

US 421 MILTON-MADISON BRIDGE (KY-NBI NO.: 112B00001N)
(US 421 Madison-Milton Bridge (IN-NBI No.: 32005))
(Indiana State Highway Bridge #421-39-6003)
US 421 spanning the Ohio River between Milton, KY & Madison, IN
Milton
Trimble County
Kentucky

HAER KY-53
HAER KY-53

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD
MIDWEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
601 Riverfront Drive
Omaha, NE 68102

HISTORIC AMERICAN ENGINEERING RECORD

U.S. 421 MILTON-MADISON BRIDGE
(KY-NBI No. 112B00001N)

HAER NO. KY-53

Location: Spanning the Ohio River via U.S. 421, between Milton, Trimble County, Kentucky (KY), and Madison, Jefferson County, Indiana (IN)

UTM: Zone 16
Northing 641694
Easting 4287948

QUAD: Madison East, KY 1973, revised 1978

Date of Construction: 1929

Engineer: J. G. White Engineering Corporation, New York, New York

Builder: Mount Vernon Bridge Company, Mount Vernon, Ohio and Vang Construction, Maryland

Present Owner: Kentucky Transportation Cabinet and Indiana Department of Transportation

Present Use: Vehicular bridge connecting Milton, Trimble County, Kentucky (KY) to Madison, Jefferson County, Indiana (IN) via U.S. 421

Significance: The U.S. 421 Milton-Madison Bridge is considered eligible by both the Kentucky State Historic Preservation Officer (KY SHPO) and the Indiana State Historic Preservation Officer (IN SHPO) for the National Register of Historic Places under Criterion C for its type and design and also under Criterion A for its association with early twentieth century truss bridge construction practices.

Project Information:

The U.S. 421 Milton-Madison Bridge will be replaced with a new, wider bridge. Recordation of the U.S. 421 Milton-Madison Bridge prior to its demolition is a stipulation in the MOA among the Federal Highway Administration, the Advisory Council on Historic Preservation, the Kentucky State Historic Preservation Officer, and the Indiana State Historic Preservation Officer.

The bridge was recorded in 2010 by Mathia N. Scherer, historian/architectural historian, AMEC Earth & Environmental, Inc., 690 Commonwealth Center, 11003 Bluegrass Parkway, Louisville, Kentucky, 40299, and Hillori L. Schenker, architectural historian, AMEC Earth & Environmental, Inc., 108 Esplanade Ave., Ste. 310, Lexington, Kentucky, 40507.

Part I. Physical Description of the U.S. 421 Milton-Madison Bridge

The U.S. 421 Milton-Madison Bridge conducts traffic on U.S. 421 across the Ohio River from Milton, Kentucky, to Madison, Indiana. The north-south bridge connects rural and agricultural Trimble County with Madison's business district. Extending north from the Kentucky state capital in Frankfort, U.S. 421 cuts through rural Kentucky and enters Milton, Kentucky, on Ferry Street, curves east and then west around the mountains on Harrison Street before resuming its northern route to the U.S. 421 Milton-Madison Bridge. On the north side of the bridge, U.S. 421 enters Madison on Jefferson Street, turns east into the central business district along Main Street, and exits the town at its eastern edge by turning south to cross the Ohio River on Harrison Street.

On the Kentucky side of the bridge, traffic exits east past two gas stations, a liquor store, and two fast food restaurants. The highway shifts around a curve toward the west, and exits the town of Milton as U.S. 421 continues up Milton Hill. The approaches to the U.S. 421 Milton-Madison Bridge force drivers to twist and turn through a labyrinth of streets leading up to and away from the bridge. As stated above, the main route in Madison, Indiana, onto the bridge is U.S. 421 (identified as IN-421 in Indiana), which extends along the Ohio River's northern floodplain on elevated ground at the edge of a residential neighborhood. The street pattern of Madison forces drivers following U.S. 421 to turn off at East Main Street onto Baltimore Street, a tree-lined lane that extends through a working class, historic residential neighborhood. After two blocks, U.S. 421 turns east onto East Second Street, followed by a turn south onto Harrison Street, which is the bridge access road.

U.S. 421 Milton-Madison Bridge offers a commanding view of the Ohio River and the two towns that are the bridge's namesake. The view shows a current land use that includes agriculture, industrial, commercial, and residential functions as well as undeveloped wooded areas. The view towards Milton, the smaller of the two towns, provides a more natural landscape scene that includes the sandy, tree-covered riverbank and the convergence of Canip Creek and the Ohio River. In addition to the buildings in Milton, a large boat ramp can also be seen as part of the Milton riverfront. Visible from the bridge deck is the Madison Riverfront, a green recreational space built on the Ohio River's floodplain and lining the east-west Vaughn Street. Picnic tables, volleyball courts, and children's play areas are scattered along the green space, which is visible from the west and east of the bridge entrance.

The U.S. 421 Milton-Madison Bridge measures 3,181' in length and consists of nineteen spans, the longest of which is 727'. The road bed, originally planned to be 24' wide, is 20' across, preventing space for a shoulder or a pedestrian lane. The all-riveted superstructure consists of steel beams, while the abutments and deck material are predominantly concrete. The U.S. 421 Milton-Madison Bridge is the only conduit open to automobile traffic that spans the Ohio River in the area. The nearest bridges are the John F. Kennedy Bridge in Louisville, Kentucky, (approximately forty-six miles downstream) and the Markland Locks and Dam Bridge connecting the towns of Florence, Kentucky, and Vevay, Indiana, (located twenty-six miles upstream).

In building the U.S. 421 Milton-Madison Bridge, a variety of truss types and building techniques were utilized that give the bridge a unique look. Starting from the north, the bridge consists of three Pratt deck trusses, followed by one Pratt through truss, two cantilevered Pratt through trusses, one simple Baltimore through truss, two additional cantilevered Pratt through trusses, one deck plate girder, and seven I-beam spans with concrete abutments. From the north, the bridge access rises at a five percent grade up a traditional anchor arm terminating at a pier. The next span is a simple Pratt through truss span, followed by the northernmost central spans, each with cantilever arms holding the next span.

The northernmost central span has a main cantilever span setup, with cantilever arms holding a central suspended span, which follows the Pratt truss configuration. The suspended span is not in the center of the span because the northern cantilever arm is shorter than the southern cantilever arm. The next large portion of the bridge, which involves a simple span of the bridge, is the Baltimore through truss at 600' in length. Two more cantilevered Pratt through trusses continue the bridge toward the Kentucky shore, lowering it at a five percent grade. The bridge returns to road level with six simple spans. The Baltimore and Pratt through trusses consist of multiple panels and supports of I-beams. I-beams also support the concrete deck, which serves as the road, and also provide the truss supports in the vertical and diagonal positions. Top laterals follow a simple cross-beam pattern.

The bridge superstructure is supported by sixteen concrete piers set in the floodplain and riverbed beneath the main span. The four piles on the north end of the bridge rise from the sloping river bank and anchor the simple spans of Pratt deck trusses and the first Pratt through truss. The central four piers rise from the riverbed supporting the cantilevered Pratt and Baltimore through trusses. The southern end of the bridge is supported by two concrete piers and six steel piers before leveling off in Milton, Kentucky at the south abutment.

Alterations

A variety of alterations and upgrades have been made to the U.S. 421 Milton-Madison Bridge since its construction, reflecting both improvements and general maintenance. General maintenance included painting the bridge in 1950 and 1968, minor road repairs, and lighting replacement. Major alterations made to the U.S. 421 Milton-Madison Bridge were performed to facilitate safer travel and to minimize damage to both vehicles and the bridge. In 1968, the original diagonal steel braces were raised from thirteen to eighteen feet, running the width of the bridge. The steel beams originally ran in an A-line configuration, but they were replaced so that they ran straight across the bridge from one side to the other.¹ Approximately twenty-seven of the braces were changed.

In 1987, the original bridge lighting was replaced by high-pressure sodium street lights. Interstate Lighting, Inc. from Lawrenceburg, Kentucky, installed the lighting. The project was

¹ "Work Is Planned to Replace Floor of Ohio River Bridge," *Madison Courier* (Madison, IN), June 6, 1979.

completed in sixteen months, and all costs associated with the upgrade and future maintenance were the responsibility of the Commonwealth of Kentucky.²

In 1989, discussion ensued between the Kentucky Transportation Department and the Indiana Department of Transportation about rehabilitating the bridge by replacing part of the deck. No mention was made of widening the deck, and ultimately any initial planning for a new bridge abated due to cost. Instead, the U.S. 421 Milton-Madison Bridge was resurfaced with latex concrete. This concrete did not permit as deep a penetration into the roadbed as the previous type of concrete, allowing for a longer lifespan of the material because it slowed deterioration through cracks and potholes.³ The work was performed by C.E.E., Inc., of Lexington, Kentucky.

A major rehabilitation of the bridge began in 1996, again in lieu of a new bridge. Several elements of the bridge were replaced, including the concrete deck and the steel support beams and trusses under the roadway. Smaller portions of the bridge damaged by water, chemical deicer, and bird waste were also replaced.⁴ The rehabilitation was performed by Jim Skaggs Inc. of Bowling Green, Kentucky. The estimated extension of the bridge's lifespan was ten to twenty years at a cost of under \$10 million dollars.⁵

Inspections

Records of inspections prior to 1986 were sparse. Many of the early projects on the bridge were routine maintenance, such as cleaning the bridge for special occasions or painting it. These types of projects did not require invasive or even detailed structural inspections. In 1967, reports showed that annual inspections did occur, although no specifics on the types of inspections were provided. A submarine inspection of the piers was also performed in 1967 to examine the condition of the concrete.⁶ In 1979, the floor of the bridge was replaced. Although not specifically noted, the engineering requirements of this action would have required some sort of inspection.

