TR 376 Bridge
Over South Prong Spring Creek
(S.N. 075-3162/Sequence No. 21534)
Spring Creek Township
Pike County
Illinois

HIER No. PK-2019-1

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

March 2020

HISTORIC ILLINOIS ENGINEERING RECORD
HIER No. PK-2019-1

TR 376 Bridge
(WARREN PONY TRUSS WITH VERTICALS)

Location: TR 376 over South Prong Spring Creek
Spring Creek Township, Pike County, Illinois

USGS Quadrangle: USGS Pearl West, 7.5 minute, Illinois
Latitude 039° 25' 9" N Longitude 090° 44' 8" W

Universal Transverse Mercator Coordinates:
Zone 15 694913 Easting 4365533 Northing

Present Owner: Spring Creek Township

Present Use: Vehicular Bridge (IDOT Structure No. 075-3162)

Significance: The TR 376 Bridge spanning the South Prong of Spring Creek is a single span, Warren Pony Truss. The structure was likely constructed elsewhere in the mid-late 1930s and moved to its present location in circa 1962. Its primary feature of interest is found in its inclined end posts and top chords which are of rolled, wide-flange beams turned 90° with riveted connections. This method of construction became common in the 1930s and continued into the 1970s, though it was used sparingly in Illinois. Given its rarity in the state, and in consultation with the State Historic Preservation Office, this bridge was determined to be eligible for the National Register of Historic Places as a unique example if its type.

PART 1. HISTORICAL INFORMATION

A. Physical History:

1. Date erected: ca. 1935[1]

[1]IDOT records suggest the Spring Creek bridge was constructed in or around 1962. IDOT Architectural Historian Elizabeth Roman, however, took a critical look at the date and concluded that the structure was likely designed and erected in the mid-1930s. Ms. Roman's conclusion is well reasoned and summarized in a memorandum dated 25 October 2018. That likelihood notwithstanding, and given the character and appearance of the poured concrete abutments, indeed appearance that makes their later construction (early-1960s) more probable than earlier (mid-1930s), an argument that the bridge was moved to the site in 1962 becomes quite credible. Elizabeth Roman, IDOT Architectural Historian, Memorandum to Brad Koldehoff, IDOT Cultural Resource Unit Chief, 25 October 2018, Copy on file at IDOT Cultural Resources, Bureau of Design & Environment, IDOT, Springfield, IL.

2. Designer: Unknown

3. Original and subsequent owners: Spring Creek Township

4. Builder or contractor: Unknown

5. Alterations and additions: The bridge offers little evidence of modification. The most apparent change is to the lower chord, downstream side, immediately adjacent to the north northeast abutment. It is significantly distorted, likely from ice or debris moving downstream during periods of very high water.

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 over larger streams in the region. Timber structures crossing small watercourses also accommodated travel. Little is known of the pile trestles or half-submerged floating platforms used. All were subject to risks and washouts.[3]

As settlers arrived in the state, rudimentary technicians – either self-taught or from New England shipyards – were attracted to erect covered bridges over rivers, ravines and other obstacles. Between 1820 and 1900, an estimated two to three hundred such bridges were built in Illinois, only a handful of which are thought to remain today.[4]

Railroads helped drive the need to improve upon early timber structures. They required

[2] The "Bridge Development in Illinois," "Steel Bridge" and "Pratt and Warren Truss 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.

by the late 1850s stronger bridges that encouraged the development of iron fabrications. Those were followed in the 1870s by those of steel and which came to use wide flange beams as structural 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 for bridge construction in England in 1776. 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 succeeding 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, in varying degrees, that 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 of 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 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

[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, n.d., page 2, From Prints and Photographs Division, Library of Congress (HABS No. MO-1465).

builders, be they employees of the originating company or those of companies that simply specialized in finalizing the bridges of others.[7]

The State of Illinois claimed almost sixty bridge building companies that operated between 1849 and 1900, the vast majority of them being 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 company. He acquired and combined twenty-four individual firms, including both the American Bridge Works and 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 venture 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 wise 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 governments 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 in 1912. The publication

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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): 65-73.

[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.

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 constructed, 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 were considerably 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 truss system which had only diagonals that acted in both tension and compression. Indeed, the substantial diagonals form a pronounced "W" in the truss's web, typically a giveaway 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 and still being erected in the 1970s.[12]

Warren Truss Bridges with Inclined End Posts and Top Chords of Wide Flange, H-beams:

Inclined endposts and top chords were historically fabricated from components including angles, plates, channels and lacing. They were composite beams. That changed in the early years of the twentieth century as American steel manufacturers

[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*, 44.

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

started to produce rolled Flange, or H-beams. I-beams were already available at the time and used in bridge construction for deck stingers and floor beams. Rolled Flange beams eliminated the individual components and the effort needed to assemble composite beams. J.A.L. Waddell saw their appeal and, in his seminal work *Bridge Engineering*, suggested that H-sections "will be largely used in [the] future by bridge designers." Fisher's Fork Bridge, built by the Central States Bridge Company in 1908 over Brush Creek, in Bartholomew County, Indiana, was an early structure with rolled beams for its inclined endposts and top chords.[13]

Flange beams are distinct and not to be confused with I-beams, though there is some similarity between the two. For an I-beam, the depth of the flange tapers between the web (where it is thickest) and the end of the flange (where it is thinnest). And they will resist force from only one direction. The depth, or thickness, of the web and flanges of an H-beam is constant whether it be a wide or narrow flange (see Figure 1). Unlike an I-beam, H-beams will resist forces from two directions.[14]

