NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

211

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "X" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name **Indiana State Highway Bridge 46-11-1316**

other names/site number Bowling Bridge 021-105-30027

2. Location

street & number State Road 46 over Eel River ☐ N/A ☐ not for publication

city or town Bowling Green ☒ vicinity

state Indiana code IN county Clay code 021 zip code 47833

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☐ statewide ☒ locally. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title — Date 1/25/00

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title — Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☒ entered in the National Register.
☐ See continuation sheet.
☐ determined eligible for the National Register
☐ See continuation sheet.
☐ determined not eligible for the National Register
☐ removed from the National Register
☐ other, (explain:) _____

Signature of the Keeper — Date of Action

Edson H. Beall 3/15/00

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ☐ private
- ☐ public-local
- ☒ public-State
- ☐ public-Federal

Category of Property
(Check only one box)

- ☐ building
- ☐ district
- ☐ site
- ☒ structure
- ☐ object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
0	0	buildings
0	0	sites
1	0	structures
0	0	objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related (vehicular)

Current Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions)

OTHER: Parker through truss

Materials
(Enter categories from instructions)

foundation

walls

roof

other METAL
CONCRETE

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

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- ☒ **A** Property is associated with events that have made a significant contriibution to the broad patterns of our history.
- ☐ **B** Property is associated with the lives of persons significant in our past.
- ☐ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☐ **B** removed from its original location.
- ☐ **C** a birthplace or grave.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property.
- ☐ **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

TRANSPORTATION

Period of Significance

1935-1949

Significant Dates

1939

Significant Person
(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Vincennes Bridge Company

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographic References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # _____
- ☐ recorded by Historic American Engineering Record # _____

Primary location of additional data:

- ☒ State Historic Preservation Office
- ☐ Other State agency
- ☐ Federal agency
- ☒ Local government
- ☐ University
- ☐ Other

Name of repository:

Indiana State Highway Bridge 46-11-1316
Name of Property

Clay IN
County and State

10. Geographical Data

Acreage of Property Less than 1 acre

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	16	498240	4359210
2			
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title John Warner

organization _____ date 6-1-99

street & number 5018 Broadway Street telephone (317) 283-5450

city or town Indianapolis state IN zip code 46205

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white** photographs of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name State of Indiana Dept. of Transportation- Operations Division #W478

street & number 402 W. Washington St. telephone 317-232-3150

city or town Indianapolis state IN zip code 46204

National Register of Historic Places
Continuation Sheet – State Bridge # 46-11-1316

Section 7 Description

State bridge 46-11-1316 is oriented generally east to west and carries State Road 46 over the Eel River at Bowling Green, Indiana. Positioned on standard concrete abutments and a concrete pier, the two 198' spans are riveted, Parker through trusses with a 24' roadway. The vertical curve of 398' is atypical for the standard plan. Each truss has 11- 18' panels bounded by verticals fabricated from a pair of laced 10" channels, except for the second from the end. The upper chord is fabricated from a pair of 15" channels and each member of the chord, except for the central panel's, is differently sloped (not parallel) from the horizontal plane of the lower chord (photo 1). Between the trusses at the upper chord location, substantial latticed strut bracing provides protection against stress induced by sway from either high winds or vehicle passage. Diagonal sets are composed of two pairs of 4"X3.5" angles (L-shaped steel members) reinforced and fastened together with battens in the outermost panels; in the second and third, a pair of 7" X 4" angles; and in the fourth a pair of 3.5" X 3" angles. A pair of 4.5" X 3" angles forms the counter sets in the three most central panels (photos 1 and 2).

The 33" floor I-beams are riveted to the verticals above a lower chord fabricated from two pair of 6"X 4" angles joined by riveted battens and reinforced along the sides with riveted plates (photo2). Heavy I-stringers, eight in all, combined with the floor beams carry the concrete deck. Crossed angles provide lower sway bracing members (photo 2).

Each span of the bridge has a fixed and expansion end; the fixed ends for both spans are anchored on the central pier. The expansion ends rest on the bridge seats on elliptical bearing points attached to the endpost with pins (photo 3). The approaches to the both ends of the bridge have concrete foundations and flared, paneled, and coped concrete rails (photo 4).

Section 8 Significance

State bridge 46-11-1316 is significant under Criterion A for its association with events in the settlement and economic development of Clay County, Indiana. The bridge is an example of an important, revised, third-generation, Indiana State Highway Commission bridge that replaced many of the late 19th century wooden structures inherited from county commissioners in the late 1910s. The bridge retains significant integrity and is structurally noteworthy for the vertical curve of the trusses; the handrails have been replaced. In addition, the bridge, erected on the site of the first major bridge to span the Eel River, is the work of a major Indiana bridge-building firm, the Vincennes Bridge Company. The positioning of the bridge, 500' upstream from the historic crossing site to Bowling Green, reminds us of the importance to commerce of all-weather roads and bridges in the development of the county.

National Register of Historic Places Continuation Sheet – State Bridge # 46-11-1316

Clay County, Indiana, named for the noted statesman Henry Clay, was originally a part of a land cession from the Delaware, Potawatomie, and Miami Indians in 1809. This elevated portion of the Wabash Valley was heavily forested with burr oak, ash, beech, elm, black walnut, and gum trees when the General William H. Harrison marched through the area in 1812 on his way to Fort Harrison on the Wabash from Vincennes, Indiana, on the lower Wabash River. With Harrison's command was a private soldier by the name of Samuel Rizley, who liked the land around Bowling Green so much he later returned to become one of the county's earliest white settlers.

The topography of the Eel River Basin proved to be one major factor in developing the transportation and industrial history of the county. At the time of settlement, the county contained as many as thirty streams, large and small, and the Eel River that traverses the county from Cass Township in the northeast, meanders through Washington, Sugar Ridge, Harrison, Perry, and Lewis Townships and exits the county in the southeast corner. With a very small change of elevation throughout its length, the river tended to flood at regular intervals and created an obstacle to travel even at its lowest depth in the dry months of the year. The Eel River, along with its major tributary, Birch Creek that drains much of the center of the county, often confounded personal travel and transportation of goods by early settlers. Birch Creek gained early historic significance in the county as a feeder stream to the Wabash and Erie Canal. On a positive note, streams like Jordan Creek, situated in some places in rugged terrain, provided enough fall to power mills, both saw and flouring. Another topographical factor in county development was the presence of a number of sloughs and marshy areas that once drained and controlled made accessible fertile land suitable for farming.

After 1816 and Indiana's statehood was a fact, the General Assembly and other private citizens sought ways to make Indiana a place attractive to settlers and entrepreneurs searching for opportunities. Indiana, like the other states carved from the Northwest Territory, lacked even a rudimentary infrastructure that would spur the influx of settlement. More importantly, an infrastructure to serve as the means to import goods these new citizens would need to live and export excess production that would result from the burgeoning economy. Debate on a solution continued until in 1827, the US Congress offered Indiana a substantial land grant to build a canal, the Wabash and Erie Canal, that when completed would connect Lake Erie with the Ohio River via the Wabash River. The canal would impact the history of Indiana and Clay County.

In 1832, construction on the canal began at Fort Wayne, Indiana, and progressed fitfully through the next two decades and reached Evansville, Indiana, in the early 1850s. Part of the canal system was the Cross-cut Canal that was to connect the Wabash and Erie with the never-constructed Central Canal in the vicinity of Worthington in Greene County. The Cross-cut Canal traversed the south west quadrant of Clay County and accounts for the names of well-known county historic assets/ events such as Feeder Dam Bridge, Aqueduct or Towpath Bridge, Towpath Road, and the Reservoir War of 1855. The Wabash and Erie Canal only operated over its full length of 459 miles for approximately a decade, but its short existence belies its importance in the growth of the Wabash River Valley and the State of Indiana.

Water transportation was not the only element of infrastructure developing in the county in the 1850s. The first railroad survey for the Terre Haute & Richmond Railroad was made in 1849. In 1850, construction of the rails began with work commencing from both ends of the line – Indianapolis and Terre Haute – simultaneously. By 1852, daily freight and passenger trains were crossing the county. By 1872, railroad tracks from the Terre Haute & Cincinnati Railroad and the Brazil branch of the Evansville & Indianapolis Railroad also crisscrossed the county.

Starting with privately-financed/built turnpikes and continuing through the latter decades of the 19th century, Clay County made steady progress in improving its ground system of transportation. Private individuals like David Thomas, who started and operated a ferry across the Eel River west of Bowling Green for almost 50 years, provided a service to the casual traveler, the farmer going to market, and the wagons carrying coal from the small mines in the county.

The 1870s and 1880s in Clay County witnessed many changes. The extensive coal reserves in the county were identified early in the development of the county. From initial estimates, the coal area was found to encompass roughly 300 square miles in the south half of the county. Its positive economic potential for the county was obvious to many but one source defined a problem that could thwart progress because, "for want of suitable transportation ... only a small portion of it [coal reserves] ... can be made available for mining purposes." While railroads would eventually haul the majority of the coal mined in the county, mines not near a railhead or those earliest mines were dependent on wagon transportation to get their coal to the consumers. For example, the pig iron furnaces around Brazil would have ceased to function without adequate supplies of coal.

The need to transport agricultural products to market also spurred development of a more all-weather infrastructure. Clay County's farmers were hard at work to raise more corn and wheat to move to market as grain or as flour processed in some of the local flouring mills. The 790,000 bushels of corn produced in the county in the 1880s nearly doubled to 1,346,160 bushels in the 1890s; a significant achievement but without purpose unless the grain reached market. Wheat, another county-grown grain, increased from 165, 600 bushels in the 1880s to 267, 590 bushels in the 1890s; another admirable achievement. County officials harkened to the needs of the taxable public and moved forward to resolve transportation issues.

As population grew and production of agricultural items and coal increased in the post Civil War decades, county officials and citizens realized that without good roads and all-weather stream crossings real limits to economic success existed in the region. Around 1868, the county commissioners took a major step in resolving some stream crossing problems when they directed construction of a covered wooden bridge over the Eel River west of Bowling Green. Built by the firm of Rarick & Black the bridge cost $12,000 to complete. The two-span Burr arch bridge was bypassed in 1934/35 by the new bridge #46-11-1316A. The old wooden bridge was later demolished in the early 1950s. Next, around 1871, the commissioners engaged contractors Ernst Muehler and David Notter, a firm that operated in Clay County during the 1870s and 1880s, to build a

bridge across Jordan Creek north of Bowling Green. The firm built many of the stonework abutments on Clay County bridges of that era. It might be worthy to note that Bowling Green was the county seat until 1877, when the seat of government was moved to the city of Brazil.

Once committed to furnishing permanent all-weather stream crossings, the county commissioners moved rapidly to contract with Muehler & McNamar for the Poland covered wooden bridge over Eel River for $7,200 (1872), and with William Graber and Levi Fair for the Hooker's Point bridge for $6,300 (1876). Later destroyed in 1883 by an act of nature, this bridge was replaced by an iron bridge from the Canton Iron Bridge Company, Canton, Ohio, at a cost of $5,120. Muehler & Notter furnished the stone abutments for $600.00. Muehler & Notter also built the first Feeder Dam Bridge over the Eel River, a wooden structure (1878) at a cost of $8,700. The first iron bridges built over Birch Creek were built by Muehler & Notter on the Bowling Green & Brazil Road (1878), the Birch Creek Reservoir bridge near Saline City (1880), and the abutments for the aqueduct bridge (1880).

In the late 1910s, the Indiana State Highway Commission (ISHC) began to assume responsibility for the construction and maintenance of certain roads and bridges previously administered by county governments. One major program was the replacement of the timber truss bridges for which the state assumed responsibility vice the counties. The state survey of the Bowling Green bridge site was conducted in the spring of 1931. In field notes drafted by the survey chief-of-party, local residents provided historical accounts of past high water levels and other pertinent flood plain information. Local resident Charles Woods remarked that " the present bridge was built in the 1871 and the west abutment was placed on a mat of logs." Another longtime resident, Hayes Miles, commented that high water in 1875, "reached up to the hub board on the Jordan Creek Bridge," which was about one-half mile upstream. These comments were collected to assist in determining average high water levels, approximately 571.1' at the bridge site, and the new bridge deck elevation (elevation 573.08'). Also identified during these testimonies were any special engineering considerations needed to mitigate the effect of flood conditions.

In 1934, the Vincennes Bridge Company of Vincennes, Indiana won the contract to build this two span structure for the sum of $63,058.13, which was about $7,000 below the state engineer's estimate. The new bridge was completed in the spring of 1935.

Still active, the bridge and its site are symbols of a number of significant events in the history of Clay County. First, the building of the covered bridge acknowledged the need for overcoming natural barriers to settlement, agricultural growth, and economic development and the role of county commissioners (local authority) in accomplishing this action. Secondly, the present bridge symbolizes its importance in the establishment of all-weather infrastructure and the evolution of the bridge builder's technology. Thirdly, it remains as an example of the ever-decreasing number of steel truss bridges that once dotted the landscape and if not protected in the future, will disappear as have many of the 19th century truss bridges.

Section 9 Bibliography

Blanchard, Charles, ed. *Counties of Clay and Owen, Indiana, Historical and Biographical Atlas.* (Chicago, Ill.: F. A. Battey & Company, 1884).

Edwards, Llewellyn N. *A Record of the History and Evolution of Early American Bridges.* (Orono, Me.: University Press, 1959.

Hool, George A. and W. S. Kinne, eds. *Steel and Timber Structures.* (New York: McGraw-Hill Book Company, 1942).

Indiana Department of Transportation. *Field Survey Notebooks.* Bridge 42-11-3101, Contract # 1586 -A-B and Bridge 46-11-1316, Contract #684.

Travis, William. *History of Clay County, Indiana. Vols. 1&2.* (Chicago, Ill.: Lewis Publishing Company, 1909).

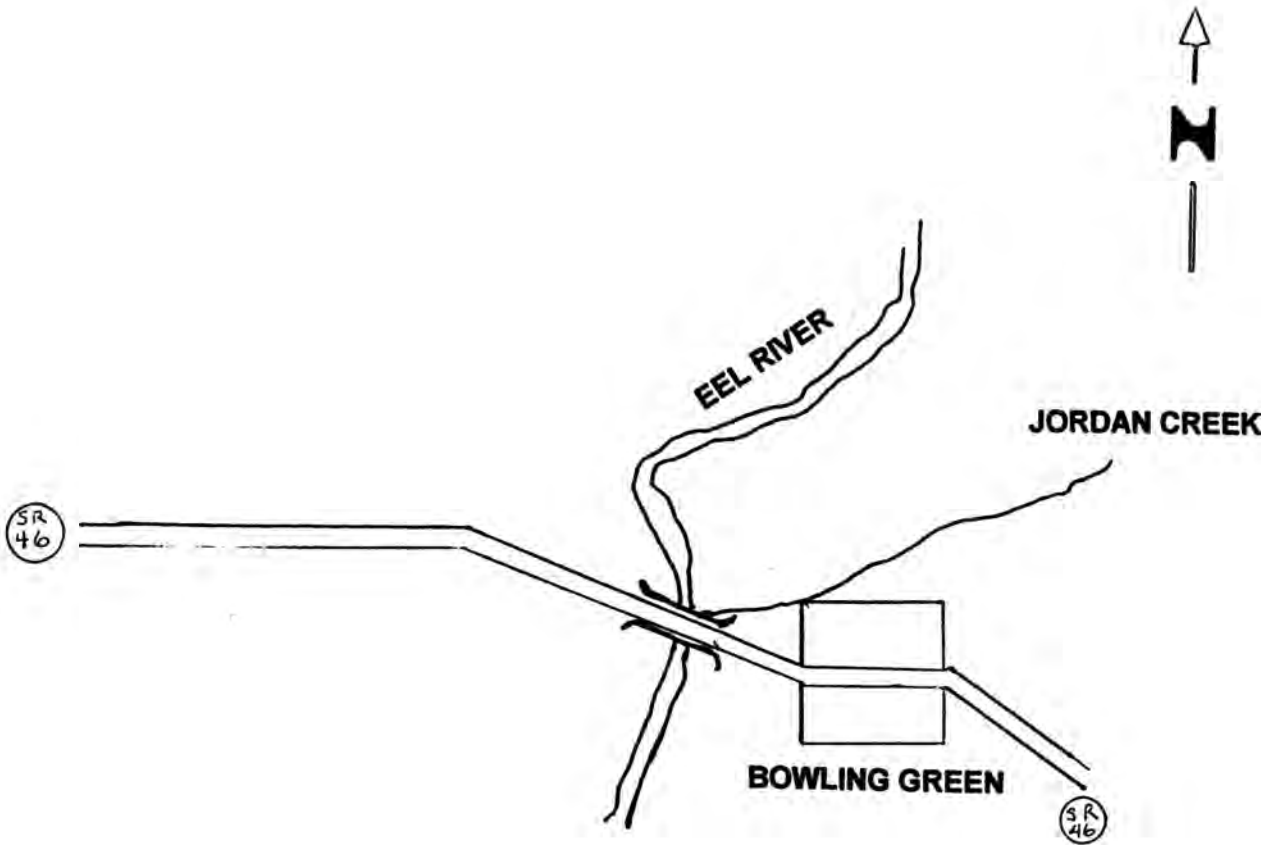
Section 10 Geographical Data

Verbal Boundary Description

From a point 60 feet east and 15 feet north of the northeast endpost of the bridge; proceed south across SR 46 to a point 60 feet east and 15 feet south of the southeast endpost of the bridge; turn west and proceed across the river to a point 105 feet west and 15 feet south of the southwest endpost of the bridge; turn north and proceed across SR 46 to a point 105 feet west and 15 feet north of the northwest endpost of the bridge; turn east and proceed across the river to close on the start point.

Boundary Justification

The boundary as described includes the approaches, wingwalls, abutments, piers, and spans of the bridge and its immediate environs.



