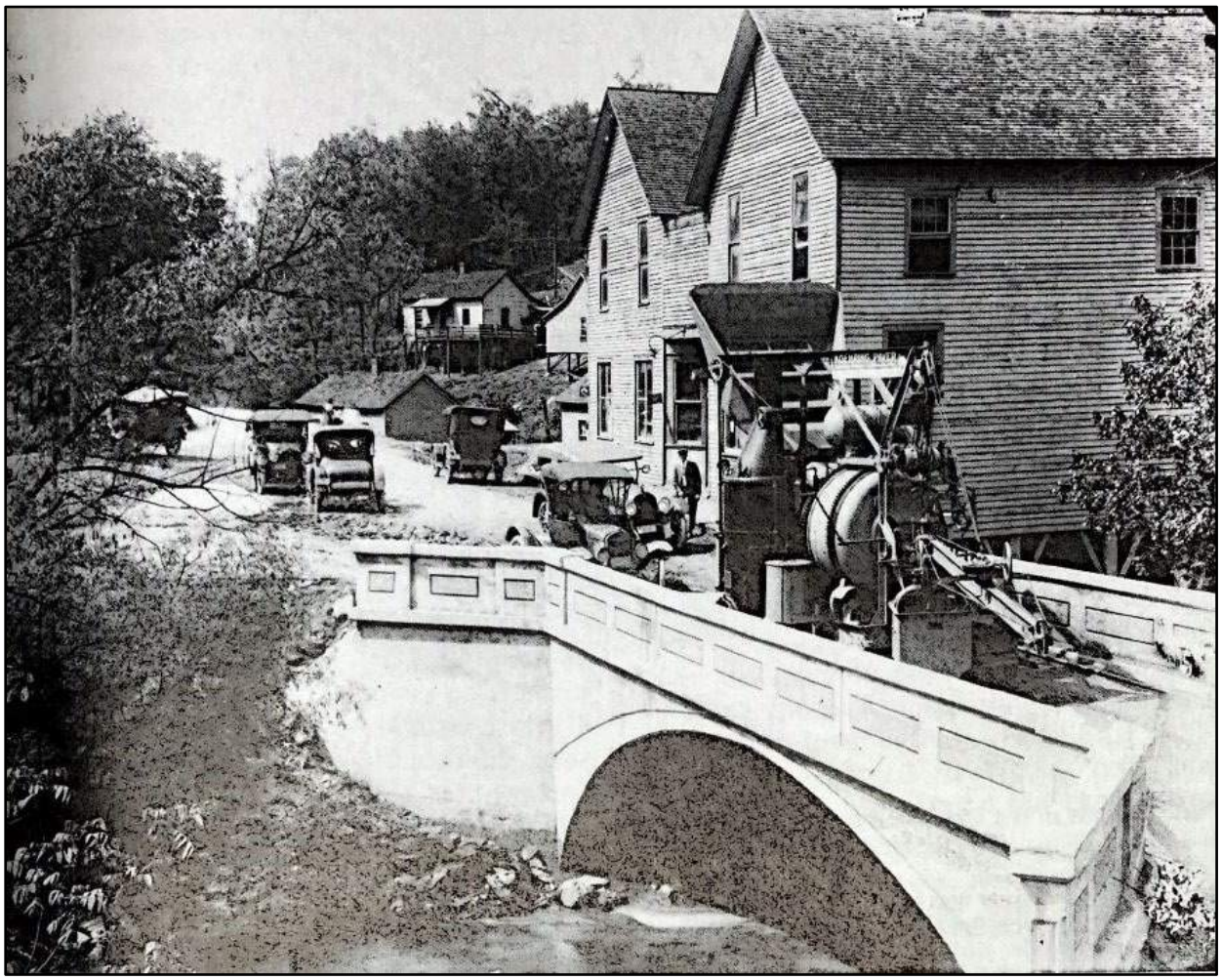


APPENDIX B: HISTORICAL PHOTOGRAPHS



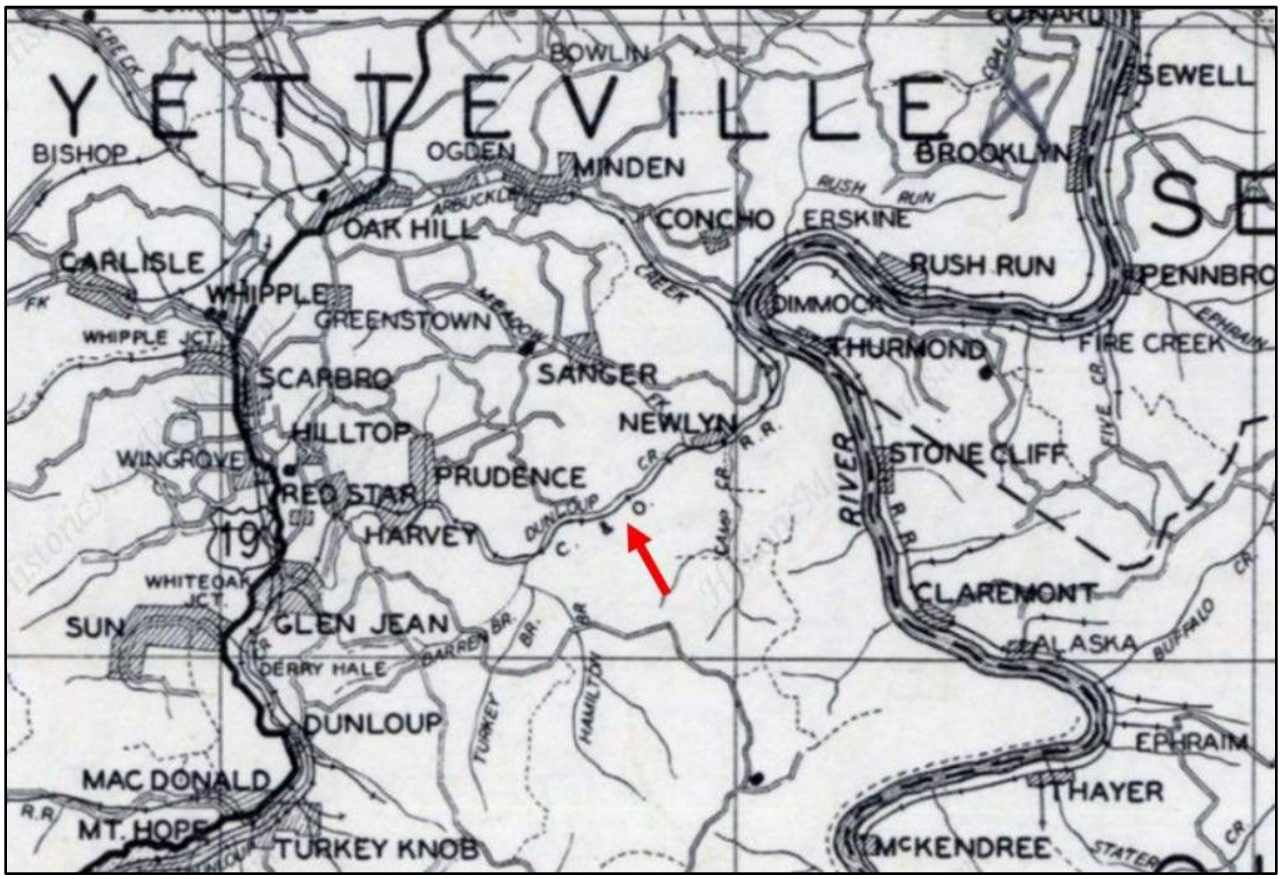
Luten Bridge Company ad.[29]

[29] TDOT, 2008.



Ca. 1920 photograph showing a Koehring Paver surfacing a section of CR 25 on one of the Luten concrete bridges near Glen Jean.[30]

[30] Sullivan, *Thurmond: A New River Community.*



Detail of a 1933 map of Fayette County showing the Dunloup Creek coalfield. The C&O Dunloup Branch Railroad and Thurmond Road (CR 25) between Glen Jean and Thurmond is indicated by the red arrow.[31]

[31] John Ice, "Fayette County – Falls, Kanawha, Mountain Cove, Nuttall, Fayetteville, Sewell Mountain, Quinnimont, West Virginia." *West Virginia State Atlas 1933,* (Clarksburg, WV: Clarksburg Publishing Company, 1933).

APPENDIX C: PHOTOGRAPHS

Index to Photographs

Name of Property:	DUNLOUP CREEK BRIDGE #9 (NBI No. 10A121)
City or Vicinity:	Thurmond
County:	Fayette County
State:	West Virginia
Name of Photographer:	Thomas Lucy
Date of Photographs:	October 26, 2023
Location of Original Digital Files:	Michael Baker International, Inc.
	100 Airside Drive, Moon Township, PA 15108

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Photo 4. OBLIQUE VIEW OF PARAPET AND ARCH OF SOUTHWEST ELEVATION OF BRIDGE, FACING EAST (WV_Fayette County_Dunloup Creek Bridge #9_0004).