An inspection by Burgess & Niple, Limited in 1986 involved a complete, in-depth inspection of the truss superstructure, the deck, and underwater portions of the substructure.⁷ The inspection report stated that the bridge ranged from good condition in some portions to severely deteriorated in others, including the bridge deck. Overall, the inspection reported extensive deterioration and predicted a short remaining lifespan for the bridge, but the report noted that renovation of the bridge would help extend its lifespan. Following the 1986 inspection, the *Madison Courier*, the

² "Ohio River Bridge Lights Switched On," *Madison Courier* (Madison, IN), May 19, 1987.

³ "Bridge Clearance to Be Raised," *Madison Courier* (Madison, IN), March 28, 1989.

⁴ "Low Bid on Rehab Set at \$8.9 Million," *Madison Courier* (Madison, IN), April 24, 1996.

⁵ Kathy Francis, "Superstructure Solution," October 2011.

⁶ Phil Graham, "Madison-Milton Bridge 'Absolutely Safe' Says Kentucky; Span Checked Annually," *The Courier Journal* (Louisville, KY), December 23, 1967.

⁷ Burgess & Niple, Ltd., *Final Bridge Inspection Report* (On file at the Madison-Jefferson County Public Library, 1986).

Indiana town's major newspaper, reported that the bridge would undergo renovations in 1989.⁸ Cost savings and a satisfactory state of repair were cited as the reasons behind renovation versus all-out replacement.

While these repairs were made, only a few years later the bridge was once again beginning to show major wear. Consequently, in 1993, the *Madison Courier* requested input from its readers on proposed locations for a replacement bridge. Moreover, in 1994 the U.S. 421 Milton-Madison Bridge was placed on the Federal Highway Administration's "National Bridge Inventory Highway Bridge Replacement and Rehabilitation Program Selection List." According to the numerical rating system used for bridges on the list, a score of fifty out of 100 indicated that a structure requires extensive renovation. The U.S. 421 Milton-Madison Bridge received a rating of 21.6.

As a result of the bridge's extremely low score, Bernardin, Lochmueller & Associates, Inc. (BL&A) conducted another inspection for a Kentucky Transportation Cabinet planning report in May 1995. The BL&A report found that, in addition to the bridge's overall degradation, the existing structure was "functionally obsolete" for the current traffic capacity.⁹ By that time, almost 5,000 vehicles crossed the U.S. 421 Milton-Madison Bridge every day, with a forecast of over 14,000 commuters by 2014. Recommendations by BL&A stated that up to \$4.4 million in repairs were required to bring the U.S. 421 Milton-Madison Bridge up to "sufficient rating levels;" however, the narrow lanes would still render the bridge "functionally obsolete".¹⁰ Based on these findings, the construction of a new viaduct was proposed, yet after much debate, an agreement on where the new bridge should be located could not be reached. Despite the pressing need, plans for a new bridge were put on hold and \$10 million dollars in improvements to the existing structure were scheduled instead.¹¹

In March 2009, stating the severe deterioration of a gusset plate on the Indiana side of the bridge, the Kentucky Transportation Cabinet reduced the allowable tonnage for vehicles crossing the bridge from thirty-one tons to fifteen tons, which prohibited most commercial vehicles from using the bridge. Another inspection in August 2009, conducted by the Parsons Brinckerhoff Co., found the overall bridge continued to be below satisfactory condition. While the deck and substructure were both satisfactory, the superstructure was rated in "poor" condition. Additionally, the report did not recommend returning the allowable tonnage back to thirty-one tons, even after the repairs were completed.

Although this inspection report did not mention replacing the bridge as earlier assessments had done, it required extensive repairs that included the replacement of all bolts, gusset plates, and

⁸ "Bridge Clearance to Be Raised," March 28, 1989.

⁹ Bernardin, Lochmueller & Associates, Inc. *U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bride Planning Report and Environmental Overview*. On file at the Madison-Jefferson County Public Library, 1995).

¹⁰ Ibid

¹¹ "Kentucky Officials Announce Kick-Off of Bridge Study". *Roundabout Newspaper* (Carrollton: Kentucky Publishing Inc., 2008).

other universal pieces of the bridge. This determination prompted the Kentucky Transportation Cabinet and the Indiana Department of Transportation to look at a number of construction options. The prospect of replacing the U.S. 421 Milton-Madison Bridge had been discussed for decades as a result of the inspections conducted since 1986, and the latest inspections only advanced the decision that repairs to the current bridge would not be a cost effective way to deal with the greater issues of cross-river mobility in the region.¹² “We did a rehab on the bridge in 1997. It put a Band-Aid on the problem and now it’s time to do this thing right,” explained Trimble County, Judge-Executive Randy Stevens.¹³

Funding for and the location of the new bridge would continue to be a pressing concern throughout the planning process and would ultimately lead to the use of innovative construction techniques. To reduce the cost of a new bridge and to completely remove the issue of location, a unique method called “superstructure replacement,” was adopted.¹⁴ Using this process, the steel portions of the existing bridge will be removed from the piers and replaced with a new modern truss bridge structure. The piers themselves will remain intact but will be strengthened to meet current codes, regulations, and engineering specifications. In addition, superstructure replacement will eliminate the need for acquiring properties or land for right-of-way, which is both costly and time-consuming.¹⁵ Studies found that the construction of a new bridge, versus replacing the existing bridge on the original piers, could extend the project from one year to approximately seven years.¹⁶ The replacement structure will resemble the historic design of the existing bridge, consisting of a 40’ road deck with two 12’ lanes, 8’ shoulders, and a cantilevered 5’ pedestrian walkway on one side.¹⁷

In February 2010, Indiana Congressman Baron Hill announced that the U.S. 421 Milton-Madison Bridge project was awarded a Transportation Investment Generating Economic Recovery (TIGER) grant through the Department of Transportation’s American Recovery and Reinvestment funds.¹⁸ This grant was the first federal funding the project had received and effectively pushed it ahead of the Louisville Ohio River Bridges project. Representatives from the Kentucky Transportation Cabinet, Indiana Department of Transportation, and the Federal Highway Administration submitted a grant application for \$95 million of the estimated \$131 million project costs.¹⁹ A grant totaling \$20 million in funds was awarded for the project, allocating \$10 million dollars each to the Kentucky Transportation Cabinet and the Indiana Department of Transportation. With this initial financial support, the truss of the historic bridge

¹² Project Advisory Group, *Meeting Files*, (On file, October 9, 2008 – January 14, 2010).

¹³ *Ibid.*

¹⁴ “U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge Project,” Wilbur Smith Associates, accessed September 2010, <http://www.miltonmadisonbridge.com/the-project/>.

¹⁵ Project Advisory Group, *Meeting Files*, (On file, October 9, 2008 – January 14, 2010).

¹⁶ Phyllis McLaughlin, “Bidding Process Starts,” June 14, 2010.

¹⁷ “U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge Project”.

¹⁸ “Hill Announces Significant Grant for Madison-Milton Bridge,” accessed September 2010, http://www.baronhill.house.gov/list/press/in09_hill/021610a.shtml.

¹⁹ Phyllis McLaughlin, “State, Federal Officials Commit to Funding Bridge Project,” *The Trimble Banner* (Bedford, KY), February 24, 2010.

is slated to be demolished in the summer of 2012 after the original piers have been widened and the new truss, which will be built on temporary piers downstream, has been completed. The “truss sliding” of the new structure is tentatively scheduled for Fall 2012.

Part II. History of the U.S. 421 Milton-Madison Bridge

The U.S. 421 Milton-Madison Bridge was constructed between 1928 and 1929 in response to inadequate ferry service between Milton and Madison, the need for overall improved transportation routes between Kentucky and Indiana, and specifically the need for a shorter route between Lexington, Kentucky, and Indianapolis, Indiana. The bridge measures 3,184’ in length and twenty’ in width. It was designed and built as a continuous truss bridge. Prior to the construction of the U.S. 421 Milton-Madison Bridge, the only other bridges in the vicinity were located to the south in Louisville, Kentucky, and to the north near Vevay, Indiana. Although numerous communities vied for a bridge at that time, the location between Milton and Madison proved to be the best location because the cities had an adequate need for a bridge, an existing transportation route (U.S. 421), and Madison had an aggressive city council pursuing the bridge.

Trimble County, Kentucky

Named for Judge Robert Trimble, an Associate Justice of the U.S. Supreme Court, Trimble County was established by an act of the Kentucky General Assembly in December 1836. Trimble County was formed from portions of Gallatin, Henry, and Oldham Counties. At a mere 146 square miles, Trimble is the sixth smallest county in Kentucky.²⁰ Located in the northwestern section of the state, the county is bordered by the Ohio River to the north and west, by Carroll County to the east, by Henry County to the southeast, and by Oldham County to the southwest. Bordering Trimble County directly across the river are the Indiana counties of Jefferson on the north and west and Clark to the southwest. The terrain of the county is marked by Ohio River valleys and hilly uplands. The hills extend along a ridge from the northwest corner of the county and terminate at Milton in the west. Streams on the north side of the ridge flow directly into the Ohio River, whereas streams on the south side of the ridge flow into the Little Kentucky River. The stream and river bottomlands are very fertile, allowing the county an economy based on agriculture.