BRIDGE 46-11-1316
CLAY COUNTY, INDIANA
NE ¼, NE ¼, S 24, T 11N, R 5W

Not to Scale

BRIDGE 46-11-1316, CLAY COUNTY, INDIANA

JOHN WARNER

22 MARCH 1999

402 W. WASHINGTON STREET, INDIANAPOLIS, IN

SOUTH SIDE TRUSSES; LOOKING WEST/NORTHWEST

#1

BRIDGE 46-11-1316, CLAY COUNTY, INDIANA

JOHN WARNER

22 MARCH 1999

402 W. WASHINGTON STREET, INDIANAPOLIS, IN

WEST SPAN-NORTH SIDE AND CENTER PIER; LOOKING WEST

#2

BRIDGE 46-11-1316, CLAY COUNTY, INDIANA

JOHN WARNIER

22 MARCH 1999

402 W. WASHINGTON STREET, INDIANAPOLIS, IN

BEARING POINTS, EAST ABUTMENT – SOUTH SIDE

#3


22

BRIDGE 46-11-1316 ; CLAY COUNTY, INDIANA

JOHN WARNER

22 MARCH 1999

402 W. WASHINGTON STREET, INDIANAPOLIS, IN

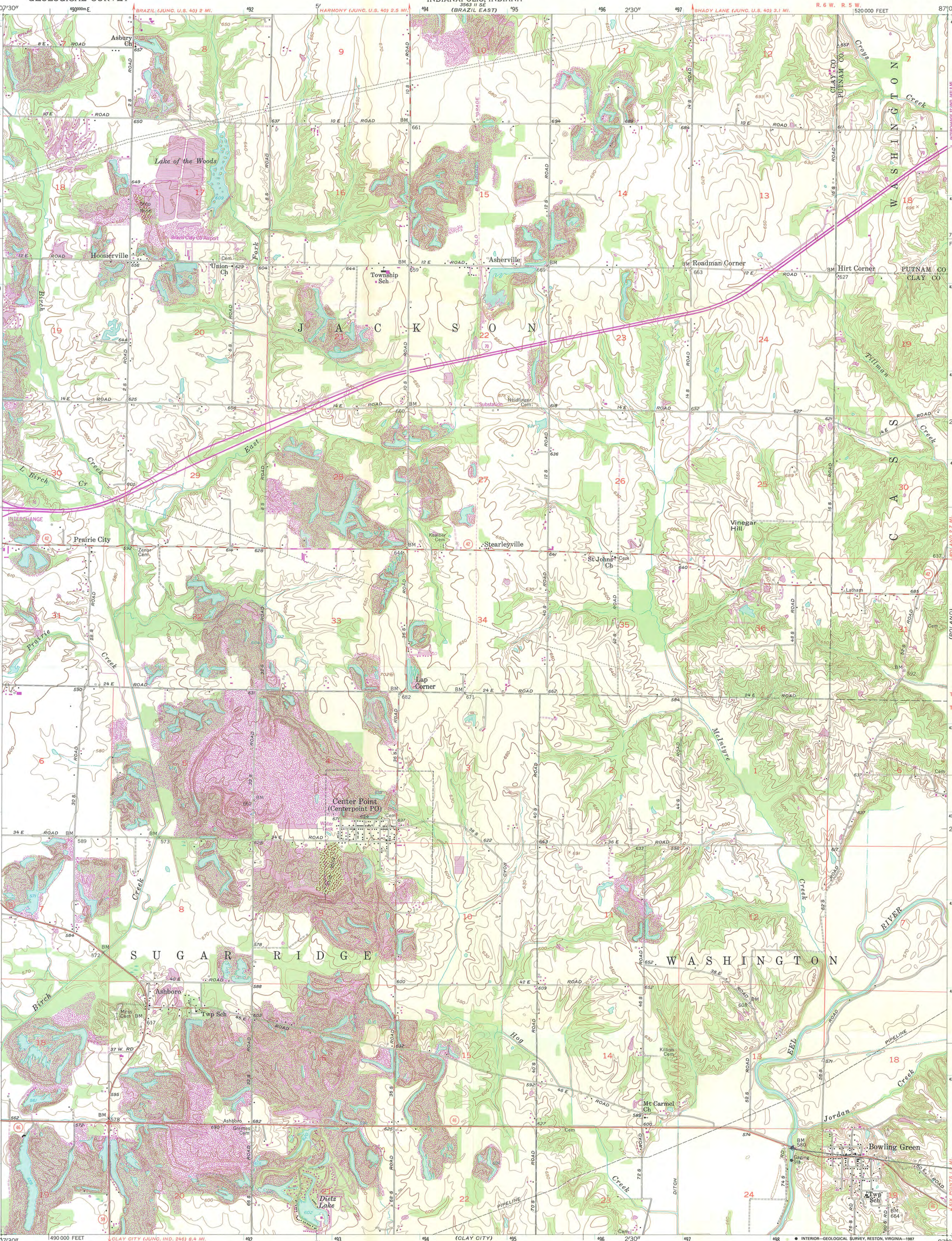
WEST APPROACH TO BRIDGE

#4

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
INDIANAPOLIS, INDIANA

CENTER POINT QUADRANGLE
INDIANA
7.5 MINUTE SERIES (TOPOGRAPHIC)



3563 II SW (BRAZIL WEST)
3563 II SE (BRAZIL EAST)
3663 III SW (REELSVILLE)
3562 I NW (STAUNTON)
3662 IV NW (POLAND)
3562 I SW (SALINE CITY)
3562 I SE (CLAY CITY)
3662 IV SW (PATRICKSBURG)
BRAZIL (JUNC. U.S. 40) 2 MI.
HARMONY (JUNC. U.S. 40) 2.5 MI.
SHADY LANE (JUNC. U.S. 40) 3.1 MI.
R. 6 W. R. 5 W.
T. 12 N.
T. 11 N.
Asbury Ch
Lake of the Woods
Strip Mine
Brazil Clay Co Airport
Hoosierville
Union Ch
Township Sch
Asherville
Roadman Corner
Hirt Corner
PUTNAM CO
CLAY CO
J A C K S O N
W A S H I N G T O N
C A S S
Croys Creek
Tillman Creek
Birch Creek
L Birch Cr
East Fork
Neidlinger Cem
Substation
INTERCHANGE
Prairie City
Zenor Cem
Kealber Cem
Stearleyville
St Johns Ch
Vinegar Hill
Latham
Prairie Creek
Lap Corner
McIntyre Creek
Center Point (Centerpoint PO)
Water Tank
S U G A R   R I D G E
Ashboro
Moss Cem
Twp Sch
Ashboro Gremes Cem
Dietz Lake
Hog Creek
Killion Cem
Mt Carmel Ch
EEL RIVER
Jordan Creek
PIPELINE
DITCH
Bowling Green
Gaging Sta
INTERCHANGE 7 (TERRE HAUTE) 15 MI.
INTERCHANGE 11 (IND. 46) 9 MI.
INTERCHANGE 37 (IND. 243) 9 MI.
INTERCHANGE 80 (INDIANAPOLIS) 55 MI.
POLAND 2.7 MI.
MOORESVILLE 45 MI.
BRAZIL (JUNC. U.S. 40) 8.8 MI.
TERRE HAUTE 19 MI.
RILEY 9.2 MI.
CLAY CITY (JUNC. IND. 246) 8.4 MI.
LINTON 30 MI.
SIX POINTS 1.2 MI.
SPENCER 16 MI.
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1987

Mapped, edited, and published by the Geological Survey

Control by USGS, NOS/NOAA, USCE, and Indiana Flood Control and Water Resources Commission

Topography by photogrammetric methods from aerial photographs taken 1956. Field checked 1957

Polyconic projection. 10,000-foot grid ticks based on Indiana coordinate system, west zone
1000-meter Universal Transverse Mercator grid ticks, zone 16, shown in blue
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 1 meter south and 1 meter east as shown by dashed corner ticks

UTM GRID AND 1986 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND INDIANA DEPARTMENT OF NATURAL RESOURCES, INDIANAPOLIS, INDIANA 46204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

Revisions shown in purple and woodland compiled in cooperation with State of Indiana agencies from aerial photographs taken 1983 and other sources. This information not field checked
Map edited 1986

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route
Interstate Route

CENTER POINT, IND.
39087-D1-TF-024
1957
PHOTOREVISED 1986
DMA 3562 I NE–SERIES V851

INDIANA STATE HIGHWAY
BRIDGE #1316A
CLAY COUNTY, INDIANA
ZONE 16
EASTING 498240
NORTHING 4359210

National Register of Historic Places

Note to the record

Additional Documentation: 2015

NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

RECEIVED 2280 FINAL
AUG - 7 2015
Nat. Register of Historic Places
National Park Service

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historic name Indiana State Highway Bridge 46-11-1316

other names/site number Bowling Bridge 021-105-30027

2. Location

street & number State Road 46 over Eel River N/A ☐ not for publication

city or town Bowling Green ☒ vicinity

state Indiana code IN county Clay code 021 zip code 47833

3. State/Federal Agency Certification

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Signature of certifying official/Title — Date 1/25/00

State or Federal agency and bureau

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4. National Park Service Certification

I hereby certify that the property is: — Signature of the Keeper — Date of Action

☐ entered in the National Register.
☐ See continuation sheet.
☐ determined eligible for the National Register
☐ See continuation sheet.
☐ determined not eligible for the National Register
☐ removed from the National Register
☐ other, (explain:) _____

Indiana State Highway Bridge 46-11-1316 — Name of Property

Clay IN — County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ☐ private
- ☐ public-local
- ☒ public-State
- ☐ public-Federal

Category of Property
(Check only one box)

- ☐ building
- ☐ district
- ☐ site
- ☒ structure
- ☐ object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
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1	0	structures
0	0	objects
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related (vehicular)

Current Functions
(Enter categories from instructions)

TRANSPORTATION: Road-Related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions)

OTHER: Parker through truss

Materials
(Enter categories from instructions)

foundation

walls

roof

other METAL
CONCRETE

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

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Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

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Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☐ **B** removed from its original location.
- ☐ **C** a birthplace or grave.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property.
- ☐ **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

TRANSPORTATION

Period of Significance

1935-1949

Significant Dates

1939

Significant Person
(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Vincennes Bridge Company

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographic References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # _____
- ☐ recorded by Historic American Engineering Record # _____

Primary location of additional data:

- ☒ State Historic Preservation Office
- ☐ Other State agency
- ☐ Federal agency
- ☒ Local government
- ☐ University
- ☐ Other

Name of repository:

Indiana State Highway Bridge 46-11-1316
Name of Property

Clay IN
County and State

10. Geographical Data

Acreage of Property Less than 1 acre

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	16	498240	4359210
2			
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title John Warner

organization _____ date 6-1-99

street & number 5018 Broadway Street telephone (317) 283-5450

city or town Indianapolis state IN zip code 46205

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white** photographs of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name State of Indiana Dept. of Transportation- Operations Division #W478

street & number 402 W. Washington St. telephone 317-232-3150

city or town Indianapolis state IN zip code 46204

National Register of Historic Places Continuation Sheet – State Bridge # 46-11-1316

Section 7 Description

State bridge 46-11-1316 is oriented generally east to west and carries State Road 46 over the Eel River at Bowling Green, Indiana. Positioned on standard concrete abutments and a concrete pier, the two 198' spans are riveted, Parker through trusses with a 24' roadway. The vertical curve of 398' is atypical for the standard plan. Each truss has 11- 18' panels bounded by verticals fabricated from a pair of laced 10" channels, except for the second from the end. The upper chord is fabricated from a pair of 15" channels and each member of the chord, except for the central panel's, is differently sloped (not parallel) from the horizontal plane of the lower chord (photo 1). Between the trusses at the upper chord location, substantial latticed strut bracing provides protection against stress induced by sway from either high winds or vehicle passage. Diagonal sets are composed of two pairs of 4"X3.5" angles (L-shaped steel members) reinforced and fastened together with battens in the outermost panels; in the second and third, a pair of 7" X 4" angles; and in the fourth a pair of 3.5" X 3" angles. A pair of 4.5" X 3" angles forms the counter sets in the three most central panels (photos 1 and 2).

The 33" floor I-beams are riveted to the verticals above a lower chord fabricated from two pair of 6"X 4" angles joined by riveted battens and reinforced along the sides with riveted plates (photo2). Heavy I-stringers, eight in all, combined with the floor beams carry the concrete deck. Crossed angles provide lower sway bracing members (photo 2).

Each span of the bridge has a fixed and expansion end; the fixed ends for both spans are anchored on the central pier. The expansion ends rest on the bridge seats on elliptical bearing points attached to the endpost with pins (photo 3). The approaches to the both ends of the bridge have concrete foundations and flared, paneled, and coped concrete rails (photo 4).

Section 8 Significance

State bridge 46-11-1316 is significant under Criterion A for its association with events in the settlement and economic development of Clay County, Indiana. The bridge is an example of an important, revised, third-generation, Indiana State Highway Commission bridge that replaced many of the late 19th century wooden structures inherited from county commissioners in the late 1910s. The bridge retains significant integrity and is structurally noteworthy for the vertical curve of the trusses; the handrails have been replaced. In addition, the bridge, erected on the site of the first major bridge to span the Eel River, is the work of a major Indiana bridge-building firm, the Vincennes Bridge Company. The positioning of the bridge, 500' upstream from the historic crossing site to Bowling Green, reminds us of the importance to commerce of all-weather roads and bridges in the development of the county.

National Register of Historic Places Continuation Sheet – State Bridge # 46-11-1316

Clay County, Indiana, named for the noted statesman Henry Clay, was originally a part of a land cession from the Delaware, Potawatomie, and Miami Indians in 1809. This elevated portion of the Wabash Valley was heavily forested with burr oak, ash, beech, elm, black walnut, and gum trees when the General William H. Harrison marched through the area in 1812 on his way to Fort Harrison on the Wabash from Vincennes, Indiana, on the lower Wabash River. With Harrison's command was a private soldier by the name of Samuel Rizley, who liked the land around Bowling Green so much he later returned to become one of the county's earliest white settlers.

The topography of the Eel River Basin proved to be one major factor in developing the transportation and industrial history of the county. At the time of settlement, the county contained as many as thirty streams, large and small, and the Eel River that traverses the county from Cass Township in the northeast, meanders through Washington, Sugar Ridge, Harrison, Perry, and Lewis Townships and exits the county in the southeast corner. With a very small change of elevation throughout its length, the river tended to flood at regular intervals and created an obstacle to travel even at its lowest depth in the dry months of the year. The Eel River, along with its major tributary, Birch Creek that drains much of the center of the county, often confounded personal travel and transportation of goods by early settlers. Birch Creek gained early historic significance in the county as a feeder stream to the Wabash and Erie Canal. On a positive note, streams like Jordan Creek, situated in some places in rugged terrain, provided enough fall to power mills, both saw and flouring. Another topographical factor in county development was the presence of a number of sloughs and marshy areas that once drained and controlled made accessible fertile land suitable for farming.

After 1816 and Indiana's statehood was a fact, the General Assembly and other private citizens sought ways to make Indiana a place attractive to settlers and entrepreneurs searching for opportunities. Indiana, like the other states carved from the Northwest Territory, lacked even a rudimentary infrastructure that would spur the influx of settlement. More importantly, an infrastructure to serve as the means to import goods these new citizens would need to live and export excess production that would result from the burgeoning economy. Debate on a solution continued until in 1827, the US Congress offered Indiana a substantial land grant to build a canal, the Wabash and Erie Canal, that when completed would connect Lake Erie with the Ohio River via the Wabash River. The canal would impact the history of Indiana and Clay County.

In 1832, construction on the canal began at Fort Wayne, Indiana, and progressed fitfully through the next two decades and reached Evansville, Indiana, in the early 1850s. Part of the canal system was the Cross-cut Canal that was to connect the Wabash and Erie with the never-constructed Central Canal in the vicinity of Worthington in Greene County. The Cross-cut Canal traversed the south west quadrant of Clay County and accounts for the names of well-known county historic assets/ events such as Feeder Dam Bridge, Aqueduct or Towpath Bridge, Towpath Road, and the Reservoir War of 1855. The Wabash and Erie Canal only operated over its full length of 459 miles for approximately a decade, but its short existence belies its importance in the growth of the Wabash River Valley and the State of Indiana.

Water transportation was not the only element of infrastructure developing in the county in the 1850s. The first railroad survey for the Terre Haute & Richmond Railroad was made in 1849. In 1850, construction of the rails began with work commencing from both ends of the line – Indianapolis and Terre Haute – simultaneously. By 1852, daily freight and passenger trains were crossing the county. By 1872, railroad tracks from the Terre Haute & Cincinnati Railroad and the Brazil branch of the Evansville & Indianapolis Railroad also crisscrossed the county.

Starting with privately-financed/built turnpikes and continuing through the latter decades of the 19th century, Clay County made steady progress in improving its ground system of transportation. Private individuals like David Thomas, who started and operated a ferry across the Eel River west of Bowling Green for almost 50 years, provided a service to the casual traveler, the farmer going to market, and the wagons carrying coal from the small mines in the county.

The 1870s and 1880s in Clay County witnessed many changes. The extensive coal reserves in the county were identified early in the development of the county. From initial estimates, the coal area was found to encompass roughly 300 square miles in the south half of the county. Its positive economic potential for the county was obvious to many but one source defined a problem that could thwart progress because, "for want of suitable transportation ... only a small portion of it [coal reserves] ... can be made available for mining purposes." While railroads would eventually haul the majority of the coal mined in the county, mines not near a railhead or those earliest mines were dependent on wagon transportation to get their coal to the consumers. For example, the pig iron furnaces around Brazil would have ceased to function without adequate supplies of coal.

The need to transport agricultural products to market also spurred development of a more all-weather infrastructure. Clay County's farmers were hard at work to raise more corn and wheat to move to market as grain or as flour processed in some of the local flouring mills. The 790,000 bushels of corn produced in the county in the 1880s nearly doubled to 1,346,160 bushels in the 1890s; a significant achievement but without purpose unless the grain reached market. Wheat, another county-grown grain, increased from 165, 600 bushels in the 1880s to 267, 590 bushels in the 1890s; another admirable achievement. County officials harkened to the needs of the taxable public and moved forward to resolve transportation issues.

As population grew and production of agricultural items and coal increased in the post Civil War decades, county officials and citizens realized that without good roads and all-weather stream crossings real limits to economic success existed in the region. Around 1868, the county commissioners took a major step in resolving some stream crossing problems when they directed construction of a covered wooden bridge over the Eel River west of Bowling Green. Built by the firm of Rarick & Black the bridge cost $12,000 to complete. The two-span Burr arch bridge was bypassed in 1934/35 by the new bridge #46-11-1316A. The old wooden bridge was later demolished in the early 1950s. Next, around 1871, the commissioners engaged contractors Ernst Muehler and David Notter, a firm that operated in Clay County during the 1870s and 1880s, to build a

bridge across Jordan Creek north of Bowling Green. The firm built many of the stonework abutments on Clay County bridges of that era. It might be worthy to note that Bowling Green was the county seat until 1877, when the seat of government was moved to the city of Brazil.

Once committed to furnishing permanent all-weather stream crossings, the county commissioners moved rapidly to contract with Muehler & McNamar for the Poland covered wooden bridge over Eel River for $7,200 (1872), and with William Graber and Levi Fair for the Hooker's Point bridge for $6,300 (1876). Later destroyed in 1883 by an act of nature, this bridge was replaced by an iron bridge from the Canton Iron Bridge Company, Canton, Ohio, at a cost of $5,120. Muehler & Notter furnished the stone abutments for $600.00. Muehler & Notter also built the first Feeder Dam Bridge over the Eel River, a wooden structure (1878) at a cost of $8,700. The first iron bridges built over Birch Creek were built by Muehler & Notter on the Bowling Green & Brazil Road (1878), the Birch Creek Reservoir bridge near Saline City (1880), and the abutments for the aqueduct bridge (1880).

In the late 1910s, the Indiana State Highway Commission (ISHC) began to assume responsibility for the construction and maintenance of certain roads and bridges previously administered by county governments. One major program was the replacement of the timber truss bridges for which the state assumed responsibility vice the counties. The state survey of the Bowling Green bridge site was conducted in the spring of 1931. In field notes drafted by the survey chief-of-party, local residents provided historical accounts of past high water levels and other pertinent flood plain information. Local resident Charles Woods remarked that " the present bridge was built in the 1871 and the west abutment was placed on a mat of logs." Another longtime resident, Hayes Miles, commented that high water in 1875, "reached up to the hub board on the Jordan Creek Bridge," which was about one-half mile upstream. These comments were collected to assist in determining average high water levels, approximately 571.1' at the bridge site, and the new bridge deck elevation (elevation 573.08'). Also identified during these testimonies were any special engineering considerations needed to mitigate the effect of flood conditions.

In 1934, the Vincennes Bridge Company of Vincennes, Indiana won the contract to build this two span structure for the sum of $63,058.13, which was about $7,000 below the state engineer's estimate. The new bridge was completed in the spring of 1935.

Still active, the bridge and its site are symbols of a number of significant events in the history of Clay County. First, the building of the covered bridge acknowledged the need for overcoming natural barriers to settlement, agricultural growth, and economic development and the role of county commissioners (local authority) in accomplishing this action. Secondly, the present bridge symbolizes its importance in the establishment of all-weather infrastructure and the evolution of the bridge builder's technology. Thirdly, it remains as an example of the ever-decreasing number of steel truss bridges that once dotted the landscape and if not protected in the future, will disappear as have many of the 19th century truss bridges.

Section 9 Bibliography

Blanchard, Charles, ed. *Counties of Clay and Owen, Indiana, Historical and Biographical Atlas.* (Chicago, Ill.: F. A. Battey & Company, 1884).

Edwards, Llewellyn N. *A Record of the History and Evolution of Early American Bridges.* (Orono, Me.: University Press, 1959.

Hool, George A. and W. S. Kinne, eds. *Steel and Timber Structures.* (New York: McGraw-Hill Book Company, 1942).

Indiana Department of Transportation. *Field Survey Notebooks.* Bridge 42-11-3101, Contract # 1586 -A-B and Bridge 46-11-1316, Contract #684.

Travis, William. *History of Clay County, Indiana. Vols. 1&2.* (Chicago, Ill.: Lewis Publishing Company, 1909).

