Old Route 3 Bridge
Over Miller Creek
(S.N. 002-0010/Sequence No. 20965)
Thebes Precinct (a.k.a., Road District No. 4)
Alexander County
Illinois

HIER No. AX-2022-1

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic Illinois Engineering Record
State Historic Preservation Office
Springfield, Illinois

Prepared by the Illinois State Archaeological Survey
on behalf of the Illinois Department of Transportation

November 2022

HISTORIC ILLINOIS ENGINEERING RECORD
HIER No. AX-2022-1

Old Route 3 Bridge
(PRATT PONY TRUSS WITH CONCRETE, POST & BEAM APPROACHES)

Location: Old IL 3 over Miller Creek
Thebes Precinct (a.k.a., Road District No. 4), Alexander County, Illinois

USGS Quadrangle: USGS Thebes, 7.5 minute, Illinois
Latitude 037° 14' 25" N Longitude 089° 26' 37" W

Universal Transverse Mercator Coordinates:
Zone 16 283232 Easting 4124128 Northing

Present Owner: IDOT

Present Use: Vehicular Bridge (IDOT Structure No. 002-0010)

Significance: The Old IL 3 bridge spanning Miller Creek is a three-span structure. It is oriented on a north/south axis and features a Pratt Pony truss flanked on the north and south by concrete, T-Beam approach spans. The fabrication's primary attraction is its truss bridge/concrete span combination, the significance of which is enhanced by the engineering and historical integrity retained eighty-nine years after it was constructed. Its importance is further enhanced as the bridge was a component of the new Route 3 (St. Louis to Chester)/Route 150 (Chester to Cairo) highway combination developed in Illinois in the late 1920s/early 1930s. Those roads generally paralleled the Mississippi River and connected the hub cities of St. Louis, MO, and Cairo, IL. Given the structure's character and integrity (Criterion C), in addition to its service as a component of that St. Louis to Cairo through-route (Criterion A), and in consultation with the State Historic Preserva-tion Office, this bridge was found eligible for the National Register of Historic Places.

PART 1. HISTORICAL INFORMATION

A. Physical History:

1. Date erected: 1933[1]

[1] This date is confirmed by the bridge plate illustrated in photo #35 of 38 found at the conclusion of this document.

2. Designer: Unknown

3. Original and subsequent owners: Illinois Department of Transportation

4. Builder or contractor:

   Watt Construction Company, Winchester, IL (substructure)
   Midland Structural Steel Company, Cicero, IL (superstructure)

5. Alterations and additions: The bridge offers little evidence of planned modification beyond the repair and/or replacement of its concrete deck. Its most apparent unplanned alteration is the structural deterioration found in the concrete curbs in general and railings of the concrete approach spans in particular.

B. Historical Context:[2]

Bridge Development in Illinois

The earliest permanent bridges in Illinois include a few stone arches built in the 1830s when the National Road was extended west from Maryland. At least one other arch was built on the Chicago-Galena Road in the same period. Accounts of early travelers suggest that rudimentary ferries sometimes facilitated passage across larger streams in the region. Timber structures crossing small water courses also accommodated travel. Little is known of the pile trestles or problematical floating platforms used. All were subject to risks and washouts.[3]

As pioneers moving west established settlements, technicians were attracted to the frontier to erect bridges, many of them covered. Between 1820 and 1900, an estimated two to three hundred such structures were built in Illinois, only a handful of which are thought to remain today.[4]

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[2] The "Bridge Development in Illinois," "Steel Bridge," "Pratt and Warren Truss Bridge" and "Concrete Bridge" sections were initially prepared in circa 1990 by John Nolan of the Illinois Department of Transportation (IDOT). Most of that material has subsequently been reviewed against the sources cited and then edited, expanded, modified or rewritten as appropriate.

[3] Keith A. Sculle and John A. Jakle, "From Terre Haute to Vandalia, Illinois," in *A Guide to the National Road*, ed. Karl Raitz (Baltimore, MD: The Johns Hopkins University Press, 1996): 277; Milo M. Quaife, *Chicago's Highways Old and New* (Chicago: D.F. Keller & Co., 1923): 187.

[4] Russell M. Garrard, "Early Bridges in Central Illinois," in *Heritage of Mid-Illinois Engineering* (Capital City Chapter of the Illinois Society of Professional Engineers, circa 1976): 15ff.

Railroads helped drive the need to improve early timber fabrications. Trains hauled heavier loads as time passed, a fact requiring by the late 1850s stronger bridges. Consequently were structures of iron developed. Those were followed in the 1870s by others of steel which came to use wide flange beams as components. The use of steel contributed to the expansion of railroads, settlement and industrialization in a growing America.[5]

Steel Bridges:

Cast iron was first used in 1776 for bridge construction in England. The resulting structure spanned the River Severn and was 102 feet long. The material was then used for other bridges on the island, as well as at least one in Germany, into the early years of the nineteenth century. Bridges of cast iron established a viable alternative to those of wood and stone. But it was the subsequent development of wrought iron, considered superior to that which was cast, that initiated bridge building in the modern era. Wrought iron's period of dominance was limited by the development of steel and the 1862 Bessemer process which removed impurities from the steel, thus improving its strength. Early United States bridges built of steel included the Eads Bridge in St. Louis (completed in 1874) and the Chicago & Alton Railroad Bridge across the Missouri River at Glasgow, Missouri (completed in 1879). Steel emerged as the dominant bridge building material in the last decades of the nineteenth century.[6]

Stone, brick and concrete arch bridges had to be constructed on site. It was impossible to build such a structure in a factory, disassemble it, transport it to its intended destination and then reassemble it. Yet that, in varying degrees, is what happened with iron and steel bridges. Approaches and abutments, stone or concrete, were often still built by local labor. The bridges themselves were not. Constructing the components for bridges, and then assembling those components, became a big business in the last quarter of the nineteenth century. Companies large and small were established to meet the growing demand for bridges across the country, the larger of which developed operations with a

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[5] Walter V. Voss, "How New Materials Increased Man's Building Ability," in *Centennial Transactions* (New York: American Society of Civil Engineers, 1953): 829-830.

[6] "The Developments of the Nineteenth Century in Bridge Design and Construction," *Engineering News*, Vol. XLIV, No. 24 (13 December 1900): 409-410; Daniel L. Schodek, *Landmarks in American Civil Engineering* (Cambridge, MA: MIT Press, 1987): 118-124; "Chicago and Alton Railway Bridge, Howard County, Missouri," Written Historical and Descriptive Data, Historic American Buildings Survey, National Park Service, U.S. Department of the Interior, no date, page 2, From Prints and Photographs Division, Library of Congress (HABS No. MO-1465).

variety of function-related shops that included designing, forging necessary parts, machining those parts, riveting them and so on. Bridges were at least partially assembled in the factory to make sure all parts fit properly, after which they were disassembled and sent to the site for final assembly by a crew of experienced builders, be they employees of the originating company or those of companies that simply specialized in putting together the bridges of others.[7]

The state of Illinois claimed almost sixty bridge building companies that operated between 1849 and 1900, the vast majority located in Chicago. Many were short-lived and either went out of business or were acquired by one of those larger. A moment in which the American bridge-building industry experienced a seismic shift occurred in 1900 when industrialist and financier J.P. Morgan created a new corporation. He acquired and combined twenty-four individual bridge-building companies, including both the American Bridge Works and the Lassig Bridge and Iron Works in Chicago, and established the American Bridge Company, a behemoth that soon dominated bridge design and construction in the United States.[8]

Notwithstanding the creation of Morgan's new company and the evolving maturation of the bridge building industry, early roadway structures of steel were often deficient. There had been a growing and significant effort to improve railroad bridges in the country in the post-Civil War years of the nineteenth century, but that effort had yet to reach those modest structures on the nation's growing roadway network. One problem was that local road commissioners often lacked the expertise to make appropriate bridge-related decisions. As well, when requests for bridge proposals were issued, they often lacked the specifics necessary to adequately describe the structure needed and the amount of traffic it might have to carry. Bridge companies were competitive. With few specifications offered, they often proposed structures that might be only nominally capable of addressing needs at a given location. Yet those shortcomings were easy to overlook since the bridges erected were of *steel*, a term that implied – though often erroneously – strength and longevity.[9]

The State of Illinois began to address the uncertainties experienced by local govern-

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[7] Jeffrey A. Hess and Robert M. Frame, *Historic Highway Bridges in Wisconsin, Volume 2, Part 1: Truss Bridges* (Madison, WI: Wisconsin Department of Transportation, 1998): 65-67.

[8] Victor C. Darnell, *Directory of American Bridge-Building Companies, 1840-1900*, Occasional Publication No. 4 (Washington, D.C.: Society for Industrial Archaeology, 1984): 7-13.

[9] Henry S. Jacoby, "Recent Progress in American Bridge Construction," *Engineering News*, Vol. XLVIII, No. 3 (17 July 1902): 44; *First Annual Report of the Illinois Highway Commission for the Year 1906* (Springfield, IL: State Printer 1907): 56.

ments as they sought bridges sufficient to safely meet growing needs. A good example of the state's efforts is found in its publication *Modern Bridges for Illinois Highways*, published initially in 1910 with an expanded second edition issued in 1912. The publication explained that "whenever the township commissioners…have under consideration the construction of a particular bridge, and desires the assistance of the Highway Commission in preparing the plans, such assistance is furnished without expense to either county, township or municipality." Indeed, the state was committed to a highway system with bridges both well designed and built, be they concrete or steel (truss).[10]

Pratt and Warren Truss Bridges:

Pratt truss bridges were first constructed of iron and patented in 1844 by Thomas and Caleb Pratt. Bridges of this type put vertically-placed members in compression (being pushed in at both ends) while diagonals were in tension (being stretched or pulled at both ends). Pratts use heavy vertical beams typically of channels, angles and lacing while diagonals are more slender and generally comprised of steel rods, angles or bars. These bridges were designed for use as either Pony or Through truss structures.[11]

Warren truss bridges were developed in the same decade. Two British engineers patented in 1848 the system which had only diagonals that acted in both tension and compression. The substantial diagonals form a pronounced "W" in the truss's web, typically a give-away as to the bridge's type. A prominent variation of the type was a Warren Truss with Verticals in which the verticals were subordinate components that simply provided additional bracing for the structure. Warren trusses, again both Pony and Through, were thought an economical bridge-type still being erected in the 1970s.[12]

The primary, center span of the Route 150 bridge over Miller Creek is a Pratt Pony truss constructed in 1933.