The Ohio River played an important role in the early settlement of the county by providing easier access to the frontier than trekking across the Appalachian Mountains. However, in addition to being an important trade and transportation route, the river also created a north-south barrier; the Milton Ferry was established in 1804 to enable people to cross the river more easily. Other transportation routes included early buffalo traces, Native American trails, and creek beds.

Although Trimble County was not officially formed until the 1830s, settlement began in the area in the late eighteenth century. Richard Ball arrived in the Trimble County area in 1805 and built

²⁰ John Kleber, *The Kentucky Encyclopedia* (Lexington: University of Kentucky Press, 1992), 900.

a cabin.²¹ This property would eventually be incorporated into Bedford, the county seat of Trimble County. Other settlers arrived via the Ohio River on flatboats, and several small communities emerged over the course of the nineteenth century. Trimble County was agricultural and characterized by hardworking and generally peaceful people. There are no accounts of major raids or military occurrences in Trimble County. However, the Underground Railroad operation at the Preston Farm in Trimble County caused some local division between slave owners and abolitionists.²² Freedom-seekers used the farm as a resting point before crossing the Ohio River into the free state of Indiana.

According to the 1982 *National Register of Historic Places Inventory/Nomination Form on Trimble County*, the waves of farmhouse construction indicated three major periods of prosperity in the county's agriculture.²³ The first major building effort, 1800-1820, involved settlement; the second, 1840-1860, included the Antebellum prosperity of the agrarian South and river trade; and the final building effort, 1880-1910, followed the devastation inflicted by both the Union and the Confederate armies on Kentucky. Primary agricultural crops included corn, tobacco, orchard fruits, wheat, and livestock. The farming economy, in conjunction with the county's relative isolation, kept the population sparse and rural in character. Other than agriculture, there was little industry in the county, with the exception of a wool-carding factory, a steam-powered gristmill, and the Richwood Distillery that operated between the Civil War and 1910. The distillery produced Bourbon whiskey sold under the labels "Susquehanna" and "Old Teakettle." Today, agriculture remains an important part of the county's economy. Other current industry includes the Louisville Gas and Electric generation facility and the Valley View Industrial Landfill.

Trimble County was relatively isolated because it lacked rail lines and major thoroughfares; consequently industry remained sparse in the area until 1927, when U.S. 42 and U.S. 421 brought regular traffic through the county. Established public roads included the Bedford-Sulphur Pike, which traveled southeast from Bedford along present-day KY-3175; the Old Bedford-Milton Pike, which cut north from the county interior to the Ohio River at Milton on present-day U.S. 421; and the Bedford-Campbellsburg Pike, a southeast route along present-day U.S. 421. These roads helped bring in such industries as the Fold-Away Basket Company in 1957 and the Martin Marietta Aggregates company in 1961. The U.S. 421 Milton-Madison Bridge permits passage throughout Trimble County, Kentucky, and Jefferson County, Indiana, for workers and travelers on both sides of the river, in addition to visitors of the annual Madison Regatta, the state parks near Madison, and other tourist attractions.

Milton, Kentucky

The town of Milton was originally settled prior to Kentucky's statehood as part of Albemarle County, Virginia and closely mirrors that of Tremble County. Milton is one of two incorporated towns in Trimble County and was the earliest settlement in the area. By 1785, settlers were

²¹ Ibid.

²² Ibid:901.

²³ William Johnson, *National Register of Historic Place Form for Historic Resources in Trimble County* (On file at the Madison-Jefferson County Public Library, 1982), 2.

recorded on the eastern edge of the present-day town, and the town was incorporated by the Virginia Legislature in 1789. The initial settlement was between Canip Creek and Tiber Creek (also called Town Branch). This settlement was annexed into a settlement south of Tiber Creek and was called Kingston. Fifty families lived in the area by 1802. In 1872, the community of Kingston changed its name to Milton, although no reason has been found for this name change.

Milton's early industrial basis was agriculture, ferries, and distilleries/breweries. It was always a small town, although it did boast a hotel, several general stores/grocers, two blacksmiths, and a shoemaker. Its growth was affected directly by its geographical location, with the Ohio River to the north preventing growth and Milton Hill, which impeded development to the south. Milton suffered flooding of the Ohio River in 1880, 1913, 1914, and 1937. These floods destroyed much of the historic commercial corridor of the town. The destruction from the floods, in addition to Prohibition and the construction of the bridge in 1929, resulted in two primary industries being lost: the distilleries/breweries closed as the county went dry in the 1940s²⁴ and ferry services ended except for times of immediate need.²⁵ The residents of Milton emerged from the 1937 flood determined to regain what they had lost. While their initial goal was to regain an industrial base, the town's economy continues to be connected to agriculture. Presently, approximately 650 people live in the town of Milton.

Milton's location across from Madison made this site ideal for the proposed bridge. Milton had some industry that could benefit from improved transportation routes, but more importantly it had established connections to other state and county roads. Consequently, the connection of Madison to Milton was beneficial for both states because it improved transportation to Frankfort, Kentucky, to the southeast and Indianapolis, Indiana, to the northwest. In addition, agreements were made by the individual state transportation authorities to make improvements to existing roads as necessary to improve chances of securing the new bridge.

Jefferson County, Indiana

Jefferson County, Indiana is located in southern Indiana on the Ohio River. It is bordered in Indiana by Ripley County to the north, Jennings County to the northwest, Switzerland County to the east, Scott County to the west, and Clark County to the southwest. Across the river in Kentucky, Trimble County sits to the south and Carroll County is located to the southeast of Jefferson County, Indiana. The State of Indiana and the Commonwealth of Kentucky are separated by the Ohio River, which comprises the southern border of Jefferson County.

²⁴ Many distilleries failed to re-open after the Prohibition ended for a variety of reasons, including the loss of the market due to the country being "dry," the change in products being manufactured (some distilleries switched to making sodas), and the change of people's palates from aged whiskeys to gin, which were produced readily by bootleggers. Overall, the Commonwealth of Kentucky had 17 distilleries prior to Prohibition. Only seven re-opened after the repeal of the Eighteenth Amendment and Prohibition.

²⁵ Sara Denhart, "Voters Approve Winery in Dry Trimble County," *The Madison Courier* (Madison, IN), December 17, 2008.

Virginia ceded this portion of the Northwest Territory to the federal government, and settlement opened in 1787 when the Northwest Ordinance was passed.²⁶ The Ohio River was the primary transportation route into the region, and many of the early settlers were former soldiers under the command of George Rogers Clark who, with the agreement of Virginia governor Patrick Henry, led a secret expedition against the British posts at Kaskaskia, Vincennes, and Detroit during the American Revolution. The first settler in the county was Captain George Logan in 1801.²⁷ By 1805, many other settlers had followed Logan into the region because of the more accessible transportation route via the Ohio River (versus overland routes) and the promise of fertile farmland. Jefferson County was organized in 1810 by the Indiana Territorial Legislature from portions of Clark and Dearborn Counties; it was named for the third President of the United States, Thomas Jefferson.²⁸

Madison, Indiana

Following the establishment of Jefferson County in 1810, Lewis Davis, Jonathon Lyons, and John Paul laid out the town of Madison on a 691.54-acre site purchased from the Jeffersonville land office.²⁹ Madison was named for the fourth President of the United States, James Madison. Its location at the uppermost part of a horseshoe bend in the Ohio River provided its residents with numerous business opportunities, and like many small river towns, it became a commercial and cultural center for the region. Madison's growth was enhanced by its location on the river because it contributed to the development of other transportation systems that connected the town to a larger commercial economy.

Transportation routes directly connected to Madison's growth included a system of locks and dams on the Ohio River, road extensions, and the construction of a railroad. The construction of a system of locks and dams from Pittsburgh, Pennsylvania, to New Orleans, Louisiana, along the Ohio and Mississippi Rivers made travel on the rivers easier. As a result of faster and safer travel, agricultural markets in Canada and the Caribbean opened up to Madison farmers and businessmen.³⁰ The Michigan Road, which extended from Lake Michigan to Madison, was constructed between 1831 and 1834. It served as the city's first significant land artery and provided a way to transport commodities from central Indiana farmers to new merchants and industrial markets.³¹ It also provided a transportation route for merchants and settlers with greater access to inland areas. The final transportation development was the construction of the Madison and Indianapolis Railroad; a project that began in 1832 but was not completed until 1843 because of funding issues. The railroad provided more access to internal markets not easily

²⁶ Division of Historic Preservation and Archaeology, *Jefferson County Interim Report* (Indianapolis: Historic Landmarks Foundation of Indiana, 1989), xiii.

²⁷ Ibid.

²⁸ Ibid.

²⁹ John T. Windle and Robert M. Taylor, Jr. et al, *The Early Architecture of Madison, Indiana* (Madison: Historic Madison, Inc. 1986), 3.

³⁰ Ibid.