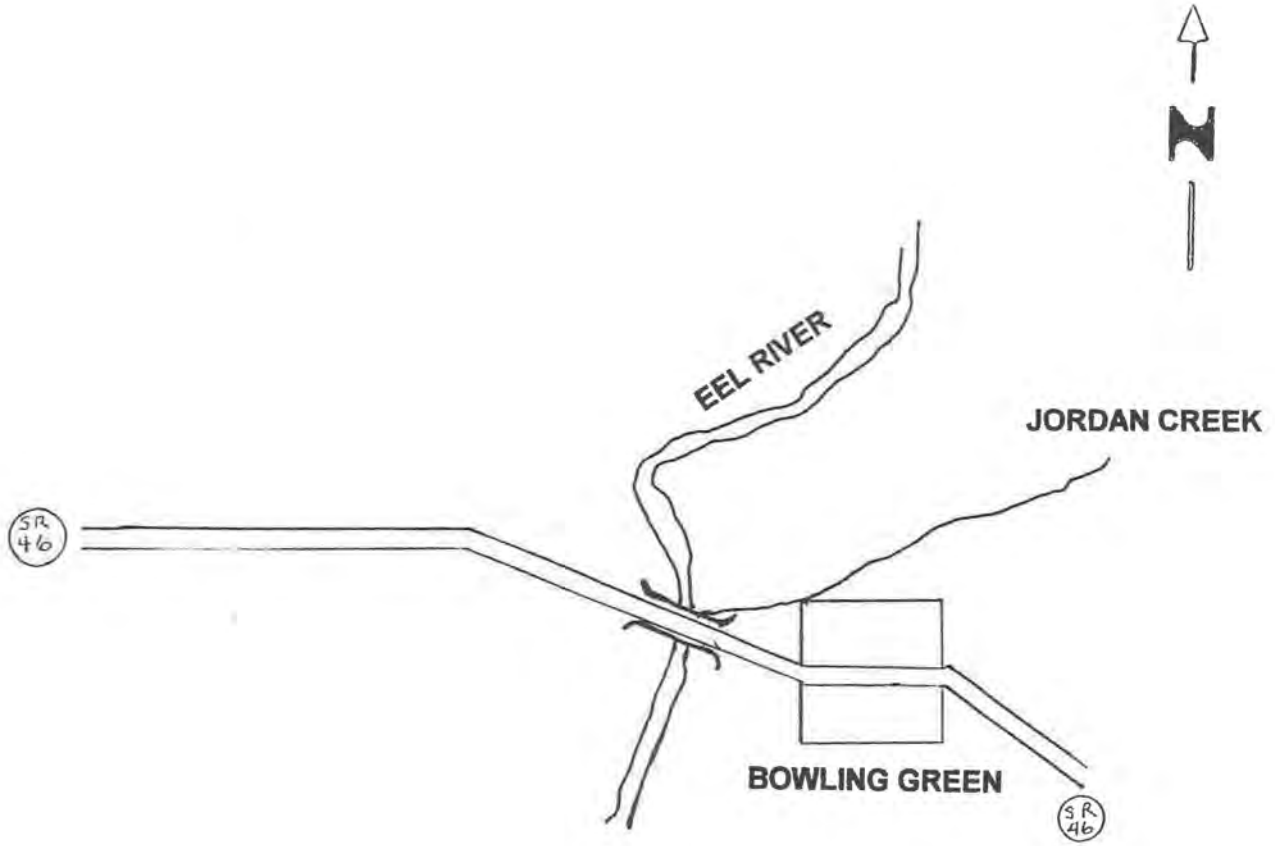
Section 10 Geographical Data

Verbal Boundary Description

From a point 60 feet east and 15 feet north of the northeast endpost of the bridge; proceed south across SR 46 to a point 60 feet east and 15 feet south of the southeast endpost of the bridge; turn west and proceed across the river to a point 105 feet west and 15 feet south of the southwest endpost of the bridge; turn north and proceed across SR 46 to a point 105 feet west and 15 feet north of the northwest endpost of the bridge; turn east and proceed across the river to close on the start point.

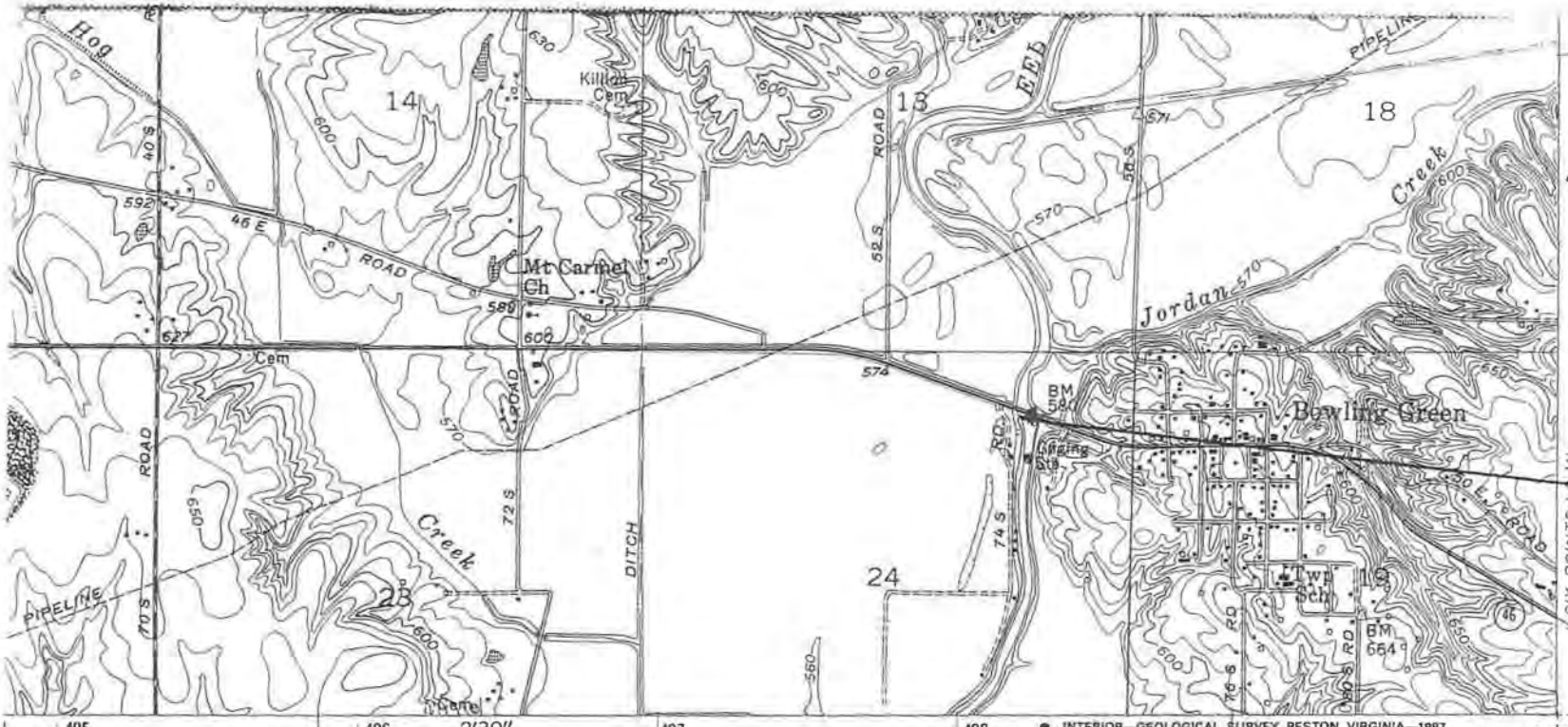
Boundary Justification

The boundary as described includes the approaches, wingwalls, abutments, piers, and spans of the bridge and its immediate environs.



BRIDGE 46-11-1316
CLAY COUNTY, INDIANA
NE ¼, NE ¼, S 24, T 11N, R 5W

Not to Scale



INDIANA STATE HIGHWAY
BRIDGE #1316A
CLAY COUNTY, INDIANA
ZONE 16
EASTING 498240
NORTHING 4359210

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1987

R. 6 W. R. 5 W.

(PATRICKSBURG)
3662 IV SW

30

1 MILE

4000 5000 6000 7000 FEET

1 KILOMETER

10 FEET
DATUM OF 1929

ROAD CLASSIFICATION

Heavy-duty
Medium-duty
Light-duty
Unimproved dirt

State Route
Interstate Route

INDIANA

QUADRANGLE LOCATION

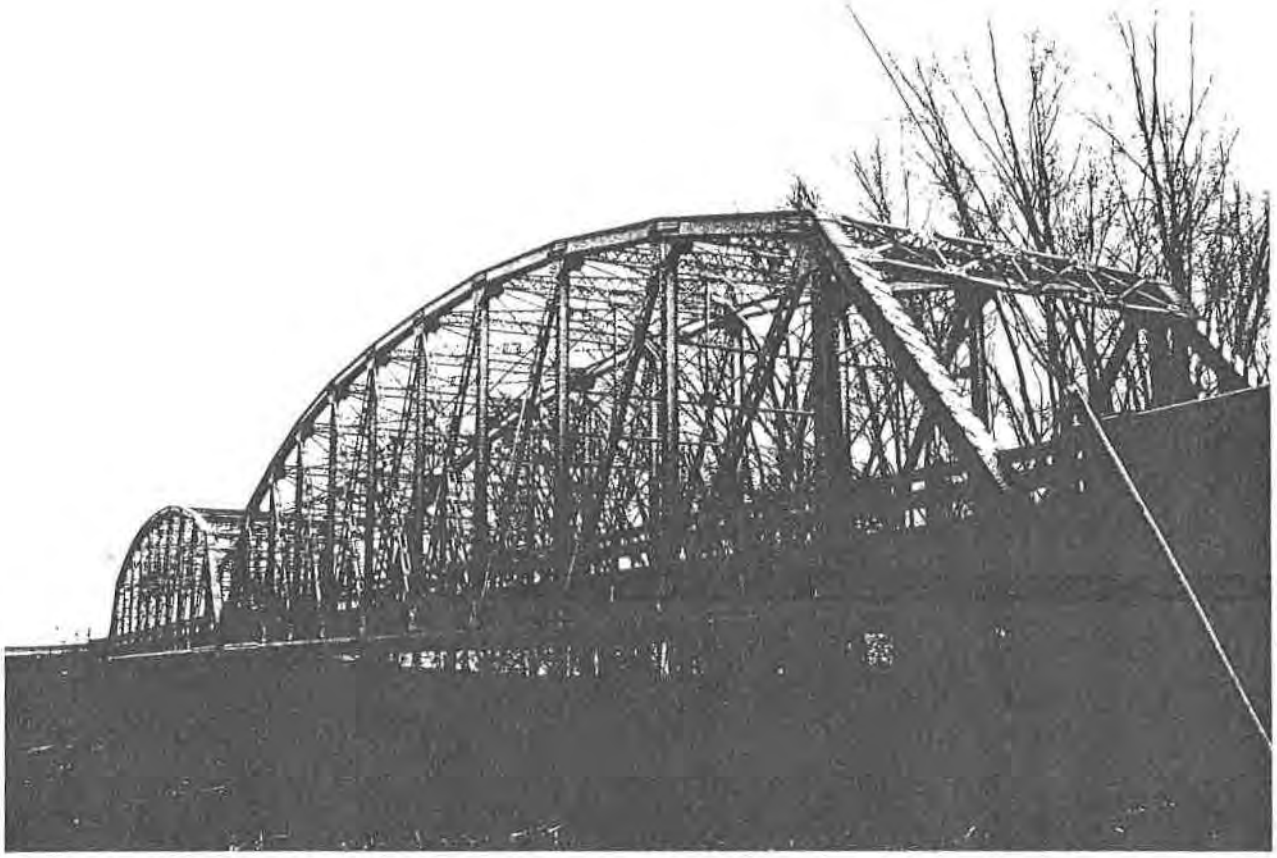
MAP ACCURACY STANDARDS
OGICAL SURVEY
ESTON, VIRGINIA 22092
OURCES, INDIANAPOLIS, INDIANA 46204
SYMBOLS IS AVAILABLE ON REQUEST

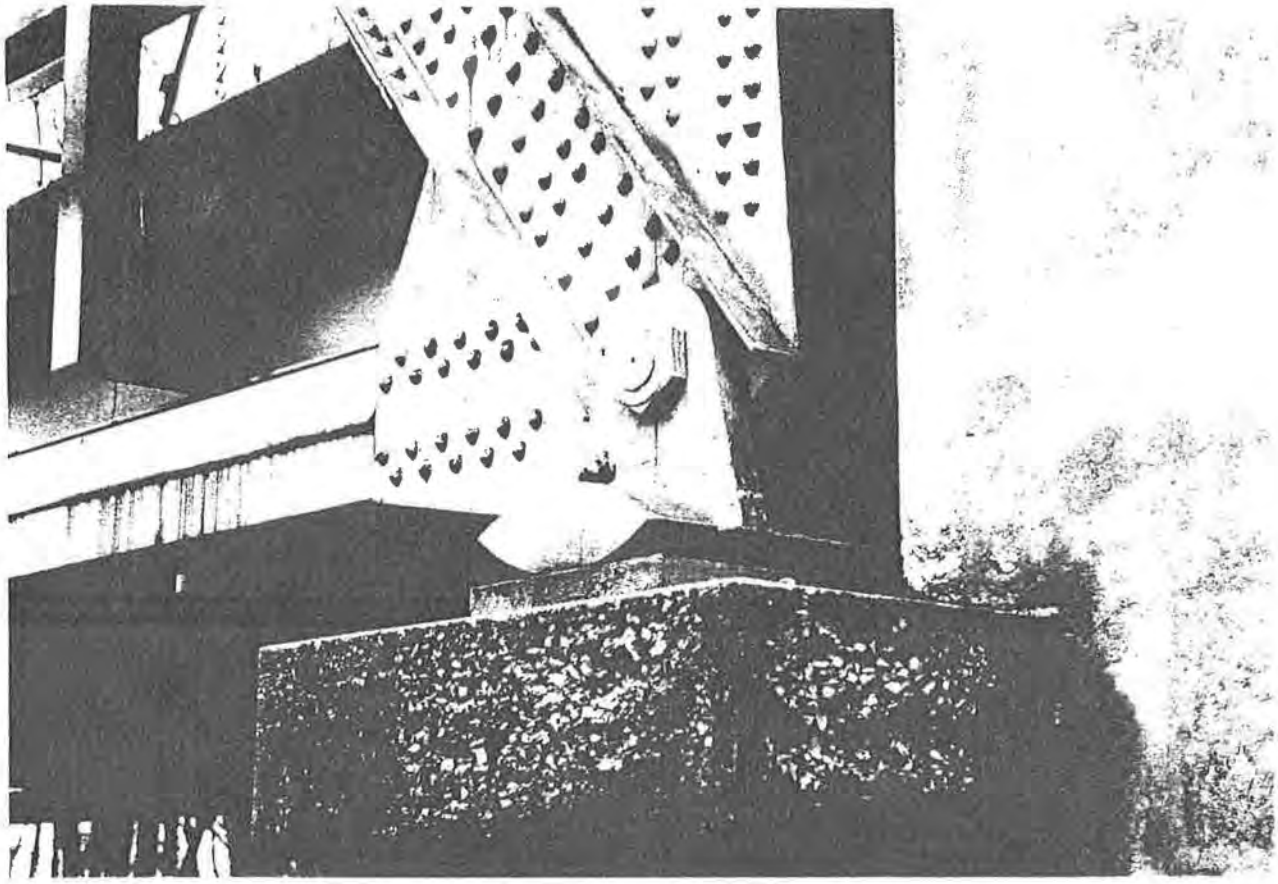
Revisions shown in purple and woodland compiled in cooperation with State of Indiana agencies from aerial photographs taken 1983 and other sources. This information not field checked
Map edited 1986

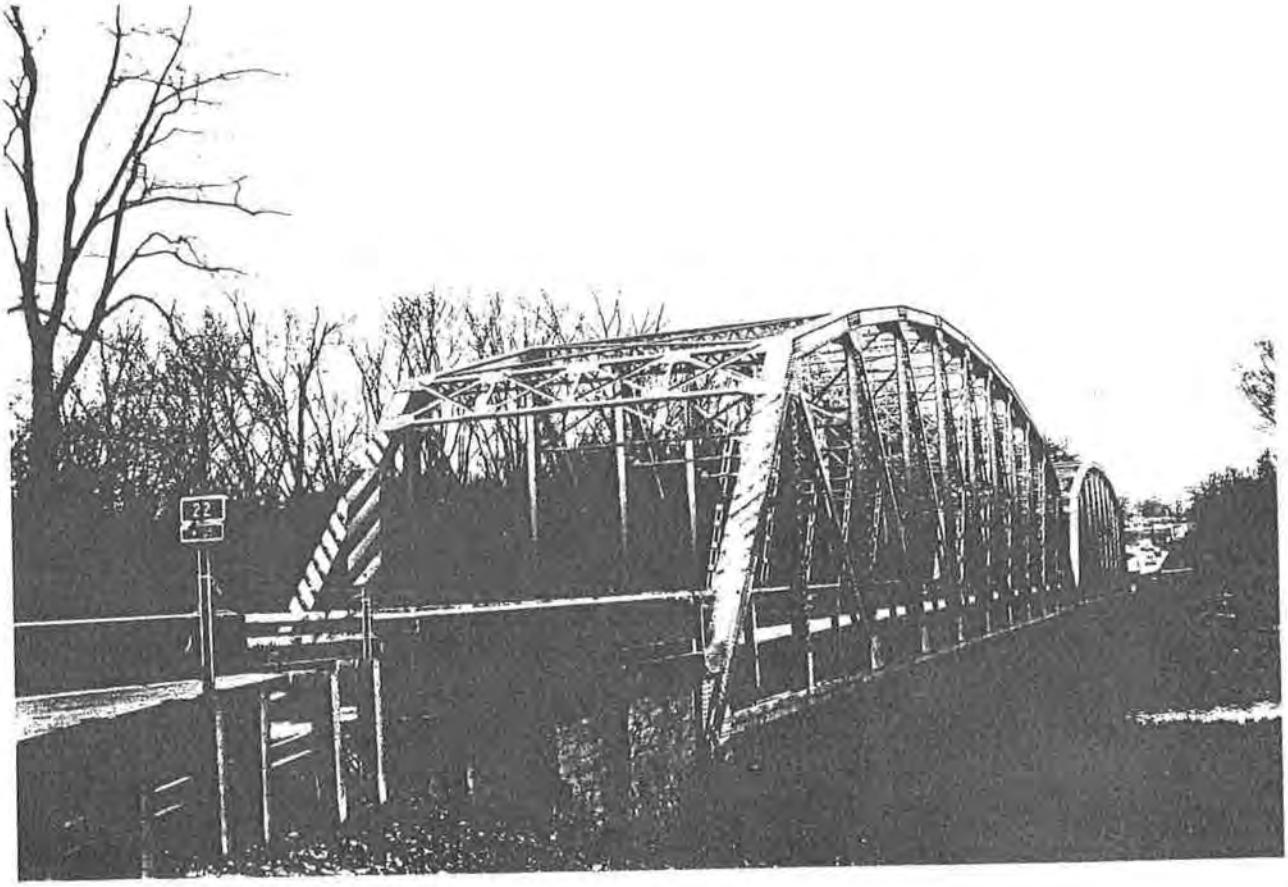
CENTER POINT, IND.

39087-D1-TF-024

1957
PHOTOREVISED 1986
DMA 3562 I NE-SERIES V851






22

Section 8 Significance

Statement of Significance Summary Paragraph

State Bridge No. 046-11-01316C is eligible for the National Register of Historic Places under Criterion C, at the state level, as a multiple-span example of an important, revised, third-generation Indiana State Highway Commission (ISHC) standard plan. The bridge is the longer example of the two remaining Parker through trusses in Clay County. It is also an excellent example of one of the few remaining works of a major Indiana bridge-building firm, the Vincennes Bridge Company. The bridge demonstrates distinctive characteristics of a type, period or method of construction and it represents the work of a master bridge builder. Bridge No. 046-11-01316C demonstrates the ISHC's ability to modify standardized plans to meet the needs of a specific location and it appears to be one of only four remaining examples of an ISHC-designed and Vincennes Bridge Company-constructed Parker through truss still in use on an Indiana state highway.

Narrative Statement of Significance

Bridge No. 046-11-01316C was designed and built in the midst of the Great Depression. It was a time when, despite many people experiencing great hardships and poverty across the nation, road building continued. Sustained work on America's highways was due, in part, to a growing obsession with the automobile. One Hoosier historian notes that in the decade leading up to the Great Depression, one car existed in Indiana for every four residents.[1] During the Depression, Hoosier automobile registrations did not decline very much, and automobile fuel consumption stayed at pre-Depression levels with a rapid increase in the late 1930s. This fervor for motorized transportation, coupled with President Franklin Delano Roosevelt's New Deal programs to put people back to work, resulted in improvements to roadways during the Depression era.[2] Across the country, from 1930 to 1940, the amount of surfaced roadways nearly doubled from 694,000 miles to 1,367,000 miles.[3]

The ISHC utilized federal money from a variety of programs to continue road building during the Depression. In 1932, it created a three-part approach for managing federal relief programs:

(1) adding local miles to the state system—almost 1,500 miles were added
(2) doing more contract construction, and
(3) creating day-labor projects.[4]

Design plans for Bridge No. 046-11-01316C indicate that it was part of "P.W.A. [Public Works Administration] Project No. 255."[5] The PWA was created soon after President Roosevelt took office and it distributed nearly $6 billion for construction projects in the 1930s on a 30 (federal)/70 (local) match basis. From March 1933 to September 1936, the timeframe in which this bridge was built, the PWA aided in construction of 60,361 miles of roads and 2,641 grade-crossing structures across the nation.[6]

Many roads and bridge crossings in Indiana, such as SR 46 in this area, were improved because of their upgrade from local road status to state highway status. As the ISHC obtained new

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[1] James H. Madison, *The Indiana Way* (Bloomington: Indiana University Press, 1986), 268.
[2] Madison, 268-269.
[3] M & H Architecture, *Indiana Historic Bridges Historic Context Study, 1830s to 1965* (Madison, WI: Mead and Hunt, Inc., 2007), 31. Prepared for the Indiana Department of Transportation. Available for download at the following URL: http://www.in.gov/indot/2531.htm.
[4] M&H Architecture, Inc., *Indiana Historic Bridges Historic Context Study*, 33.
[5] Indiana State Highway Commission, *Plans for Bridges of Spans Over 20 Feet for Proposed State Highway P.W.A. Project No.255 Section B, State Road No. 46 Section C & D.* November 17, 1933.
[6] M&H Architecture, Inc., *Indiana Historic Bridges Historic Context Study*, 31-32.

jurisdiction and responsibility for more local roadways each year, the need for maintenance and new construction projects continued to grow.