Concrete Bridges and the Illinois State Highway Department:

Reinforced concrete emerged in the early twentieth century as a new material for bridge

[10] *Modern Bridges for Illinois Highways, Second Edition Revised and Enlarged* (Springfield, IL: State of Illinois Highway Commission, Bulletin No. 9, 1912): 8.

[11] T. Allan Comp and Donald Jackson, *Bridge Truss Types: A Guide to Dating and Identifying* (Memphis, TN: American Association for State and Local History, Technical Leaflet 95, 1977); n.p.; Hess and Frame, *Bridges in Wisconsin*, 12.

[12] Comp and Jackson, *Truss Types*, n.p; Parsons Brinckerhoff and Engineering & Industrial Heritage, *A Context for Common Historic Bridge Types*, (Washington, D.C., Transportation Research Board, 2005): 3-39 to 3-40.

construction. Concrete bridges were used in many locations with short crossings that would otherwise have needed steel structures (i.e., truss bridges). The versatility of concrete was enhanced when it was reinforced with steel rods or used to encase rolled steel beams, thus protecting them from the weather. The use of concrete for shorter span bridges also accommodated the growing twentieth century inclination toward aesthetics in design, which meant essentially giving bridges a more pleasing appearance.[13]

Illinois established a state authority in 1905 to design roadway bridges. It offered plans for new structures, concrete being the recommended building material for spans of less than 50 feet. A 43-foot test bridge was built in 1908 at the Southern Illinois Penitentiary in the City of Menard, Randolph County. It successfully carried over a multi-year testing period as many as 580 tons, or about 1,500 pounds per square foot. The growing appetite for concrete bridges was so great the Highway Commission reported "the demand for plans for short span steel bridges is almost nil."[14]

Three types of concrete bridges were built in Illinois by 1910-1912: slab, through girder and deck girder. In the case of slab bridges, they were very short spans in which the deck carried its own weight and that of the traffic on it (dead and live loads, respectively). With through girder bridges, the load-bearing girders were placed above the deck in such a fashion that they also served as the railings, though significantly oversized railings due to the loads they carried (these bridges were also known as edge-girder structures). The traffic deck essentially tied the lower chords of the two girders together, which meant that the bottom of the bridge was flat – it offered no obstacle to the flow of high water beneath. The loads of and on deck girder bridges were typically carried by two girders placed below the deck. The operational success of this bridge-type required clearance between high water and the girders, without which the girders might be problematical and impede high water flow. Through girder bridges typically accommodated the passage of water well since there were no structural obstacles below. The growing popularity of concrete structures is apparent by the fact that in 1908 fifty-one were built around the state, a number that had increased to 109 in 1911 and 141 in 1912.[15]

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[13] Walter M. Smith, Sr., and Walter M. Smith, Jr., "Concrete Bridges: Some Important Features in Their Design," *Transactions of the American Society of Civil Engineers* 77 (December 1914): 695-696; Leslie R. Schureman, "Beauty in Short-Span Highway Bridges," *Civil Engineering*, 8 (May 1938): 319.

[14] *First Annual Report…for the Year 1906*: 55, 57, 59; *Second Annual Report of the Illinois State Highway Commission for the Year 1907* (Springfield, IL: State of Illinois, 1908): 77-81; *Modern Bridges* (1912): 3-4, 49-53; *Third Annual Report of the Illinois State Highway Commission for the Years 1908-1909* (Springfield, IL: State of Illinois, 1911): 113.

[15] A good introduction to concrete bridges is found in David Plowden's, *Bridges: The Spans of North America* (New York: Viking Press, 1974), 297-300; *Fourth Annual Report of the Illinois State Highway Commission for the Years 1910, 1911, 1912* (Springfield, IL: State of Illinois, 1913): 303-304, 324-325, 327-329; *Third Annual Report*, 115, 119.

Concrete T-Beam Bridges:

T-Beam decks date to the early years of the twentieth century, as did those structures that used a simple slab deck. The latter was favoured for crossings of less than twenty-five feet while the former worked well, and was more economical, for crossings of between twenty-five and fifty feet. As described in *A Context for Common Historic Bridge Types*, a T-Beam cross section illustrates that "the upper horizontal slab (deck section) of this type of bridge constitutes the top of the "T", and the lower vertical section constitutes the stem of the "T"." Tension forces in these beams are addressed by steel rods in the stem as well as rods in the deck that are placed at right angles to those in the stem. T-Beams were widely used in the 1920s and 1930s in general, and for the approach spans of the Miller Creek Bridge in particular.[16]

Alexander County and the Village of Thebes:

Settlement in what came to be known as Alexander County began in about 1805. It was originally part of Union County, though separated therefrom in 1819. Alexander County was the southern tip of Illinois, an area that was divided in half in 1843 when the region east of the Cache River became Pulaski County. Its first seat of government was the community of America, on the west bank of the Ohio River. Thereafter did it move in 1833 to Unity, just west of the Cache River, and then in 1845 to Thebes on the Mississippi River. The county seat finally moved to Cairo in 1859 where it remains today.[17]

Topography in Alexander County varied. Soil of gravel, sand, silt and clay, all deposited over time by the flowing waters of the Mississippi River, was found through much of the region, adjacent to which were sand and limestone bluffs with rolling hills to the east. The county claimed about 220 square miles and its population in 1820 was 626, a number that had grown by 1880 to 14,809. Early settlers arrived, especially after 1835, primarily from Tennessee and Kentucky. Timber harvesting and milling were important early industries, as was farming which took advantage of Alexander County's generally fertile soil. It was reported in 1858 that grass, Indian corn and wheat, along with swine and cattle, were then the county's primary agricultural products. Six years later wheat and corn were dominant, production being 31,262 bushels and 350,000 bushels respectively. There were also then 605 horses, 665 sheep and 2,189 head of cattle present at the time. By 1880, agriculture accounted for 59,515 acres in the county, 28,661 acres

[16] Parsons Brinckerhoff, *Context for Common Historic Bridge Types*: Section 3, Page 88.

[17] *Alexander County, Illinois, Volume 1 – 1989: History and Families*. Paducah, KY: Turner Publishing Co., 1898: 8.

of which were improved while 30,004 acres were unimproved. There were 711 farms, the average size being eighty-four acres, the vast majority of which were between ten and 500 acres though a few were smaller as were a few much larger. Horses, swine and milk cows were prominent among the animals found in the county. Twenty years later, in 1900, Alexander County had 772 farms, their average size being 116.3 acres. The county hosted 719 farms on 86,089 acres in 1930 with an average size of 119.73 acres per farm. More specifically did the Thebes Precinct then claim thirty-nine farms on 4,971 acres. Clearly, farming was an economic endeavour of some consequence for both the county and precinct. Industry in the county seems to have been centered around Cairo and included iron works, brick yards, grain elevators, various mills, distilleries, sand and gravel production, and so on.[18]

Thebes was the primary community on the west side of the county, along the east shore of the Mississippi. Its townsite was patented in October 1835 to Joseph Chandler and Franklin Hughes, though not platted until March 1846. Consistent with the southern Illinois moniker of "Little Egypt," the name selected for the settlement was Thebes, after the Egyptian capital. It became the third seat of Alexander County government the year before the village was platted. A courthouse was constructed in 1848 for $4,400 that served the county for the next twelve years. The 1859 loss of the county seat to Cairo was distressing to Thebes. Considered twenty-three years later, it was speculated that had Thebes "remained the county seat, there is no telling to what extent its glory might have expanded, but the removal of the courthouse was the 'frost which nipped the shoot' and 'its hopes departed for ever.'" Thebes was reported in 1883 to be "no longer a flourishing young city, but rather a dead old town a third of a century old."[19]

Perceived doom notwithstanding, Thebes had 300 residents in 1858, the year before the courthouse was lost to Cairo. And while a population number was not cited in 1864 after the seat of government had moved, community residents were served by three general stores, two grocers, two boot and shoemakers and two flour mills, along with a doctor,

[18] Ibid., 8; J.M. Peck, A.M., *A Gazetteer of Illinois in Three Parts* (Philadelphia, PA: Grigg & Elliot, 1837): 92; *Illinois State Gazetteer and Business Directory for the Years 1858-1859* (Chicago, IL: George W. Hawes, 1858): 3; *Illinois State Gazetteer and Business Directory for the Years 1864-5* (Chicago, IL: J.C.W. Bailey, 1864); 55; United States Census Office, *Report of the Production of Agriculture as Returned at the Tenth Census.* (Washington, D.C.: Government Printing Office, 1883): 78, 145, 183; William R. Merriam, Director, *Twelfth Census of the United States Taken in the Year 1900: Agriculture Part 1, Farm, Live Stock and Animal Products* (Washington, D.C.: United States Census Office, 1902): 72; *Fifteenth Census of the United States: 1930-Agriculture Volume 1, Farm Acreage and Farm Values* (Washington, D.C.: Bureau of the Census. Library, 1931): 144. All census data accessed on 28 October 2022 and located at https://agcensus.library.cornell.edu. *Alexander County, Volume 1*: 8.