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Photo 14. VIEW FROM CENTER OF BRIDGE, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0014).

Photo 15. VIEW FROM CENTER OF BRIDGE, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0015).

Photo 16. OBLIQUE VIEW OF BRIDGE SHOWING NORTHEAST ELEVATION, FACING WEST (WV_Fayette County_Dunloup Creek Bridge #9_0016).

Photo 17. VIEW OF BRIDGE SHOWING NORTHEAST ELEVATION, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0017).

Photo 18. VIEW OF SOUTHWESTERN END OF BRIDGE, SHOWING NORTHEAST ELEVATION OF PARAPET EXTERIOR, SPANDREL WALL, AND ABUTMENT, FACING SOUTH (WV_Fayette County_Dunloup Creek Bridge #9_0018).

Photo 19. VIEW OF NORTHEASTERN ABUTMENT, SPANDREL WALL, ARCH INTERIOR, AND WINGWALL, FACING WEST (WV_Fayette County_Dunloup Creek Bridge #9_0019).

Photo 20. VIEW OF UNDERSIDE OF ARCH, NORTHWEST ABUTMENT, AND WINGWALLS, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0020).

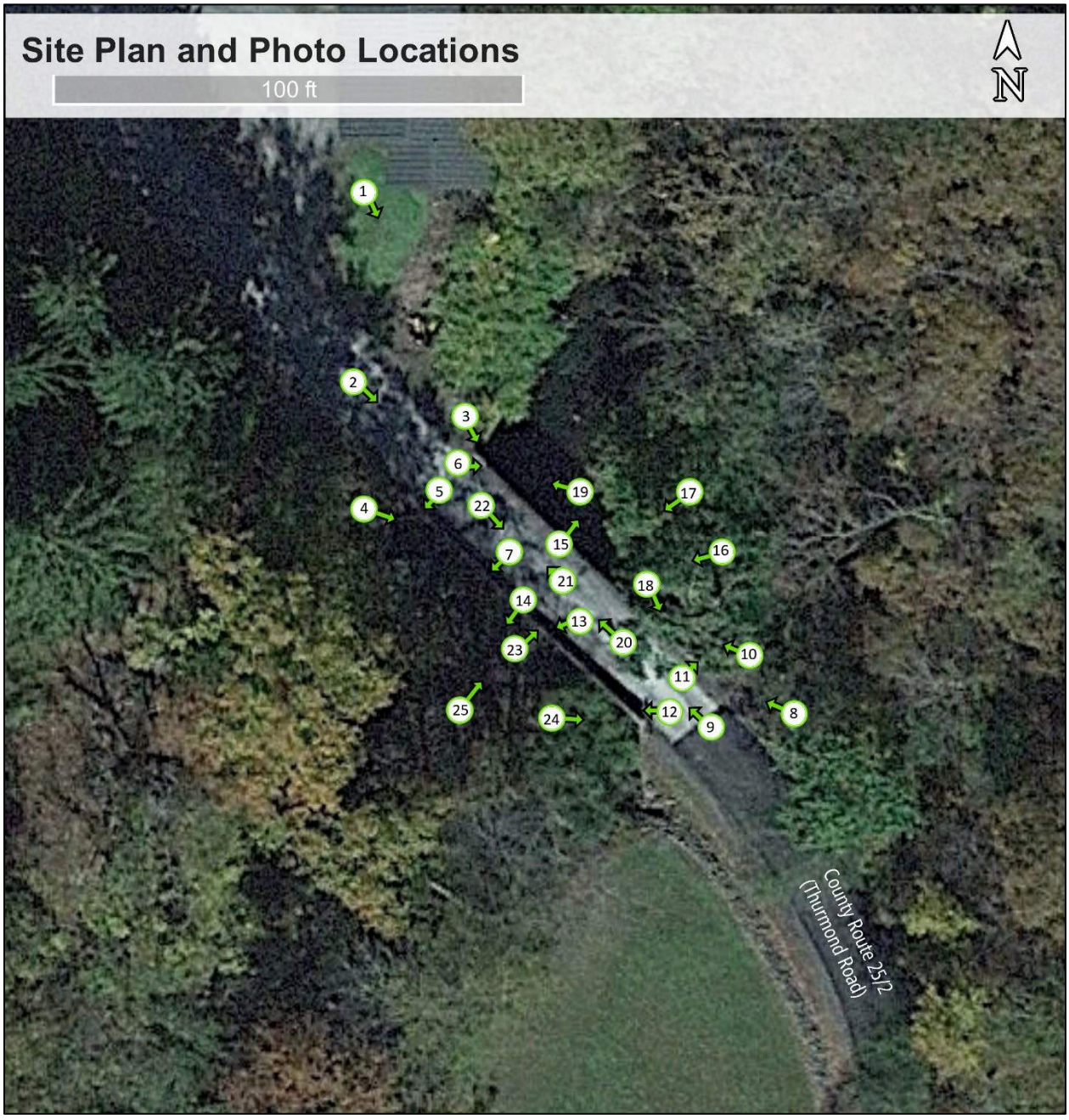
Photo 21. DETAIL OF UNDERSIDE OF ARCH SHOWING CONCRETE DETERIORATION AND EXPOSED METAL REINFORCING BARS, FACING UP (WV_Fayette County_Dunloup Creek Bridge #9_0021).