Although SR 46 was a route present on state highway maps from 1927 to 1929 from the Indiana-Ohio state line westward to the town of Spencer in Owen County, that is where the roadway stopped.[7] The ISHC's annual report from 1930 stated that the following roadway had been taken into the system on September 25, 1930: SR 46 – From Terre Haute to Spencer; 40.82 miles.[8] Additionally, the State Highway map for 1930 shows a route – identified as a continuation of SR 46 – going from Spencer through Bowling Green in Clay County to Terre Haute in Vigo County as an "authorized/proposed addition."[9] The 1931 map shows the road from Spencer to the Clay-Vigo County line as an "intermediate type," likely gravel or stone with some sort of surface treatment. From the Clay-Vigo County line to Terre Haute the road is designated as a "high" type of roadway, one that is composed of concrete or a bituminous material.[10]

The survey work by the ISHC for the Bridge No. 046-11-01316C site over the Eel River was conducted from December 3 to December 8, 1931.[11] Much of the recorded information deals with flooding at the site and the recorded high water marks over the years. The testimony of several local residents was gathered in relation to the floods of 1875 and 1913, in which the water was several feet deep over the roadway to the west of the existing covered bridge. Most blamed the high floodwaters on the fact that "the Narrows" area of the Eel River about 1.5 mile downstream from the bridge had been blocked with driftwood causing the river to back up. The blockage was so dense that one long-time resident stated that one could walk across the river on the driftwood at "the Narrows" in 1875. Local residents were contemplating how to obtain dynamite, a scarce resource at the time, to eliminate the blockage. However, it finally broke free on its own accord before that measure was taken.[12] All of the flooding information was essential in determining an appropriate new bridge deck elevation to attempt to avoid rising floodwaters in the future.

Bridge No. 046-11-01316C is an example of a Parker through truss. Parker spans developed in the 1870s as an adaptation of the Pratt truss. Parker trusses consist of five or more slopes on the top chord, and typically spanned between 40 and 300 feet.[13] This truss type was particularly well-suited to span long distances in many different locations. Thus, the Parker became the preferred choice for the through truss in Indiana, especially for ISHC designs. Although used as early as 1904, with that date being the earliest extant example in the state, they would reach wider circulation in the next several decades.[14] By the 1920s, the ISHC had developed standard drawings for Parker trusses.[15] Common

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[7] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1927.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1927.pdf on 26 May 2015; Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1928.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1928.pdf on 26 May 2015; Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1929.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1929.pdf on 26 May 2015.

[8] *Year Book of the State of Indiana for the Year 1930* (Fort Wayne: Ft. Wayne Printing Co., 1930), 1146.

[9] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1930.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1930.pdf on 26 May 2015.

[10] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1931.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1931.pdf on 26 May 2015.

[11] Indiana State Highway Commission, *Surveyor's Field Notebook BR No. 512*, "46-C-1316 Eel River," December 1931 – May 1932, 33 and Indiana State Highway Commission, *Plans for Bridges of Spans Over 20 Feet for Proposed State Highway P.W.A. Project No.255.*

[12] *Surveyor's Field Notebook*, 47-48 and 61.

[13] M & H Architecture, *Indiana Historic Bridges Historic Context Study*, 65.

[14] James L. Cooper, *Iron Monuments to Distant Posterity: Indiana's Metal Bridges, 1870-1930* (Indianapolis: DePauw

truss lengths for ISHC-designed Parkers were 150', 175', and 200'.

Bridge No. 046-11-01316C is an example of the ISHC's revised version of the third-generation standard plan (#479A) for a 198-ft., riveted, Parker through truss for 24-ft. roadways.[16] The bridge is constructed upon a concrete pier and concrete abutments on a 398-ft vertical curve. The truss depth varies from 21ft-6 in. at the portal to 33 ft. at midspan.

The overall length of the structure sets this bridge apart from the other extant Parker through truss in Clay County, State Bridge No. 042-11-03101A, which carries SR 42 over the Eel River approximately 5 miles north of Bridge No. 046-11-01316C. Bridge No. 042-11-03101A, also built by the Vincennes Bridge Company, was constructed in 1939 and is a one-span example at 175'. It was listed in the National Register in 2000.

The ISHC's annual report for 1934 acknowledged the significance of Bridge No. 046-11-01316C by listing it in the narrative "Report of the Engineer of Design" as one of seven "large bridges" that were included in contracts awarded that year.[17] Bridges receiving this type of recognition in annual reports are rare and unique as most bridge contracts were simply listed in a table of aggregate data. The 1934 "Report of the Engineer of Construction" stated that 137 contracts for bridges over 20 ft. in length were awarded in that fiscal year. Out of the large group of bridge contracts awarded that year, it is noteworthy that the construction of Bridge No. 046-11-01316C was called out in a report that typically summarizes data on a state level with very few specific projects recognized.[18]

The Engineer of Construction, in his 1935 annual report, noted that: "During the past year we have demonstrated that bridges can be built on alignment curves with superelevation, as well as vertical curves, without sacrifice of careful workmanship and pleasing lines."[19] Although no bridges were individually identified in conjunction with the above statement, because of its 398-ft vertical curve and its recognition as a "large bridge" in the previous annual report, it is likely that Bridge No. 046-11-01316C was one of the examples in mind.

Bridge No. 046-11-01316C was constructed by the Vincennes Bridge Company, a major Indiana bridge-building firm, whose work could be found in at least eight states. In Indiana, they primarily concentrated in its southern counties. The company was founded by brothers John and Frank Oliphant and Jacob L. Riddle in Vincennes in 1899 and it was active through 1951. The firm specialized in metal trusses, focusing on functional and economical designs. In contrast to other manufacturing firms in Indiana, the Vincennes Bridge Company offered full-service bridge-building services even when other manufacturers took on a role of subcontractor. The company retained crews that could build a bridge from bottom to top and it routinely bid against contractors for construction contracts.

The Vincennes Bridge Company bid on many ISHC contracts, as well as those for other state highway departments, as new projects for these developing entities became more prevalent in the 1920s.[20] The extent of the company's work is evidenced in its annual production that reached 1,200 bridges and its annual sales, which reached approximately $1 million. Contract No. 684 for Bridge No. 046-11-01316C was awarded by the ISHC to the Vincennes Bridge Company on January 2, 1934 for a

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University, et. al, 1987), 76.

[15] M & H Architecture, *Indiana Historic Bridges Historic Context Study,* 65.

[16] M&H Architecture, Inc., *Indiana Historic Bridge Inventory,* Database, entry for "State Bridge Number 046-11-01316A," 2010. Prepared for the Indiana Department of Transportation. Available for download at the following URL: http://www.in.gov/indot/div/public/HistoricBridgeDatabase.mdb.

[17] *Year Book of the State of Indiana for the Year 1934* (Indianapolis: Wm. B. Burford, 1934), 650.

[18] Ibid., 651.

[19] *Year Book of the State of Indiana for the Year 1935* (Indianapolis: Wm. B. Burford, 1935), 525.

[20] Cooper, 28.

price of $63,058.13.[21] The contract was completed on April 10, 1935 with only $58,112.32 in payments expended.[22]

While many examples of the Vincennes Bridge Company's work once dotted the Indiana landscape, very few confirmed examples remain extant today. An analysis of the *Indiana Historic Bridge Inventory* database (2010 data) indicates that approximately 22 identified/known examples of the company's work remain, while eleven other examples can likely be attributed to the firm. Noted Indiana bridge historian James L. Cooper has observed that the Vincennes Bridge Company probably built more Parker through trusses in the state than any other Indiana firm.[23] However, of the 33 bridges mentioned above, only a handful (five) are Parker through trusses (Bridge No. 046-11-01316C included). Only four of these Parker through trusses carry state highways, making Bridge No. 046-11-01316C a rarity.[24]

Today, Bridge No. 046-11-01316C remains basically unchanged from the bridge that the Vincennes Bridge Company built in 1935. Major repair work has been undertaken on the bridge three times since its construction. In 1977, the bridge deck was reconstructed and various structural members were repaired. The deteriorated condition of the superstructure has required two closures of the bridge in recent years. In 2011 the bridge was closed to traffic requiring the Indiana Department of Transportation (INDOT) to complete repair work to some gusset plates and floor beams. In 2012 it was closed again after in-depth inspections revealed additional concerns. Additional gusset plate repairs were undertaken to reopen the bridge.

Additional major rehabilitation work is needed at this time because nearly all steel members show some amount of rusting and/or minor section loss and the lower portion of all sway bracing has been removed due to continued collision damage. However, the trusses remain intact and demonstrate the bridge's historical and engineering integrity/significance.

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[21] M&H Architecture, Inc., *Indiana Historic Bridge Inventory,* Database, entry for "State Bridge Number 046-11-01316A," 2010 and *Year Book of the State of Indiana for the Year 1934,* 676.

[22] *Year Book of the State of Indiana for the Year 1935,* 525.

[23] Cooper, 77.

[24] Although more than 33 extant examples of the Vincennes Bridge Company's may be present in Indiana and simply not attributed to the firm, the number of ISHC-designed examples currently still on state highways is unlikely to change due to readily available and accurate state record-keeping.

CALIFORNIA, RIVERSIDE COUNTY,
Sieroty House,
695 E. Vereda Sur,
Palm Springs, 15000643,
LISTED, 9/28/15
(Architecture of Albert Frey MPS)

CALIFORNIA, RIVERSIDE COUNTY,
Town and Country Center,
146, 156-166, 168, 174 N. Palm Canyon Dr., 167-181 N. Indian Canyon Dr.,
Palm Springs, 15000644,
DETERMINED ELIGIBLE, 9/28/15

CALIFORNIA, RIVERSIDE COUNTY,
Tramway Gas Station,
2901 N. Palm Canyon Dr.,
Palm Springs, 15000645,
LISTED, 9/28/15
(Architecture of Albert Frey MPS)

CALIFORNIA, SAN BERNARDINO COUNTY,
Judson and Brown Ditch,
Crosses San Bernardino FCD Rd.,
Redlands vicinity, 15000646,
LISTED, 9/29/15

INDIANA, CLAY COUNTY,
Indiana State Highway Bridge 46-11-1316,
IN 46 over Eel R,
Bowling Green vicinity, 00000211,
ADDITIONAL DOCUMENTATION APPROVED, 9/29/15

KANSAS, LINCOLN COUNTY,
Evangelical Lutheran School,
308 N. Indiana St.,
Sylvan Grove, 15000690,
LISTED, 10/02/15

KANSAS, RILEY COUNTY,
Kimble, Francis Byron (Barney), House,
720 Poyntz Ave.,
Manhattan, 15000691,
LISTED, 10/02/15
(Late 19th and Early 20th Century Residential Resources in Manhattan, Kansas MPS)

KENTUCKY, CALLOWAY COUNTY,
Swann, W.G., Tobacco Company,

National Register of Historic Places
Memo to File

Correspondence

The Correspondence consists of communications from (and possibly to) the nominating authority, notes from the staff of the National Register of Historic Places, and/or other material the National Register of Historic Places received associated with the property.
Correspondence may also include information from other sources, drafts of the nomination, letters of support or objection, memorandums, and ephemera which document the efforts to recognize the property.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Indiana State Highway Bridge 46-11-1316

MULTIPLE NAME:

STATE & COUNTY: INDIANA, Clay

DATE RECEIVED: 2/07/00 DATE OF PENDING LIST: 2/24/00
DATE OF 16TH DAY: 3/12/00 DATE OF 45TH DAY: 3/24/00
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 00000211

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	N	NATIONAL:	N

COMMENT WAIVER: N

√ ACCEPT ___RETURN ___REJECT 3/15/00 DATE

ABSTRACT/SUMMARY COMMENTS:

Entered in the
National Register

RECOM./CRITERIA_____

REVIEWER_____ DISCIPLINE_____

TELEPHONE_____ DATE_____

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

DNR Indiana Department of Natural Resources

Frank O'Bannon, Governor
Larry D. Macklin, Director

Division of Historic Preservation
and Archaeology
402 W. Washington Street, W274
Indianapolis, IN 46204-2748
PH: 317/232-1646
FAX: 317/232-0693
dhpa@dnr.state.in.us

January 27, 2000

Carol D. Shull
Keeper of the National Register
U.S. Department of the Interior
National Park Service
Cultural Resources
National Register of Historic Places
Mail Stop 2280, Suite 400
1849 C Street NW
Washington, D.C 20240

Dear Ms. Shull:

Enclosed is a National Register of Historic Places nomination for Bridge 46-11-1316 in Clay County, Indiana.

The Indiana Historic Preservation Review Board reviewed the nomination and voted to recommend its inclusion in the National Register of Historic Places.

Very truly yours,

Jon C. Smith
Director
Division of Historic Preservation
and Archaeology

JCS:PCD:pcd

Enclosure

National Register of Historic Places

Note to the record

Correspondence related to 2015 Additional Documentation

INDIANA DEPARTMENT OF TRANSPORTATION

Request to move the SR 46 Bridge over the Eel River
Bridge No. 046-11-01316C
from Clay County, Indiana to Brown County, Indiana

Related to INDOT Des. No. 0800910

Prepared per 36 CFR § 60.14 (b)(1)

by INDOT Cultural Resources Office staff

Contact: Mary Kennedy, mkennedy@indot.in.gov

May 2015

Introduction

Per 36 CFR § 60.14 (b)(1), properties listed in the National Register of Historic Places (National Register) should be moved only when there is no feasible alternative for preservation. Additionally, when a property is moved, every effort should be made to reestablish its historic orientation, immediate setting, and general environment.

As part of the Indiana Department of Transportation (INDOT)'s project Des. No. 0800910, with funding provided by the Federal Highway Administration (FHWA), INDOT has identified a preferred alternative that calls for dismantling and moving the two spans of the National Register-listed State Bridge No. 046-11-01316C from its existing location in Clay County to two new locations along a trail in Brown County, Indiana.

Per 36 CFR § 60.14 (b)(2), if it is proposed that a property listed in the National Register be moved and the State Historic Preservation Officer (SHPO) wishes the property to remain in the National Register during and after the move, the SHPO shall submit documentation to the National Park Service (NPS) prior to the move. Also, per 36 CFR § 60.14 (b)(3), any such proposal with respect to the new location shall follow the required notification procedures, shall be approved by the State Historic Preservation Review Board (Review Board) if it is a State nomination and shall continue to follow normal review procedures. The Keeper of the National Register (Keeper) shall also follow the required notification procedures for nominations. The Keeper shall respond to a properly documented request within 45 days of receipt from the SHPO.

In a letter to INDOT's consultant, Parsons Transportation Group (Parsons), dated March 5, 2015, the SHPO stated that if Bridge No. 046-11-01316C must be moved, "then we would want it to remain listed during and after the move if at all possible." As such, INDOT has prepared the following information to aid in the Indiana SHPO's required documentation submittal to the Review Board and Keeper in order for Bridge No. 046-11-01316C to remain in the National Register during and after the move.

Reasons for the proposed move of Bridge No. 046-11-01316C - per 36 CFR § 60.14 (b)(2)(i)

Bridge No. 046-11-01316C was listed in the National Register National Register in 2000. As part of the *Indiana Historic Bridge Inventory*, the bridge was determined to be Select. Select bridges are historic bridges that are most suitable for preservation and are excellent examples of a given type of historic bridge. The Individual Review conducted for the bridge as part of the *Inventory* process specifically designated the bridge "Select for Non-Vehicular Use," indicating it is better suited for bicycle and/or pedestrian use than for vehicles.

Major rehabilitation work is needed on Bridge No. 046-11-01316C at this time because nearly all steel members show some amount of rusting and/or minor section loss and the lower portion of all sway bracing has been removed due to continued collision damage. The deteriorated condition of the superstructure has required two closures of the bridge in recent years. In 2011 the bridge was closed to traffic requiring INDOT to complete repair work to some gusset plates and floor beams. In 2012 it was closed again after in-depth inspections revealed additional concerns. Additional gusset plate repairs were undertaken to reopen the bridge.

A detailed alternatives analysis for this bridge summarizing the bridge's existing conditions and exploring rehabilitation/re-use options was prepared by INDOT's consultant (Parsons, 5-21-15). A summary is provided below. The full text of the alternatives analysis can be found in Appendix A. The appendices of

the alternatives analysis are not included since they are over 450 pages long, but they are available upon request.

Despite its Select designation for Non-Vehicular Use, INDOT nonetheless examined the rehabilitation option to keep the bridge in continued vehicular use. This alternative would be expected to extend the life of the structure by approximately 25 years and would undertake the following work:

- Replacement of
    - Approximately 80% of lower chord members;
    - All gusset plates at the end bents and center pier;
    - Approximately 50% of other gusset plates;
    - Approximately 75% of splice plates, cover plates, and batten plates;
    - Approximately 50% of the lower lateral cross bracing and corner support angles;
    - Approximately 25% of vertical members;
    - Floor beams at each end bent and pier;
    - Existing bridge deck;
    - All bridge railing;
    - Rivets with round-headed bolts where members are replaced;
    - Exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Cleaning and painting of the entire bridge; and
- Patching of concrete on the abutments and center pier.

This alternative would be designed to meet "3R" (Resurfacing, Restoration, and Rehabilitation) standards as defined in the *Indiana Design Manual*. Due to the nature of truss bridges, it is not possible to address deficiencies related to the width of the structure without completely reconstructing the bridge. As such, design exceptions for lane, shoulder, and clear roadway width would be required. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS- 20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved. Therefore, this is not a prudent and feasible alternative.

The alternative to construct a new bridge parallel to the existing bridge and rehabilitate the existing bridge, with each structure carrying a single lane of traffic, was examined. This alternative includes constructing a new bridge approximately 20' to the south of the existing structure to carry eastbound traffic, retaining westbound traffic on the existing structure. The new bridge would be constructed to accommodate future 2-way travel, for the time when the existing bridge can no longer be maintained. The existing bridge would be rehabilitated in the same way described above with the same service life expectations. It would also have the same structural capacity limitations and would still require a Level 1 design exception. Additionally, this alternative is very costly. Therefore, this is not a prudent and feasible alternative.

INDOT is proposing to dismantle and move the two spans of the bridge from its existing location in Clay County to two new locations along a trail in Brown County, Indiana. The existing bridge would be relocated and rehabilitated for use on the Salt Creek Trail, a 2.5-mile multi-use trail connecting Nashville to Brown County State Park (BCSP), two heavily visited tourist destinations. The purpose of the trail project is to provide an alternative transportation mode for pedestrians that are currently using SR 46 to

travel to land uses in and between Nashville and BCSP. The conflict between pedestrians and the motoring public is currently unsafe. The trail will reduce traffic congestion between the County's three largest motels and the shops in Nashville by providing pedestrian access rather than visitors driving to the shopping areas. In addition, the trail will provide a safe means of transportation for the youth of Nashville and Brown County as it will connect the Brown County School Corporation sports facilities. The trail has been under development for several years, with construction of the first phase already underway. The project includes two crossings of Salt Creek, approximately 0.7 mile apart from one another. The two spans of the existing bridge would be separated to cross Salt Creek at these two locations.

The option of keeping the bridge in place at or near its original location in Clay County as a pedestrian structure and bypassing it with a new bridge was explored. This alternative was dismissed based on the location of the bridge in a sparsely populated area. A sidewalk or multi-use path could be provided from the nearby unincorporated town of Bowling Green to the bridge. The town is located approximately 0.25 mile to the east of the existing bridge with a population of approximately 250. Although it is the closest population center, Bowling Green does not commonly draw visitors from other areas. In 2009, INDOT reached out to Clay County regarding the possibility of relocating the bridge immediately adjacent to the existing location so that the County could create a park with the bridge as a feature. Clay County indicated that they had no interest in creating a park facility utilizing the bridge.

At a December 4, 2014 meeting with Consulting Parties, a request was made to INDOT to conduct outreach to Clay County and the public to determine the level of interest in retaining the bridge in its current location. On January 29, 2015, INDOT held a public meeting in Bowling Green to provide an overview of the project, including the bridge's condition, the alternatives under consideration, and the potential to relocate the bridge to Brown County. The deadline for a local party to step forward and take responsibility for the bridge was originally set as March 30, 2015; however, based on comments received at the meeting and during the comment period, INDOT extended this deadline to the time of the public hearing, currently anticipated for the first week of August 2015, a period of more than six months from the date of the public meeting. To date, no parties have stepped forward to take responsibility for the structure and retain it in place.