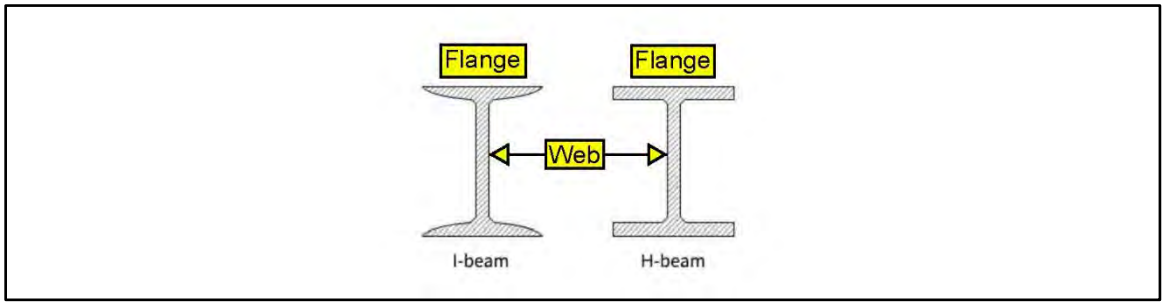

Figure 1: Note the consistency of the web's thickness in the two examples. The depth of the I-beam flanges, however, obviously tapers as the flange extends away from the web (this illustration is adapted from H-beam vs I-beam Steel (14 Difference Analysis), Viewed at https://machinemfg.com/h-beam-vs-i-beam-steel/ on 03 April 2020.

Though the I-beam and H-beam pictured in Figure 1 show the same orientation, the H-beam can also be turned 90° for use. Positioned as pictured, the lateral stiffness of the H-beam is dominant.[15] It is reasonable to assume, therefore, that, if turned 90° for use on a bridge, the vertical stiffness of the H-beam dominates given that both flanges are acting together. Intermediate verticals, should they be used on a given Warren

[13] J.A.L. Waddell, *Bridge Engineering*, Volume 1 (New York: John Wiley & Sons, Inc., 1916): 48; James L. Cooper, *Iron Monuments to Distant Posterity: Indiana's Metal Bridges, 1870-1930* (No City: No Publisher, 1987): 115; Fishers Fork Bridge, Bridge Hunter Inventory Number BH 44481, Viewed on-line at https://www.bridgehunter.com on 03 April 2020.

[14] H-beam vs I-beam Steel (14 Difference Analysis), Viewed at https://machinemfg.com/h-beam-vs-i-beam-steel/ on 03 April 2020.

[15] Ibid.

Truss, then rise from the floor beam connections and help to maintain the top chord's lateral rigidity.

Assuming a circa 1908 start, the number of Wide Flange structures around the country grew significantly in the 1930s and then accelerated in the late 1940s and the 1950s. H-beam bridges were still being erected in the 1960s and beyond. An informal review of structures at www.bridgehunter.com identified at least 100+ such pony trusses around the country. The states of California and Ohio claimed many of those bridges. In the case of the latter, the numbers may have been influenced by the fact it hosted two bridge building companies that produced H-beam structures – the Champion Bridge Company (Wilmington, OH) and Ohio Bridge Corporation (Cambridge, OH).[16]

The State of Illinois claims very few H-beam bridges. One likely reason is that their growing national popularity occurred at a time when the state was using an increasing number of concrete bridges for short-span crossings. One H-beam bridge in Illinois was the Coal Creek Bridge, over Coal Creek, in Fulton County. Documented in 1995 for the HAER Program of the National Park Service (HAER No. IL-125), the structure employs H-beams for its upper chords, but that fact is not recognized in the HAER report. Nor was the use of H-beams mentioned in any of the entries identified in the bridgehunter collection, an observation suggesting there was nothing technologically unique about the use of Wide Flange beams in bridge construction—other than the fact that they replaced composite beams. Despite that, the TR 376 bridge over the South Prong of Spring Creek is a notable example of this common bridge type used so rarely in Illinois.[17]

Pike County and Spring Creek Township:

Pike County included a large area when created in January 1821. By January 1825, when its final borders were established, the county's size had been significantly reduced as the counties of Adams, Calhoun, Fulton, Hancock and Schuyler had been carved from it. Rolling terrain generally covered with equal parts of forest and prairie were said to

[16] These statements are made on the basis of an anecdotal review of inventory entries observed at www.bridgehunter.com. Additionally reviewed were the following sources: David H. Miars, *A Century of Bridges: The History of the Champion Bridge Company and the Development of Industrial Manufacturing in Wilmington, Ohio* (Wilmington, OH: Cox Printing, 1972); Historic Bridge Survey Report, SFN #3937003, On file at the Cultural Resource Unit, Environmental Services, Division of Planning, Ohio Department of Transportation, Columbus, Ohio.

[17] John B. Nolan, "Coal Creek Bridge," Written Historical and Descriptive Data, Historic American Buildings Survey, National Park Service, U.S. Department of the Interior, 1995, pages 1-12, From Prints and Photographs Division, Library of Congress (HAER No. IL-125); Roman, Memorandum to Koldehoff, 25 October 2018.

characterize the county, which claimed in 1830 just under 2,400 residents. In the late 1850s the soil was reported as productive and well farmed, wheat, corn, potatoes and oats being counted among the crops that proliferated. The county's population was then about 28,000.[18]

The four southernmost townships in the county were, identified east to west, Pearl, Spring Creek, Pleasant Hill and Atlas. An 1860 plat map of the county suggests that Pearl, Spring Creek and Pleasant Hill, as well as the southern half of Atlas, were populated, though each appeared to have areas of unclaimed land, especially in the townships of Pearl and Spring Creek. The only community identified among the townships was Pleasant Hill, in Pleasant Hill Township, and it was simply noted in 1858 as "a post village of Pike County…." One reason for lagging development in Spring Creek in particular, and possibly the other three entities as well, may have been that it was for a time considered "not a very good agricultural township." Despite that evaluation, Spring Creek Township claimed in 1870 a population of 1,010 as well as 174 farms, 7,261 improved acres, 344 horses, 277 sheep and 1,196 swine. It produced that year 35,150 bushels of wheat, 44,500 bushels of corn and 2,020 bushels of oats. Those were modest numbers compared to other townships. But there were others not as productive Spring Creek.[19]