Photo 22. VIEW OF UNDERSIDE OF ARCH, SOUTHEAST ABUTMENT, AND WINGWALLS, FACING SOUTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0022).

Photo 23. DETAIL OF EXTERIOR FACE OF PARAPET ON SOUTHWESTERN ELEVATION, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0023).

Photo 24. VIEW OF SOUTHEASTERN END OF BRIDGE SHOWING SPANDREL WALL, WINGWALL, AND PARAPET, FACING EAST (WV_Fayette County_Dunloup Creek Bridge #9_0024).

Photo 25. VIEW OF BRIDGE SHOWING SOUTHWEST ELEVATION, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0025).



Site plan and photo key depicted on October 2022 Google Earth aerial mapping.

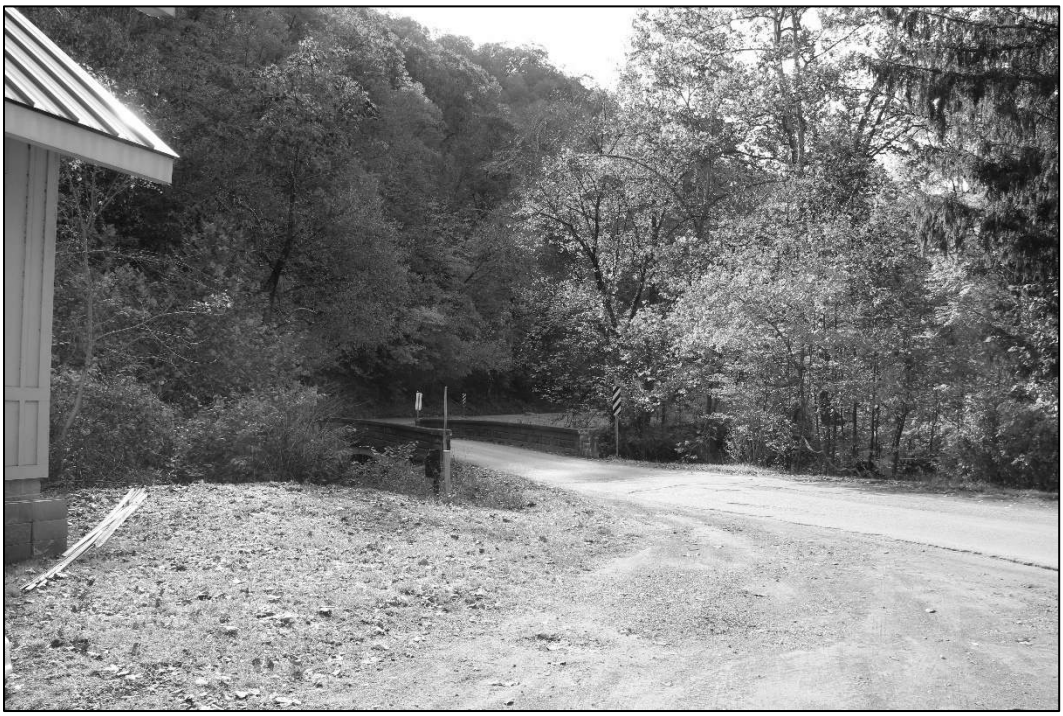


Photo 1. BRIDGE IN CONTEXT SHOWING NORTHWESTERN APPROACH, FACING SOUTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0001).

Photo 2. NORTHWESTERN APPROACH TO BRIDGE AND BRIDGE DECK FROM CENTER OF COUNTY ROAD 25, FACING SOUTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0002).

Photo 3. VIEW OF EXTERIOR OF NORTHEAST PARAPET AND ARCH OF BRIDGE, FACING SOUTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0003).

Photo 4. OBLIQUE VIEW OF PARAPET AND ARCH OF SOUTHWEST ELEVATION OF BRIDGE, FACING EAST (WV_Fayette County_Dunloup Creek Bridge #9_0004).