INDOT believes that the pedestrian usage of the existing bridge in its current location would be minimal and provide little value to the general public as a historic site compared to its potential use at other locations. At the Salt Creek Trail location, there is a strong demand for a pedestrian facility. When complete, it is anticipated that approximately 10,000 people will use the trail each year. It is anticipated that on the Salt Creek Trail, the span to be located adjacent to SR 46 at Eagle Park would be owned and maintained by Brown County, while the span located within BSCP would be owned and maintained by DNR. Each party will be required to sign an agreement committing to maintain their respective structures for a minimum of 25 years. However, it is anticipated that, based on the expected visitation levels, the bridges would be retained far beyond that minimum. DNR and Brown County have each submitted a letter of intent to take responsibility for the bridge spans.

It should also be noted that an approach that would keep the two spans together as part of the Salt Creek Trail was evaluated; however, the topography, hydraulic conditions, and presence of wetlands in the area, make that option impractical. Preliminary investigations confirmed that using the spans at two separate locations was the only practical option.

Effect of the move on Bridge No. 046-11-01316C's historical integrity - per 36 CFR § 60.14 (b)(2)(ii)

Given the decreased loading associated with pedestrian use, the extent of rehabilitation of Bridge No. 046-11-01316C for use on the Salt Creek Trail would not be quite as extensive as required for vehicular

use. The scope of the rehabilitation described here is based on visual inspection and engineering judgment only and includes:

- Replacement of:
  - Approximately 25% of lower chord members;
  - All gusset plates at the end bents and center pier;
  - Approximately 50% of other gusset plates;
  - Approximately 25% of splice plates, cover plates, and batten plates;
  - Approximately 10% of the lower lateral cross bracing and corner support angles;
  - Approximately 10% of vertical members;
  - Floor beams at each end bent and pier;
  - Existing bridge deck;
  - All bridge railing;
  - Rivets with round-headed bolts where members are replaced;
  - Exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Cleaning and painting of the entire bridge;
- Construction of new abutments at the new bridge locations;
- Construction of ADA compliant shared-use trail approaches to the bridges that connect to the existing ground elevation.

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation (Secretary's Standards)*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and missing sway bracing would be re-installed. In accordance with Attachment B of the *Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management and Preservation of Indiana's Historic Bridges* (Historic Bridge PA)[1], the rehabilitation plans will be reviewed by the Indiana SHPO to ensure compliance with the *Secretary's Standards* and to incorporate context sensitive design features, where practicable.

With regard to relocating the bridge, INDOT shall disassemble the bridge while match-marking and mapping its components. The disassembly will be conducted as non-destructively as possible and shall incorporate principles and guidance (as feasible and relevant to bridges) from the publication "Moving Historic Buildings" by John Obed Curtis (published originally by the United States Department of the Interior). If the bridge must be stored before reassembly at the new locations, the larger components shall be placed on blocks or railroad tie and stored off the ground. Smaller components and other detached members shall be stored indoors or in an otherwise locked facility. As has successfully occurred with several other bridge projects in the past, INDOT will submit the detailed disassembly plan to the Indiana SHPO and FHWA for review and approval before disassembly shall take place.

Even though the trusses will be separated at the new locations on the Salt Creek Trail, the trusses are structurally independent and once reassembled and rehabilitated, each truss will retain its historical and evolutionary integrity/significance as examples of Indiana State Highway Commission (ISHC)-designed Parker through trusses.

[1] The Historic Bridge PA can be downloaded here: http://www.in.gov/indot/files/HistoricBridgePA.pdf.

New setting and general environment of the proposed site - per 36 CFR § 60.14 (b)(2)(iii)

The current setting of Bridge No. 046-11-01316C is on SR 46 over the Eel River, approximately 4.84 miles east of SR 59, in Clay County. SR 46 is functionally classified as a Rural Minor Arterial on Indiana's 3R system. The speed limit across the structure and on SR 46 west of the bridge is 55 mph, but it is reduced east of the bridge as SR 46 nears the small town of Bowling Green. Specifically, this bridge is located in Sections 13 & 24 of Township 11 North, Range 6 West and Sections 19 of Township 11 North, Range 5. This location is in Washington Township in Clay County, which can be seen on the USGS Center Point Quadrangle Map.

The Eel River is a perennial stream and exhibits an ordinary high-water mark (OHWM). It is listed on the "Roster of Indiana Waters Declared Navigable or Non-navigable" as a navigable stream. Three other bodies of water are within the project area, though they are not shown on the USGS topographic map. Stream 1 is an unnamed tributary (UNT) to the Eel River, and is located in the southeast quadrant of the project area. Stream 1 is an ephemeral stream that exhibits an OHWM, and has a confluence with the Eel River just downstream of the project area. Streams 2 and 3 are both unnamed tributaries to Stream 1. They are both ephemeral streams with an OHWM, located in the southeast quadrant of the project area.

The land in the northwest and southwest quadrants is primarily used for row-crop agriculture while the eastern quadrants are primarily forested. Terrestrial habitat in the project area primarily consists of the forests east of the river, a narrow wooded riparian corridor along the west bank of the river, grassy roadside, and the farmland. The project area supports a variety of flora and fauna typical to these habitats

The proposed new setting of Bridge No. 046-11-01316C is in rural Brown County, between the small town of Nashville, Indiana and the BCSP. Specifically, the new location is located in Sections 20 and 29, Township 9N, Range 3E. This location is in Washington Township in Brown County, which can be seen on the USGS Nashville Quadrangle Map. Salt Creek meanders through the project vicinity and is crossed by SR 46 three times between the project area and Nashville. There are currently no pedestrian facilities that cross Salt Creek, although Phase 1 of the Salt Creek Trail Project is now open from the south side of Nashville (near the CVS Pharmacy), east along Salt Creek to near the Brown County YMCA at the end of Hawthorne Drive.

Within the local community surrounding the project area, this creek is simply called Salt Creek, but the full name of this watercourse is actually North Fork of Salt Creek. There are several streams in the area with "Salt Creek" in the name (North Fork, Middle Fork, South Fork, Little Fork, etc). All of these creeks merge in what is now Monroe Lake. The outflow of Monroe Lake is actually called just "Salt Creek."

Within the project area, the North Fork of Salt Creek is a perennial stream and exhibits an OHWM. It is listed on the "Roster of Indiana Waters Declared Navigable or Non-navigable" as a navigable stream from its junction with Salt Creek for 36.7 river miles to its junction with David Branch (which is near the SR 46/SR135 junction, 1.5 miles upstream from the project area).

At the proposed West bridge location, the west abutment would be on residential and commercial property. The east abutment would be in a wooded riparian corridor along Salt Creek on property that is owned by the Brown County School Corporation that is known as Eagle Park. At the proposed East bridge location, the north abutment would be in a wooded area consisting of floodplain forest. The south abutment would be in a grassy-covered lawn area adjacent to the BCSP pool parking lot. Terrestrial habitat in the project area primarily consists of floodplain forest, a narrow, wooded riparian corridor along

Salt Creek, and grassy lawns. The project area supports a variety of flora and fauna typical to these habitats.

Every effort would be made to reestablish the bridge's historic orientation, immediate setting, and general environment after the move. At its existing location, Bridge No. 046-11-01316C crosses the Eel River at in a general east-west alignment (on a slight diagonal). At the proposed West bridge location, the span would also be generally east-west oriented (on a diagonal). At the proposed East bridge location, the alignment of the span would generally be north-south due to the general east-west route of Salt Creek in this area, the desire to connect the trail near existing facilities in BCSP, and constraints related to topography and hydraulic conditions.

The bridge's existing conditions and immediate setting of forested land, a wooded riparian corridor, and grassy areas would be similar at both of the proposed new span locations. Additionally, at both the existing and new locations, the structure will span a navigable stream with several other small streams located in the greater area. Although miles from the exiting location, the proposed new bridge locations would also be in proximity to the alignment of the roadway that the bridge currently carries, SR 46. While the commercial and residential property near the West bridge location and BCSP near the East bridge location are slightly different features than found at the existing location, they are not completely out of context. The outskirts of the town of Bowling Green, located approximately 0.25 mile east of the existing bridge, are visible when looking eastward from the bridge. Namely the large billboard that outlines the history of Bowling Green is discernible year-round while some buildings are discernible when foliage is off the trees.

The compatibility of the new site to the resource is ideal. At the proposed new locations, the bridge's historic orientation will be reestablished for one of the spans and for both of the spans, the immediate setting, and general environment will be reestablished. The fact that the spans can be placed across another navigable stream amidst similar flora and fauna and in proximity to the route that the bridge historically carried is a unique and desirable opportunity.

It should be noted that the proposed site does not possess historical or archeological significance that would be adversely affected by the relocation of Bridge No. 046-11-01316C. The new locations have been subjected to the appropriate archaeological and above-ground studies for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. A *Phase Ia Archaeological Survey Report* (Schwarz, 11/26/14) for the new sites of the bridge was prepared and determined that three archaeological sites within the Area of Potential Effects (APE) do not appear to be eligible for the National Register. The SHPO agreed with this recommendation in a letter dated December 15, 2014. The historic properties report for the proposed new locations (Nelson, 10/27/14) recommended two properties located within the APE, the Ramp Creek Covered Bridge and the BCSP North Gate House, as being eligible for the National Register, both under Criteria A and C. The SHPO issued a letter on December 22, 2014 concurring with the recommendations of the report. No adverse effects on these properties are anticipated as a result of the bridge relocation as both properties are located over 750' away from the location of the closest span with some trees and buildings partially blocking the view.

Justification for National Register Eligibility Under Criterion C During and After the Move

As mentioned above, even though it is necessary to separate the trusses at the new location on the Salt Creek Trail, the trusses are structurally independent. The ISHC utilized a varied number of spans of Parker trusses as the conditions of a specific crossing dictated. Examples ranged from one single span to nine spans at one location. Once reassembled and rehabilitated, each truss of Bridge No. 046-11-01316C

will retain its historical and evolutionary integrity/significance as an example of ISHC-designed Parker through trusses.

The relocation of the bridge would remove its association from events and historical patterns related to its original location and era. Therefore, it seems likely that it would only be considered eligible for inclusion in the National Register under Criterion C and no longer under Criterion A. Criterion C is applicable to structures that embody the distinctive characteristics of a type, period, or method of construction. Although originally listed in the National Register under Criterion A only, INDOT has prepared information to justify the bridge's listing under Criterion C as well at the state level. The bridge's Criterion C significance lies in being an important example of a revised, third-generation ISHC standard plan and an excellent and rare extant example of the work of a major Indiana bridge-building firm, the Vincennes Bridge Company.

In its new location, Bridge No. 046-11-01316C would still be an excellent example of an important ISHC standard plan. Common truss lengths for Parkers designed by the ISHC were 150', 175', and 200'. Therefore, even when functioning as two separate 198' trusses, they will still be two of the longer extant examples of an ISHC Parker truss. Additionally, the trusses will still be rare extant examples of Parkers built by the Vincennes Bridge Company. Due to relocation, the bridge spans' significance would limited to the original date of construction, 1935.

Under National Register Criteria Consideration B, a property removed from its original or historically significant location can be eligible if it is significant for architectural value, or perhaps more appropriately in the case of a bridge, engineering value. Additionally, moved properties must still have an orientation, setting, and general environment that are comparable to those of the historic location and that are compatible with the property's significance. As explained above, the bridge will still retain significance under Criterion C and its new location is comparable to its original location and compatible with the bridge's significance. In its new location, the bridge will maintain its integrity of design, materials, workmanship, and feeling as an ISHC-designed and Vincennes Bridge Company-built Parker through truss.

Finally, it might be helpful to take into consideration the argument of noted Indiana bridge historian James L. Cooper that metal truss bridges are still significant after being moved, which was made in his July 2004 paper titled "Nomads of the Roadways: Metal Bridges on the Move." Even though written in the context of type of effects under Section 106 and not specifically related to National Register criteria, Cooper explains that metal bridges have traditionally been treated as "eminently moveable resources" and that their ability to be transported from one location to another is an "inherent and desirable characteristic." Specifically with regard to ISHC bridges, Cooper states that some of the once-prevalent standard designs no longer exhibit any extant examples on Indiana roadways and others are now "close to extinction." Therefore, he argues, "relocated examples of state-design may be our best hope for retaining elements of ISHC's trajectory on Hoosier highways."

Appendix A

Excerpt from Alternatives Analysis Document

HISTORIC BRIDGE ALTERNATIVES ANALYSIS

Bridge Number: 046-11-01316C
Designation Number: 0800910

SR 46 OVER EEL RIVER
Clay County
NBI Number: 017050

Eel River, 4.84 miles east of SR 59 at reference post 22+05

PREPARED BY:

PARSONS

Dan Prevost, AICP CTP, ENV-SP

May 21, 2014

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

A. Section 4(f) Alternatives Analysis Framework

The Indiana Department of Transportation (INDOT) has identified a need to improve the structural and operational condition of the SR 46 bridge over the Eel River in Clay County (Appendix A, Figures 1-4). The bridge is listed on the National Register of Historic Places (NRHP) and was identified in the Indiana Historic Bridge Inventory (August 2009) as "Select". Select bridges are those "that are most suitable for preservation and are excellent examples of a given type of historic bridge."[1]

Section 4(f) of the US Department of Transportation Act of 1966 (Title 49, USC, Section 303) requires special considerations be made regarding the "use" of any publicly owned park, recreation area, wildlife/waterfowl refuge or historic property that is listed in or eligible for the NRHP. Prior to any "use" of a Section 4(f) property, an alternatives analysis must be conducted that confirms that there are no "feasible and prudent" alternatives to the "use" of the resource.

Alternatives for this project were developed in accordance with INDOT's *Historic Bridge Programmatic Agreement Project Development Process* (Historic Bridge PA PDP) and include no build, rehabilitation, and replacement options, with and without relocation of the existing bridge. The evaluation below follows INDOT's *Historic Bridge Alternatives Analysis Layout* for documentation of this process.

B. Indiana Historic Bridge Inventory

As noted above, the SR 46 bridge over the Eel River was evaluated as part of INDOT's Historic Bridge Inventory survey. That process, developed in conjunction with the Federal Highway Administration and the Indiana Department of Natural Resources-Division of Historic Preservation and Archaeology (IDNR-DHPA), evaluated the NRHP-eligibility of every state-owned bridge in Indiana and established a systematic framework for how historic bridges shall be considered in the project development process.

Because the SR 46 bridge was already listed in the NRHP, its historic eligibility was not reevaluated (see Appendices E-1, E-2, and E-3). Determination of a bridge's Select or Non-Select status involves a multi-step process that incorporates both the historic eligibility and the current condition of the bridge. The SR 46 bridge received a "high" eligibility rating (based on its NRHP listing), but a "low" condition rating (29 out a possible 45) (See Appendix E-4). Bridges with this combination of ratings received an "Individual Review" that considered its condition, the feasibility of rehabilitation, and the potential to correct nonstandard elements without affecting its historic integrity. The Individual Review also considered whether the bridge was suitable for reuse as a non-vehicular (bicycle/pedestrian) structure either in its existing location or at a new location.

Through the Individual Review, the SR 46 bridge was found to be Select, based largely on the fact that the structural deficiencies could be corrected without jeopardizing the character-defining features that made it NRHP-eligible (see Appendix E-5). However, the Individual Review also recognized that while a major rehabilitation could make the bridge structurally sound, some deficiencies could not be corrected. As a result, the Historic Bridge Inventory identified the SR 46 bridge as Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles (see Appendix E-6).

[1] *Programmatic Agreement Regarding Management and Preservation of Indiana's Historic Bridges*, July 17, 2006 (Historic Bridge PA).

C. Project Development History

In 2009, INDOT determined that action was required to address the deteriorated condition of the bridge. At the time, the Historic Bridge Inventory was not yet complete; however, the bridge was already listed on the NRHP. Due to the condition of the bridge, it was not yet known whether the bridge would be listed as Select or Non-Select. In August 2009, INDOT conducted a field check, during which it was decided that the deterioration was so severe that replacement was appropriate. INDOT reached out to Clay County regarding the possibility of relocating the bridge immediately adjacent to the existing location so that the County could create a park with the bridge as a feature. Clay County indicated that they had no interest in creating a park facility utilizing the bridge.

Volume 4 of the Indiana Historic Bridge Inventory finalized the list of Select and Non-Select bridges, identifying the Eel River Bridge as "Select for Non-Vehicular Use" as described above. While the "Select" designation effectively requires that the bridge remain in use (vehicular or non-vehicular), the "Non-Vehicular Use" label was utilized for bridges that may be more suitable for non-vehicular use due to condition and/or nonstandard geometric features. The Indiana Historic Bridge Inventory did not evaluate whether non-vehicular use was appropriate at the bridge's existing site, but did consider whether the bridge type was suitable for relocation. In 2009, based on the lack of interest from Clay County to take ownership of the bridge for a park, INDOT reversed its previous decision and decided to proceed with a rehabilitation project.

During 2011, INDOT's system-wide approach to fracture-critical bridge inspections became more rigorous due to an increased concern that risks were not being fully identified. Prior to that change, the bridge was inspected primarily via climbing from the bridge deck, the use of ladders where possible, and binoculars for inspecting the areas over the water. The use of under-bridge inspection trucks had previously been minimal due to their availability (INDOT owns only two) and the difficulty of threading the truck's inspection bucket through the truss members. The 2011 inspection used an under-bridge inspection truck allowing the inspector to remove rust and make a more accurate assessment of the condition of the floor beams.

In 2011, Parsons was selected to prepare design plans for the rehabilitation of the Eel River Bridge. During INDOT's inspection of the Eel River Bridge in November 2011, applying these more rigorous inspection techniques, failed gusset plates and a close-to-failure floor beam were identified, resulting in closure of the bridge. In December 2011, INDOT completed an expedited repair that allowed the structure to reopen, although it still required a more permanent repair. On July 31 and August 1, 2012, Parsons performed an in-depth inspection to determine the scope of the rehabilitation effort. During that inspection, Parsons identified additional concerns regarding the condition of the bridge, including serious deterioration of additional gusset plates and bottom chord splice plates. Based on these findings, Parsons requested the bridge be closed until an additional expedited repair could be designed and implemented. The bridge was closed July 31, 2012 and reopened November 2, 2012 after the repair was complete.

The 2011 and 2012 inspections identified structural deficiencies that were far more serious than those identified previously. During each of the closures numerous complaints from the public and businesses were received due to the long (21.9 miles) detour route. This bridge carries more than 3,300 vehicles per day and is an arterial route and part of the National Truck Network. Based on the public's negative response to the detour during those closures INDOT determined that it would be prudent to select an option that requires no (or very limited) closure. The severity of the deterioration and need to minimize closures led INDOT to reconsider the appropriateness of rehabilitation and reevaluate all alternatives, which is the purpose of this document.II. EXISTING STRUCTURE DATA

This section provides a summary of the structural and geometric features of the existing SR 46 bridge over the Eel River.

A. Identification/History

Bridge No.	046-11-01316C
NBI Number	017050
Project Location	SR 46 over the Eel River, Clay County, INDOT Crawfordsville District
Designation No.	0800910
Year Built	1933
Years Repaired	1977, 2011, 2012
Most Recent Field Inspection Date	5/1/2014
Average Daily Traffic (ADT)/Year of ADT	3,310 (2011) / 4,071 (2034)
Percentage of Commercial Vehicles	9%
Low volume road?	No
Functional Classification	Rural Minor Arterial
Detour Length	21.9 miles
Load Rating	14 tons
Sufficiency Rating	7.0
National Register of Historic Places Status	Listed
Historic Bridge Prioritization Status	Select

B. Structure/Dimensions

Surface Type	1 ½" modified concrete overlay placed on a 6 ½" concrete deck (1977)
Out to Out of Copings	25'-0"
Out to Out of Bridge Floor	402'-4"
Clear Roadway Width	24'-0"
Number of Lanes on Structure	2
Skew	0 degrees
Type of Superstructure	Parker steel through truss
Spans	2 – 198'-0" each
Type of Substructure/Foundation	End bents are reinforced concrete wall on spread footings; Intermediate pier is a solid reinforced concrete wall on piles
Seismic Zone	Zone 1

C. Appurtenances

Bridge Railing	C6 x 8.2 steel channel handrail, 2'-10 ¾" height
Curbs	Concrete 6" wide by 5" high, both sides
Sidewalks	None
Utilities	Overhead electric to south; Buried fiber optic to north
Railroad	None

D. Approaches

Roadway Width	24'-0"
Surface Type	Asphalt over concrete
Guardrail	Steel W-beam, class D-S
Guardrail End Treatment	Curved terminals on the west approach, type OS on the east approach

III. EXISTING CONDITIONS

This section summarizes the condition of the bridge's structural elements. Except where noted, the information below was obtained from the May 1, 2014 *Bridge Inspection Report* (see Appendix D-2) prepared by INDOT, the most recent INDOT inspection report available. Representative photos from the Inspection Report are provided in Appendix B.