A factor that affected the development of the four southernmost, Pike County townships was the arrival of the Chicago & Alton Railroad. It had been most recently chartered in 1862 and primarily operated a Chicago to St. Louis line. Considering expansion opportunities, the railroad committed in 1870 to develop a line between Chicago and Kansas City. After some discussion and negotiation, the new Kansas City line departed at Roodhouse, Illinois, an already extant alignment between Springfield and St. Louis, and then pushed west into the southern townships of Pike County before crossing the Mississippi River at Louisiana, Missouri. Nebo, the primary community of Spring Creek Township, was one of those that developed along the new railroad line, which was said then to have "opened up a most prolific part of Pike County."[20]

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[18] Solon Justus Buck, *Travel and Description, 1765-1865*, Volume IX, *Collections of the Illinois State Historical Library* (Springfield, IL: Illinois State Historical Library, 1914): 277, 283, 302, 307, 352, 362; *Illinois State Gazetteer and Business Directory for 1858 and 1859*. (Chicago: George W. Hawes, 1858): 171.

[19] *Map of Pike County, Illinois* (Buffalo, NY: Holmes & Arnold, Civil Engineers & Map Publishers, 1860): Map; *Gazetteer for 1858 and 1859*, 172; Capt. M.D. Massie, *Past and Present of Pike County, Illinois* (Chicago: S.J. Clark Publishing Co., 1906): 84; *Atlas Map of Pike County, Illinois* (Davenport, IA: Andreas, Lyter & Co., 1872): n.p.

[20] Gene V. Glendinning, *The Chicago & Alton Railroad: The Only Way* (DeKalb, IL: Northern Illinois University Press, 2002): 90; Massie, *Past and Present*, 109.

The Village of Nebo and Transportation Development in the Area:

The new community of Nebo was laid out by Peter Windmiller and William E. Smith. By 1878 the town claimed a population of about 150 and had a number of businesses including two hotels, two blacksmiths, two wagon makers, three physicians, two grocers, two dry good stores, as well as a carpenter, a flour mill, lumber yard, meat market, grain dealer and lumber yard, among other businesses. Nebo primarily shipped wheat and livestock, evidence suggesting that farming in the surrounding countryside was productive. Six years later the business mix was not significantly changed. Two blacksmiths and two grocers remained, though the number of physicians, hotels and dry good purveyors had each dropped by one. New to the town were two general stores and a milliner. The population reached about 300 in 1886, and included a shoemaker, meat market and livery. Two years later it claimed 500 residents. There were then four grocers, two general stores, two carpenters and two saloon/billiard halls. Also remaining were a blacksmith, harness maker, physician, hotel, wagon maker and lumber yard. Gone by then were the shoemaker, meat market, livery, dry good store and flour mill. The town was reported in 1906 to have had a bank, newspaper and about 600 inhabitants. It was also then said to be "a good business town," suggesting that Nebo provided the basic services required by those in the surrounding, agricultural countryside. Population in the town declined during the Great Depression and World War II, never to fully recover. By the late 1960s, Nebo claimed one grocery story. There had been six in the 1940s.[21]

An 1872 atlas of Spring Creek illustrated a township with a mix of forested land and prairie, the southern half of the township perhaps claiming more forest and that to the north more prairie. What is clear is that there were no roads penetrating Section 27, that section in which the subject bridge is located. Spring Creek Road did extend east southeast of Nebo in 1872, but no roads reached south from it into Section 27. That changed by 1895 when a conveyance (a TR 376 predecessor) extending south from Spring Creek Road in Section 22 continued south through the west one-half of Section 27. The new road was on the west side of the South Prong of Spring Creek, the location at which subsequent plat maps of 1912 and circa 1930 continue to show it. All the earlier plat maps, however, seem to lack a sense of specificity with regards to the

[21] "History of Nebo, Illinois," Accessed at https://www.heartlandlodge.com/resort/history/nebo-il-history/ on 29 March 2020; *Illinois State Gazetteer and Business Directory, 1878*, Volume I (Detroit, MI: R.L. Polk & Co., 1878): 852; *Illinois State Gazetteer and Business Directory, 1884*, Volume IV (Chicago, IL: R.L. Polk & Co., 1884): 1244-1245; *Illinois State Gazetteer and Business Directory, 1886*, Volume V (Chicago, IL: R.L. Polk & Co., 1886): 1008; *Illinois State Gazetteer and Business Directory, 1888*, Volume VI (Chicago, IL: R.L. Polk & Co., 1888): 1065.

roadway's exact placement.[22]