³¹ Robert M. Taylor, Jr. et al, *Indiana: A New Historical Guide* (Indianapolis: Indiana Historical Society, 1989), 117.

accessed via river transportation.³² This industry helped expand existing businesses within Madison, and it introduced feeder industries, such as iron foundries, to the area. An industry that contributed to Madison's growth, but was not one of its primary businesses, was ship building. James Howard, who established the Howard Ship Yard and Docks Company, built a small shipyard in Madison that operated for ten years between 1836 and 1846. He moved his operations to Louisville, and it would not be until 1851 that another shipyard was opened in Madison. That year the Madison Marine Shipyard opened and remained in operation for almost 100 years. The primary reason for the lack of shipyards in Madison was the success of other transportation routes, specifically the Michigan Road and the railroad, and other shipyards along the Ohio River in Pittsburgh, Pennsylvania, Cincinnati, Ohio, and the Louisville, Kentucky-Jeffersonville, Indiana, area.³³

Industries abounded in Madison, with the dominant ones being agriculture (peaches, pork, poultry, syrup, and tobacco), coal, saddletree manufacturing, and starch production. With access to numerous markets via the Ohio River and the railroad, Madison became one of the nation's largest pork packaging centers. Processing other agricultural products also pushed Madison's growth. For over fifty years, manufacturing, railroads, steamboats, and location (within close proximity to Cincinnati, Louisville, and Lexington) helped Madison remain one of Indiana's thriving cities and one of the more successful river towns along the Ohio River.

Although Madison's economy was affected by recessions, floods, and population decline, the city maintained a steady economy into the twentieth century. Local leaders stressed the city's viability by focusing on its agricultural market, industries and businesses; specifically coal, crude drugs (ginseng, sarsaparilla, and yellow root), and lumber.³⁴ In addition, local leaders boasted of the city's peaceful environment because of its lack of management-labor strife often associated with the new and growing automobile industry elsewhere in Indiana. By 1910, when Congress authorized the deepening of the Ohio River to provide sufficient depth for large boats, Madison residents were anticipating a growth in the economy because of the possibility of year-round shipping.

In addition to deepening the Ohio River, several important events contributed to a new industry in Madison: tourism. In 1917, the Jefferson County Historical Society recorded all identified archeological and historic sites within the county, and submitted the information to the state. The State of Indiana completed its survey of archeological and historic resources within the state in 1922. As a result of this inventory work, the James F.D. Lanier Mansion in Madison became the first historic memorial in the State of Indiana. In addition to identifying the region's history via archeological and historic resources, residents of Madison and Jefferson County contributed enough money to purchase and develop Clifty Falls in 1920, which became a state park. These

³² Ibid:118.

³³ Ibid.

³⁴ Ibid:121.

historical and recreational resources drew tourists to the area, making it an industry financially comparable to manufacturing.³⁵

It was the combination of agriculture, industry, tourism, and transportation in Madison that favorably influenced the decision to locate the proposed bridge between Milton and Madison. Although other communities, including Carrollton and Ashland, Kentucky, and Evansville, Indiana, vied for the bridge and pursued possible funding options, Madison had a more defined need for an efficient river crossing that would enhance existing business and personal opportunities. Local city leaders pushed for the bridge based on these factors, and ultimately both the State of Indiana and the Commonwealth of Kentucky agreed that Madison was an ideal location.

The U.S. 421 Milton-Madison Bridge

Transportation between Milton and Madison in the late nineteenth and early twentieth centuries was slow because ferries provided the only direct transportation route between the two towns; people who did not use the ferry had to travel either twenty-six miles north to Vevay, Indiana, to cross the Ohio River at what was then lock and dam No. 39 built in 1921 (now the replacement Markland Locks and Dam built beginning in 1956), or forty-six miles south to Louisville, Kentucky. Ferries provided reliable but slow transportation, often taking fifteen to thirty minutes to cross the river. The advent of the automobile brought more attention to the shortcomings of these local ferries, which were often too small and too light to carry the heavier cars and trucks. Plans for bridges across the Ohio were proposed in numerous communities, including Carrollton and Ashland, Kentucky, Madison, and Evansville, Indiana. Residents in all four cities desired a bridge because of the short-comings of ferry service.

The idea for a bridge between Milton and Madison predated the invention of the automobile. As early as 1899, the Commonwealth of Kentucky and the U.S. Engineers chose a commission to assess the possibility of a bridge between Madison and Milton. This commission included Major Charles F. Powell of Pittsburgh, Pennsylvania; Captain H. T. Hodges of Cincinnati, Ohio; George A. Zinn of Louisville, Kentucky; and Lieutenant John M. G. Watt of Frankfort, Kentucky, who served as the engineer in charge of the Ohio River.³⁶ The commission heard statements both for and against the bridge from captains and pilots who navigated the Ohio River, steamboat owners that operated on the Ohio River, businessmen with interests in the surrounding communities, and Congressman Colonel A. S. Berry of Newport, Kentucky.³⁷ The primary concern of the opposition to the bridge location related to the bridge height, which they wanted to be high enough to ensure that boats could safely navigate under the bridge regardless of the water level. Despite all of this debate and planning, it would be thirty years before the bridge came to fruition.

³⁵ Taylor, *Indiana*, 121.

³⁶ "The Kentucky Bridge," *Carrollton Democrat* (Carrollton, KY), July 18, 1899.

³⁷ *Ibid.*

In response to the increased automobile traffic, on November 19, 1927, the push for a bridge became a reality when E. M. Elliott, of E. M. Elliott and Associates of Chicago, approached the Madison, Indiana, City Council about securing a bridge franchise.³⁸ The meeting included Elliott, the Madison City Council, and a special committee comprised of John W. Tevis, Elmer E. Scott, W. H. Miller, Major J. F. Butts, and John C. Finch, with Mayor Marcus R. Sulzer acting as chairman of the special committee.³⁹ Elliott, who was known in the field of bridge construction, argued that a bridge would provide Madison with more economic opportunities and would improve communication between Madison and the surrounding areas. Elliott was successful in his argument, and by the end of the meeting had secured a bridge franchise to locate the bridge and its approaches, pending approval by the War Department.⁴⁰ The specific dimensions, pier locations, and approaches of the proposed bridge were not decided at this meeting, although a bridge width of 24' was chosen. It was decided that engineering studies would be performed to properly locate the piers and approaches, as well as to decide the dimensions of the bridge and the strength required to withstand impact from ice on the river, which could amount to several thousands of tons of pressure. The U.S. 421 Milton-Madison Bridge was built under the terms of the Murphy Toll Bridge Act to enable more efficient flow of traffic through northern Kentucky to Frankfort and Lexington, and to ease the burden of traffic on U.S. Highway 31. The Murphy Toll Bridge Act, also known as the State Highway Bridge Act, gave the Kentucky government the "power to condemn or purchase privately owned toll bridges and to issue bonds for construction of new facilities as part of the state primary system of highways."⁴¹ Meeting attendees also decided that the new bridge toll would be the same as the current ferry toll.⁴²

Indiana and Kentucky officials agreed on the bridge location for several reasons: the river conditions between Milton and Madison were better than other locations because of the water levels, terrain, and existing transportation routes in Milton and Madison respectively; this location would link several new roads that had been constructed; funding was being organized; and the proposed approach road in Carrollton was prone to flooding.⁴³ Milton was linked to Frankfort, Kentucky, via the Kentucky towns of Bedford, Campbellsburg, New Castle, and North Pleasureville, which eliminated many miles of travel for Indiana travelers, who previously had to follow routes through Louisville or Cincinnati to travel to Frankfort or cities further south.⁴⁴ Kentucky travelers would have easier access to Columbus and Indianapolis, Indiana, via Madison. Under Murphy Toll Bridge Act, Kentucky could also charge tolls until the construction

³⁸ "Will Ask Permit to Build Bridge," *The Madison Courier* (Madison, IN), April 12, 1928.

³⁹ *Ibid.*

⁴⁰ "When Opportunity Knocked, Our City Fathers Answered," *Madison Courier* (Madison, IN), April 28, 1937.

⁴¹ Acts of Ky. 1928, chap. 172; *Estes v. State Highway Com.*, 235 Ky. 86 [29 S.W. (2d) 583, 585]; also in Kleber, *Kentucky Encyclopedia*, 663.

⁴² "Will Ask Permit," April 12, 1928.

⁴³ Madison Bridge Company, *The Completed U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge Over the Ohio River*, (1930), 5.

⁴⁴ "U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge to Connect Highways," *Trimble Banner Democrat* (Bedford, KY), September 20, 1928.

and maintenance costs accrued by the private construction company were reimbursed. Indiana did not have a comparable act.

Elliott wasted little time in preparing for a new bridge between Madison and Milton. Within four days of his receiving the bridge franchise, representatives of Rodgers and Reed of Louisville arrived in Madison to survey the area for base lines and triangulations necessary for the placement of the new bridge.⁴⁵ By December 5, 1927, engineers were documenting the water level stages of the Ohio River. On December 20, 1927, a bill by Kentucky Representative Harry Canfield authorizing the U.S. 421 Milton-Madison Bridge Company to construct the bridge was introduced into the House of Representatives. The bill was introduced into the Kentucky Senate one month later on January 19, 1928, and it passed both houses on February 6, 1928. Indiana would incorporate the U.S. 421 Milton-Madison Bridge Company as a foreign corporation in order to work in Indiana. Final authorization for the U.S. 421 Milton-Madison Bridge had yet to come from the U.S. War Department, who controlled waterways and strategic ports and ensured marine navigation, and would not be gained until almost eight months later in August. Nevertheless, prospective contracting engineers began drilling for pier locations.⁴⁶

Two primary issues were at the forefront of the construction process: what land to buy and with whom to contract the construction work. The officials involved in the project felt that land could be purchased for reasonable rates. The general contract for the bridge was awarded to J. G. White and Company of New York, one of the foremost engineering and financing companies in the United States at the time. The company worked on five continents, “carrying the dynamic principles of U.S. business into lands where U.S. political influence will perhaps never penetrate.”⁴⁷ Examples of their projects included a dam in Abyssinia (Ethiopia), a railroad in South America, and a hydro-electric plant in Italy.