[19] *Alexander County, Volume 1*: 18; William Henry Perrin, ed., *History of Alexander, Union and Pulaski Counties, Illinois* (Chicago, IL: O.L. Baskin & Co., Historical Publishers, 1883): 496-497.

wagon maker, tailor, blacksmith, gunsmith and hotel, among other businesses. Yet, over time, Thebes fortunes declined, the 1870s growth of some flour and sawmilling endeavours notwithstanding. Its population in 1878 was a mere 100 residents, the only businesses then noted being one general store, two grocers and a physician. Ten years later that had not changed. The 1888 population was still reported to be 100 though it then claimed four general stores, a druggist, wagon maker and flour mill.[20]

Thebes fortunes began to recover around the turn of the twentieth century. The village had continued, over the later years of the nineteenth century, to offer river-related transportation services. But in 1899, the same year that Thebes incorporated, the community became a railroad town with the arrival of the Chicago & Eastern Illinois which began to offer services including both a depot and a hotel. That railroad was followed in 1902 by the Missouri Pacific and Cotton Belt railroads and their stations. As well, between 1902 and 1905, a bridge across the Mississippi River was built at Thebes. Growth was inevitable. When the bridge was opened in 1905 Thebes claimed a cooperage company, lumber yards, a pottery works, movie theater, dairies and eight saloons as well as various stores and restaurants among other businesses. "These railroads were very important," it was observed. "They provided employment and paid taxes which greatly helped for support of the school and town." Thereafter did Thebes receive concrete sidewalks in 1905, electricity in 1910, a city water system in 1927 and natural gas in the 1950s. It also got a new neighbor a couple of miles to the north when the hamlet of Gale was established. John N. Gale, and his brother J.H. Gale, owned and farmed land in the mid-1920s in the northeast quarter of Section 4 and west one-half of the northwest quarter in Section 3 (T15S, R3W). That land had presumably been farmed by the family at least as early as 1880. A small community was established on the Gale land in 1899 and served by the Missouri Pacific Railroad. Though a negligible town, Gale did have a post office from 1902 to 1976.[21]

Thebes was substantially larger than Gale, at least in a relative sense. Yet they are both notable as they frame on the south and north that short, two-and-one-half mile segment of the greater Route 150 alignment between Chester and Cairo on which the three span bridge over Miller Creek is found.

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[20] *State Gazetteer for 1858-1859*, 213; *State Gazetteer for 1964-5*, 578; *Illinois State Gazetteer and Business Directory, 1878*, Volume I (Detroit, MI: R.L. Polk & Co., 1878): 1087; *Illinois State Gazetteer and Business Directory, 1888*, Volume VI (Chicago, IL: R.L. Polk & Co., 1888): 1329; Perrin, *History of Alexander County*, 496.

[21] *Alexander County, Volume I*: 19; *Plat Book of Alexander County, Illinois* (Rockford, IL: W.W. Hixson, c.a., 1927): n.p.; U.S. Federal Census – Population (1880, 1900), accessed at www.ancestory.com on 04 November 2022; "Welcome to Jim Forte Postal History," Post Offices, Alexander County, Illinois, Viewed at https://www.postalhistory.com on 04 November 2022.

Route 150/3:

Plans were developed as early as 1919 for a highway network tying together the counties of southern Illinois known colloquially as "Little Egypt." Ten years later those plans had apparently progressed and Cairo had become a highway transportation hub at the southern tip of the state. One of the roads serving Cairo was Route 150 which departed the city and extended northwest through Alexander, Union and Jackson counties to the Randolph County city of Chester, a Mississippi River community that was then the southern terminal point for Route 3 as it extended south southeast from East St. Louis and points north.[22]

The original Route 150/3 travelway from Cairo to East St. Louis is important. But it is the Route 150 component reaching from Cairo to Chester that offers the more immediate context for the Alexander County, Thebes-to-Gale segment of the highway that claims the subject bridge. Work on the road continued for almost five years. It was reported in September 1929 that the entire route from Cairo to Olive Branch had been graded, though only paved a few miles north of the former. The preferred alignment from Olive Branch to Thebes had been identified, though not yet from Thebes to Chester. That notwithstanding, it was observed in the 1929 article that construction from Thebes to McClure, immediately east of Cape Girardeau on the Illinois side of the river, would likely be constructed next. But there was a design challenge encountered on that segment where "…an abrupt descent from the ridge and a serious hazard is presented by a reverse curve under two railroad trestles which it is feared would be a death trap."[23]

Planning and construction on Route 150 occurred concurrently. In February 1930 it was announced that a route for the greater highway between Cairo and Chester had been identified by the state's Department of Public Works and Buildings. Detailed at the time, however, was only that part of the alignment from Chester southeast to Gorham, Grand Tower and Ware, the latter at a point about nine miles north northeast of Cape Girardeau, MO. A year later, in the early spring of 1931, additional good news came when it was announced that Route 150, or at the very least a significant portion of it, would be

[22] After passing through Chester, Route 150 extended to a point some miles north of Lebanon, MO, a city about twenty miles east of East St. Louis. "Nearly 300 Miles Double Traffic State Hard Roads for Egypt," *The Daily Free Press* (Carbondale, IL), 08 August 1919: 2; "Cairo to be Hub When Road Work is Done, It Says," *The Daily Free Press* (Carbondale, IL), 17 June 1930: 1; F.A. Behymer, "Highway Improvements in Southern Illinois Open Up Delightful Scenic Tours," *St. Louis* (MO) *Post-Dispatch*, 08 September 1929: Part 8, p. 2; *Map of Illinois Showing State Highways* (Springfield, IL: Department of Public Works and Buildings, Division of Highways, December 1930): n.p.

[23] Behymer, "Highway Improvements," *Post-Dispatch*, 08 September 1929: Part 8, pp. 1-2.

designated a federal highway. Which is to say that the project would be paid for by the federal government as opposed to a federal aid road where the government simply shared costs with the state.[24]

In any event Route 150 was a unique roadway because of the Mississippi River-enhanced area through which it passed. Indeed, as early as 1929, it was reported that the conveyance will "pass through the great garden spot lying between Rockwood and Thebes." A year-and-a-half later Murphysboro's *Daily Independent* commented in more detail. It reported that a government engineer called the roadway "'the most beautiful in design ever to come out of the federal or state engineering departments.'" The article continued that "Federal engineers…are reportedly unusually enthusiastic as to the scenic side of the improvement [from Chester south through the bottomlands]. They are quoted as predicting the highway between the bluffs and the mighty river for many miles will convert the beautiful area into a famous touring ground for federal and state highway rovers." Then, in Fall 1932, the *Independent* reported that three communities along Route 150, Grand Tower, Gorham and Chester, would be working together in 1933 to attract tourists to "Scenic Valley Route 150" and its rare birds, geologic formations and other attractions. "Route 150, which engineers claim is the most beautiful 'trail' in southern Illinois, is destined to bring Chester, Gorham and Grand Tower in time annual excursions of tourists who will more than pay their way."[25]

Construction continued throughout the period. An example is Joseph Keal & Sons, an Edwardsville (IL) firm that received in September 1931 a $104,748.00 contract to pave the almost seven miles of roadway between Thebes and Olive Branch. Construction progress notwithstanding, there were also some disappointments. The community of Grand Tower, for instance, was disappointed when it was bypassed to the east by a few miles in favor of a "bee-line," which is to say a more direct route that did not veer into town. Despite its distress, the city reportedly "resigned herself to the state's preferred location…. Persons who say Grand Tower township is to prove a stumbling block to

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[24] Regarding designation as a federal highway, one source suggested that Federal Highways were different from Federal Aid Roads in that the former were paid for in whole by the federal government while aid roads were paid for jointly by the federal and state governments.

"State Route 150 Follows Bluff South," *The Daily Independent* (Murphysboro, IL), 18 February 1930, 1; "Highway 150 Federal Road, Chester, South," *The Daily Independent* (Murphysboro, IL), 30 March 1931: 1; "U.S. Engineers Call Route 150 Way Beautiful," *The Daily Independent* (Murphysboro, IL), 13 April 1931: 1.

[25] Behymer, "Highway Improvements," *Post-Dispatch*, 08 September 1929: Part 8, pp. 1-2; "Route 150 Way Beautiful," *Independent*: 13 April 1931: 1; "Grand Tower, Gorham Will Seek Tourist," *The Daily Independent* (Murphysboro, IL), 11 October 1932: 1.

highway progress are all wet. That is not the case."[26]

The date for completion of Route 150 between Chester and Cairo was a moving target. It was optimistically reported in June 1932 that construction would be complete by the end of the year. But that did not happen. Indeed, a significant and unexpected problem arose which was a shortage of concrete! Reported in June 1933 was that concrete availability would be a significant problem that construction season. The state tried to contract for as much concrete as it could, but that guaranteed nothing. Project completions were endangered, including four segments of "Scenic Valley Route 150," one of which was the Alexander County component from Thebes to Gale. Shortages appear to have continued through the year but some progress was made. The roadway segment across the Union/Jackson county line, from Aldridge, IL, to Grand Tower, IL, was completed and opened to traffic on Sunday 01 October 1933. Hundreds celebrated by driving the new highway. Progress was being made.[27]

It finally appeared as 1933 drew to a close that all would soon fall into place for the Route 3/150 highway between St. Louis, Chester and Cairo. "The completion of Route 150," reported Murphysboro's *Daily Independent*, "will also offer a new short route to St. Louis from…points east and south, such as…Cairo…and through traffic from the southeastern states." Bridges were an important element of highway construction and the ability to connect cities. And on Route 150, one of those bridges was located across Miller Creek, between the communities of Thebes and Gale, in Alexander County.[28]

Route 150 Bridge over Miller Creek:

That segment of Route 150 between Thebes and Gale was new alignment. It did not use an already extant roadbed and was essentially a 2.13 mile long, north/south roadway that required erecting two bridges. The original solicitation for contractors was issued at the end of July 1931. Required was constructing the grade as well as working on at least one

[26] "Contract is Let for Road Work in S[outhern] Illinois," *The Daily Free Press* (Carbondale, IL), 17 September 1931: 3; "Grand Tower Resigned to State Plans for Highway," *The Daily Independent* (Murphysboro, IL), 23 January 1932: 1.

[27] "Contractors for Highway 144 Coming to City," *The Daily Independent* (Murphysboro, IL), 08 June 1932:1; "Big Highway Program will Begin Monday," *The Daily Independent* (Murphysboro, IL), 23 June 1933: 3; "State Offers Its New Road Building Plan," *The Daily Independent* (Murphysboro, IL), 23 June 1933: 3; "Cement for Route 150 is Now Assured," *The Daily Independent* (Murphysboro, IL), 08 September 1933: 1; "No Assurance of Paving of 150 Before Winter," *The Daily Independent* (Murphysboro, IL), 08 September 1931: 1; "Hundreds of Motorists See New Route 150," *The Daily Independent* (Murphysboro, IL), 02 October 1933: 1; "Contract for Slab on Chester End, Route 150 Oct. 27," *The Daily Independent* (Murphysboro, IL), 20 October 1933: 1.

[28] "Routes 150/3 Shortline to St. Louis, Mo.," *The Daily Independent* (Murphysboro, IL), 22 December 1933: 1.