The numerical or condition ratings assigned to each bridge element are on a scale from 0 through 9 in accordance with the Federal Highway Administration's *Recording and Coding Guide for the Inventory and Appraisal of the Nations Bridges*. The condition ratings are as follows:

9 Excellent or new condition

8 Very good condition—no problems noted

7 Good condition—some minor problems

6 Satisfactory condition—structural elements show some minor deterioration

5 Fair condition—all primary structural elements are sound but have minor section loss, cracking, spall or scour

4 Poor condition—advanced section loss, deterioration, spall or scour

3 Serious condition—loss of section, deterioration, spall or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present

2 Critical condition—Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored, it may be necessary to close the bridge until corrective action is taken

1 Imminent Failure—Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but repairs may put back into light service

0 Failed—out of service and beyond repair

A. Roadway Geometrics

State Road 46 is on Indiana's "3R" (Resurfacing, Restoration, and Rehabilitation) System and it is not anticipated that the route would require any change in that status in the next 25 years. 3R design criteria, as outlined in Chapter 55 and Figure 55-3A of the *Indiana Design Manual*, are appropriate for the existing bridge and approaches and would apply if the bridge were rehabilitated. If the bridge is replaced, "4R" (Resurfacing, Restoration, Rehabilitation, and Reconstruction) design criteria, provided in Chapter 53 and Figure 53-2 would apply. The table below shows the Level 1 design criteria (3R) as well as the bridge's existing dimensions. Level 1 criteria are those that are the most critical indicators of a highway's safety and serviceability.

SR 46 runs due east-west across most of Clay County, with very few curves. The bridge lies within the tangent section between a slight reverse curve (radii of 8,596 and 11,458) with a computed design speed at or above the posted 55 mph speed limit. The approach roadway is generally flat to either side of the bridge, with grades less than 1%. All curves meet the minimum design speed of 55 mph based on Figures 43-3A(3) (horizontal), 44-3A (crest curves), and 55-4A (sag curves) of the *Indiana Design Manual*.

TABLE 1: LEVEL 1 DESIGN CRITERIA AND EXISTING BRIDGE VALUES

Criteria	Minimum Design Criteria (1)	Existing Value	Meets Standard	Possible to Reconstruct to Standard
Travel Lane Width	12'	11'	No	Yes(2)
Usable Shoulder	6'	1'	No	No
Paved Shoulder	2'	1'	No	No(2)
Cross Slope	2%	1.5%	No	No(3)
Structural Capacity	HS-20	H-20	No	No
Clear Road Width	39'4"(4)	24'0"	No	No
Vertical Clearance	14'	14'-8"56)	Yes	N/A

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) If travel lanes were marked at 12', the usable shoulder width on the bridge would be 0. It is not feasible to widen a through truss bridge without replacing nearly all of the structural components with larger, stronger members.
(3) This truss is unlikely to be able to support additional dead load from increased deck thickness without decreasing the live load capacity.
(4) This is based on two 12' travel lanes, 7' shy line offset distance and 8" barrier offset either side.
(5) This clearance has been obtained by removing the lower sway bracing, which has impacted the historic material integrity of the bridge.

B. Bridge Deck

The deck is in overall satisfactory condition. The wearing surface has transverse cracking over top of every floor beam along with longitudinal cracking. There are a total of 31 patches in the wearing surface, numerous areas of delamination, and several spalls. The curbs exhibit vertical cracking and require repair. Several of the downspouts have rusted off entirely.

TABLE 2: BRIDGE DECK CONDITION RATINGS

	Condition Rating
Wearing Surface	5
Deck Underside	6
Curbs	6
Copings	6
Railings	5
Painted Lines	5
Drains	7
Downspouts	4
Joints	6
Deck (overall)	**6**

C. Superstructure

The deteriorated condition of the superstructure has required two closures of the bridge in the past three years. During an inspection of the bridge by INDOT in November 2011, failed gusset plates and a close-to-failure floor beam were identified, resulting in a rating of 1 ("Imminent Failure") and closure of the bridge. In December 2011, INDOT completed an expedited repair that allowed the structure to reopen, although it still had an overall rating of 4 ("Poor") and required a more permanent repair. On July 31 and August 1, 2012, Parsons performed an inspection to determine the scope of the rehabilitation effort (see Appendix D-1). During that inspection, Parsons identified additional concerns regarding the condition of the bridge and requested the bridge be closed until an additional expedited repair could be designed and implemented. The bridge was closed July 31, 2012 and reopened November 2, 2012 after the repair was complete.

Following these repairs, the condition of the bridge has been reevaluated. The stringers are in Fair condition with minor section loss and continued rusting. Most of the floor beams have some section loss, with individual beams exhibiting section loss ranging from 10-50%. Several of the lower bracing laterals have section loss of 50% or more. Vertical truss members have minor section loss and several members have been damaged by collision. Nearly all steel members show some amount of rusting and/or minor section loss. The lower portion of all sway bracing was removed due to continued collision damage (Appendix B, Photos 26-27). Every gusset plate shows some section loss, while some exhibit significant or complete section loss resulting in a condition rating of 1. The most serious of these gusset plate deficiencies were addressed by the temporary repair. The paint is failing in many areas and was rated as Poor. Photos 20-36 in Appendix B show the generally deteriorated nature of the superstructure.

The 2012 repair designed by Parsons (Appendix B, Photo 37) is anticipated to have a service life of a minimum of 5 years (2017). Following that repair, and based on the findings of Parsons' 2012 inspection, the superstructure condition was given a rating of 3 in its 2013 inspection (see Appendix D-2). INDOT continues to inspect this bridge annually to monitor its condition.

TABLE 3: SUPERSTRUCTURE CONDITION RATINGS

	Condition Rating		Condition Rating
Bearings	5	Gusset Plates	1
Stringers	5	Stay/Batten Plates	4
Floor Beams	4	Lacings	4
Knee Braces	N/A	Rivets	5
Trusses	4	Bolts	5
Verticals	4	Splice Plates	5
Diagonals	6	Brackets	6
Upper Chords	6	Pins	5
Lower Chords	4	Nuts	6
Upper Bracings	6	Collision Damage	5
Portals	4	Alignment of Members	6
Top Laterals	6	Deflections	6
Lateral Strut	6	Vibrations	6
Sway Bracing	4	Impact	6
Lower Bracing Laterals	3	Noise	6
Connection Plates	3		
Superstructure (overall)	**3**		
Paint	**4**		

D. Substructures and Foundations

The substructure is in overall Good condition with some cracking and spalling identified. The river flows from north to south and the channel runs along the west face of the center pier. Originally, the river channel was located under the east span of the bridge. However, due to the high velocity of the river, it has migrated to the west, eroding and destabilizing the channel bank, causing large trees to fall into the river. Today, during a Q100 storm, a rain event that has a 1 percent chance of occurring in a given year, water overtops the west bank by 5000 feet and causes approximately 2 feet of backwater (Appendix B, Photos 16-17), During Parsons' 2012 inspection, significant erosion was noted on the west bank under the bridge. The calculated scour depths exceed the pier footing depth and it is likely that within 20 years the west abutment and approach embankment will become unstable. Without proper bank protection, the end bent would eventually be undermined and the bridge would require closure.

TABLE 4: SUBSTRUCTURE AND CHANNEL CONDITION RATINGS

	Condition Rating		Condition Rating
Abutments		Channel	
Bridge Seat	7	Scour upstream	7
Backwall	7	Scour downstream	6
Breastwall	7	Drift	7
Wing Walls	5	Vegetation	7
Scour	7	Channel Change	7
Erosion/Undermining	6	Adequacy of Opening	7
Settlement	7	Channel Protection	5
Intermediate Pier		Waterway Adequacy	6
Pier Cap	7	**Channel (overall)**	**5**
Column	7		
Erosion/Undermining	7		
Scour/Undermining	7		
Settlement	7		
General			
Concrete	6		
Debris on Bridge Seat	7		
Substructure (overall)	**7**		

E. Approaches

The roadway approaches are in overall good condition following a road resurfacing project approximately 10 years ago (Appendix B, Photos 2, 3, and 6).

TABLE 5: APPROACH CONDITION RATINGS

	Condition Rating
Alignment	8
Approach Slab	7
Approach Guardrail	7
Approach Pavement	7
Approach Shoulders	7
Approach (overall)	**7**

IV. PURPOSE AND NEED

The purpose of this project is to provide a safe and structurally sufficient bridge to carry SR 46 over the Eel River.

The primary need for a project at this location is the advanced deterioration, section loss and fatigue affecting critical load-bearing components of this fracture critical bridge. The SR 46 bridge has been closed to traffic twice—once in 2011 and once in 2012—due to an 'imminent failure' condition of fracture critical components discovered during inspections by INDOT and Parsons. Expedited repairs were made on both occasions sufficient to reopen the bridge to traffic; however much more extensive reconstruction would be needed for the bridge to remain in long-term service. The bridge is considered structurally deficient and has a sufficiency rating of 45.6.

The nature and volume of existing and proposed traffic on SR 46 necessitates that the bridge be capable of safely carrying modern highway loadings including commercial vehicles, grain haulers, school buses, and emergency vehicles.

In addition to this need, other desired outcomes of the project include:

- Improvements to the hydraulic capacity of the structure and implementation of scour countermeasures;
- A bridge that provides standard lane widths and shoulders and can safely accommodate agricultural equipment;
- An improved intersection at CR 475 East that provides sufficient sight distance;
- Guardrail transitions and end treatments that meet current standards; and
- A bridge that is not subject to frequent or long-term closures for construction, maintenance, or inspection due to the lack of safe, efficient alternative routes and high user costs;

Alternatives meeting this purpose and need will be weighed based on their ability to balance feasibility, cost-effectiveness, and environmental impacts.

V. ALTERNATIVES

As described above, Section 4(f) and the INDOT Historic Bridge PA PDP require the systematic evaluation of alternatives for this project. The alternatives analysis must prove why each alternative either is or is not feasible and prudent, and it should document the justification for the decision to proceed with the preferred alternative. The regulations state that a potential avoidance alternative is not “feasible” if it cannot be built as a matter of sound engineering judgment (23 CFR 774.17), it is not possible to engineer, design and build. The term "prudent" means there are no unique problems or unusual factors involved with the use of such alternatives. Per 23 CFR 774.17, an alternative is not prudent if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- After reasonable mitigation, it still causes:
    - Severe social, economic, or environmental impacts;
    - Severe disruption to established communities;
    - Severe disproportionate impacts to minority or low income populations; or
    - Severe impacts to environmental resources protected under other Federal statutes;
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The Historic Bridge PA PDP establishes the criteria for determining feasibility and prudence for projects involving historic bridges in Indiana. The Historic Bridge PA PDP is available at: http://www.in.gov/indot/2531.htm.

A. Alternative 1: No Build

Alternative Description

The No Build alternative would make no improvements to this bridge at this time (Appendix A, Figure 5). INDOT would continue its current inspection program to identify structural deficiencies and would address issues as required. As described in Section III above, the expedited repair implemented by INDOT in 2012 has an anticipated minimum lifespan of five years. Therefore, it is anticipated that sometime in 2017 or later, the bridge would require a permanent solution or would need to be closed to traffic. INDOT would continue to monitor the structure to ensure the safety of motorists.

Because of the age and condition of this structure, it is impossible to anticipate the cost of repairs that would be needed or when the bridge would require closure.

Compliance with Design Standards

The No Build Alternative would make no improvements to the structure, leaving all design elements in their current state. As shown in Table 6, the bridge does not meet INDOT Design Criteria for travel lane width and shoulder width on the bridge and approaches, clear roadway width and structural capacity on the bridge, and cross slope on the approaches.

TABLE 6 - DESIGN CRITERIA FOR ALTERNATIVE 1

Design Element	Minimum Design Criteria (1)	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features				
Travel Lane	12’	11’	11’	Yes
Shoulder	6’ (minimum)	1’	1’	Yes
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40’	24’	24’	Yes
Vertical Clearance	14’	14’-8”(2)	14’-8”	No
Roadway Features				
Travel Lane	12’	11’	11’	Yes
Shoulder Width	6’	1’	1’	Yes
Stopping Sight Distance at Vertical Curve	495’	1,124’	1,124’	No
Maximum Grade	5%	0.59%	0.59%	No
Through Lane Cross Slope	2%	1.5%	1.5%	Yes

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.

Hydraulics

The lowest point of the existing bridge is located at approximately elevation 574.05 feet above sea level. The Q_{100}, the elevation at which there is a 1% chance of a storm event of the magnitude in any given year, for this bridge is 573.00 above sea level. The *Indiana Design Manual* requires a minimum of 2 feet of freeboard, clearance between the Q_{100} and the bottom of the bridge, to allow for passage of ice and debris. The existing SR 46 bridge over the Eel River does not meet that standard and the No Build alternative would not alter that condition.

Historic Bridge Effects

This alternative would not alter the historic elements of the structure. The lower sway bracing, which was removed by INDOT, would remain as-is. However, the bridge would continue to deteriorate until closure was required.

Right-of-Way

The No Build alternative would require no right-of-way.

Utilities

The No Build alternative would have no impact on existing utilities in the corridor.

Maintenance of Traffic

Because there is no construction associated with this alternative, no maintenance of traffic plan is required. However, if, as a result of its continued deterioration, the bridge was closed temporarily for repairs or permanently, the official detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. SR 246 is a narrow, winding rural roadway not well suited to carry 159 commercial vehicles a day. When the bridge was closed in 2011 due to the condition of the bridge, the district received complaints and safety concerns from the public about the number of trucks on SR 246. When SR 46 was closed again in 2012, commercial traffic was routed along SR 59, I-70 and US 231 through Spencer, an additional approximately 22.5 miles. The district again received complaints from users and elected officials due to the additional distance. There is no adequate local road detour. CR 200 crosses the Eel River to the southwest, but doesn't afford significant time or mileage savings over the SR 59 and SR 246 official state detour.

Environmental Issues

This alternative would cause no direct environmental impacts. If the bridge required closure for a long duration, the diversion of traffic could have traffic-related impacts on other communities along the alternative route(s) that vehicles utilized.

Cost

The No Build Alternative does not include any improvements and, therefore, has no cost. As noted above, it is not possible to estimate the costs associated with any repairs that would be required or the user costs associated with any temporary or permanent closures. If the structure were closed for a long duration (or permanently) it may be necessary to make improvements to other roadways in the area to improve access or to allow them to accommodate the additional traffic.

Section 4(f) Evaluation

The No Build Alternative requires no design or construction; therefore, **it is a feasible alternative**. It would, however, retain the non-standard features identified above and the hydraulic capacity would remain insufficient. Further, this alternative does not provide a safe, reliable transportation facility for the SR 46 corridor. **It does not, therefore, meet the project's purpose and need** and is **not a prudent alternative**. It will, however, be retained throughout the project's development for comparison purposes as required by the National Environmental Policy Act.

B. Alternative 2: Rehabilitation for Continued Vehicular Use

Alternative Description

The scope of the rehabilitation described here is based on visual inspection and engineering judgment only. A detailed three-dimensional model could be used to refine the extent of improvements if this alternative was to be investigated further. This alternative would undertake a major rehabilitation of the existing bridge (Appendix A, Figure 6) including:

- Replacement of approximately 80% of lower chord members;
- Replacement of all gusset plates at the end bents and center pier;
- Replacement of approximately 50% of other gusset plates;
- Replacement of approximately 75% of splice plates, cover plates, and batten plates;
- Replacement of approximately 50% of the lower lateral cross bracing and corner support angles;
- Replacement of approximately 25% of vertical members;
- Replacement of the floor beams at each end bent and pier;
- Replacement of the existing bridge deck;
- Replacement of exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing (will be thicker, more compact section to allow vertical clearance requirement to be met);
- Replacement of all bridge railing;
- Replacement of rivets with round-headed bolts where members are replaced;
- Cleaning and painting of the entire bridge; and
- Patching of concrete on the abutments and center pier.

This alternative would be expected to extend the life of the structure by approximately 25 years. If the work was completed in 2016, the bridge would require additional rehabilitation in 2041, when major remaining elements would be 108 years old.

On the east side of the bridge, the approach roadway would be reconstructed for a length of approximately 300 feet to provide wider shoulders, add guardrail, and modify the driveway entrance to improve sight distance. On the west side, the reconstruction would also include relocating the intersection of CR 475 E and SR 46 approximately 200 feet to the west in order to improve the sight distance for vehicles entering from CR 475 E.

Compliance with Design Standards

This alternative would be designed to meet 3R standards as defined in the *Indiana Design Manual*. Due to the nature of truss bridges, it is not possible to address deficiencies related to the width of the structure without completely reconstructing the bridge (see Table 7). As such, design exceptions for lane, shoulder, and clear roadway width would be required. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS-20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved.

Hydraulics

Alternative 2 would make no changes to the elevation of the bridge, the substructure, or the channel. As such, this alternative would not meet the 2-foot freeboard requirement.

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity. Sway bracing would be re-installed – with some modifications – so as to not recreate the clearance issues that led to its removal.

Right-of-Way

Alternative 2 would require approximately 2.0 acres of new right-of-way from adjacent properties to allow for the improvements to the bridge, its approaches, and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 2 would require the relocation of approximately 2 utility poles as part of the realignment of CR 475 E.

TABLE 7 - DESIGN CRITERIA FOR ALTERNATIVE 2

Design Element	Minimum Design Criteria (1)	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features				
Travel Lane	12'	11'	11'	Yes
Shoulder	6' (minimum)	1'	1'	Yes
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40'	24'	24'	Yes
Vertical Clearance	14'	14'-8"(2)	14'-8"	No
Roadway Features				
Travel Lane	12'	11'	12'	No
Shoulder Width	6'	1'	8'	No
Stopping Sight Distance at Vertical Curve	495'	415'	501'	No
Maximum Grade	5%	3.7%	3.7%	No
Through Lane Cross Slope	2%	1.5%	2%	No

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.

Maintenance of Traffic

Rehabilitation of the existing bridge would require the full closure of SR 46 for approximately 9 months. During this time, the posted detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. This is the same detour route used during the closure in 2011. As noted previously, SR 246 is a narrow, winding rural roadway not well suited to large trucks, resulting in numerous complaints from the public when this was used as a detour route during the 2011 repair project.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction work on the approaches to the bridge would potentially cause minor impacts to a stream located in the southeast quadrant of the bridge. The jurisdictional status of other water features in the area

has not been determined. Minimal tree clearing may also be required. Impacts could potentially be minimized or eliminated during final design through the use of steeper slopes or retaining walls. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's Categorical Exclusion (CE) document and mitigated as appropriate. This alternative would also result in traffic-related impacts on other communities along the alternative route(s) that vehicles utilized during construction.

Cost

Alternative 2 would cost $4,838,780 to construct and would have user costs[2], resulting from time and operating expenses associated with the longer, slower detour of $4,848,363, for a total project cost of $9,687,143. Additional cost details are provided in Appendix C, pages 1-4 and pages 47-48. Due to its fracture critical nature, the bridge would continue to be inspected at one-year intervals (instead of the typical two-year interval for non-fracture-critical bridges), requiring expenditures not captured above.

Construction Cost*	$4,768,780
ROW/Utilities	$70,000
Project Cost	**$4,838,780**
User Costs	$4,848,363
TOTAL COST	**$9,687,143**

*Includes bridge rehabilitation and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 2; however, it would not meet structural capacity requirements. The H-20 load rating does not meet the needs of the corridor and, therefore, this alternative **does not meet the project's purpose and need**.

During the Individual Review for this bridge as part of the Historic Bridge Inventory Select/Non-Select analysis, it was determined that this bridge could not be rehabilitated to meet current applicable design standards and that design exceptions would not be appropriate for this bridge. As a result, the Individual Review designated the bridge Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles. Therefore, Alternative 2 **is not a feasible alternative**. While Alternative 2 would provide a reliable transportation corridor for at least 25 years, it requires an investment of almost $5 million and would cause user costs of an equal amount during the rehabilitation process. The Historic Bridge PA PDP establishes that if the cost of rehabilitation is equal to or greater than 80% of the replacement cost, it may not be suitable for rehabilitation. Alternative 2 exceeds this threshold when compared to several of the replacement alternatives (see Table 14). This alternative would retain the non-standard features identified above, it would not meet the 2-foot freeboard requirement, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. Based on this evaluation, Alternative 2 is **not a prudent alternative**.

[2] User costs were included in the evaluation due to the concerns raised by businesses and the public regarding safety and delays during the short-term closures associated with the 2011 and 2012 repair projects. User costs were calculated based on the methodology provided in the *Indiana Design Manual*, Section 81-4.02(2). User cost calculations for each alternative are provided in Appendix C.