Photo 5. DETAIL VIEW OF BRIDGE PLAQUE ON THE INSIDE OF SOUTHWEST PARAPET, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0005).

Photo 6. VIEW OF THE NORTHWESTERN END OF THE NORTHEAST PARAPET, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0006).

Photo 7. DETAIL VIEW OF SOUTHWEST PARAPET, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0007).

Photo 8. OBLIQUE VIEW OF THE SOUTHEASTERN APPROACH TO BRIDGE, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0008).

Photo 9. SOUTHEASTERN APPROACH TO BRIDGE AND BRIDGE DECK FROM CENTER OF COUNTY ROAD 25, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0009).

Photo 10. OBLIQUE VIEW OF PARAPET AND ARCH OF NORTHEAST ELEVATION OF BRIDGE, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0010).

Photo 11. DETAIL OF BRIDGE PLAQUE ON THE INSIDE OF NORTHEAST PARAPET, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0011).

Photo 12. VIEW OF THE SOUTHWESTERN END OF THE SOUTHWEST PARAPET, FACING WEST (WV_Fayette County_Dunloup Creek Bridge #9_0012).

Photo 13. VIEW OF JOINT AND CAP DETAIL ON INSIDE FACE OF SOUTHWEST PARAPET, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0013).

Photo 14. VIEW FROM CENTER OF BRIDGE, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0014).

Photo 15. VIEW FROM CENTER OF BRIDGE, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0015).

Photo 16. OBLIQUE VIEW OF BRIDGE SHOWING NORTHEAST ELEVATION, FACING WEST (WV_Fayette County_Dunloup Creek Bridge #9_0016).

Photo 17. VIEW OF BRIDGE SHOWING NORTHEAST ELEVATION, FACING SOUTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0017).

Photo 18. VIEW OF SOUTHWESTERN END OF BRIDGE, SHOWING NORTHEAST ELEVATION OF PARAPET EXTERIOR, SPANDREL WALL, AND ABUTMENT, FACING SOUTH (WV_Fayette County_Dunloup Creek Bridge #9_0018).

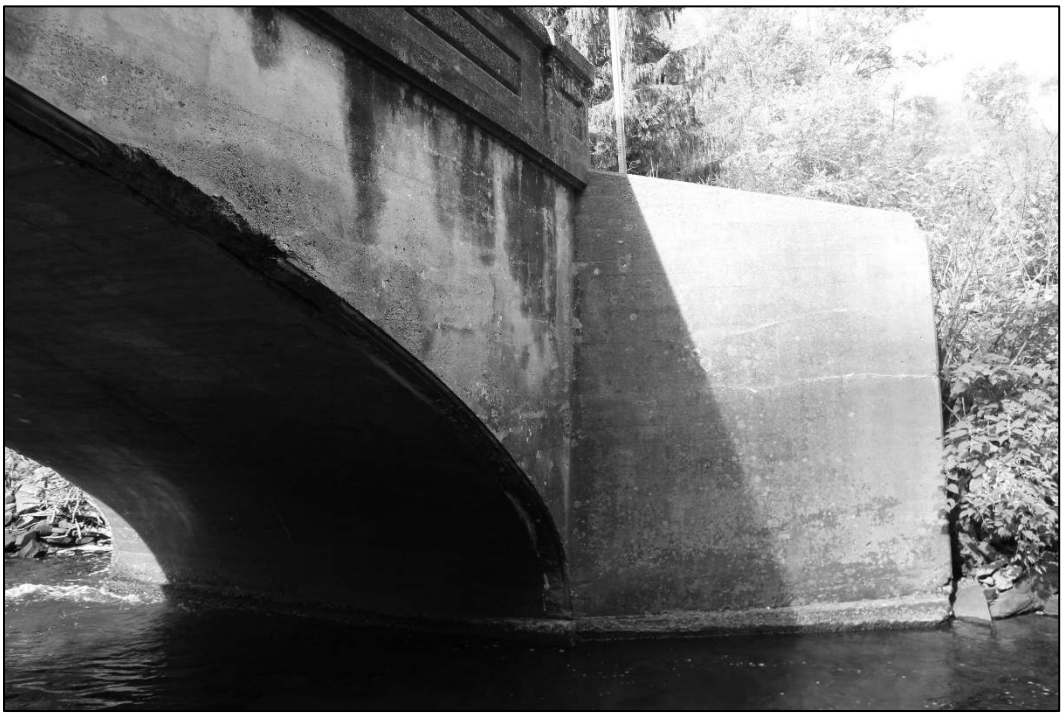


Photo 19. VIEW OF NORTHEASTERN ABUTMENT, SPANDREL WALL, ARCH INTERIOR, AND WINGWALL, FACING WEST (WV_Fayette County_Dunloup Creek Bridge #9_0019).