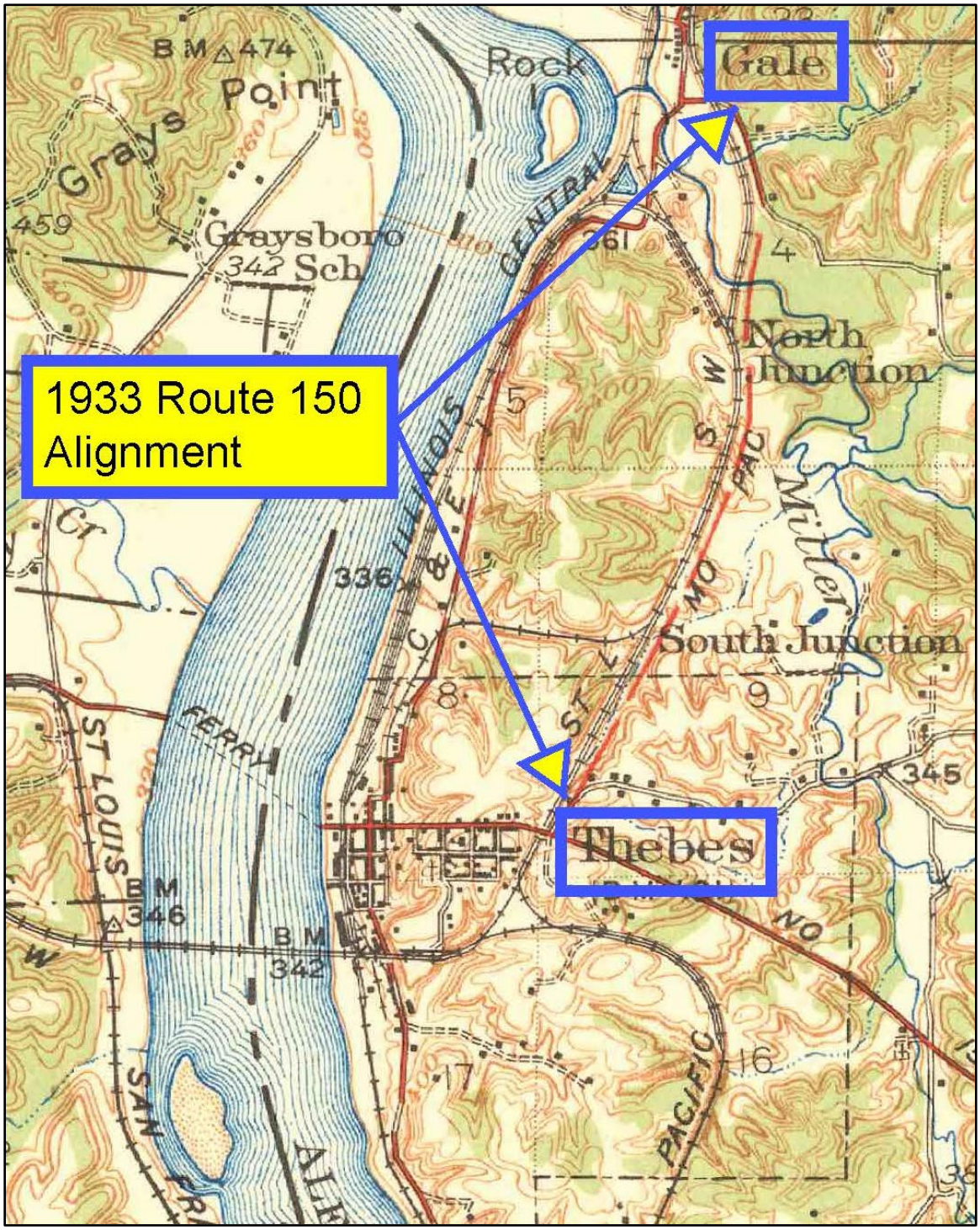

Figure 1: Illustrated in this 1933 USGS map is the new Route 150 alignment between Thebes and Gale. It is on this highway that the subject bridge was built (U.S. Geological Survey, *Thebes Quadrangle* [map], 1934, 1:62500, 15 Minute Series (Reston, VA: United States Department of the Interior, USGS, 1934).

bridge sub/superstructure. Proposals were due on 08 September 1931. Clark, Kearny & Stark, a firm located in Vienna, IL, submitted a $48,919.46 bid for building the roadway while Allenbough, Sisson & Hochstetter, of Sullivan, IN, proposed $51,143.45 to construct the sub and superstructures for bridges across both Miller and Sexton creeks, the latter being slightly more than half-a-mile north of the former. Perhaps the bids were too high. What is certain is that both projects were rebid in November when Martin Wunderlich, of Jefferson City, MO, was selected to prepare and grade the 2.13 mile alignment for a fee of $46,494.49. Two firms were also selected to build the bridges. Construction of the substructures went to Watt Construction, Winchester, IL, for a fee of $38,220.30 while the Pan American Bridge Company, New Castle, IN, was awarded for $11,483.51 the erection of the two bridge superstructures.[29]

The Watt Construction Company appears to have had the largest part of the Miller and Sexton creek bridge projects – at least based on budget. Information found about the firm was not extensive. It appears that the company was organized in Winchester, IL, in the mid-1920s and operated as a co-partnership. It incorporated in 1934. Throughout the late 1920s the company worked, possibly among other things, on bridge projects, specific examples of which included a Route 126 effort approaching Litchfield, IL, and a Route 107 project in Pike County, IL. In 1930 the firm relocated and moved to a new office on the south side of the public square in Winchester.[30]

It is unknown what transpired in the next twenty months (+/-). What is certain is that the Miller and Sexton creek superstructures were put out for bid again in the summer of 1933. The award went to the Midland Structural Steel Company for $27,688.92. It appears that Midland's contract was for the construction of the bridge superstructures only, thus did it replace the Pan American Bridge Company. Consequently did the state contract on 06 January 1933 with Watt Construction, as it had proposed on 26 October 1931, for the substructures of the Miller and Sexton creek bridges and with Midland Steel on 06 September 1933, as it had proposed on 31 July 1933, for the construction of the steel superstructures for the two bridges.[31]

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[29] "More Road Bids Asked and Pay Scales Fixed," *The Rock Island* (IL) *Argus*, 31 July 1931: 4; "Two Egyptian Routes Enjoy Bids Tuesday," *The Daily Independent* (Murphysboro, IL), 09 September 1931: 2; "Estimates Made on $5,000,000 Road projects," *The Daily Advocate* (Belleville, IL), 28 October 1931: 3; "144 Miles of Slab in Egypt in Nov. Letting," *The Daily Independent* (Murphysboro, IL), 28 October 1931: 1; "Highway Building Projects," *Centralia* (IL) *Sentinel*, 13 November 1931: 1; "State Highway Department to Let Contracts," *The Daily Advocate* (Belleville, IL), 13 November 1931: 2

[30] "Scott County R.N. A. Meet to be Held at Alsey," *The Jacksonville* (IL) *Daily Journal*, 20 April 1934: 16; "Five State Jobs Let Oct. 1 to 16," *The Decatur* (IL) *Daily Review*, 23 October 1927: 23; "Bridge and Pavement Contracts to be Let," *The Daily Independent* (Murphysboro, IL), 11 July 1928: 6; "Winchester," *The Jacksonville* (IL) *Daily Journal*, 04 October 1930: 8; "New Notes," *The Jacksonville* (IL) *Daily Journal*, 08 April 1934: 10.

[31] "Low Bids on $70,000 of Illinois Road Work," *Perry County Advocate* (Pinckneyville, IL), 04 August 1933: 8; "Let

Construction finally complete, the Thebes to Gale segment of Route 150, as well as the Miller and Sexton creek bridges on it, carried in 1937 about 350 vehicles per day. And by 1947, when part of Route 3, the roadway and its accompanying structures carried approximately 1050 vehicles per day.[32]

Conclusion:

A truncated Illinois Route 150 remains today. It extends northeast from Chester, though for a short distance only. The original segment of Route 150 between Cairo and Chester was redesignated in 1937 as part of Route 3, thus becoming the primary East St. Louis to Cairo travelway along the Mississippi River. In subsequent years the historic period Route 150/3 roadway route has changed nominally. The Thebes to Gale segment was entirely realigned in the 1990s onto an old railroad grade that had been abandoned. The original segment of the Thebes to Gale alignment remains and is now recognized as Old State Route 3 on which the original 1933 Miller Creek bridge remains.[33]

PART II: ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural Character:

The bridge is a three-span fabrication built in 1933. Its overall length is 148'-0" which consists of two, 33'-3" concrete approach spans, each flanking the center, 81'-4" Pratt Pony Truss span. The overall structure is carried by concrete abutments, between which are two, intermediate concrete piers, each pier supporting the river side of an approach span as well one side of the center truss span. The bridge carried Route 150, later identified as Route 3, over Miller Creek.

2. Condition of Fabric: The structure remains open to traffic, though its Sufficiency

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Contract for Bridge on Hecker Route," *Belleville* (IL) *Daily News-Democrat*, 01 August 1933: 14; "Bridge Project Near Hecker is Given Approval," *The Daily Advocate* (Belleville, IL), 01 August 1933: 3; Contract No. 5135, Alexander County 133B, RT 150, IDOT-Highways, R.S. 242.28, 1921-1947, Illinois State Archives, Springfield, IL; Contract No. 5240, Alexander County 133C, RT 150, IDOT-Highways, R.S. 242.28, 1921-1947, Illinois State Archives, Springfield, IL.

[32] *Traffic Map Alexander County Illinois* (Springfield, IL: Department of Public Works & Buildings, Division of Highways, 1937): map; *Traffic Map Alexander County Illinois* (Springfield, IL: Department of Public Works & Buildings, Division of Highways, Bureau of Highway Research, 1947): map.

[33] "Route Continuity and Improvement is Major Project," *The Daily Independent* (Murphysboro, IL), 15 May 1937: 1.

Rating was 24.3 in 2018.[34] Structural deficiencies are not readily apparent with the exception of deteriorating concrete, an example of which is that found on the diminished curb and extensively exposed rebar on the east side of the deck. Additional deteriorating and cracking concrete is found on the approach span railings and end blocks, as well as on the underside of the deck on all three spans.