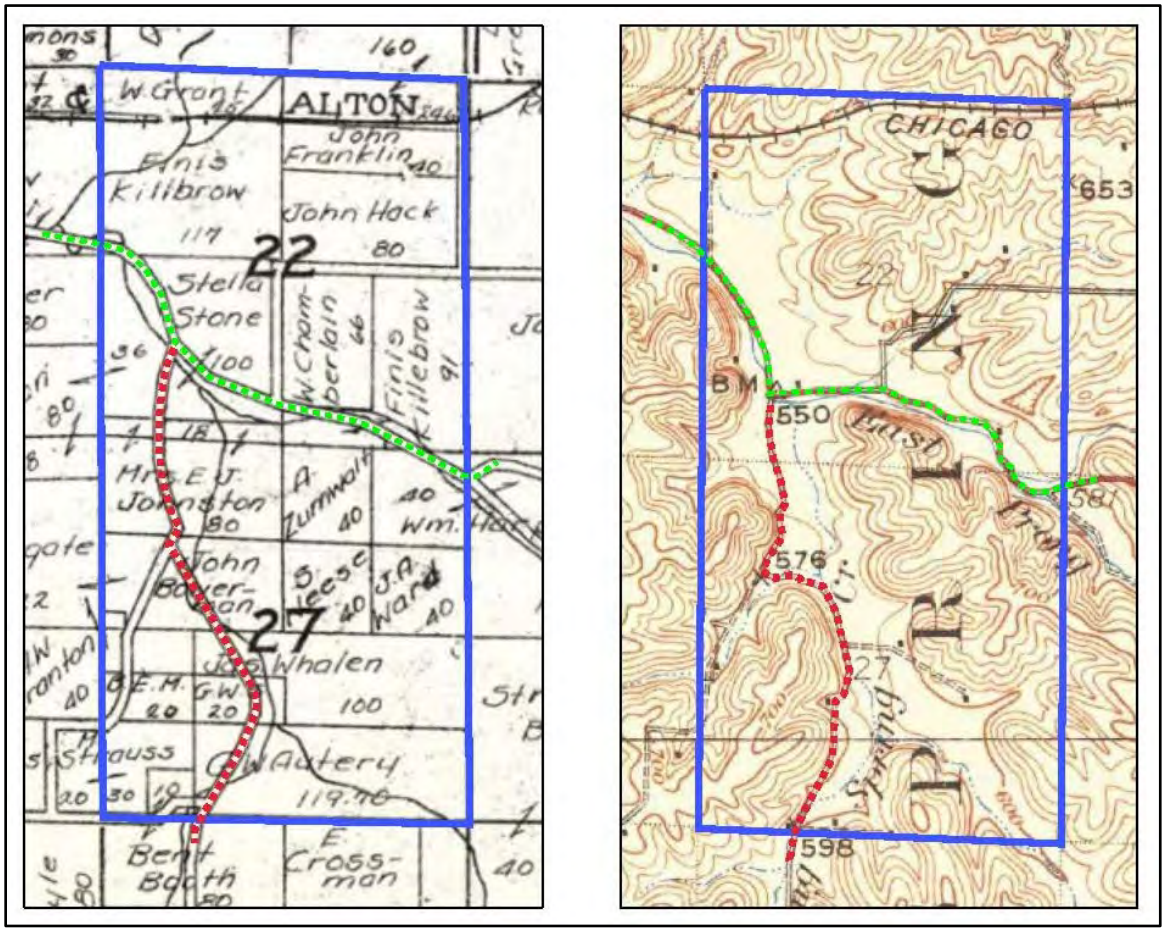

Figure 2a & 2b: The maps pictured both date to circa 1930. That to the left is from a county plat book while that to the right is from a 15' USGS Map. The precision utilized in the USGS image, as opposed to the county plat, is unmistakable (*Plat Book of Pike County*, Illinois [Rockford, IL: W.W. Hixson & Co., circa 1930]; n.p.; U.S. Geological Survey, Illinois/Missouri Pearl Quadrangle [map], 1930, 1:62500, 15 Minute Series [Reston, VA: United States Department of the Interior, USGS, 1930).

Offering more detail in this matter are editions of United States Geological Survey (USGS) maps. That identified as Figure 2b clearly reveals a more specific roadway location in circa 1930 than did the adjacent plat map (Figure 2a). Little changed between 1930 and 1950, except for the construction of a new alignment that straightened Spring Creek Road and eliminated the previously necessary 90° turn several hundred yards to the south, in the southwest ¼ of Section 22 (Figure 3a). Again, all showed the roadway extending south into Section 27 on the west side of the South Prong. A 1980

[22] *Atlas Map* (1872), 137; *Plat Book of Pike County, Illinois* (Chicago, IL: Geo. A. Ogle & Co., 1895):14; *Standard Atlas of Pike County, Illinois* (Chicago, IL: Geo. A. Ogle & Co., 1912); 85; *Plat Book of Pike County, Illinois* (Rockford, IL: W.W. Hixson & Co., circa 1930): n.p.

USGS map (Figure 3b) identifies a completely realigned roadway then on the east side of the creek with a new junction tying it to the road to the north.