James Gilbert White, the founder of J. G. White and Company, was born circa 1867 in Pennsylvania, the son of a poor preacher. White eventually moved to the West, where he taught physics at the University of Nebraska.⁴⁸ For unexplained reasons, White left teaching and began working in contracting. His reputation grew, and in 1890, he made Manhattan in New York City his base of operations. In 1903, his company was incorporated under Connecticut law with \$3 million in capital stock, of which \$10,000 was selected for use in Indiana.⁴⁹

J. G. White and Company financed numerous endeavors, including electric toll ways, electric light and power plants, gas works, water systems, and other types of infrastructure companies and the company also managed several subsidiary companies. These companies included the Augusta-Aiken Railway and Electric Company in Augusta, Georgia; the Associated Gas and Electric Company in New York; the Eastern Pennsylvania Railway Company; the Helena Light

⁴⁵ Ibid.

⁴⁶ “When Opportunity Knocked,” April 28, 1937.

⁴⁷ “Toll Bridges,” *Time Magazine*, April 23, 1928.

⁴⁸ Ibid.

⁴⁹ State of Indiana, *Certificate of Incorporation for J.G. White and Company, Inc.*, 1903.

and Railway Company in Helena, Montana; the Manila Electric Railroad and Lighting Corporation in the Philippines; the Pacific Railroad of Nicaragua; and the Kentucky Public Service Company.⁵⁰ White's enterprise grew to such an extent that he divided it into two companies, which were incorporated in 1912 under the laws of Connecticut as the J. G. White Management Corporation (a financial and management company) and the J. G. White Engineering Corporation (a design and building company). The J. G. White Engineering Corporation worked on projects such as those seen prior to the company's division, with the addition of street railways, high tension transmissions, and wireless telegraph systems.⁵¹ The company also acted as a purchasing agent for engineering and public utility properties. The company had previous experience working in Indiana; a Department of State Certificate incorporating the J. G. White and Company had been issued on October 21, 1903, allowing the company to work in the state.⁵² When the U.S. 421 Milton-Madison Bridge project began, White was 60-years old, and his son, James Dugald White, served as director of his father's companies.

On March 24, 1928, J. G. White and Company contracted the Longyear Exploration Company of Minneapolis, Minnesota, to locate the bedrock in the vicinity of the proposed bridge.⁵³ The data provided by the Longyear Exploration Company was used to determine the location and potential cost of the bridge. Cost would ultimately govern the fate of the U.S. 421 Milton-Madison Bridge, since the local public authorities in Indiana and Kentucky did not have the money to construct a bridge at common expense and would have to purchase the bridge from the private construction company upon completion, as allowed by the Murphy Toll Bridge Act. Consequently, the J. G. White and Company took on the role of financier of the U.S. 421 Milton-Madison Bridge in addition to being its designer and builder.

J. G. White and Company formed the National Toll Bridge Company in 1928 with the express purpose of financing the construction and operation of new and existing toll bridges. The company issued class A common stock, which immediately funded the construction of three new toll bridges: the bridge over the Ohio River between Milton and Madison, and two bridges over the Missouri River at Hermann and Courtney, Missouri.⁵⁴ White and Company would design, construct, and operate the proposed bridges until the respective states could buy them, which, in the case of the U.S. 421 Milton-Madison Bridge, could occur under the auspices of the Murphy Toll Bridge Act. Using private capital to construct bridges was a common practice at the time. According to the U.S. Bureau of Public Roads, a total of 233 toll bridges were in operation in the country in 1928, of which 191 were owned by private stockholders, and an additional 29 toll bridges were under construction. Only nine of the bridges in operation were funded by public capital.⁵⁵ A total of 163 toll bridges were proposed in 1928, and private capital was to fund 100

⁵⁰ Frederic Nicholas, *McGraw Electric Railway Manual*, (Columbus: McGraw Publishing Company, 1914), 194.

⁵¹ *Ibid.*

⁵² *Certificate of Incorporation*, 1903.

⁵³ "Drillers Get Data for Madison Span," *The Courier Journal* (Louisville, KY), 1928.

⁵⁴ *Ibid.*

⁵⁵ *Ibid.*

of them.⁵⁶ Banking on the knowledge that the state governments lacked the resources to construct new bridges, private investors promoted the use of their capital for numerous reasons: motorists would pay tolls for a shorter trip; local authorities received money, even if only a small amount, from the tolls. In addition, they felt that it was better for engineers in the public realm, rather than the cronies of politicians, to receive the jobs and the profits. They also understood that bridge bond and stock sales provided work and profits for banking houses and bridge bond and stock sales provided people who had disposable income with an investment opportunity. Funding such endeavors was always a risk, as the soundness of the investment in a new toll bridge depended directly on the integrity of the bank that provided those funds.

The plan for the bridge, which was finalized by 1928, indicated that the bridge approach on the Kentucky side of the river would be at the most favorable approach on Milton Street, following the newly constructed Milton Hill Road and running north-south in the extreme west end of Milton. On the Indiana side, Harrison Street was chosen to offer the most favorable approach to the bridge. The Kentucky State Highway Commission, predecessor to the Kentucky Transportation Cabinet, guaranteed Karl Gillman, J. G. White and Company's supervisor of surveying and sounding work, that a hard surface road would be constructed from the Milton Hill Road.⁵⁷

J. G. White and Company opened bidding for the construction of the piers and abutments in early August 1928, despite no approval from the U.S. War Department. Seven companies bid on the project, including Vang Construction out of Maryland; the Dravo Construction Company of Pittsburgh, Pennsylvania; the Foundation Company and the Kansas City Bridge Company of Kansas City, Missouri; the Union Bridge and Construction Company of Kansas City, Missouri; and the S. R. Peterson Company of Pennsylvania.⁵⁸ The goal of J. G. White and Company was to award the contract by August 31, 1928, but the contract was delayed slightly because the U.S. War Department did not grant approval until August 30, 1928. Delays in U.S. War Department approval often resulted in construction delays that ranged from three to 10 years, such as in the Golden Gate Bridge in San Francisco, California, and the Roosevelt Avenue Bridge in Flushing, New York. The J. G. White and Company worked hard to avoid project delays, and on September 4, 1928, they awarded Vang Construction the contract for the construction of the piers and abutments. Almost two months later, on November 22, 1928, the Mt. Vernon Bridge Company was awarded the contract for the steel work.

On September 25, 1928, Attorney Henry C. Black, Bedford, Kentucky, and Madison Mayor Sulzer turned over the first shovel of dirt, indicating construction had begun. Officially, construction on the U.S. 421 Milton-Madison Bridge began on October 1, 1928, when the St. Louis Structural Steel Company began work on the steel caissons for the bridge.⁵⁹ By this time,

⁵⁶ Ibid.

⁵⁷ "Will Build Madison Bridge," *Madison Courier* (Madison, IN), April 11, 1928.

⁵⁸ "Bridge Work Opens Next Month," *Madison Courier* (Madison, IN), August 18, 1928.

⁵⁹ "When Opportunity Knocked," April 28, 1937.

according to the Madison City Council, only the drying up of the Ohio River would prevent the U.S. 421 Milton-Madison Bridge from being constructed.⁶⁰

The feat of construction was as much a marvel as the finished bridge itself. The approaches on the Kentucky and Indiana sides were completed first. Then a 3,000-pound plunger placed one-to-two telephone-pole-sized pillars per minute into the ground to anchor the mixer and the derrick.⁶¹ Constructing the bridge over the water required building a narrow-gauge railway track and barges measuring 12' x 30', called "work flats."⁶² Frames for the piers were constructed on land and pulled by barges to their intended places. These piers would later be filled with concrete and sunk to a foundation on the floor of the river. The foundation for the pier was constructed by a crew of men called "sand hogs," who had cleared the area with compressed air and sent up scraped and washed rock to the top to be placed on the river banks.⁶³ All equipment for placing the piers, including air compressors, steam boilers, and electrical generators, was located on the work flats. The steel beams were erected with the help of a "traveler," a piece of equipment that ran on the railway track and that had a 95' boom. More than 4,000 tons of steel were used in the bridge, and most of the steel work was performed in Madison by local laborers.⁶⁴

By January 1929, work on the bridge was two months ahead of schedule, despite the delay in the U.S. War Department approval. Two piers had been completed, and the other twelve piers were approximately 50' to 75' in the ground but not anchored or sealed.⁶⁵ However, that month all work was suspended because of high water levels, ice, and other handicaps. Work on the bridge resumed in the spring when the water levels were lower. On August 13, 1929, Vang Construction Company poured the final pier, and the Mt. Vernon Bridge Company took over and started building the upper portion of the bridge. The last steel beam was lowered into place on November 17, 1929.

After years of planning, and despite the onset of the Great Depression, the U.S. 421 Milton-Madison Bridge was built at a total cost of \$1,365,101.84. Engineers called it "one of the finest and safest bridges of its kind in the world."⁶⁶ Moreover, construction of the U.S. 421 Milton-Madison Bridge was completed in slightly more than one year, which was quite fast compared to other bridge projects of the day. For example, J. G. White and Company's bridge in Hermann, Missouri, which was being built at the same time as the U.S. 421 Milton-Madison Bridge, took more than three years to complete.