Photo 20. VIEW OF UNDERSIDE OF ARCH, NORTHWEST ABUTMENT, AND WINGWALLS, FACING NORTHWEST (WV_Fayette County_Dunloup Creek Bridge #9_0020).

Photo 21. DETAIL OF UNDERSIDE OF ARCH SHOWING CONCRETE DETERIORATION AND EXPOSED METAL REINFORCING BARS, FACING UP (WV_Fayette County_Dunloup Creek Bridge #9_0021).

Photo 22. VIEW OF UNDERSIDE OF ARCH, SOUTHEAST ABUTMENT, AND WINGWALLS, FACING SOUTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0022).

Photo 23. DETAIL OF EXTERIOR FACE OF PARAPET ON SOUTHWESTERN ELEVATION, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0023).

Photo 24. VIEW OF SOUTHEASTERN END OF BRIDGE SHOWING SPANDREL WALL, WINGWALL, AND PARAPET, FACING EAST (WV_Fayette County_Dunloup Creek Bridge #9_0024).

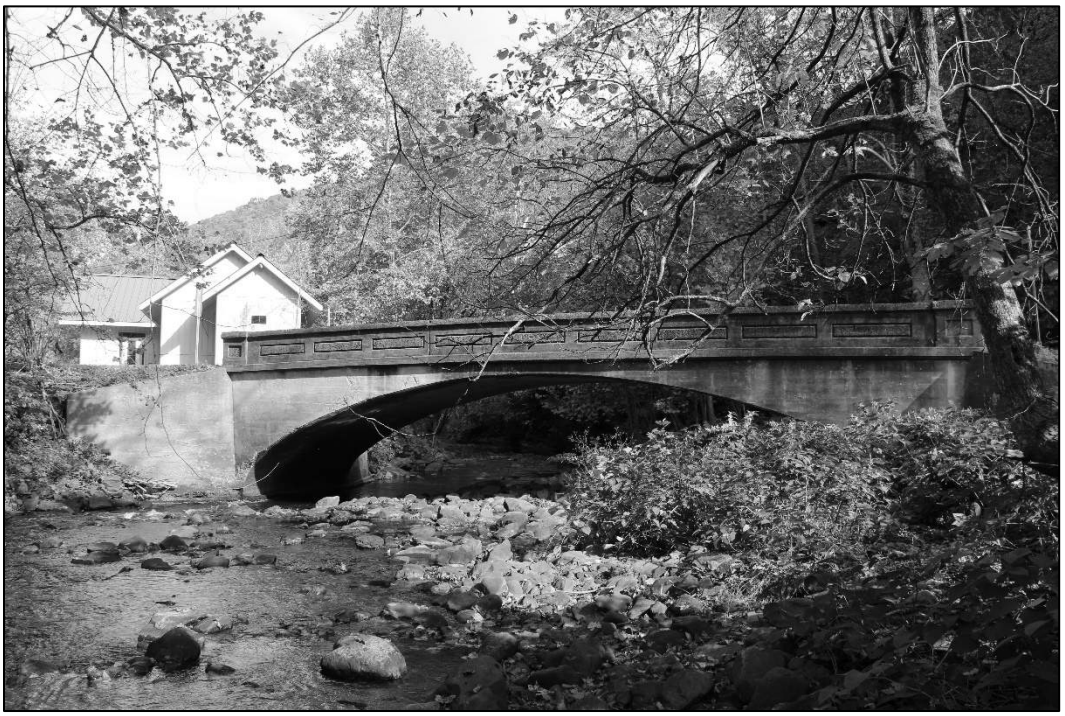
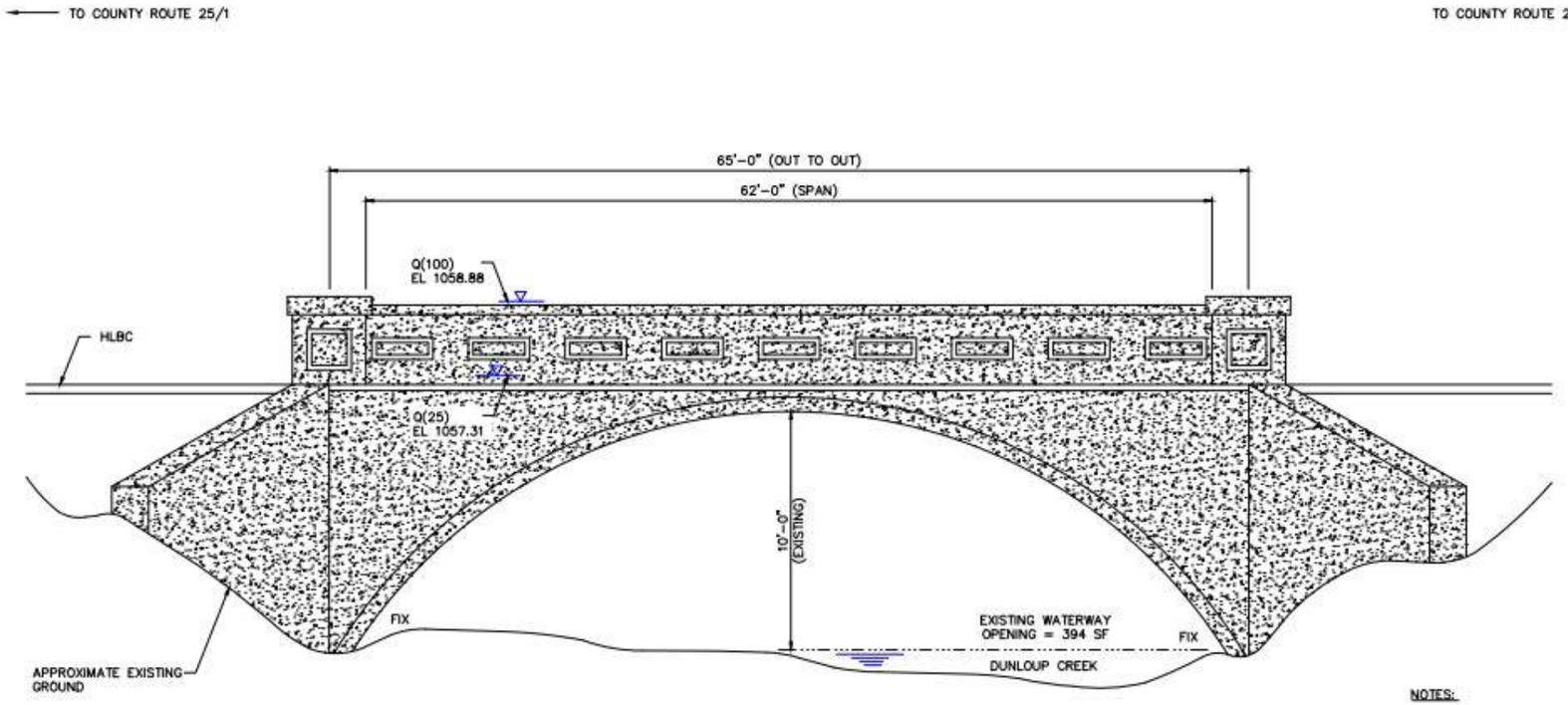