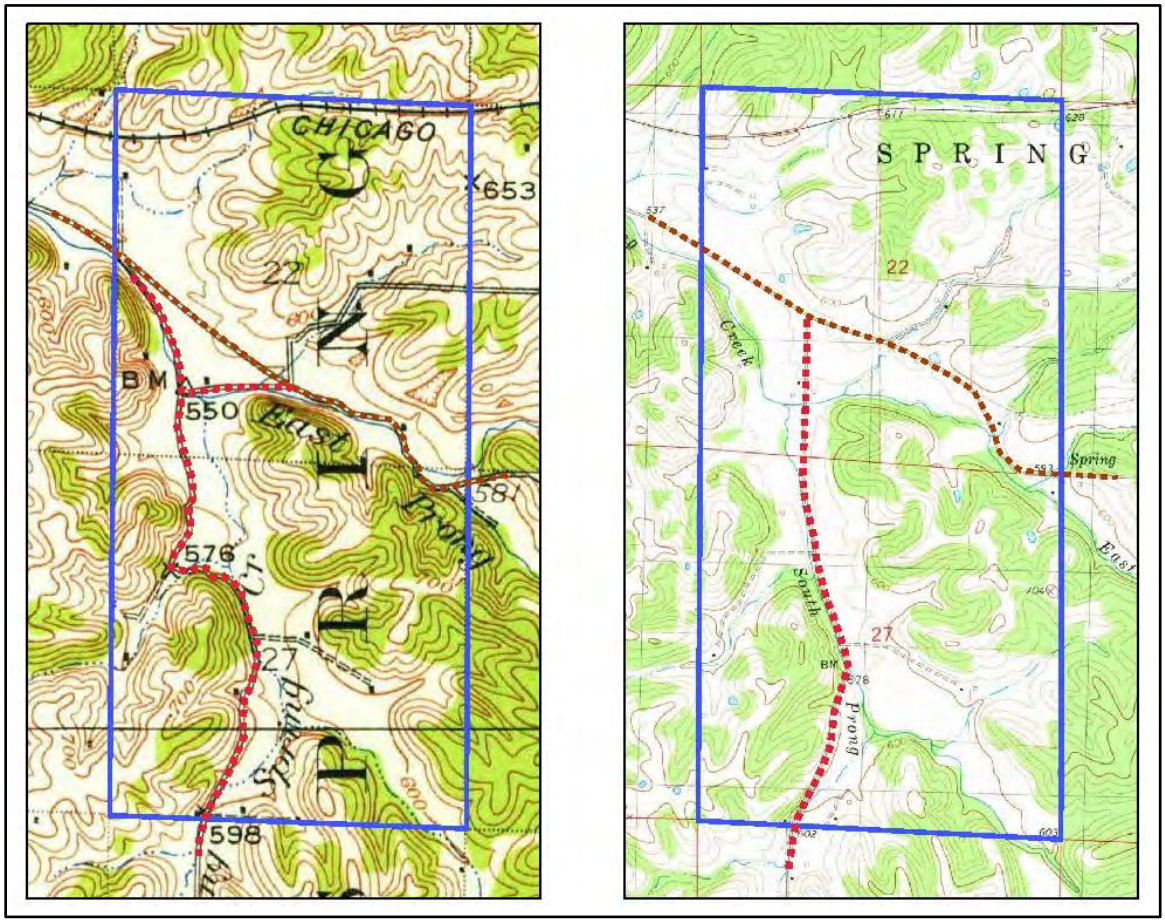

Figure 3a & 3b: The map to the left is from 1950 and identifies a specific improvement in Spring Creek Road, which is the cutoff that eliminates on the primary highway (hashed, brown line) the 90° turn to the east. The map to the right, which was published in 1980, clearly shows that a significant amount of alignment straightening had occurred (U.S. Geological Survey, Illinois/Missouri Pearl Quadrangle [map], 1950, 1:62500, 15 Minute Series [Reston, VA: United States Department of the Interior, USGS, 1950); U.S. Geological Survey, Pearl West Quadrangle [map], 1980, 1:24000, 7.5 Minute Series [Reston, VA: United States Department of the Interior, USGS, 1980]).

It is interesting how the roadways in Sections 22 and 27 evolved given that Pike County routes around Nebo were otherwise not well regarded by local residents. It was reported in one instance, for example, that "people in Nebo found it much easier to trade in Louisiana, Missouri, than the county seat of Pittsfield, because of the good rail service available to points west and east..." Clearly implied was the fact that the vehicular route between Nebo and Pittsfield was lacking. Indeed, the first paved highway connecting Nebo to any other community in the vicinity was that to Pleasant Hill which was finished in 1964. A highway connecting Nebo to the county seat of Pittsfield was

finished about eight years later.[23]