The U.S. 421 Milton-Madison Bridge officially opened on December 20, 1929. It measured 3,181' in length and sat 100' above the lowest water level. Sitting atop concrete piers and

⁶⁰ "U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge to Connect," September 20, 1928.

⁶¹ Ibid.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ "Bridge News," *Madison Courier* (Madison, IN), April 6, 1929.

⁶⁵ "Bridge Work Suspended," *Madison Courier* (Madison, IN), January 1929.

⁶⁶ Graham, "Madison-Milton Bridge 'Absolutely Safe'," December 23, 1967.

abutments were three 150' steel deck truss beams, one 150' through truss span, one 254' through truss span, one 727' through steel span, two 600' through truss steel spans, and one 78' steel plate girder span. A major dedication ceremony was held, at which a ribbon was tied across the bridge at the midway point between the Kentucky and Indiana approaches for the ribbon cutting ceremony.⁶⁷ State and federal representatives from Kentucky and Indiana attended the festivities, along with local officials, official representatives from thirteen communities, and the public. An invitation-only luncheon was held for all of the official representatives invited to the dedication ceremony. Miss Marguerite Pecan was named "Queen of the Bridge," and eighteen young ladies served as her maids of honor for the ceremony. According to local lore, the first person to cross the bridge was an 11-year-old boy on a bicycle.⁶⁸

On December 10, 1939, almost ten years to the date after the completion of the bridge, the Kentucky Department of Highways purchased the U.S. 421 Milton-Madison Bridge by issuing Commonwealth of Kentucky Bridge Revenue Bonds as authorized by the Murphy Toll Bridge Act. The bridge was purchased for \$915,000. Kentucky officials anticipated paying off the bridge through the tolls by 1953, when the bridge revenue bonds reached their maturity date.⁶⁹ The toll for crossing the bridge was 45 cents for drivers; pedestrians paid five cents. This toll was comparable to the ferry rates. On February 1, 1942, William Neal of the Kentucky State Highway Department indicated that the toll rate for trucks over five tons would be reduced from \$1.50 to \$1.10.⁷⁰

The toll house was located at the access point of the northern side of the bridge in Madison, Indiana. According to historic photos, which show the building (demolished in 1949) in the context of the bridge, the toll house was a one-story structure built on a concrete slab surrounded by a concrete curb. The material constituting the walls appears to be brick. The building's north end was square, and the south side bowed out with four additional sides, like half of an octagon. The octagonal sides had 12-light fixed-pane windows, with each light divided by thin wooden muntins; these windows occupied the entire wall. Each window was divided by a mullion decorated as a Doric pilaster. An undecorated cornice surrounded the top of the building wall. The rounded southern wall was protected by a high concrete curb that also had a sign painted with the words, "Stop Toll." The roof was slate shingle with visible flashings and little to no overhang. An interior brick chimney rose from the west side of the building and was capped with a masonry arch.

On November 1, 1947, the U.S. 421 Milton-Madison Bridge was officially "freed" from being a toll bridge. Another dedication ceremony was held, and again officials and local participants

⁶⁷ Historic Madison, Inc. has produced a DVD with archival footage of the dedication ceremony in limited quantities. This video was made from the original nitrate film that since been preserved (please see Footnote #67).

⁶⁸ *1929 The Madison Milton Bridge*, This History Rescue Project, accessed September 2010, www.mjcp.org/historyrescue/timeline/1929-madison-milton-bridge.

⁶⁹ Kentucky Department of Highways, *Program Celebrating the Freeing of the U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge*, (On file at the Madison-Jefferson County Public Library, 1947), 2.

⁷⁰ "One-Third Cut from Toll on Madison-Milton Span," *Madison Courier*, (Madison, IN), January 28, 1942.

congregated to celebrate. The excitement over freeing the bridge resulted in both Milton and Madison sprucing up for the festivities. The bridge was swept; mailboxes were painted from Bedford to Milton; roads from Bedford to Milton, specifically the Milton Hill Road, were patched; yards were groomed; and the Longview Inn at the top of Milton Hill was renovated.⁷¹ Miss June Hereford, honored as Miss Milton, and Miss Lillian Warman, Queen of the Madison Fall Festival, assisted Kentucky Governor Simeon Wells and Indiana Governor Ralph Bates during the ribbon-cutting ceremony. After this ceremony, people headed to the Kiwanis Park in Madison to listen to a local Madison school band and eat a type of stew called burgoo, a regional specialty,⁷² which had been prepared in a large vat in the middle of the park.⁷³

Two years after freeing the bridge, the Kentucky State Highway Department decided to demolish the tollhouse, which had operated as a control house for the bridge lights after tolls were discontinued. Many officials and other residents of the area objected to losing the tollhouse, saying it not only provided a reminder of the former years of the bridge but also helped keep traffic at a slower pace and prevent accidents.⁷⁴ Nevertheless, on January 13, 1949, a crew from the Highway Department garage in Carrollton began demolishing the building. The old concrete was torn out, and new concrete was poured to make a smooth straightaway across the bridge.

The U.S. 421 Milton-Madison Bridge underwent periodic repairs in response to the wear and tear associated with eighty years of use. Calls for a new bridge occurred periodically in the 1980s and 1990s, but engineering studies, including underwater inspections, found that renovation of the bridge was the best alternative. In 2000, a series of engineering studies resulted in another call for a new bridge, and this time, officials pursued the idea. In August 2008, the U.S. 421 Milton-Madison Bridge Project, led by the Kentucky Transportation Cabinet and the Indiana Department of Transportation, began seriously researching options for replacing the deteriorating superstructure. Inspections and tests occurred from January to March 2009 to inspect the general condition of the bridge and to test the concrete piers. The tests showed the bridge had weakened from corrosive rust and cracks, which created a major concern since approximately 9,100 vehicles cross the bridge each day.⁷⁵ The majority of damage was identified on the Indiana side. While the Kentucky Transportation Cabinet and the Indiana Department of Transportation could patch up the bridge, as had been done for the past 20 to 30 years, many officials were concerned about a catastrophic bridge collapse such as the one in Minnesota in 2007 on the Interstate-35 Bridge.⁷⁶

⁷¹ “Reason to Celebrate When Toll Was Lifted,” *Madison Courier* (Madison, IN), October 23, 1947.

⁷² Burgoo consists of local variety vegetables, savory spices, and thickening starch stewed with most any type of meat available, usually smoked for additional flavor. The reliance on whatever meat is most available in a given area and season gives it regional variety and also accounts for the joking nickname “roadkill stew.”

⁷³ Graham, “Madison-Milton Bridge ‘Absolutely Safe’,” December 23, 1967.

⁷⁴ “Old Toll House Is Coming Down,” *Madison Courier*, (Madison, IN), January 25, 1949.

⁷⁵ Brent Schanding and Phyllis McLaughlin, “Weight Limit Set for U.S. 421 U.S. 421 U.S. 421 Milton-Madison Bridge,” *The Trimble Banner*, March 16, 2009.

⁷⁶ *Ibid.*

The previous studies on the structural integrity of the bridge were obsolete by 2009 due to a variety of reasons, the most dominant impact being the extensive renovations performed in 1996 – 1997. Other impacts to the bridge included damage due to weather, chemicals (such as road deicer), and even birds and changes in the project area that impacted proposed alternatives. A final impact to the study of the bridge was not a physical impact, but the nomination and acceptance of downtown Madison as a National Historic Landmark District in 2006, already listed on the National Register of Historic Places, which affected the evaluation of historic resources nearby.⁷⁷ At this time, the need for a new bridge was argued because the existing bridge was functionally obsolete and structurally deficient. The two ten foot wide lanes were defined as functionally obsolete according to the standards identified in *Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials, although the bridge's capacity remained adequate.⁷⁸ The bridge was determined structurally deficient due to the type of steel used for construction and its age. These two issues led to trepidation over the remaining service life of the bridge. Based on new studies, the lifespan of the bridge in its current condition is estimated to be approximately 10 years.⁷⁹

By April 2009, four alternatives from a proposed fourteen were chosen as possibilities for replacing the U.S. 421 Milton-Madison Bridge. The Kentucky Transportation Cabinet and the Indiana Department of Transportation had presented the original fourteen alternatives to the Milton, Kentucky, and Madison, Indiana, communities in the fall of 2008. The four chosen alternatives received the best public response.⁸⁰ These four alternatives included replacing the existing superstructure but utilizing the existing piers; construction of a new bridge at Tiber Creek; construction of a new bridge near Canip Creek; and no action.⁸¹

The Milton and Madison communities were divided, although the majority of support seemed to be for a new bridge. Kentucky and Indiana officials researched grants for the various construction alternatives. The estimate for replacing the existing superstructure on the existing piers was \$131 million, while the estimates for new construction would add an additional \$60 to \$80 million to the cost of the bridge.⁸² By August 2009, state officials determined the most cost-effective and quickest method of dealing with the U.S. 421 Milton-Madison Bridge would be to replace the superstructure but reuse the existing piers. On August 12, 2009, the Kentucky

⁷⁷ Michael Baker, Jr. "Purpose and Need Statement for US 421 Bridge Over the Ohio River Between Milton, KY and Madison, IN," April 2009.

⁷⁸ Ibid.

⁷⁹ Dave Taylor, "Grant Funds Could Put Bridge Replacement on the Fast Track," *The Madison Courier* (Madison, IN), August 19, 2009.