C. Alternative 3: Rehabilitation for Continued Vehicular Use/One-Way Pair

Alternative Description

This alternative would construct a new bridge parallel to the existing bridge and rehabilitate the existing bridge, with each structure carrying a single lane of traffic. This alternative includes constructing a new bridge approximately 20' to the south of the existing structure (Appendix A, Figure 7) to carry eastbound traffic, retaining westbound traffic on the existing structure. To accommodate this directional split, the eastbound SR 46 roadway would shift to the south starting approximately 0.5 mile west of the bridge, travel across the new bridge over the Eel River, and re-join the existing SR 46 alignment approximately 0.25 mile east of the river. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years. In accordance with the *Historic Bridge Alternatives Analysis Layout*, the new bridge would be constructed to accommodate future 2-way travel, for the time when the existing bridge can no longer be maintained.

To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet.

The existing bridge would be rehabilitated in the same way described above for Alternative 2, with the same service life expectations (25 years).

Compliance with Design Standards

The new bridge would be designed to meet 4R standards as defined in the *Indiana Design Manual*, while the existing bridge would be rehabilitated to 3R standards, as shown in Table 8.

TABLE 8 - DESIGN CRITERIA FOR ALTERNATIVE 3

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features – Existing Bridge [(1)]				
Travel Lane	12'	11'	12'	No
Shoulder	6' (minimum)	1'	6'	No
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40'	24'	24'	No
Vertical Clearance	14'	14'-8"[(2)]	14'-8"	No
Bridge Features – New Bridge [(3)]				
Travel Lane	12'	11'	12'	No
Shoulder	6' (minimum)	1'	8'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	40'	24'	40'	No
Vertical Clearance	14'	14'-8"[(2)]	N/A [(4)]	No
Roadway Features [(1)]				
Travel Lane	12'	11'	12'	No
Shoulder Width	6'	1'	10'	No
Stopping Sight Distance at Vertical Curve	495'	415'	501'	No
Maximum Grade	5%	6.74	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(4) The new bridge will have no vertical obstructions.

The new bridge would meet all applicable design criteria. With only one lane utilizing the 24-foot wide bridge, the rehabilitated existing bridge would meet design standards for lane width and shoulders. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS-20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved.

The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green. This grade exists today and correcting it would be cost-prohibitive.

Hydraulics

The new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). Alternative 3, however, would make no changes to the elevation of the existing bridge, its substructure, or the channel. As such, the rehabilitated existing bridge would not meet the 2 foot freeboard requirement. Further, while a detailed hydraulic analysis has not been completed, it is anticipated that the analysis would show that the new bridge's west abutment would be required to line up with the existing bridge's abutment. Therefore, it would be subject to the same scour issues experienced by the existing bridge and would require regular maintenance of the installed countermeasures (likely riprap). As per the Historic Bridge PA, the existing bridge would be maintained for a minimum of 25 years; however, should it be removed after that time, the new bridge would remain in its hydraulically undesirable location for the rest of its service life (75 years).

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity. Sway bracing would be re-installed – with some modifications – so as to not recreate the clearance issues that led to its removal.

Right-of-Way

Alternative 3 would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the new eastbound bridge and approach roadways and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 3 would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. All traffic would then be shifted to the new bridge during the rehabilitation of the existing bridge. No disruption to SR 46 traffic is anticipated except at the

location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 3 would cost $11,349,048 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total project cost of $11,430,129. Additional cost details are provided in Appendix C, pages 5-10 and page 50. Due to its fracture critical nature, the bridge would continue to be inspected at one-year intervals (instead of the typical two-year interval for non-fracture-critical bridges), requiring expenditures not captured above.

Construction Cost*	$11,075,048
ROW/Utilities	$274,000
Project Cost	**$11,349,048**
User Costs	$81,081
TOTAL COST	**$11,430,129**

*Includes rehabilitation of existing bridge, the new bridge, and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 3; however, it would not meet structural capacity requirements. The H-20 load rating does not meet the needs of the corridor and, therefore, this alternative **does not meet the project's purpose and need**.

During the Individual Review for this bridge as part of the Historic Bridge Inventory Select/Non-Select analysis, it was determined that this bridge could not be rehabilitated to meet current applicable design standards and that design exceptions would not be appropriate for this bridge. As a result, the Individual Review designated the bridge Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles. Therefore, Alternative 3 **is not a feasible alternative**. Alternative 3 would address some of the geometric deficiencies by only placing a single lane of traffic on the existing bridge, but the existing bridge would retain its insufficient freeboard, leaving it at risk for damage due to ice or debris, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. The Historic Bridge PA PDP establishes that if the cost of rehabilitation is equal to or greater than 80% of the replacement cost, it may not be suitable for rehabilitation. At a cost of $11,349,048, this is the most expensive alternative to construct and would exceed this threshold (see Table 14). Based on this evaluation, Alternative 3 is **not a prudent alternative**.

D. Alternative 4: Bypass/Non-Vehicular Use

Alternative Description

This alternative includes constructing a new bridge approximately 20' to the south of the existing structure (Appendix A, Figure 8). The alignment of SR 46 would need to be adapted to access this new structure. Starting about 0.5 mile west of the bridge, SR 46 would diverge to the south of the existing alignment and require a reverse curve formation in order to merge back into the

existing roadway alignment approximately 0.25 mile east of the bridge. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years.

Once complete, all SR 46 traffic would utilize the new structure. The existing bridge would be retained for non-vehicular (pedestrian) use. Given the decreased loading associated with pedestrian use, the extent of rehabilitation would not be quite as extensive as required for vehicular use. The scope of the rehabilitation described here is based on visual inspection and engineering judgment only. A detailed three-dimensional model could be used to refine the extent of improvements if this alternative was to be investigated further. Based on this review, the following improvements are proposed:

- Replacement of approximately 25% of lower chord members;
- Replacement of all gusset plates at the end bents and center pier;
- Replacement of approximately 50% of other gusset plates;
- Replacement of approximately 25% of splice plates, cover plates, and batten plates;
- Replacement of approximately 10% of the lower lateral cross bracing and corner support angles;
- Replacement of approximately 10% of vertical members;
- Replacement of the floor beams at each end bent and pier;
- Replacement of the existing bridge deck;
- Replacement of exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Replacement of bridge railing;
- Replacement of rivets with round-headed bolts where members are replaced; and
- Cleaning and painting of the entire bridge.

The existing roadway approaches would provide access to the existing bridge for vehicles and/or pedestrians. While not included in the current design, a sidewalk or multi-use path could be provided from Bowling Green as well. The unincorporated town of Bowling Green, located approximately 0.25 mile to the east of the existing bridge with a population of approximately 250, is the closest population center and does not commonly draw visitors from other areas.

At a December 4, 2014 meeting with Consulting Parties, a request was made to INDOT to conduct outreach to Clay County and the public to determine the level of interest in retaining the bridge in its current location. On January 29, 2015, INDOT held a public meeting in Bowling Green to provide an overview of the project, including the bridge's condition, the alternatives under consideration, and the potential to relocate the bridge to Brown County. The presentation also included the requirements for a party seeking to take ownership of the bridge. A copy of the materials presented at the meeting, as well as the comments received is provided in Appendix F-7.

The deadline for a party to step forward was originally set as March 30, 2015; however, based on comments received at the meeting and during the comment period, INDOT extended this deadline to the time of the public hearing, currently anticipated for the first week of August 2015, a period of more than six months from the date of the public meeting.

To date, no parties have stepped forward to take responsibility for the structure and retain it in place.

Compliance with Design Standards

The new bridge would be designed to meet 4R standards as defined in the *Indiana Design Manual* as shown in Table 9.

The new bridge would meet all applicable design criteria. The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green. The steep grade exists today and correcting it would be cost-prohibitive.

The structural capacity of the pedestrian bridge is based on an H10 design vehicle, which would accommodate typical maintenance vehicles that may need to utilize the bridge.

Hydraulics

The new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). Alternative 4, however, would make no changes to the elevation of the existing bridge, its substructure, or the channel. As such, the existing bridge, repurposed for pedestrian use, would not meet the 2 foot freeboard requirement. Further, while a detailed hydraulic analysis has not been completed, it is anticipated that the analysis would show that the new bridge's west abutment would be required to line up with the existing bridge's abutment. Therefore, it would be subject to the same scour issues experienced by the existing bridge and would require regular maintenance of the installed countermeasures (likely riprap). As per the Historic Bridge PA, the existing bridge would be maintained for a minimum of 25 years; however, should it be removed after that time, the new bridge would remain in its hydraulically undesirable location for the rest of its service life (75 years).

TABLE 9 - DESIGN CRITERIA FOR ALTERNATIVE 4

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features [(1)]				
Travel Lane	12’	11’	12’	No
Shoulder	10’	1’	10’	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44’	24’	44’	No
Vertical Clearance	16.5’	14’-8”[(2)]	N/A [(3)]	No
Pedestrian Bridge Features [(4)]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [(1)]				
Travel Lane	12’	11’	12’	No
Shoulder Width	10’	1’	10’	No
Stopping Sight Distance at Vertical Curve	570’	415’	579’	No
Maximum Grade	3%	2.74%	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed.

Right-of-Way

Alternative 4 would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the new eastbound bridge and approach roadways and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 4 would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. No disruption to SR 46 traffic is anticipated except at the location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 4 would cost $10,260,836 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $10,341,917. Additional cost details are provided in Appendix C, pages 11-16 and page 50.

Construction Cost*	$9,986,836
ROW/Utilities	$274,000
Project Cost	**$10,260,836**
User Costs	$81,081
TOTAL COST	**$10,341,917**

*Includes rehabilitation of existing bridge, the new bridge, and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 4; therefore, **it is a feasible alternative**. Alternative 4 would provide a safe, reliable, and cost-effective structure to carry all traffic in the SR 46 corridor. The bridge and roadway would meet nearly all design criteria, with a design exception required only for the grade approaching Bowling Green. The existing bridge, repurposed for pedestrian use, would retain its insufficient freeboard, leaving it at risk for damage due to ice or debris, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. Based on the location of the bridge in a sparsely populated area, INDOT believes that the pedestrian usage of the existing bridge would be minimal and provide little value to the general public as a historic site compared to its

potential use at other locations. As described below, several groups expressed interest in utilizing the bridge as part of planned, high-demand trail networks.

Based on the reasons above, Alternative 4 has been identified as **not prudent**, pending outreach to local stakeholders regarding the potential demand for the bridge to remain in place.

E. Alternative 5: Bridge Replacement/Relocation of Historic Bridge

Alternative Description

This alternative includes the construction of a new bridge over the Eel River and relocation of the existing bridge to a new location for use as a pedestrian/bicycle facility. As is the case in any bridge replacement project, there are several options for construction methods and alignment. Five options – or subalternatives – were developed for consideration under this alternative:

- 5A – Bridge Replacement on Existing Alignment – Full Detour
- 5B-S – Bridge Replacement on Existing Alignment – Temporary Bridge to South
- 5B-N – Bridge Replacement on Existing Alignment – Temporary Bridge to North
- 5C-S – Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)
- 5C-N – Bridge Replacement on New Alignment to North

Each option would provide a new bridge that would provide a safe, reliable, cost-effective structure for vehicles in the SR 46 corridor. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years. Each would also relocate the existing historic bridge to a new location where it would be highly utilized and maintained for a minimum of 25 years. The primary differences are in the location of the new bridge, the approach to maintaining traffic during construction, and potential user costs.

Bridge Relocation Options

In accordance with the Historic Bridge PA PDP, this alternative would require the identification of a suitable location for the structure, as well as an organization willing to commit to taking ownership and maintenance responsibility. It would also require INDOT, as the bridge's current owner, to pay for the cost to rehabilitate and relocate the structure. The IDNR Division of Outdoor Recreation maintains an email list of individuals and organizations involved in the development and improvement of recreational trails. At INDOT's request, information regarding the existing SR 46 bridge, including dimensions, conditions, and adoption requirements, was distributed to more than 300 people (see Appendix F-1).

Three interested parties responded to IDNR's solicitation: John Bawcum, Friends of the Panhandle Pathway, Inc. (see Appendices F-2 and F-3); Cliff Kunze, Covered Bridge Gateway Trails Association (see Appendix F-4); and Mike List, Indiana State Parks & Reservoirs (see Appendix F-5). The Panhandle Pathway was interested in using the SR 46 bridge (or more likely, one of the spans) to provide a grade-separated trail crossing of SR 14 in Winamac, Indiana. The Covered Bridge Gateway Trails Association expressed interest in relocating the SR 46 bridge as part of a rails-to-trails project in Parke County. The proposal from Indiana State Parks & Reservoirs was to use the bridges at two locations of the Salt Creek Trail, which is under development near Brown County State Park.

INDOT reviewed the three requests and determined that the Salt Creek Trail option was the best option for preserving the bridge and in the best interest of the State (see Appendix F-6). The Salt Creek Trail project has been under development for approximately 10 years and, as of this year, one segment is open and three of its four remaining segments (including the one

where the bridges would be placed) are fully funded. A Categorical Exclusion (CE) document was completed in 2007 for the entire trail; due to some alignment changes a portion of the trail will be re-evaluated in a new CE document in the next year. The anticipated high usage (10,000 people per year) and the location of one of the bridge spans immediately adjacent to SR 46 at Eagle Park will provide a high level of visibility for the spans. While using the bridge for the Salt Creek Trail project would require separation of the bridge into its two component spans, based on the other responses received and INDOT's past experience with bridge relocation for recreational trails, due to the length of this bridge any other proposal to reuse the bridge would likely do the same.

Since selecting the Salt Creek Trail location as the proposed relocation option, additional investigations and analyses have been conducted in the areas where the two spans would be placed. A hydraulic analysis has been conducted to confirm the requirements for span lengths and location and preliminary field investigations have been conducted to identify potential environmental resources. An approach that would keep the two spans together as part of the Salt Creek Trail was evaluated; however, the topography, hydraulic conditions, and presence of wetlands in the area, make that option impractical. These preliminary investigations confirmed that using the spans at two separate locations was the only practical option.

The Salt Creek Trail

Under each of the Alternative 5 options (A, B-S, B-N, C-S, and C-N), the existing bridge would be rehabilitated and relocated for use on the Salt Creek Trail, a 2.5-mile multi-use trail connecting Nashville, Indiana to Brown County State Park, two heavily visited tourist destinations (See Figure 9). The purpose of the trail project is to provide an alternative transportation mode for pedestrians that are currently using State Road 46 to travel to land uses in and between Nashville and Brown County State Park. The conflict between pedestrians and the motoring public is currently unsafe. The trail will reduce traffic congestion between the County's three largest motels and the shops in Nashville by providing pedestrian access rather than visitors driving to the shopping areas. In addition, the trail will provide a safe means of transportation for the youth of Nashville and Brown County, as the trail will connect with the Brown County School Corporation sports facilities.

The trail has been under development for several years, with construction of the first phase breaking ground earlier this year. The project includes two crossings of Salt Creek, approximately 0.7 mile apart from one another. The SR 46 bridge is comprised of two 198 foot long trusses that are structurally independent and are of an appropriate length to span the two Salt Creek crossings. The current cost estimate for the trail project, assuming the construction of new bridges at the two stream crossings, is $5,000,000 with construction to be completed in 2017.[3] **When complete, it is anticipated that approximately 10,000 people will use the trail each year.**

While a formal agreement will be developed later in the project process, under the plan INDOT, which is obligated under the Historic Bridge PA to ensure the bridge is preserved, will pay to dismantle the existing bridge, replace or rehabilitate any elements that require it, construct new foundations, and install the truss spans in their new locations. It is anticipated that the span to be located adjacent to SR 46 at Eagle Park would be owned and maintained by Brown County, while the span located within Brown County State Park would be owned and maintained by IDNR. Each agency will be required to sign an agreement committing to maintain their

[3] The trail project is being built in segments as funding becomes available. This cost estimate was developed prior to the availability of the Eel River spans and assumed construction of two new bridges at these locations. As such, the cost estimate for the trail would be reduced by some amount if the Eel River spans were relocated to the trail.

respective structures for a minimum of 25 years. However, it is anticipated that, based on the anticipated visitation levels, the bridges would be retained far beyond that minimum. IDNR and Brown County have each submitted a letter of intent to take responsibility for the bridge spans (Appendix F-8).

Compliance with Design Standards

Each of the Alternative 5 options would be designed to meet 4R standards as defined in the *Indiana Design Manual*. None of the options would address the maximum grade on the approach into Bowling Green. Design standard compliance details for each option are provided in the sections below.

Hydraulics

Under each Alternative 5 option, the new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). The west abutment of the new, longer structure would be located such that scour would not be a concern.

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed. In accordance with Attachment B of the Historic Bridge PA, the rehabilitation plans will be reviewed by SHPO to ensure compliance with the Secretary of Interior's Standards for Rehabilitation and to incorporate context sensitive design features, where practicable.

Based on coordination with SHPO, there is concern that relocation of the trusses would result in their immediate removal from the NRHP. There is also concern that, because the bridge is listed under Criterion A for its transportation significance in the settlement and development of Clay County, that its relocation to another county would make it ineligible for continued listing. SHPO has requested that INDOT initiate a request that the bridge also be considered under Criterion C based on its engineering significance as well as its continued listing during and following any relocation. INDOT is in the process of submitting such a request.

Right-of-Way

Each of the Alternative 5 options would require right-of-way, ranging from 7-16 acres. No relocations would be required. Details for each option are provided in the sections below.

Utilities

Each option would require the relocation of some utilities; details for each option are provided below. None of these relocations are anticipated to be complicated or excessively costly.

Maintenance of Traffic

Alternative 5A would require a full detour resulting in high user costs. Each of the other options would maintain traffic on SR 46 except for limited periods. Details for each option are provided in the sections below.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Each of the alternatives would result in minor to moderate impacts to environmental resources, but would not impact any

unique or exceptional resources for which mitigation is not possible. Additional information is provided in the sections below.

Cost

Estimated project costs (right-of-way, utilities, construction, and rehabilitation/relocation of the existing bridge) for the Alternative 5 options range from $8.2 – 11.0 million. User costs associated with closures and detours range from $80,000 to $4.8 million, the latter associated with the 9-month closure required to construct Alternative 5A. Total estimated costs range from $9.7 million to $13.0 million.

Section 4(f) Evaluation

It would be possible to design and build each of the Alternative 5 options; therefore, **each is a feasible alternative**.

Each of the Alternative 5 options would construct a safe, reliable structure to carry all traffic in the SR 46 corridor, thus meeting the project's purpose and need. Under each, the existing bridge would be relocated to the Salt Creek Trail, where there is a strong demand for a pedestrian facility and the truss spans can be installed to meet all hydraulic requirements.

Impacts associated with each of the Alternative 5 options vary; however, none would be considered severe. Long-term operation and maintenance costs would be similar for each and, while construction and user costs vary, none are of an extraordinary magnitude. Based on this evaluation, **each is a prudent alternative**.

The Section 4(f) analysis for each alternative is summarized in Table 14.

The sections below provide additional details about each Alternative 5 option and provide the basis for the selection of the preliminary preferred alternative.

Alternative 5A – Bridge Replacement on Existing Alignment – Full Detour

Alternative 5A would replace the bridge over the Eel River utilizing the existing SR 46 alignment (Appendix A, Figure 10). The roadway would be closed throughout construction and all traffic detoured. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. This would require reconstruction of SR 46 for approximately 800 feet to the west of the existing bridge and approximately 600 feet to the east in order to transition back to existing grade.

Accelerated Bridge Construction (ABC) techniques were investigated in an effort to minimize the duration of the closure. These methods include the use of prefabricated bridge elements or construction of the bridge offline and then sliding it into place. These techniques are typically applied when a structure is being replaced on its existing alignment and closures incur substantial impacts. At this location, both prefabricated elements and slide-in structures were considered. However, as noted earlier, the roadway profile at this location must be raised by 6-8 feet to accommodate the additional structure depth of a new bridge and provide adequate freeboard above the river. Additionally, any new bridge would need to be longer than the existing one, likely with a different span arrangement, to satisfy hydraulic requirements. While these techniques could be applied to the SR 46 bridge, they would be cost-prohibitive compared to alternative methods of maintaining traffic. As such, Alternative 5A did not include any of these techniques.

Compliance with Design Standards

The new bridge would be designed to meet 4R as defined in the *Indiana Design Manual* as shown in Table 10.

The new bridge would meet all applicable design criteria. The approach roadways would also meet all design criteria; however, it should be noted that the nonstandard grade on the approach to Bowling Green identified in other alternatives would exist under this alternative as well, but would lie outside the project limits and, therefore, not require a Level 1 design exception.

Right-of-Way

Alternative 5A would require approximately 7.0 acres of new right-of-way from 5 parcels to allow for the grading required to raise the roadway profile and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5A would require the relocation of approximately 2 utility poles to allow for the realignment of CR 475 E.