B. Description:[35]

The bridge is anchored to and carried by two, concrete abutments and two concrete piers. Each abutment rises from a 12' long by 23'-6" wide by 2'-3" deep footing anchored to twenty-eight piles arranged in four rows of seven. The abutment's base is 11' long. As it rises its first 3', the abutment tapers on both ends to a length of 9'-6", after which the creek side of each abutment rises vertically while its approach side continues to taper to a length of 18" at the top of its 25'-2" height.

Each of the two piers rise from a footing that measures 32'-6" wide by 7'-6" long by 1'-9" deep. Each is tied to thirty-one piles set in two outer rows of ten and a middle row of eleven. The piers are 5'-9½" long at their base, a number that tapers to a length of 3'-6" at the top. The width of each pier is 30'-11" at the base and narrows to 28'-8½" at the top, 27'-3" above. Crowning each pier is a 5'-4" long by 29'-5" wide by 1'-6" deep beam.

The north and south approach spans of the bridge are of reinforced concrete with a post-and-beam structural system. The abutments and piers are the posts while the "T" beam stringers carrying the deck are the beams. The spans are 33'-3" long with an overall width (outer edge-to-outer edge) of 24'-6". The traffic deck is 20'-10" wide, curb-to-curb. Carrying the deck, and extending from the north and south abutment to the adjacent intermediate pier 33'-3" away, are four, reinforced concrete "T" beam stringers, all 17" wide, 20" deep and set on 6'-6" centers. The width of the deck extends 21" beyond the outer side of the outer beam. Additionally do the "T" beam stingers have a triangular flare on each side at that point where its vertical web (beam) joins the horizontal flange (deck). The flares start at a point 6" below the flange and extend to a point on the flange 6" beyond the web.

The railing on the approach spans is a predecessor of, and visually similar to, the Texas

[34] "Miller Creek Bridge," Viewed at https://bridgehunter.com/il/alexander/miller-creek/ on 16 September 2022.

[35] The measurements used to describe this fabrication were taken from the bridge plans as well as from the structure itself during field investigations. Activities associated with the latter were limited to components that could be reached from the deck, slopes around and ground beneath the deck without aid of ladders, boats or other equipment.

Classic Type 411 railing with round top, Type B windows that IDOT uses today. Extending the length of the span, the railing on each side rises from a 19" wide, 9" high concrete course. At each end of the railing are 3' long by 3'-4" high concrete end blocks located over the abutments and piers. They are 12' deep and flush with the outer edge of the span and the 19" wide, 9" high course rising from the deck, which means the remaining 7" of that course serves as a curb. The end blocks are embellished with a centered, 18" high by 21" long panel inset by 1¾", the angled frame of which extends another 1¾" around the panel. Atop each end block is 3'-2" long by 14" wide by 10" high crown, the top of which is embellished with a nominal hip that rises another 1" between the outer edge and the center. Between the end blocks is the railing baluster. It rises from and is centered on a 3¾" high by 12" deep concrete course atop the 19" wide 9" high course. The railing has twenty-two balusters, all 7¼" long by 8½" deep by 25" high. The windows between are 21" high by 8" wide. The railing top chord crowns the balusters and is 11½ wide and 8" high. Its height above the roadway is 3'-9¾".

Situated between the two approach spans, and carried by the two intermediate piers, is a five panel, Pratt Pony Truss span that is 81'-6" long with an overall width of 24'-5". The traffic deck remains 21'-10" wide, curb-to-curb, as it is on the approach spans. The deck is carried by each of the two piers and four floor "I" beams, each 10" wide and 24" deep, atop which are ten, symmetrically placed, "I" beam deck stringers that are bolted to the deck beams. Bottom lateral bracing is of angles. The lower chord in panels one, two, four and five is constructed of 5" by 3½" angles and stay plates with an overall measurement of 7¾" by 10". The lower chord in panel three is fabricated from 6" by 3" angles all placed to measure 7¼" by 12".

The bridge's inclined end posts and top chords, are 14" wide and 10" deep. They are constructed of 10" channels (sides), 14" wide plates (top) and lacing (bottom). The depth of the structure, that is the distance between the bottom of the lower chord and the top of the top chord, is 10'-9". The distance from the deck to the top of the top chord is 10'-1½".

The panels of a truss bridge are defined by hip and intermediate verticals and that point at which they connect to the lower and top chords. Panels are further defined, and the truss strengthened, by diagonals that extend from a diagonal/lower chord connection and extend to an adjacent diagonal/top chord connection. The two hip verticals, the structure's two outer verticals (1 and 5), define panels one and five and are fabricated from angles and plates with a width of 7½" and a depth of 6". The two intermediate verticals, those between the hip verticals, are 7¼" wide and 6¼" deep and, again, constructed from angles and plates. They define panels two, three and four. The one diagonal in panels two and four is 7" wide by 4½" deep and built of one plate and two angles while panel 3, that in the center, has two diagonals that are 7" wide by 3¼" deep.

Curiously all top chord/vertical/ diagonal connections are reinforced with the additional use of plates, as are the two lower chord/intermediate vertical/diagonal connections. A plate also reinforces that point where the two diagonals cross in panel 3. Finally are the intermediate verticals additionally reinforced by wind bracing fabricated from extensions to the deck beams that project 2'-6" beyond the bridge, from which two angles, placed back-to-back with an overall width of 6¼" and dept of 3¾" extend at an angle and tie into the top chord/intermediate vertical/diagonal connection.

The traffic deck on the truss span is concrete and framed by a 6" wide, 9" to 10" high curb with canted corners consistent with those curbs on the approach spans. Above the curb is a two-course railing, each chord being a 1¾" by 5" channel. The top of the top channel is 3'-4" above the deck while that of the lower channel is 1'-11" above the deck.

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PART IV: METHODOLOGY OF RESEARCH

A. Research Strategy

Objectives were to place the bridge in its geographic, historic and engineering contexts. A plan was developed to accomplish those goals by reviewing local, regional and statewide documentary sources. On-site investigation of the bridge was part of the plan.

B. Research Process

1. Visited bridge to review conditions, photograph and measure it.

2. Searched resources in the University of Illinois Library (Urbana, IL), Wisconsin State Historical Society (Madison, WI), Illinois State Library and Illinois State Archives (Springfield, IL). Digital sources include the HathiTrust Digital Library and newspapers.com, all for data relating to the growth of Alexander County in general, and the building of the Route 150 bridge over Miller Creek in particular.

3. Completed research and prepared report draft.

4. Document draft internally reviewed.

5. Document draft reviewed by IDOT and SHPO.

6. Completed all revisions and submitted to IDOT.

C. Archives and Repositories Used/Consulted:

•Libraries

University of Illinois Library

1408 W. Gregory Drive
Urbana, Illinois 61801
(Illinois State Gazetteers)

Wisconsin Historical Society
816 State Street
Madison, Wisconsin 53706
(Alexander County History)

Illinois State Archives
Norton Building
State Capitol Complex
Springfield, Illinois 62756
(IDOT Record Group 242)

Illinois State Library
300 S. 2nd Street
Springfield, Illinois 62701-1796
(Plat Map, County Atlases, Illinois Transportation Map Collections)

•On-Line Sources:

HathiTrust Digital Library
(Digitized Books, Engineering Journals and Other Resources)

newspapers.com
(Historic-period newspapers)

D. Research Staff

1. Researcher/Preparer/Editor:

John N. Vogel, Ph.D.
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois
23 Stadium Drive
Champaign, Illinois 61820
jnvogel@hrltd.org

2. Photographer:

John N. Vogel, Ph.D.
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois
23 Stadium Drive
Champaign, Illinois 61820
jnvogel@hrltd.org

3. Drone Operators (aerial photographs):

Michael E. Smith, M.A.
Senior Architectural Archaeologist
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois
23 Stadium Drive
Champaign, Illinois 61820
mesmith4@illinois.edu

John M. Lambert, M.A.
Archaeological Spatial Analyst
Illinois State Archaeological Survey
Prairie Research Institute
University of Illinois
23 Stadium Drive
Champaign, Illinois 61820
lambertj@illinois.edu

4. Supplemental Research in Urbana (University of IL Library):

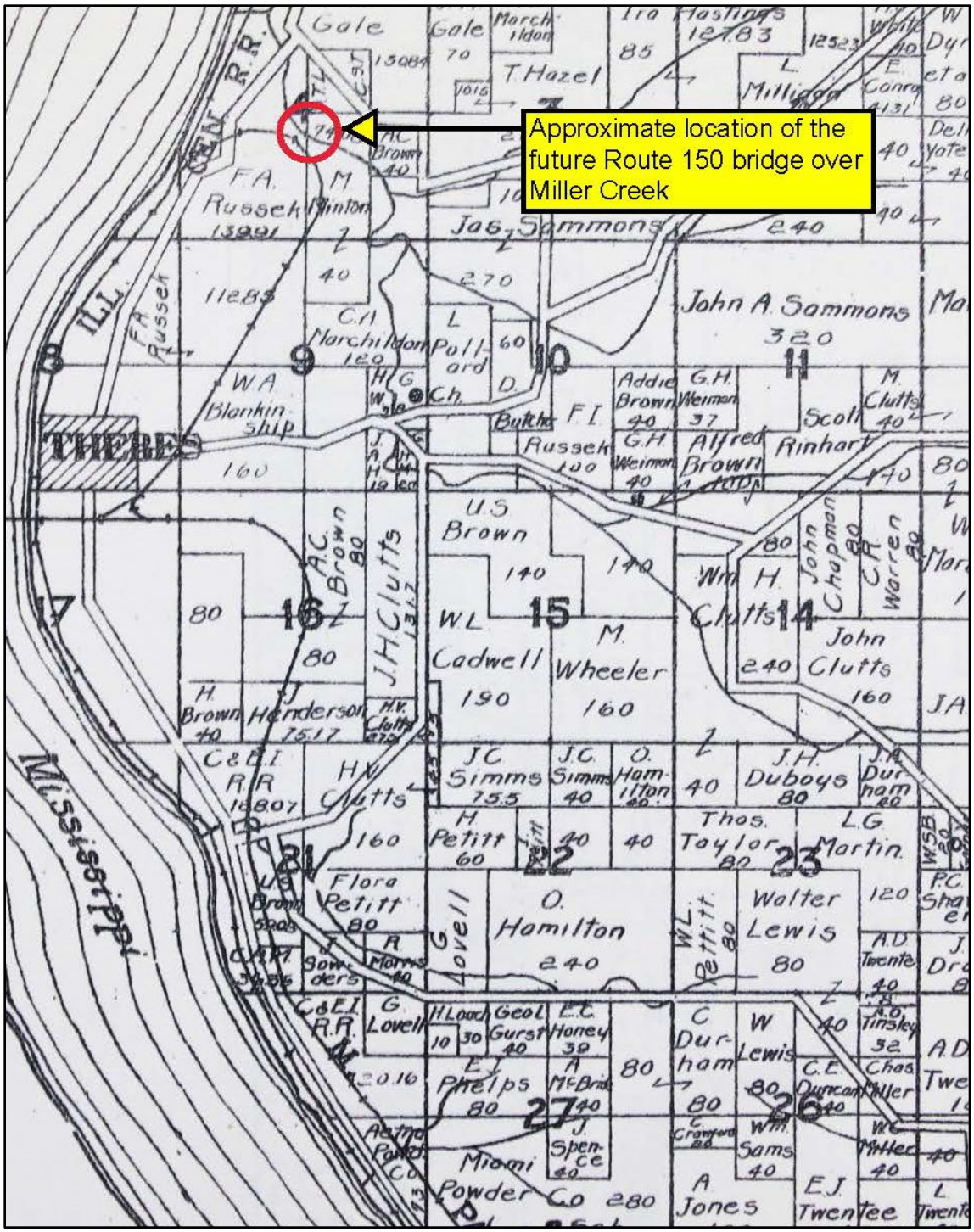
Michael E. Smith, M.A.
Cultural Resource Specialist
Illinois State Archaeological Survey
Prairie Research Institute