⁸⁰ Phyllis McLaughlin, "Then There Were 4," *The Trimble Banner* (Bedford, KY), April 28, 2009.

⁸¹ Ibid.

⁸² Jeff Moore, "Impact of Bridge Replacement Plan Must Be Considered," *The Madison Courier* (Madison, IN), August 19, 2009.

Transportation Cabinet and the Indiana Department of Transportation officials announced that funding would be sought from the American Recovery and Reinvestment Act for \$100 million.⁸³

The initial plan for the bridge replacement, as decided in 2009, was to remove the existing steel superstructure and replace it with a new superstructure that measure 40' in width with two 12' lanes.⁸⁴ The current U.S. 421 Milton-Madison Bridge has a 20' road deck and two 10' lanes. The majority of existing piers would be reused, although they would be modified to meet current construction and safety standards. Pier 5 would be replaced in its entirety because of structural weakness. Other additions, such as possible pedestrian or bike paths, were under consideration. The design of the bridge would be similar to the current bridge because the residents of two communities preferred the truss-type bridge and because other types of bridges, such as a cable-stay bridge, could not be constructed on the existing piers.⁸⁵ In addition, the replacement of the existing bridge would not require the purchase of land for new rights of way.

In February 2010, the Kentucky Transportation Cabinet and the Indiana Department of Transportation were awarded \$20 million as part of the Transportation Investment Generating Economic Recovery grant program (also known as a TIGER grant), which is a grant program under the American Recovery and Reinvestment Act of 2009. The money is allocated for "shovel ready" infrastructure projects and has a required completion date of December 31, 2012.⁸⁶ U.S. Secretary of Transportation, Ray LaHood, stated that this money was granted not only because of the importance of the bridge to Kentucky and Indiana residents and commerce, but also because of safety concerns and replacement needs.⁸⁷

Initial environmental and cultural resource assessments on the effect of the bridge project were performed by Wilbur Smith Associates of Lexington, Kentucky. The cultural resource assessment determined the project would have an adverse effect on the National Register of Historic Places-eligible bridge. As a result, an MOA was developed by the Federal Highway Administration, the Advisory Council on Historic Preservation, the Kentucky Historic Preservation Office, the Indiana State Historic Preservation Office, the City of Milton, the City of Madison, Kentucky Transportation Cabinet, the Indiana Department of Transportation, and the public. The MOA was signed in February 2010. Upon completion of mitigation stipulations and as the design/build phase begins, Wilbur Smith Associates will relinquish project management to Michael Baker Jr. Inc. of Louisville, Kentucky.

In September 2011, it was announced that a new plan for the bridge placement had been devised that would reduce the cost of the bridge by twenty percent and decrease the amount of time

⁸³ Dave Taylor, "Grant Funds Could Put Bridge Replacement on the Fast Track," *The Madison Courier* (Madison, IN), August 19, 2009.

⁸⁴ Ibid.

⁸⁵ Ibid.

⁸⁶ Phyllis McLaughlin, "State, Federal Officials Commit to Funding Bridge Project," *The Trimble Banner* (Bedford, KY), February 24, 2010; Phyllis McLaughlin, "Bidding Process Starts for Bridge Replacement Project," *The Trimble Banner* (Bedford, KY), June 24, 2010.

⁸⁷ McLaughlin, "State, Federal Officials Commit," February 24, 2010.

needed to close the bridge.⁸⁸ Indiana Governor Mitch Daniels announced on September 28, 2011 that Walsh Construction Company of LaPorte, Indiana and its teaming partners Buckland & Taylor, Ltd, of North Vancouver, British Columbia, Canada, and Burgess & Niple Engineers of Columbus, Ohio, proposed new construction that would cost \$103 million versus the estimated \$131 million dollars and could only result in ten days of bridge closure versus 365. The new plan involves constructing the new truss on temporary piers in which traffic could be temporarily re-routed over while the original piers are widened and strengthened and the original truss is demolished.⁸⁹ The new truss would then be put in place using a “truss sliding” method in which the new truss would be slid onto the renovated and rehabilitated original permanent piers.

⁸⁸ Indiana Department of Transportation, “Daniels Announces Creative Solution to Building New Madison-Milton Bridge,” September 2011.

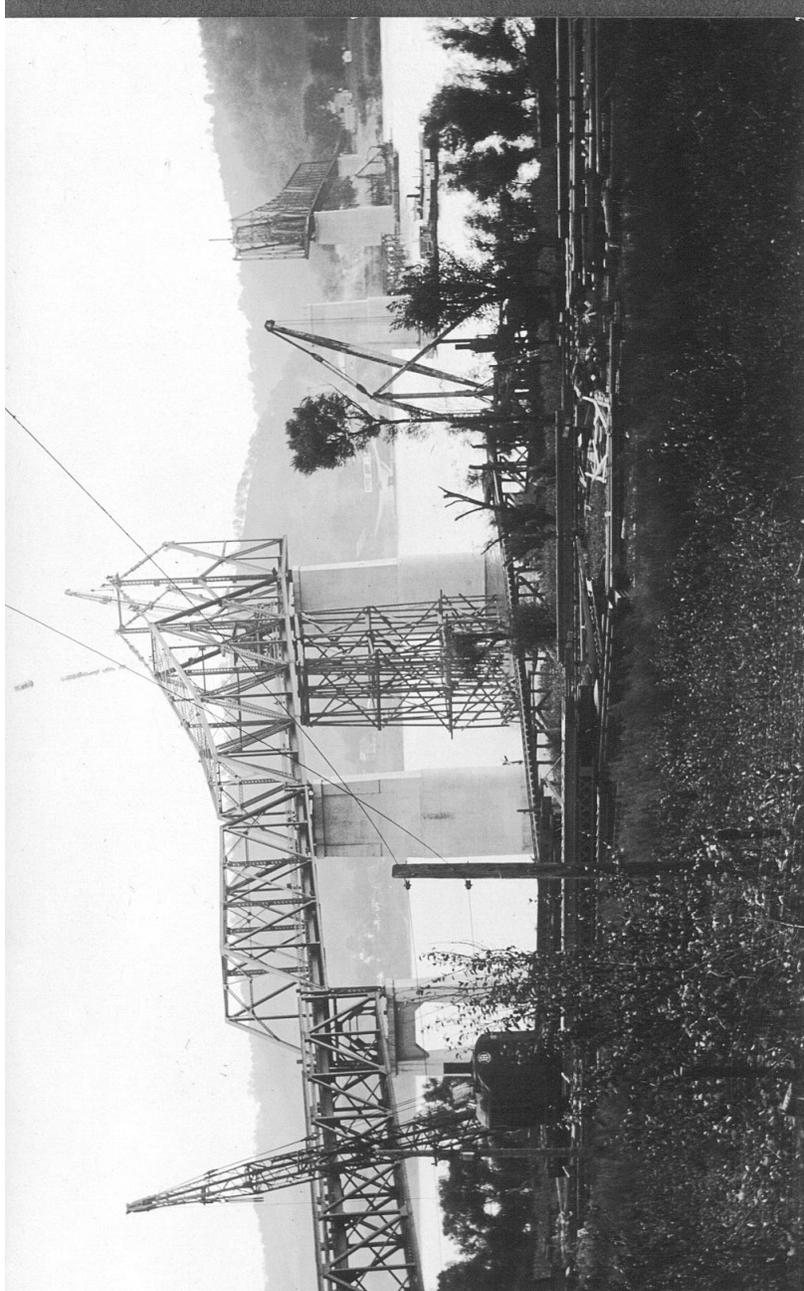
⁸⁹ Buckland & Taylor, Ltd. “Milton-Madison Bridge: B&T’s Innovative “Truss Sliding” Method Reduces Bridge Closure During Construction From 365 Days to Just 10 Days,” September 28, 2011.



Aerial photograph of the U.S. 421 Milton-Madison Bridge in 2005.
Image courtesy of Wilbur Smith Associates.