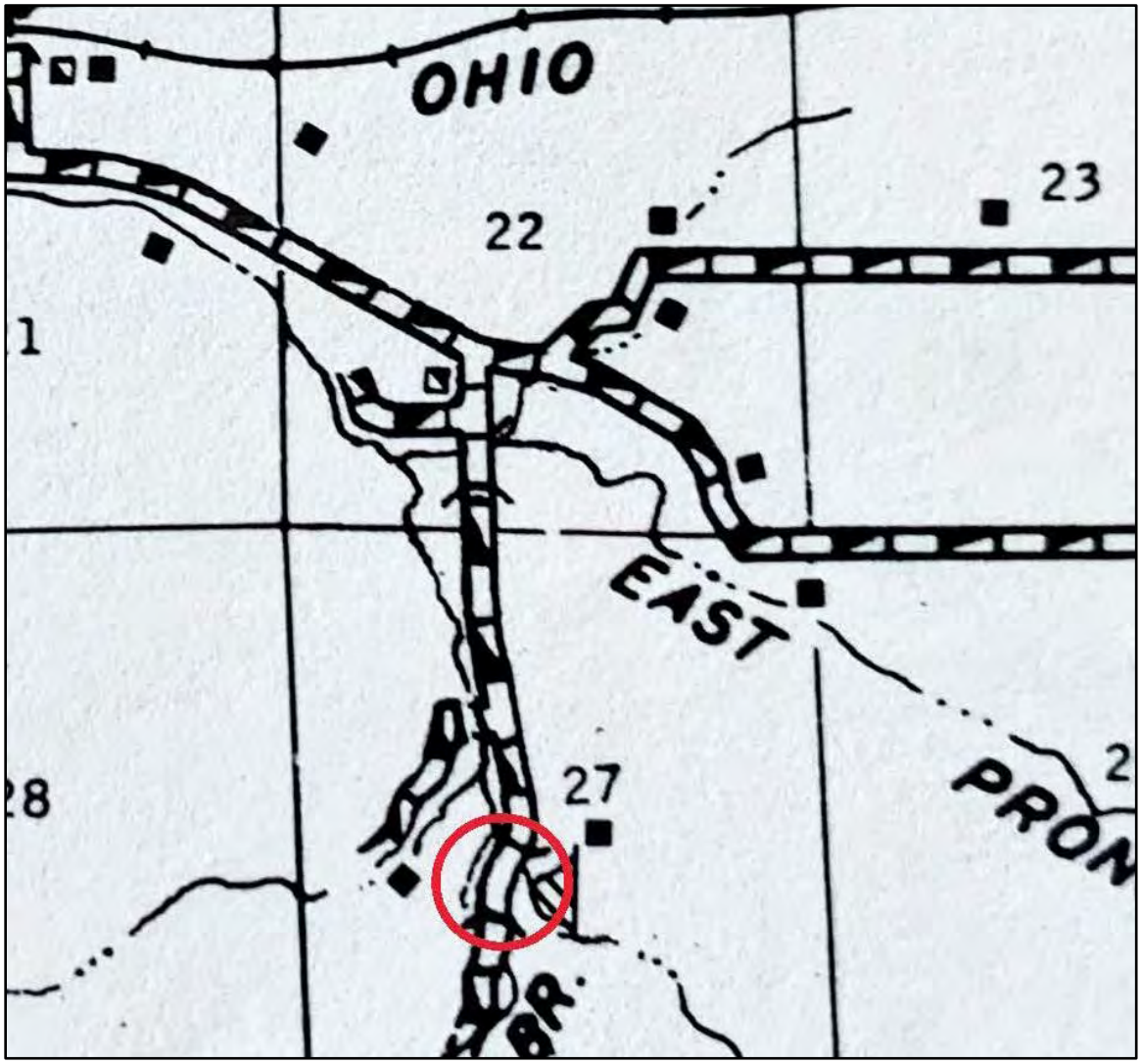

Figure 4: Pictured on a 1965 County Highway Map is the realigned roadway to the south, then clearly located on the east side of the South Prong of Spring Creek. Also noted on the map was the subject bridge spanning the South Prong (General Highway Map: Pike County Illinois [Springfield, IL: Department of Transportation Office of Planning and Programming, 1965]).

The TR 376 Bridge over the South Prong of Spring Creek:

Virtually nothing is known about the TR 376 bridge.[24] IDOT records state that it was

[23] "History of Nebo, Illinois."

[24] Research for the subject bridge was conducted at the Illinois Department of Transportation's Contracts and Local Roads & Streets Records at the Illinois State Archives (Record Group 242), which yielded no relevant information.

constructed in 1962, which is incorrect. More probable, given its character and nature, is that the structure was erected in the mid-1930s for use elsewhere and then moved to its present site in the early 1960s when Spring Creek Road was additionally realigned, the present Spring Creek Road/TR 376 intersection was moved and constructed anew and TR 376 was relocated and reconstructed on the east side of Spring Creek. What may have preceded the arrival of the current bridge is uncertain. It is possible, given the low-water character of the stream at this location, that the road simply passed through it – a procedure that would have precluded crossing during times of high water. The 1965 location of the realigned roadway and bridge are illustrated in Figure 4. The structure, with it's rare (for Illinois) H-beam construction, has served its Section 27, Spring Creek Township, location ever since.[25]

PART II: ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural Character:

The TR 376 Bridge is a five-panel, single-span structure that was constructed in circa 1935 and moved to its present location in circa 1962.[26] It is a Warren Pony Truss with Verticals and has an overall length and width of is 81'-0" and 17'-11¼", respectively. It carries TR 376 over the South Prong of Spring Creek.

2. Condition of Fabric:

The historical integrity of the structure is generally good. The most apparent damage sustained by the bridge is on the north northwestern most component of its lower chord which appears to have been hit and disfigured by the passage of ice and/or other debris during periods of very high water.

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[25] Master Structure Report (S-107), Included in *Documentation for Consultation* (*DFC*) as Attachment 2, March 2019, Copy on file with the Cultural Resource Unit, Bureau of Design & Environment, IDOT, Springfield, IL; Christopher Johnson, P.E., Pike County Engineer, Letter to the Pike County Historical Society, 08 January 2019, Copy Published as Attachment 8 in the *DFC*; Roman, Memorandum to Koldehoff, 25 October 2018.

[26] See Footnote #1.

B. Description:[27]

The TR 376 bridge, which is anchored by two, concrete abutments with wingwalls, is a five-panel, single-span, Warren Pony Truss with Verticals. It is 81'-0"long and has an overall width of 17'-11¼". The traffic deck is 15'-10" wide and constructed of two, wooden courses. The first lays on, and perpendicular to, the deck stringers. It is generally of 3" thick by 10" wide timbers with 1" to 2" spaces in between. The second course parallels the bridge's length and consists of two tracks, each with three, 3" by 10" planks set with 1" to 3" spaces in between. The deck is carried by four floor beams, each a 16" deep by 7" wide "I" beam, atop which are six, 10" deep by 6" wide, "I" beam deck stringers all generally placed on 3' centers. Deck stringers are bolted to the deck beams. Bottom lateral bracing is of ¾" rods.

The lower chord in outer panels one and five is constructed of 4" by 3½" angles and stay plates with an overall measurement of 4" by 12". The lower chord in intermediate panels two, three and four is fabricated from 6" by 4" angles and stay plates all placed to measure 6" by 12".

The bridge's inclined endposts and top chords are 12" by 6½" Wide Flange beams both bolted and welded together and turned 90° (thus appearing as an "H"). The depth of the structure, that is the top of the top chord to the bottom of the lower chord, is 8'-5½".

The panels of a Warren Truss, and thus the positions of the floor beams, are defined by the diagonals and where they connect to the lower chord. The panels are further defined, and the truss strengthened, by intermediate verticals that tie to that diagonal/ lower chord connection and extend to the top chord. Accordingly are the intermediate verticals generally set on 16'-5" centers (the bridge has no hip verticals) and measure 12" by 6½", as do the inclined endposts and top chords. The diagonals in all five panels are comprised of 3" by 4" angles, inverted and tied together with stay plates and an overall measurement of 4" by 12". 27" by 17½" gusset plates in panels three, four and five accommodate tying the diagonals to the top chords, as do smaller gusset plates tie the top chords, inclined endposts and diagonals in panels one and five at each end of the bridge.

The bridge has a two course railing. The top of the middle course is 26½" above the deck while that of the top chord is 44½" above the deck. Each chord of the railing is a 4"

[27] The measurements used to describe this bridge were taken from the structure itself during field investigations. Activities 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.

by 1½" channel.

No embellishments, nor a bridge plate, are found on the structure.