Photo 25. VIEW OF BRIDGE SHOWING SOUTHWEST ELEVATION, FACING NORTHEAST (WV_Fayette County_Dunloup Creek Bridge #9_0025).

APPENDIX D: BRIDGE ELEVATION (NOT TO SCALE)

PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
S310-025/00-6.12 00 23	STBG-0025 (162)D	9	FAYETTE	29	76



ELEVATION
NTS

NOTES:

THIS DRAWING IS BASED ON A SKETCH PREPARED BY THE WEST VIRGINIA DEPARTMENT OF HIGHWAYS.

NO.	REVISION	DATE	BY

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
ENGINEERING DIVISION

DUNLOUP CREEK BRIDGE #9

EXISTING BRIDGE
LOOKING UPSTREAM

DESIGNED MEM	DATE 7/24
DRAWN RWR	7/24
CHECKED CSS	7/24
REVIEWED BMB	7/24

L.A. GATES Company

SHEET 29 OF 76
BRIDGE NO. 11974

APPENDIX E: MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER, AND
THE WEST VIRGINIA DIVISION OF HIGHWAYS

REGARDING THE IMPLEMENTATION OF THE DUNLOUP CREEK BRIDGE #9 REPLACEMENT PROJECT
STATE PROJECT S310-025-6.12 00 23
FEDERAL PROJECT STBG-0025(160)d
FAYETTE COUNTY, WEST VIRGINIA

MARCH 2025

WHEREAS, the Federal Highway Administration (FHWA), in cooperation with the West Virginia Division of Highways (WVDOH), proposes to replace the Dunloup Creek Bridge #9, which spans Dunloup Creek near Thurmond, Fayette County, West Virginia, hereinafter referred to as the Project. The Project involves the construction of a new bridge in its current location; and