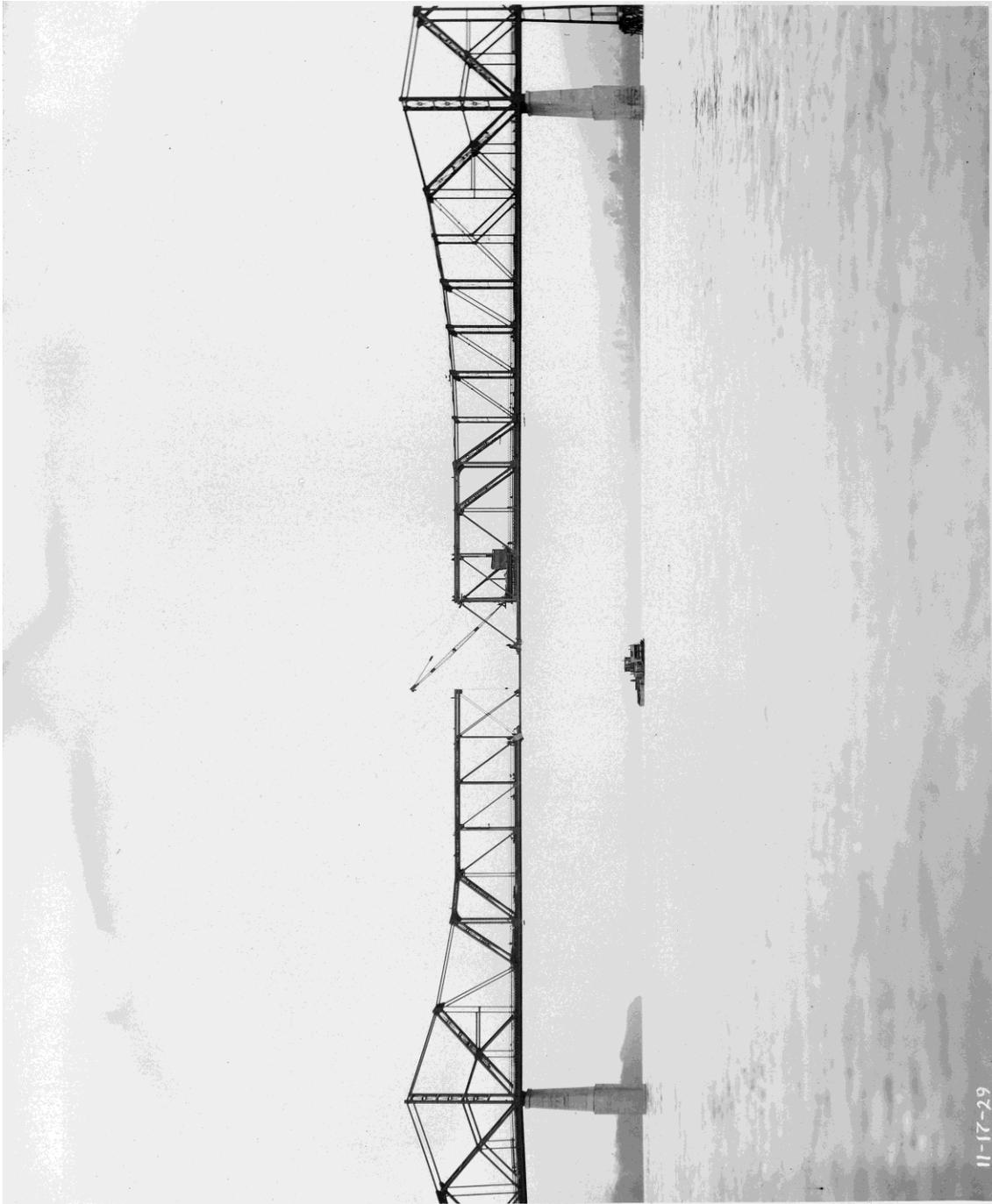
Early phase construction in 1928.
Photo courtesy of the Jefferson County Historical Society.



Approaches are complete and main span construction has begun in 1929.
Photo courtesy of the Jefferson County Historical Society.



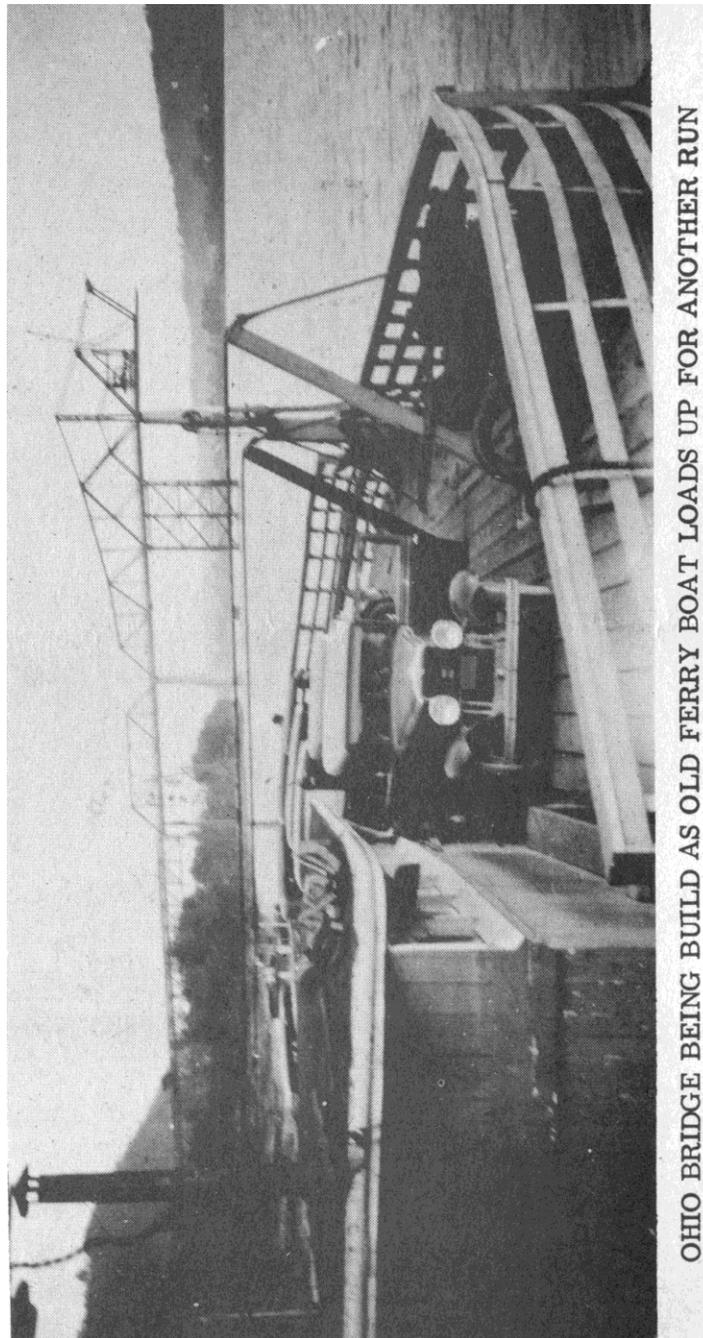
Further construction of the bridge in 1929.
Photo courtesy of the Jefferson County Historical Society.



Bridge is almost complete in November 1929.
Photo courtesy of the Jefferson County Historical Society.



The tollhouse, circa 1930.
Photo courtesy of the Jefferson County Historical Society.



The ferry in front of the bridge, which is under construction in 1929.
Photo courtesy of the Jefferson County Historical Society.



The completed bridge in 1929 as seen north from Madison looking downriver.
Photo courtesy of the Jefferson County Historical Society.



Postcard of the completed bridge circa 1929.
Photo courtesy of the Jefferson County Historical Society.



The U.S. 421 Milton-Madison Bridge during the 1937 flood, when the approach on the Milton side was completely under water.
Photo courtesy of the Jefferson County Historical Society.



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Cultural Resources Administrator
Office of Environmental Services
Indiana Department of Transportation
100 N. Senate Ave., IGCN, Room N642
Indianapolis, IN 46204

March 4, 2010

Mr. Peterson,

In regards to the original design plans for the Milton-Madison Bridge over the Ohio River, the Kentucky Transportation Cabinet has found the original design plans as being accurate when comparing them to what is in the field. We have used these plans for recent repairs and provided these plans to consulting engineers for inspection purposes and for preparing additional repair plans.

These plans along with the rehabilitation plans from 1996 (drawing #23948) should be considered as accurate 'as-builts' for further structural purposes.

Sincerely,

A handwritten signature in cursive script that reads "David W. Steele".

David W. Steele, P.E.
Transportation Engineer
Branch Manager for Bridge Preservation



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Letter from Kentucky Transportation Cabinet regarding the accuracy of the U.S. 421 Milton-Madison Bridge design plans.

Part III. Sources of Information

A. Original Architectural Drawings

Kentucky Transportation Cabinet, Frankfort, Kentucky

B. General Repositories

Kentucky State Historic Preservation Office

Kentucky Transportation Cabinet, Frankfort, Kentucky

Kentucky State Library and Archives, Frankfort, Kentucky

Kentucky History Center, Frankfort, Kentucky

Trimble County Public Library, Bedford, Kentucky

Louisville Free Public Library, Louisville, Kentucky

Indiana State Historic Preservation Office - Division of Historic Preservation and Archaeology

Indiana Department of Transportation, Indianapolis, Indiana

Indiana State Library and Archives, Indianapolis, Indiana

Madison-Jefferson County Public Library, Madison, Indiana

Jefferson County Historical Society, Madison, Indiana

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Part IV. Project Information:

Historic American Engineering Record documentation was prepared on the U.S. 421 Milton-Madison Bridge in accordance with consultation between the Indiana Department of Transportation and the National Park Service.

Mathia N. Scherer, historian/architectural historian, AMEC Earth & Environmental, Inc., 690 Commonwealth Center, 11003 Bluegrass Parkway, Louisville, Kentucky 40299 (502-267-0700) and Hillori L. Schenker, architectural historian, AMEC Earth & Environmental, Inc., 108 Esplanade Avenue, Suite 310, Lexington, Kentucky, 40507 (859-231-0070), under contract to the Indiana Department of Transportation, prepared the narrative report and assisted with photographing the site in June 2010. Research was completed in June and July 2010.

Jeff Bates, architectural photographer, under contract to Hardlines Design Company, 4608 Indianola Avenue, Columbus, Ohio 43214 (614-784-8733), assisted by Maria Gissendanner Burkett, architectural historian, Hardlines Design Company, 4608 Indianola Avenue, Columbus, Ohio 43214 (614-784-8733), under contract to AMEC Earth & Environmental, Inc., 690 Commonwealth Center, 11003 Bluegrass Parkway, Louisville, Kentucky 40299 (502-267-0700), under contract to the Indiana Department of Transportation, photographed the site in June 2010.