PART III: SOURCES OF INFORMATION

A. Primary and Unpublished Sources:[28]

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[28] Also consulted for any relevant information were Illinois DOT Record Groups 242.28 and 242.4 at the Illinois State Archives. No pertinent or relevant information was identified in either Record Group.

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PART IV: METHODOLOGY OF RESEARCH

A. Research Strategy

Research objectives were to place the bridge in its geographic, historic and engineering contexts. A strategy was developed to accomplish those goals that

investigated local, regional and statewide documentary sources. On-site observation and investigation of the bridge was also part of the research 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), as well as at the Illinois State Library and Illinois State Archives. Digital sources consulted include the HathiTrust Digital Library and newspapers.com, all for data relating to the development of Pike County in general, and the construction of the TR 376 bridge 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)

Illinois State Archives
Norton Building
State Capitol Complex
Springfield, Illinois 62756
(IDOT Record Group 242, Local Government Records Index and Maps)

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

•On-Line Sources:

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

Library of Congress
(Historic-period county plat maps)

historicmapworks.com
(Historic-period county plat maps)

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PART V: PROJECT INFORMATION

This HIER archival documentation is submitted in compliance with a stipulation of a Memorandum of Agreement (MOA) between the Federal Highway Administration, Illinois

Division, and the Illinois State Preservation Officer, with final signature on 10 January 2020. The MOA was executed in compliance with CFR 36 800.6(b)(1)(iv) of the National Historic Preservation Act of 1966, as amended.

1939 Aerial Image of the Bridge Location and Its Surrounding Community:

Figure 5: This picture illustrates the location of the TR 376 bridge amid the forested and agricultural land of Spring Creek Township (Illinois Historic Aerial Photography: 1937-1947, Image AR-5-44, 28 August 1939, Viewed at http://maps.isgs.illinois.edu/ilhap/ in December 2019.

USGS Map (1981) Identifying Bridge Location:

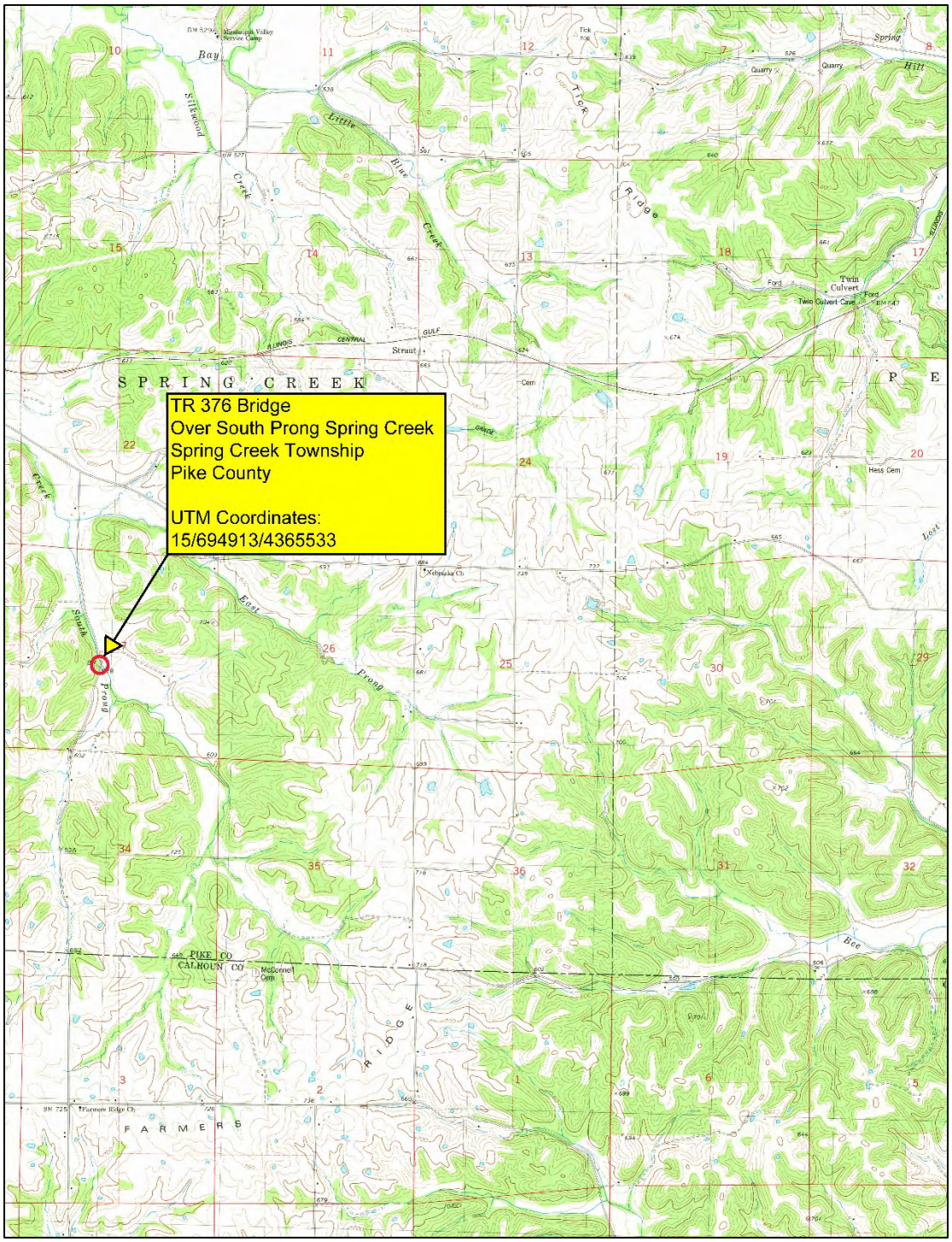

Figure 6: U.S. Geological Survey, *Pearl West Quadrangle* [map], 1980, 1:24000, 7.5 Minute Series (Reston, VA: United States Department of the Interior, USGS, 1980).