University of Illinois
23 Stadium Drive
Champaign, Illinois 61820
mesmith4@illinois.edu

5. Final Editor:

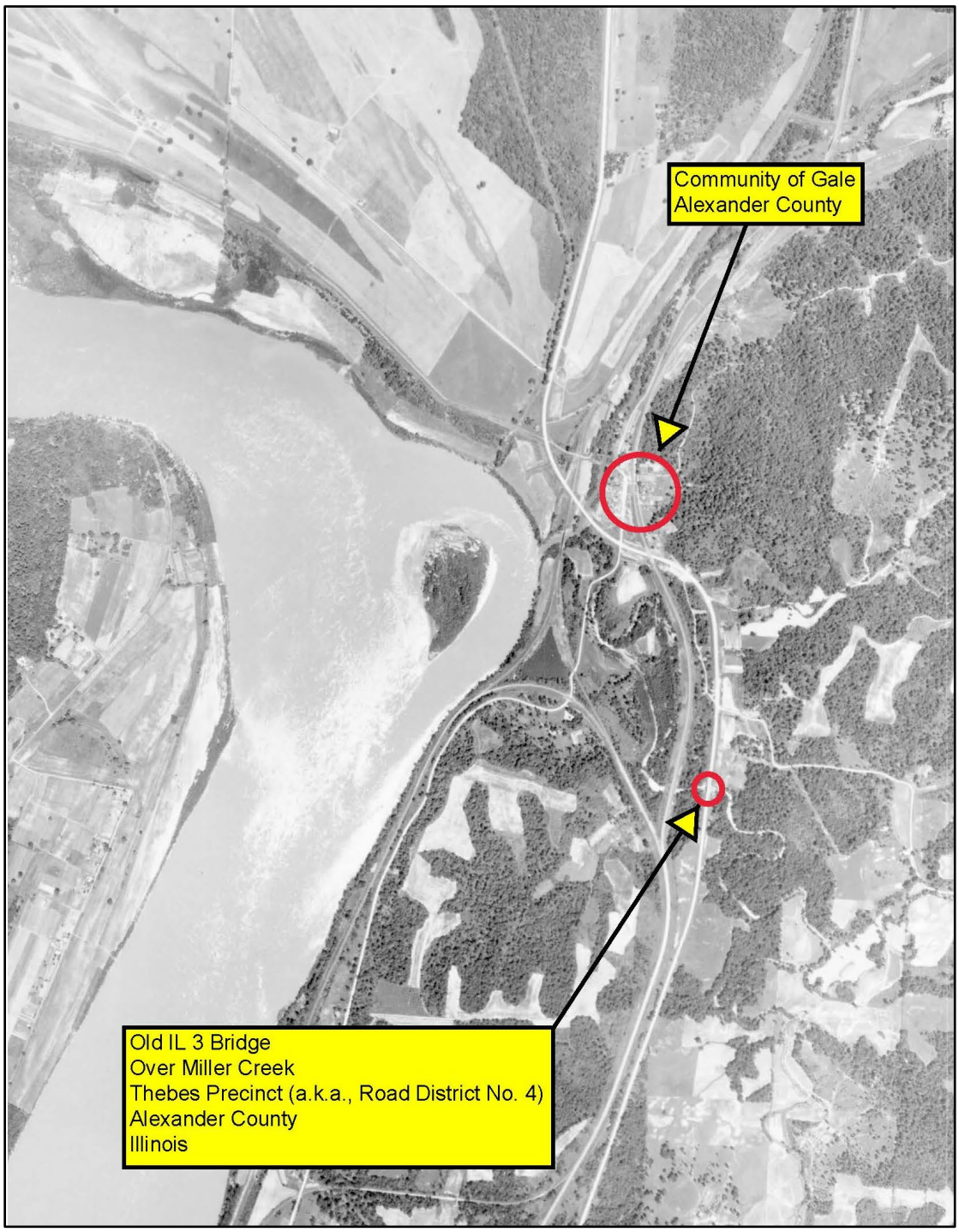
Emelie Land, M.A.
Architectural Historian
Cultural Resource Unit
Bureau of Design & Environment
Illinois Department of Transportation
2300 S. Dirksen parkway
Springfield, Illinois 62764
emelie.land@illinois.gov

Circa late 1920s Plat Map Illustrating the Gale Area Prior to the Bridge:



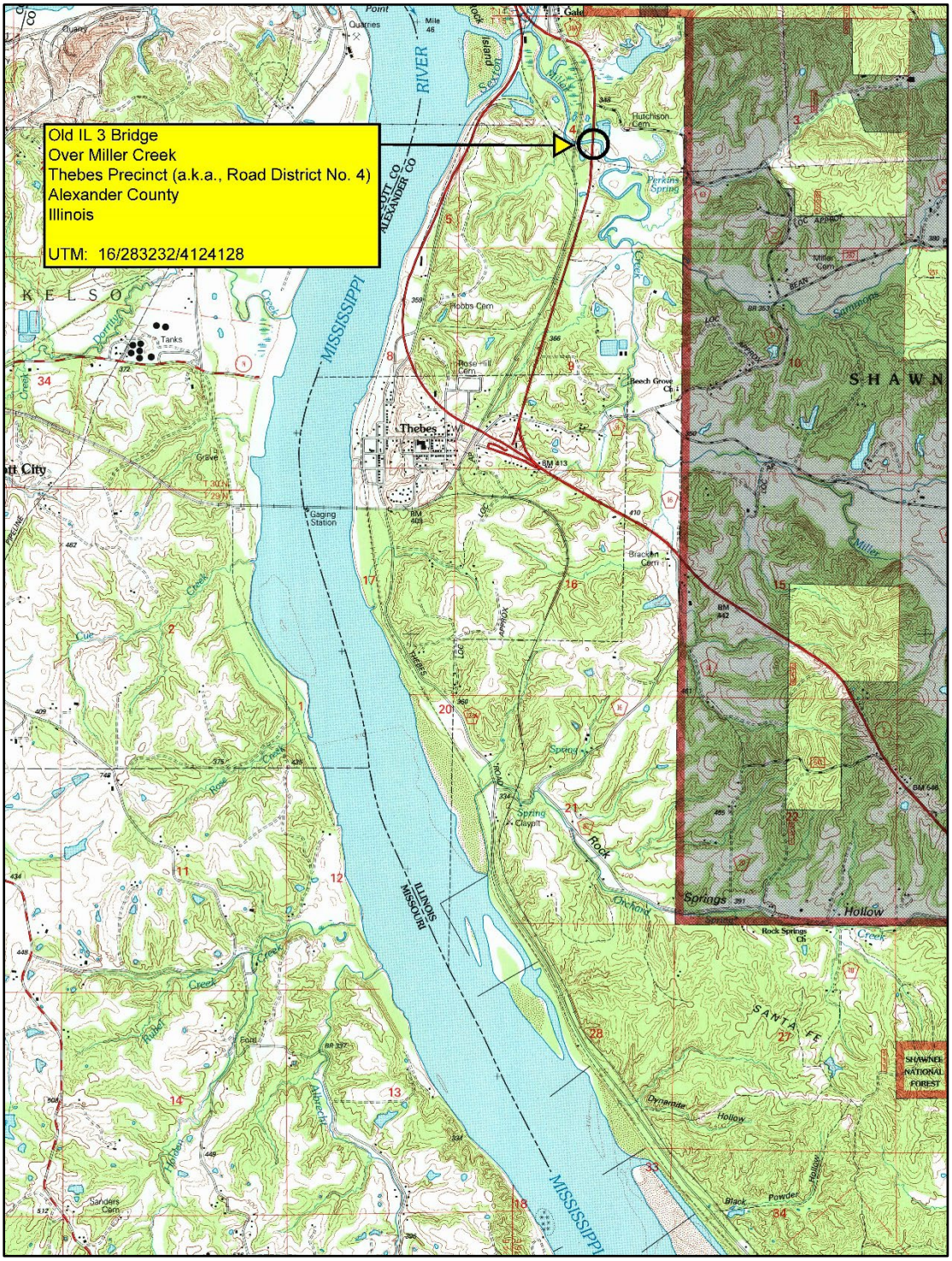
This late 1920s plat map illustrates the Gale/Thebes area prior to the construction of Route 150, later to be known as Route 3 and IL 3 (*Plat Book of Alexander County, Illinois* [Rockford, IL: W.W. Hixson, ca. 1927): n.p.])