WHEREAS, the FHWA has determined that the Project will have an adverse effect upon Dunloup Creek Bridge #9, a property that has been determined to be eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, the FHWA has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to 36 CFR Part 800 Implementing Section 106 of the National Historic Preservation Act; (54 U.S.C. § 306108); and

WHEREAS, the WVDOH has contacted the Fayette County Historic Landmark Commission, the Preservation Alliance of West Virginia, the National Coal Heritage Area Authority, and the National Park Service and received no response in return; and

WHEREAS, in accordance with 36 CFR § 800.6 (a) (1), the FHWA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination providing the specified documentation, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6 (a) (1) (iii);

NOW, THEREFORE, the FHWA, the WVSHPO, and the WVDOH agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

STIPULATIONS

The FHWA, with the assistance of WVDOH, shall ensure that the following stipulations are carried out:

I. Dunloup Creek Bridge #9

A. Prior to demolition, removal, or alteration, WVDOH, using the services of a person meeting the Secretary of the Interior's *Professional Qualifications Standards* [48 FR 44738-9] in History and/or Architectural History, will document the Dunloup Creek Bridge #9 its present setting. The State-Level documentation package will include a description of the structure, brief history, summary of its historic significance, reproduction of historic images (if available), and current digital photographs of the bridge and its setting. Digital PDF versions of the documentation will include embedded color photographs, and the one hard copy will be supplemented with 5x7-inch black-and-white prints placed in archival sleeves. The documentation package will include one hard copy printed single-sided on 20lb Permalife archival bond paper placed in an archival three-ring binder. Digital copies in the form of PDFs for documents, and TIFF files for photographs will be submitted on flash drives. The WVSHPO will be given the opportunity to review the document before the submission of final copies. Final documents will be distributed to the WVSHPO (digital), WVDOH (digital), and the Oak Hill Public Library (digital and one hard copy).

B. Two hundred color brochures of the Dunloup Creek Bridge #9 will be developed by the WVDOH and distributed to the Oak Hill Public Library. The WVSHPO will be given the opportunity to review all educational materials developed for this stipulation. A CD/DVD or flash drive containing the brochure will also be provided to the Oak Hill Public Library to allow for the printing of additional brochures once the original total has been exhausted.

C. The Dunloup Creek Bridge #9 will be documented on the West Virginia historic bridge website: Highways Through History (http://www.highwaysthroughhistory.com).

II. Duration

This MOA will expire if its stipulations are not carried out within 5 years from the date of its execution. At such time, and prior to work continuing on the undertaking, the FHWA shall either (a) execute an MOA pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Prior to such time, FHWA may consult with other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation V below. FHWA shall notify the signatories as to the course of action it will pursue.

III. Post-Review Discoveries

If any unanticipated discoveries of historic properties or archaeological sites, including human burial sites and/or skeletal remains, are encountered during the implementation of this undertaking, work shall be suspended in the area of the discovery until the WVDOH has developed and implemented an appropriate treatment plan in consultation with the WVSHPO pursuant to 36 CFR § 800.13(b).

Monitoring and Reporting

Each year following the execution of this MOA until it expires or is terminated, FHWA shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered,

and any disputes and objections received in FHWA's efforts to carry out the terms of this MOA.

IV. Dispute Resolution

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FHWA shall consult with such party to resolve the objection. If FHWA determines that such objection cannot be resolved, FHWA will:

A. Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide FHWA with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories, and concurring parties and provide them with a copy of this written response. FHWA will then proceed according to its final decision.

B. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, FHWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA and provide them and the ACHP with a copy of the written response.

C. FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

V. Amendments

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

VI. Termination

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation V, above. If within 30 days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated and prior to work continuing on the undertaking, FHWA must either (a) execute a MOA pursuant to 36 CFR § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. FHWA shall notify the signatories as to the course of action it will pursue.

EXECUTION of the MOA by the FHWA, WVSHPO, and the WVDOH and the implementation of its terms, evidence that the FHWA has afforded the ACHP an opportunity to comment on the Project and its effects on historic properties and that the FHWA has taken into account the effects of the undertaking on historic properties.

Signatories:

JASON WORKMAN

Digitally signed by JASON WORKMAN
Date: 2025.06.24 16:14:20 -04'00'

Federal Highway Administration — Date

Susan McPierce

West Virginia Deputy State Historic Preservation Officer — April 9, 2025 — Date

Invited Signatory:

West Virginia Division of Highways — 4/11/2025 — Date