HISTORIC ILLINOIS ENGINEERING RECORD

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Spring Creek Township
Pike County
Illinois

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01 7.5 Minute USGS Map (1980)

John N. Vogel, Ph.D., Associate Degree - Professional Photography, Photographer

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HIER No. PK-2019-1.2	VIEW TO NORTH NORTHEAST.
HIER No. PK-2019-1.3	VIEW TO NORTH NORTHWEST.
HIER No. PK-2019-1.4	VIEW TO NORTHWEST.
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HIER No. PK-2019-1.24 VIEW TO SOUTHEAST. UPSTREAM FROM BRIDGE.

HIER No. PK-2019-1.25 VIEW TO NORTHWEST. DOWNSTREAM FROM BRIDGE.

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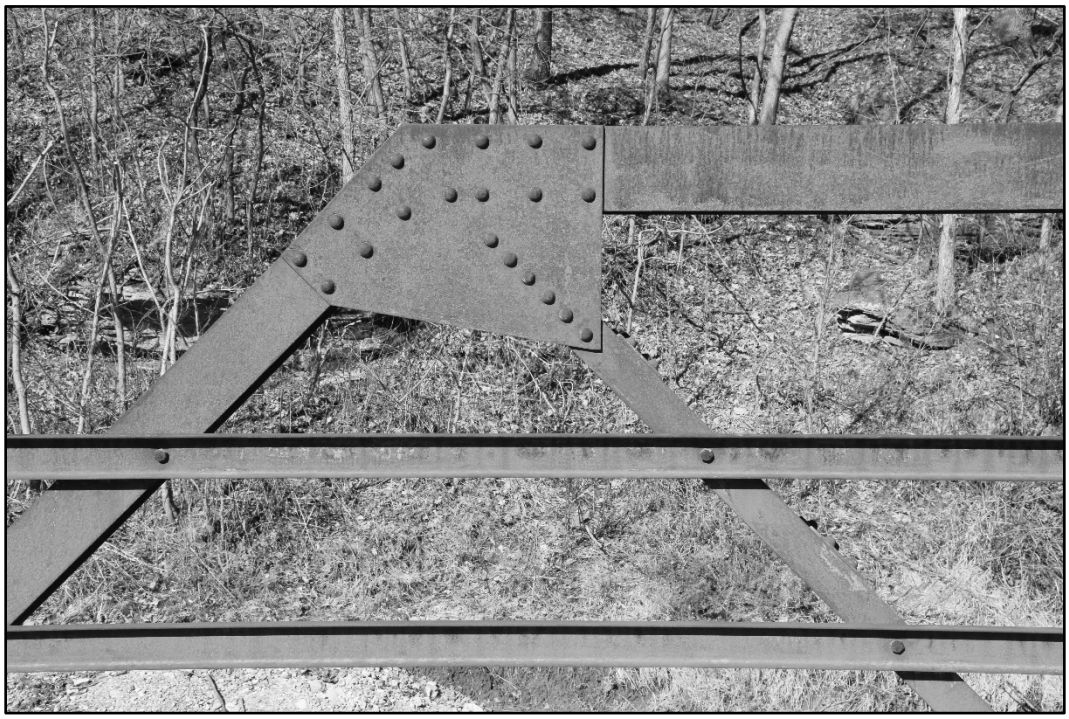

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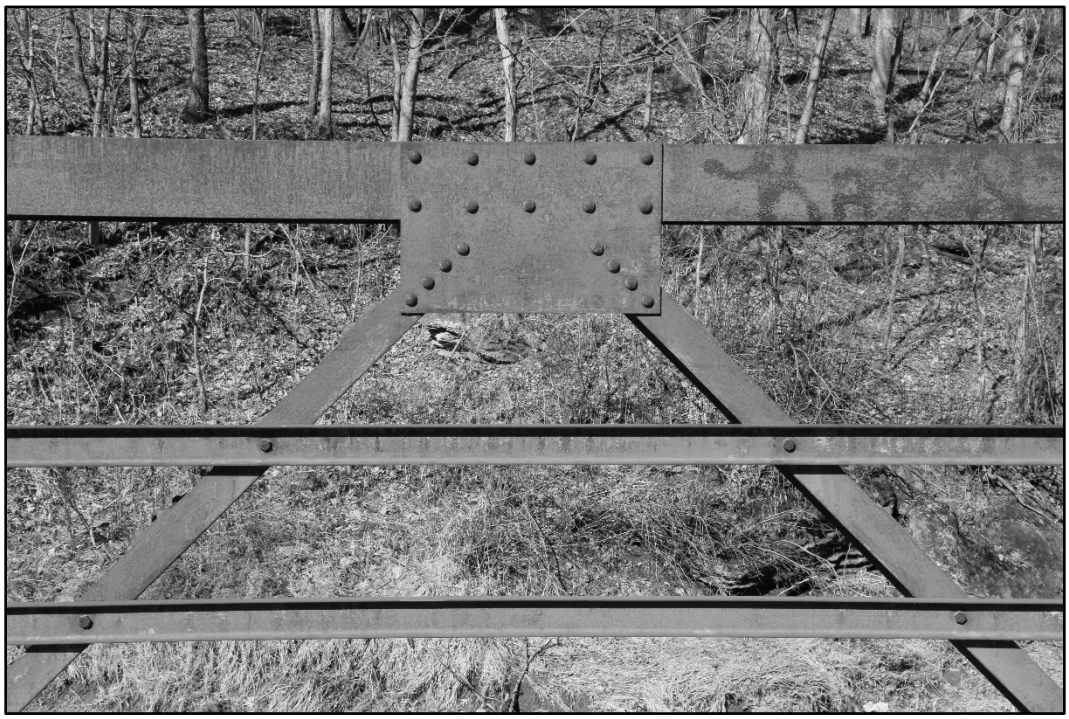

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