1939 Aerial Image of Bridge Location and Its Surrounding Community:



Agricultural river bottomland is apparent to the north northwest. The terrain is much more varied and partially wooded immediately north of the bridge, as well as to the east and south. Illinois Historic Aerial Photography: 1937-1947, Image BFZ-1-39, 05 July 1938, Viewed at http://maps.isgs.illinois.edu/ilhap/ on 19 October 2022.

USGS Map (1996) Identifying Bridge Location:



U.S. Geological Survey, Thebes Quadrangle [map], 1996, 1:24000, 7.5 Minute Series (Reston, VA: United States Department of the Interior, USGS, 1996.

General Elevation View of Bridge from 1932 Plan Set:

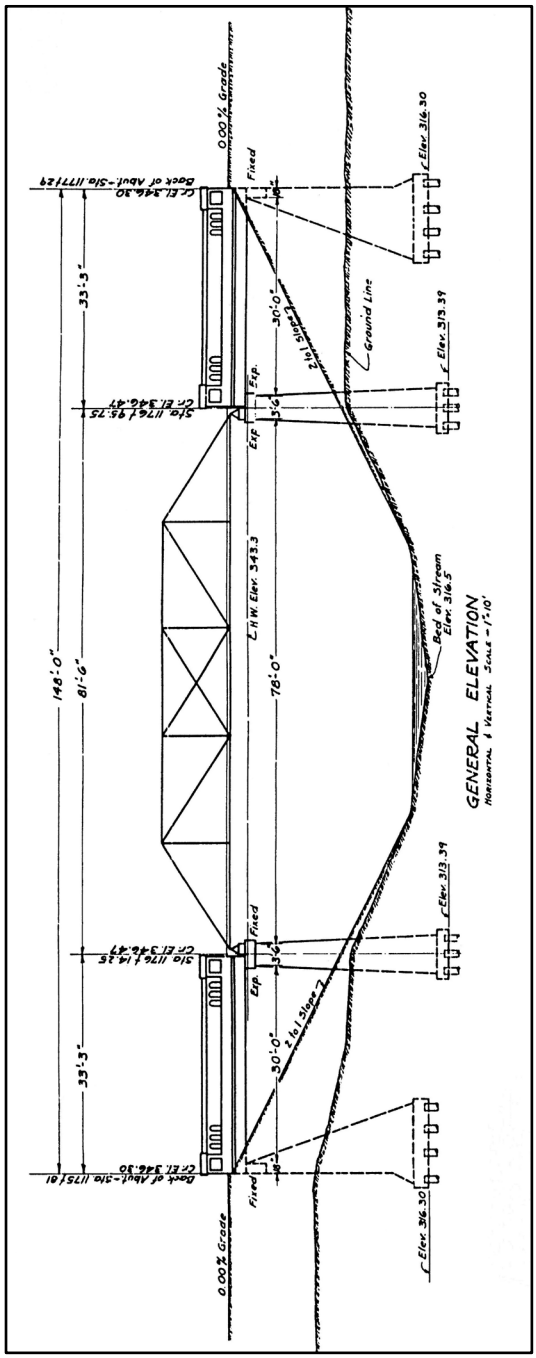


Figure 2: Perspective view of the proposed bridge ("Plans for Proposed State Bond Issue Highway, Route 150, Sections 133A, 133B, 133C, Alexander County, 1932," On file in the Bureau of Location & Environment, IDOT, Springfield, IL.

HISTORIC ILLINOIS ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

Old Route 3 Bridge
Over Miller Creek
Thebes Precinct (a.k.a., Road District No. 4)
Alexander County
Illinois

HIER No. AX-2022-1

Documentation: 38 Exterior Photographs (2022)
31 Data Pages
01 7.5 Minute USGS Map (1996)

John N. Vogel, Ph.D., Associate Degree - Professional Photography, Photographer
Mike Smith, M.A. & John M. Lambert, M.A., Drone Operators (Photographs #1-8)

HIER No. AX-2022-1.1 DISTANT VIEW TO NORTH. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.2 VIEW TO NORTH. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.3 VIEW TO EAST NORTHEAST. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.4 VIEW TO EAST SOUTHEAST. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.5 VIEW TO SOUTH. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.6 VIEW TO SOUTHWEST. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.7 VIEW TO NORTHWEST. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.8 VIEW TO EAST. BRIDGE AND ITS SETTING.

HIER No. AX-2022-1.9 DISTANT VIEW TO NORTH.

HIER No. AX-2022-1.10 VIEW TO NORTH.

HIER No. AX-2022-1.11 VIEW TO SOUTH SOUTHEAST.

HIER No. AX-2022-1.12 VIEW TO SOUTH.

HIER No. AX-2022-1.13 VIEW TO NORTHWEST.

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HIER No. AX-2022-1.14 VIEW TO NORTHEST.

HIER No. AX-2022-1.15 DISTANT VIEW TO EAST.

HIER No. AX-2022-1.16 VIEW TO EAST.

HIER No. AX-2022-1.17 VIEW TO NORTHEAST. PIER, NORTH APPROACH SPAN, TRUSS SPAN.

HIER No. AX-2022-1.18 VIEW TO SOUTH. SOUTH APPROACH SPAN. ABUTMENT AND CONCRETE "T" BEAMS.

HIER No. AX-2022-1.19 VIEW TO NORTH. SOUTH PIER AND CONCRETE "T" BEAMS.

HIER No. AX-2022-1.20 VIEW TO NORTHEAST. CLOSEUP OF SOUTH PIER AND "T" BEAM CONNECTION.

HIER No. AX-2022-1.21 VIEW TO EAST. NORTH APPROACH SPAN RAILING.

HIER No. AX-2022-1.22 VIEW TO EAST. RAILING END BLOCK.

HIER No. AX-2022-1.23 VIEW TO EAST. PRATT PONY TRUSS SPAN.

HIER No. AX-2022-1.24 VIEW TO NORTH. NORTH PIER AND NORTH ANCHOR FOR TRUSS SPAN.

HIER No. AX-2022-1.25 VIEW TO NORTHEAST. DECK STRINGERS, DECK BEAM AND BOTTOM LATERAL BRACING.

HIER No. AX-2022-1.26 VIEW TO NORTH. DECK STRINGERS, DECK BEAMS AND BOTTOM LATERAL BRACING.

HIER No. AX-2022-1.27 VIEW TO NORTH. DECK BEAM AND SUPPLEMENTAL BRACING CONNECTION.

HIER No. AX-2022-1.28 VIEW TO SOUTHEAST. PONY TRUSS SPAN.

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HIER No. AX-2022-1.29 VIEW TO NORTHEAST. PONY TRUSS SPAN.

HIER No. AX-2022-1.30 VIEW TO EAST. CENTER SPAN THREE AND DIAGONAL BRACING.

HIER No. AX-2022-1.31 VIEW TO EAST. INCLINED ENDPOST, TOP CHORD, HIP VERTICAL CONNECTION.

HIER No. AX-2022-1.32 VIEW TO SOUTHEAST. INTERMEDIATE VERTICAL, TOP CHORD, DIAGONALS, BOTTOM CHORD CONNECTION.

HIER No. AX-2022-1.33 VIEW TO EAST NORTHEAST. INTERMEDIATE VERTICAL, TOP CHORD, DIAGONALS, BOTTOM CHORD CONNECTION.

HIER No. AX-2022-1.34 VIEW TO EAST. CLOSEUP OF TOP CHORD, INTERMEDIATE VERTICAL, DIAGONAL CONNECTION.

HIER No. AX-2022-1.35 VIEW TO SOUTH. BRIDGE PLATE.

HIER No. AX-2022-1.36 VIEW TO SOUTH. CONCRETE BRIDGE DECK.

HIER No. AX-2022-1.37 VIEW TO EAST. MILLER CREEK.

HIER No. AX-2022-1.38 VIEW TO WEST. MILLER CREEK AND DISTANT RAILROAD BRIDGE.

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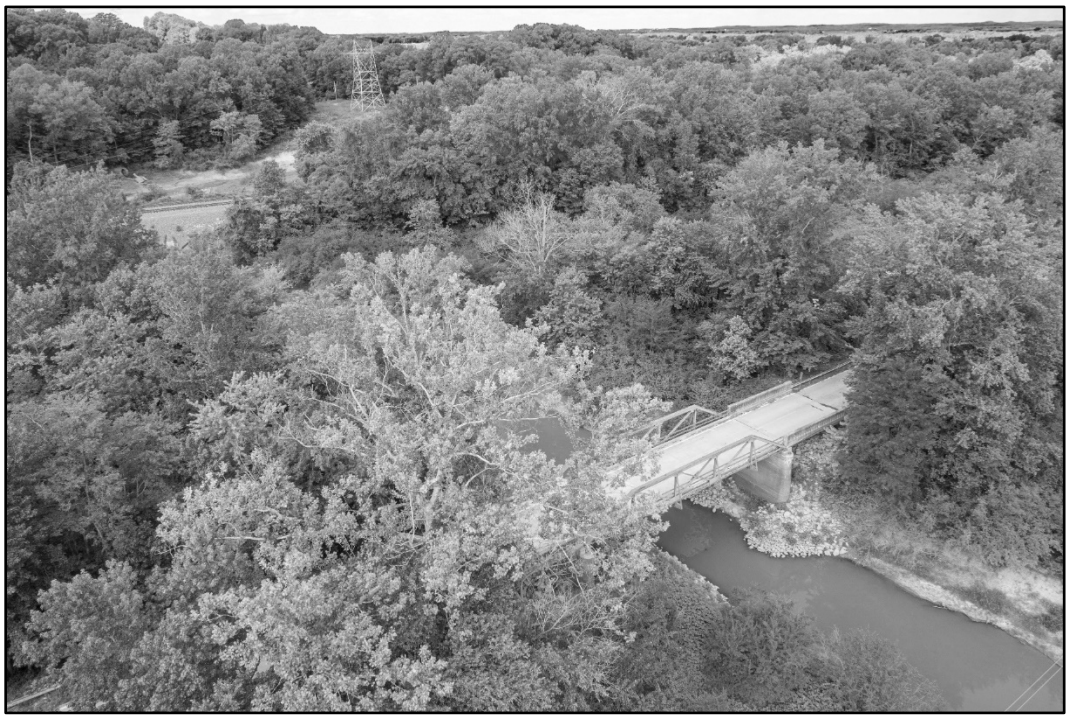

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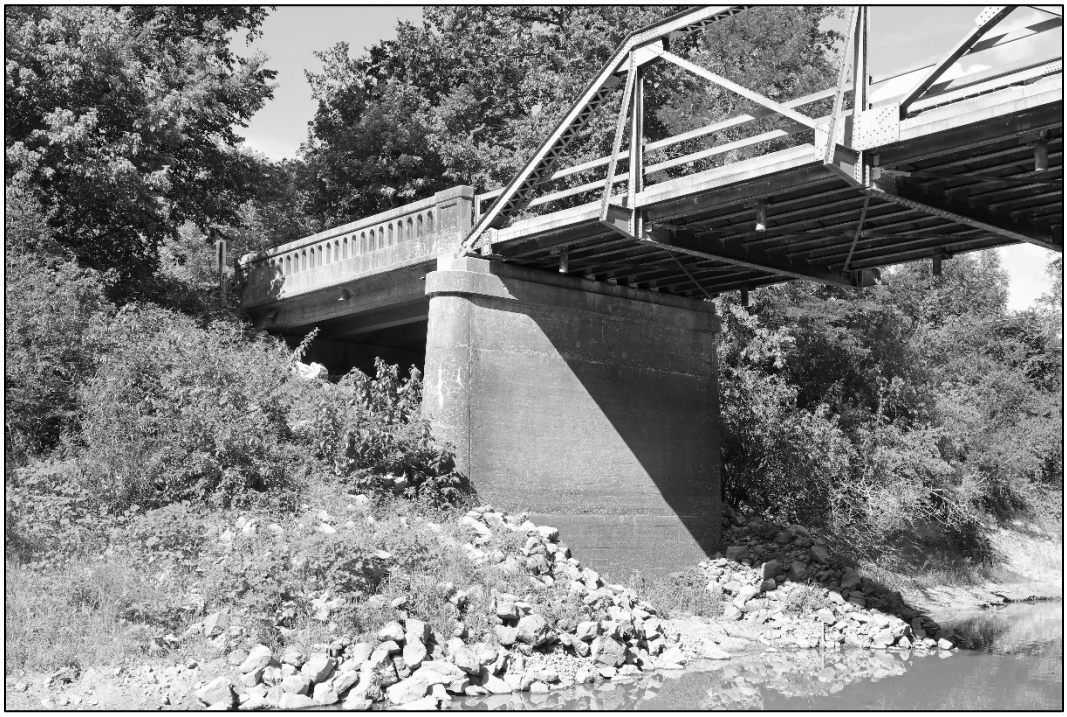

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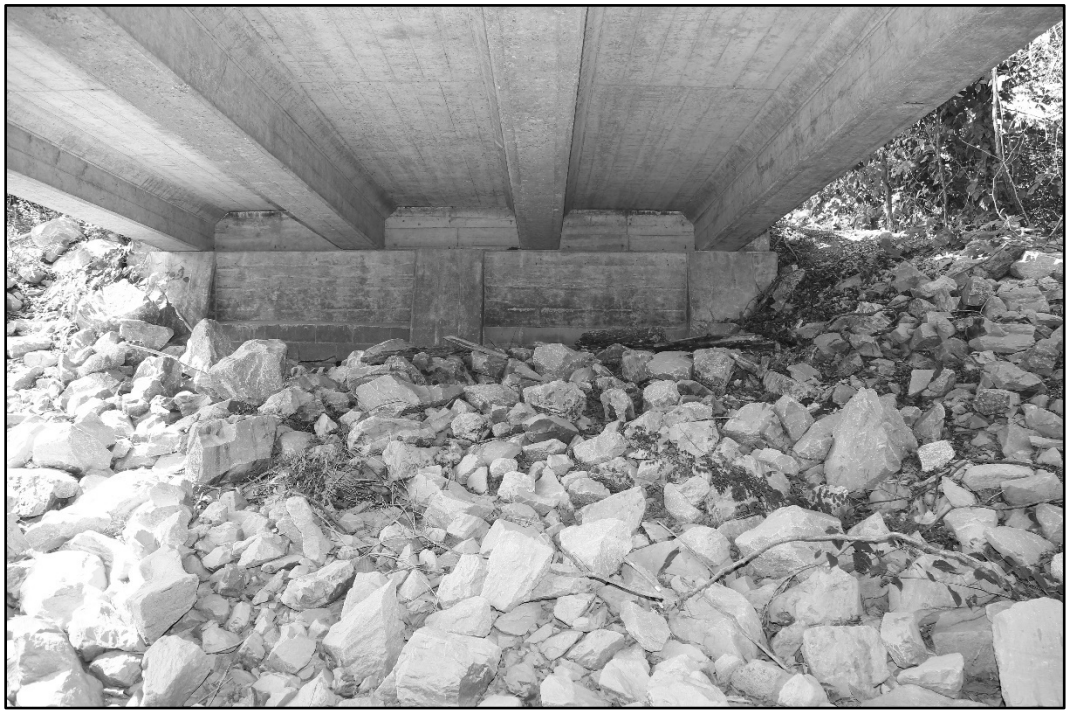

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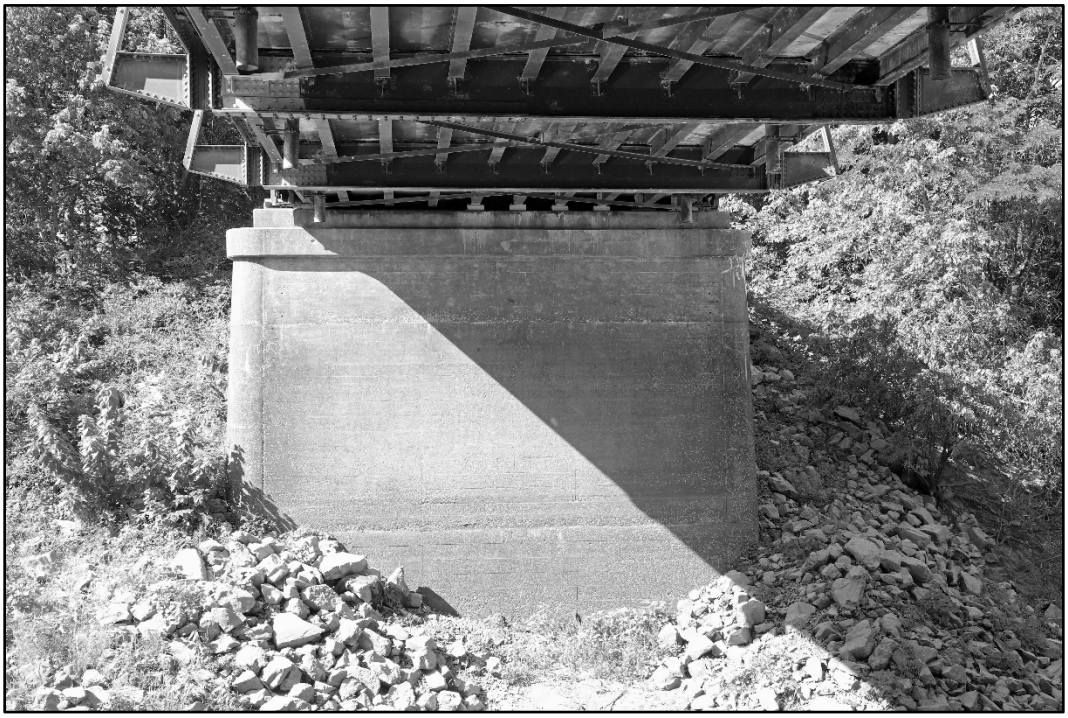

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Figure #31 of 38 (turn 90° to right for viewing)

Figure #32 of 38 (turn 90° to right for viewing)

PHOTOGRAPHS

Figure #33 of 38 (turn 90° to right for viewing)

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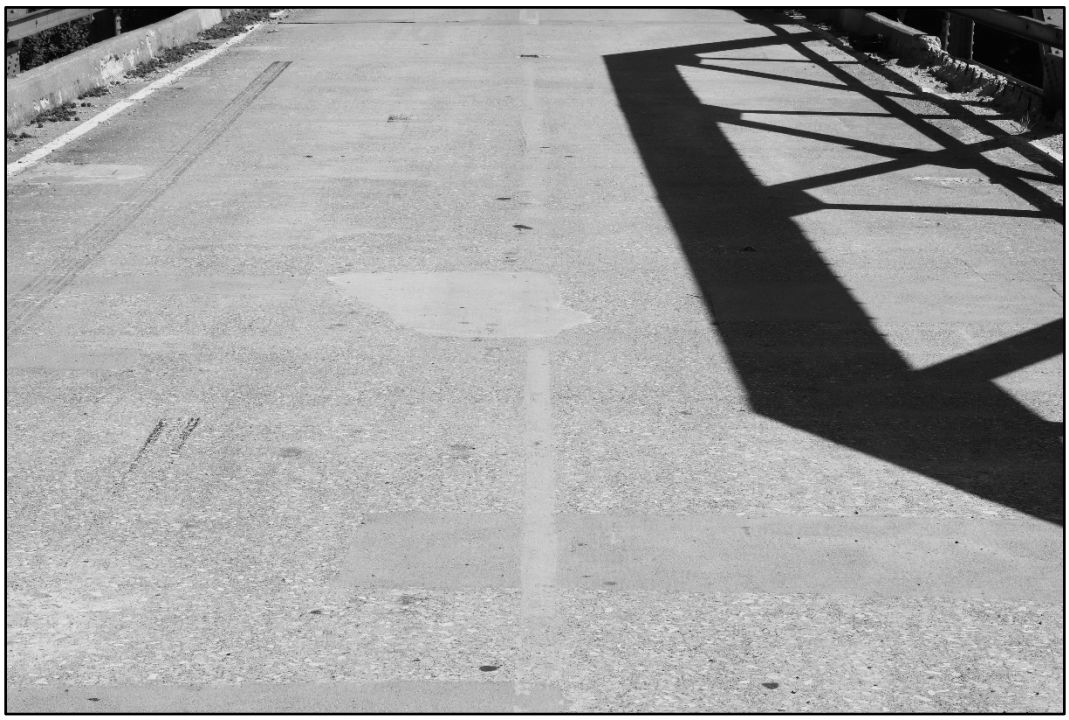

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