Maintenance of Traffic

Alternative 5A would require the full closure of SR 46 for approximately 9 months. During this time, the posted detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. This is the same detour route used during the closure in 2011. As noted previously, SR 246 is a narrow, winding rural roadway not well suited to large trucks, resulting in numerous complaints from the public when this was used as a detour route during the 2011 repair project.

TABLE 10 - DESIGN CRITERIA FOR ALTERNATIVE 5A

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder	10’	1’	10’	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44’	24’	44’	No
Vertical Clearance	16.5’	14’-8”(2)	N/A (3)	No
Pedestrian Bridge Features (4)				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder Width	10’	1’	10’	No
Stopping Sight Distance at Vertical Curve	570’	415’	588’	No
Maximum Grade	3%	3.7%	2.8%	No
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction work on the approaches to the bridge would potentially cause minor impacts to a stream located in the southeast quadrant of the bridge. The jurisdictional status of other water features in the area has not been determined. Minimal tree clearing may also be required. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate. This alternative would also result in traffic-related impacts on other communities along the alternative route(s) that vehicles utilized.

Cost

Alternative 5A would cost $8,179,880 to construct and would have user costs, resulting from time and operating expenses associated with the longer, slower detour of $4,848,363, for a total cost of $13,028,243. Additional cost details are provided in Appendix C, pages 17-22 and pages 47-48.

Construction Cost*	$8,029,880
ROW/Utilities	$150,000
Project Cost	**$8,179,880**
User Costs	$4,848,363
TOTAL COST	**$13,028,243**

*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements

Alternative 5B-S – Bridge Replacement on Existing Alignment – Temporary Bridge to South

Alternative 5B-S would replace the bridge over the Eel River utilizing the existing SR 46 alignment (Appendix A, Figure 11). In order to maintain traffic during construction, a temporary bridge would be constructed to the south of the existing bridge. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. This would require reconstruction of SR 46 for approximately 800 feet to the west of the existing bridge and approximately 600 feet to the east in order to transition back to existing grade.

The temporary bridge would be designed as a 6-span, 372-foot long, single lane structure with temporary signals on either end to control traffic flow. The temporary bridge would be constructed with a low structure elevation of 567.6. This elevation, equivalent to the Q_2 storm event (a storm that has a 50% chance of occurrence in any given year), would allow water to overtop the roadway and not create a backwater issue upstream. In the event of a storm greater than the Q_2 storm, the bridge would be closed to traffic. Throughout construction, the temporary bridge would need to be monitored for the accumulation of debris at the piers that could create scour concerns. The contractor would be required to remove debris immediately.

Compliance with Design Standards

The new bridge would be designed to meet 4R as defined in the *Indiana Design Manual* as shown in Table 11.

The new bridge would meet all applicable design criteria. The approach roadways would also meet all design criteria; however, it should be noted that the nonstandard grade identified in other alternatives would exist under this alternative as well, but would lie outside the project limits and, therefore, not require a Level 1 design exception.

Right-of-Way

Alternative 5B-S would require approximately 10.6 acres of new right-of-way from 5 parcels to allow for the construction of the temporary bridge, the grading required to raise the roadway profile, and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5B-S would require the relocation of approximately 5 utility poles.

Maintenance of Traffic

As described above, a single-lane temporary bridge would be in place throughout construction, with temporary signals at either end controlling traffic. While vehicles would experience some delay associated with the signals, reduced speeds, and roadway curvature, SR 46 would remain open to all traffic.

TABLE 11 - DESIGN CRITERIA FOR ALTERNATIVE 5B-S

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder	10’	1’	10’	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44’	24’	44’	No
Vertical Clearance	16.5’	14’-8”(2)	N/A (3)	No
Pedestrian Bridge Features (4)				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder Width	10’	1’	10’	No
Stopping Sight Distance at Vertical Curve	570’	415’	588’	No
Maximum Grade	3%	3.7%	2.8%	No
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the temporary bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species

and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 5B-S would cost $11,025,257 to construct and would have user costs, resulting from time and operating expenses associated with the construction zone of $576,445, for a total cost of $11,601,702. Additional cost details are provided in Appendix C, pages 23-28 and page 49. Note the user costs presented here do not include the costs associated the closure of the temporary bridge due to a large storm event. Depending on the magnitude and duration of the event the user cost could increase substantially.

Construction Cost*	$10,814,257
ROW/Utilities	$211,000
Project Cost	**$11,025,257**
User Costs	$576,445
TOTAL COST	**$11,601,702**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5B-N – Bridge Replacement on Existing Alignment – Temporary Bridge to North

Alternative 5B-N would be similar to Alternative 5B-S except that the temporary structure would be built to the north of the existing bridge (Appendix A, Figure 12). Only features that differ from Alternative 5B-S are described below.

Right-of-Way

Alternative 5B-N would require approximately 11.0 acres of new right-of-way from 5 parcels to allow for the construction of the temporary bridge, the grading required to raise the roadway profile, and the realignment of CR 475 E.

Utilities

Buried fiber optic lines parallel the roadway to the north. Alternative 5B-N would require the lines to be relocated. This alternative would also require the relocation of approximately 2 utility poles on the south side of the roadway in order to realign CR 475 E.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction of the roadway approaches would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. Construction of the temporary bridge to the north would require additional tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Construction Cost*	$10,828,285
ROW/Utilities	$200,000
Project Cost	**$11,028,285**
User Costs	$576,445
TOTAL COST	**$11,604,730**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5B-N would cost $11,028,285 to construct and would have user costs, resulting from time and operating expenses associated with the construction zone of $576,445, for a total cost of $11,604,730. Additional cost details are provided in Appendix C, pages 29-34 and page 49. Note the user costs presented here do not include the costs associated the closure of the temporary bridge due to a large storm event. Depending on the magnitude and duration of the event the user cost could increase substantially.

Alternative 5C-S – Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)

Alternative 5C-S would construct a new bridge over the Eel River approximately 20 feet to the south of the existing bridge and permanently realign the SR 46 roadway (Appendix A, Figure 13). To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet.

The alignment of SR 46 would need to be adapted to access this new structure. Starting about 0.5 mile west of the bridge, SR 46 would diverge to the south of the existing alignment and require a reverse curve formation in order to merge back into the existing roadway alignment approximately 0.25 mile east of the bridge.

Compliance with Design Standards

The new bridge would meet all applicable design criteria. The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green as shown in Table 12. The steep grade exists today and correcting it would be cost-prohibitive.

TABLE 12 - DESIGN CRITERIA FOR ALTERNATIVE 5C-S

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder	10’	1’	10’	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44’	24’	44’	No
Vertical Clearance	16.5’	14’-8”(2)	N/A (3)	No
Pedestrian Bridge Features (4)				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder Width	10’	1’	10’	No
Stopping Sight Distance at Vertical Curve	570’	415’	588’	No
Maximum Grade	3%	6.74%	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Right-of-Way

Alternative 5C-S would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the bridge and the realignment of SR 46 and CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5C-S would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. No disruption to SR 46 traffic is anticipated except at the location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project’s CE document and mitigated as appropriate.

Cost

Alternative 5C-S would cost $9,663,935 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $9,745,016. Additional cost details are provided in Appendix C, pages 35-40 and page 50.

Construction Cost*	$9,389,935
ROW/Utilities	$274,000
Project Cost	**$9,663,935**
User Costs	$81,081
TOTAL COST	**$9,745,016**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5C-N – Bridge Replacement on New Alignment to North

Alternative 5C-N would be similar to Alternative 5C-S except that the new bridge would be built to the north of the existing bridge (Appendix A, Figure 14). Only features that differ from Alternative 5C-S are described below.

Compliance with Design Standards

Like Alternative 5C-S, this alternative would require a Level 1 design exception for maximum grade based on the grade approaching Bowling Green, as shown in Table 13. Alternative 5C-N would also require a Level 1 design exception for the curve radius in the same area. While a full sight distance analysis has not been completed, it is likely that sight distance would be further compromised due to the likely need to install guardrail on the inside of this curve. Flattening out this curve to make it standard would require acquisition of right-of-way from multiple residential parcels in Bowling Green.

Right-of-Way

Alternative 5C-N would require approximately 16.1 acres of new right-of-way from 13 parcels to allow for the construction of the bridge and the realignment of SR 46 and CR 475 E. It is also likely that this alternative would require the relocation of one residence in Bowling Green.

Utilities

Buried fiber optic lines parallel the roadway to the north. Alternative 5B-N would require the lines to be relocated. This alternative would also require the relocation of approximately 2 utility poles in order to realign CR 475 E.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the north would require moderate tree clearing. The jurisdictional status of water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

TABLE 13 - DESIGN CRITERIA FOR ALTERNATIVE 5C-N

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder	10’	1’	10’	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44’	24’	44’	No
Vertical Clearance	16.5’	14’-8”(2)	N/A (3)	No
Pedestrian Bridge Features (4)				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features (1)				
Travel Lane	12’	11’	12’	No
Shoulder Width	10’	1’	10’	No
Horizontal Curvature	1200’	1,432’	1000’	Yes
Stopping Sight Distance at Vertical Curve	570’	415’	588’	No
Maximum Grade	3%	6.74%	7.36%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Cost

Alternative 5C-N would cost $10,015,307 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $10,096,388. Additional cost details are provided in Appendix C, pages 41-46 and page 50.

Construction Cost*	$9,458,840
ROW/Utilities	$371,000
Project Cost	**$10,015,307**
User Costs	$81,081
TOTAL COST	**$10,096,388**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternatives Evaluation

While the project cost of Alternative 5A is the lowest of these options, it would cause substantial user costs ($4.8 million) as a result of the closure of SR 46 for approximately 9 months. Based on the response to the previous closures, both of which were much shorter, INDOT has determined that this alternative is not in the interest of the traveling public and eliminated it from consideration.

Alternatives 5B-N and 5B-S would each utilize a temporary bridge and signal to construct a new bridge on the existing alignment. Either alternative would reduce the user costs compared to Alternative 5A, with only a couple short term closures required. However, the temporary bridge’s low elevation would introduce a risk that it would be overtopped requiring additional closures. Finally, these options would cost more than $1 million more than Alternative 5C-S or 5C-N.

Alternatives 5C-N and 5C-S would each maintain traffic on the existing bridge and roadway throughout construction, minimizing user costs associated with delay or detours. Project costs are similar for each, as are environmental and right-of-way impacts. Both would require a Level 1 design exception for the maximum grade approaching Bowling Green; Alternative 5C-N, would introduce a horizontal curve on its approach to Bowling Green that would require an additional Level 1 design exception. Eliminating this non-standard curve would require impacts to several residential properties.

Based on the analysis above, INDOT has identified Alternative 5C-S as the preliminary preferred alternative. A comparison of all alternatives is provided in Table 14.

VI. MINIMIZATION AND MITIGATION

In addition to evaluating if there is a feasible and prudent avoidance alternative, minimization and mitigation of unavoidable impacts to the historic resource is required.

A. Minimization

As noted above, no formal determination has been made as to whether the rehabilitation of the existing bridge described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed, as it would meet the 10 foot minimum clearance for a shared use path. In accordance with Attachment B of the Historic Bridge PA, the rehabilitation plans will be reviewed by SHPO to ensure compliance with the Secretary of Interior's Standards for Rehabilitation and to incorporate context sensitive design features, where practicable.

B. Mitigation

INDOT will consult with the SHPO to determine if photo documentation of the existing bridge is needed. Any requirement for documentation will be included in the Section 106 Findings documentation. INDOT will work with IDNR to determine if interpretive signage regarding the bridge's history and origin could be provided nearby.

VII. PRELIMINARY PREFERRED ALTERNATIVE

As noted above, Alternative 5C-S was found to be both feasible and prudent and has been identified as the preliminary preferred alternative.

TABLE 14: ALTERNATIVES ANALYSIS SUMMARY

Alternative		Meets Project Purpose & Need	Project Cost	User Cost	Total Cost	Feasible & Prudent
1	No Build	No (non-standard features, hydraulics, continued closures/repairs)	N/A*	$6,482,243 per year of closure*	N/A*	Feasible: Yes Prudent: No – Does not meet purpose and need; cost associated with road closure
2	Rehabilitation for Continued Vehicular Use	No (structural capacity)	$4,838,780	$4,848,363	$9,687,143	Feasible: No – Cannot be rehabilitated to meet current design standards Prudent: No – Non-standard features, hydraulics, user costs
3	Rehabilitation for Continued Vehicular Use/ One-Way Pair	No (structural capacity)	$11,349,048	$81,081	$11,430,129	Feasible: No – Cannot be rehabilitated to meet current design standards Prudent: No – Non-standard features, hydraulics
4	Bypass/Non-Vehicular Use	Yes	$10,260,836	$81,081	$10,341,917	Feasible: Yes Prudent: No – Pedestrian bridge hydraulics; very low pedestrian usage
5A	Bridge Replacement on Existing Alignment – Full Detour	Yes	$8,179,880	$4,848,363	$13,028,243	**Feasible: Yes** **Prudent: Yes**
5B-S	Bridge Replacement on Existing Alignment – Temporary Bridge to South	Yes	$11,025,257	$576,445	$11,601,702	
5B-N	Bridge Replacement on Existing Alignment – Temporary Bridge to North	Yes	$11,028,285	$576,445	$11,604,730	
5C-S	Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)	Yes	$9,663,935	$81,081	$9,745,016	
5C-N	Bridge Replacement on New Alignment to North	Yes	$10,015,307	$81,081	$10,096,388	

* While the No Build Alternative does not include any improvements, it is not possible to estimate the costs associated with any repairs that would be required or the user costs associated with any temporary or permanent closures.

Appendix B

Photographs & Maps of the Bridge in its Existing Location

Image: USGS, Center Point quad
Data: USFWS, National Wetlands Inventory

0 500 1,000 2,000 Feet

Legend

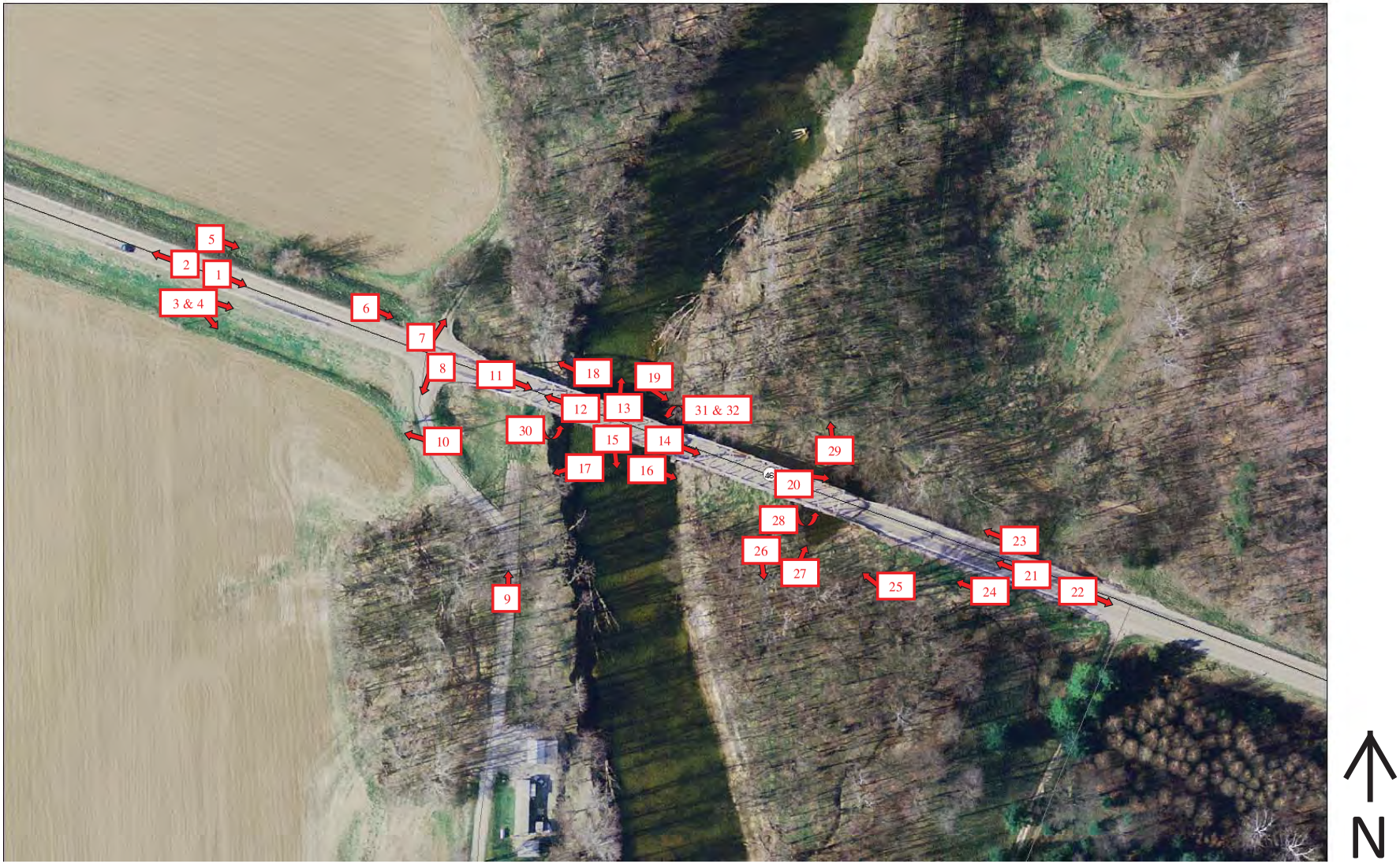
NWI Polygons

PARSONS

DES: 0800910

S.R. 46 Bridge Project over Eel River; 4.84 Miles East of S.R. 59; Clay County

Project Area Photographs; Photograph Location Map



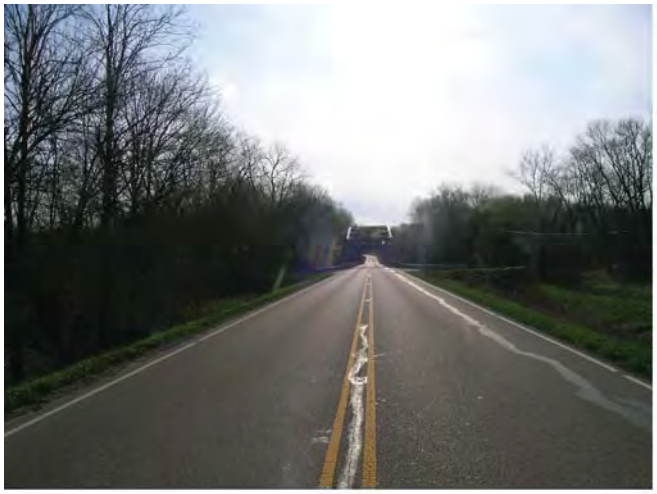


Photo 1: Standing on SR 46 facing east towards the bridge (Bridge # 046-11-01316A).

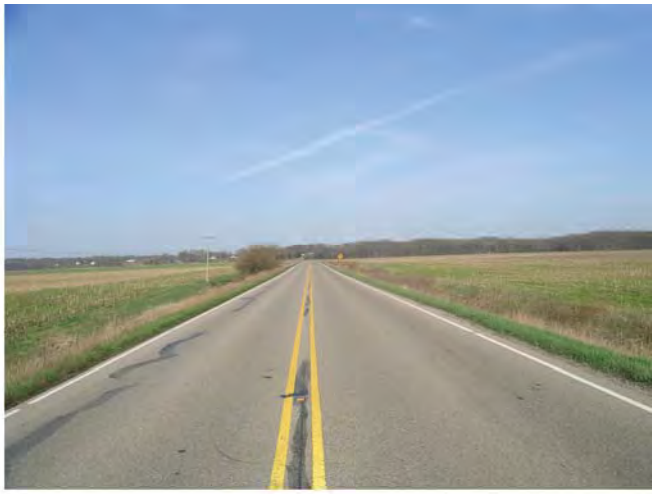


Photo 2: Standing on SR 46 facing west.

Photo 3: View (1) of the SW ditch.

Photo 4: View (2) of the SW ditch and farmland where CR 475 E will be relocated.

Photo 5: View of the NW shoulder.

Photo 6: View of the farm filed entrance adjacent from CR 475 E.

Photo 7: Looking north at the farm field entrance intersection with SR 46.

Photo 8: Looking south at the SR 46/CR 475 E intersection.

Photo 9: Standing on CR 475 E looking north.

Photo 10: Standing on CR 475 looking west to where CR 475 E will be relocated.

Photo 11: Standing on SR 46 looking east at the bridge.

Photo 12: Standing on the bridge looking west.

Photo 13: Standing on the bridge looking north (upstream) at the Eel River.

Photo 14: Standing on the bridge looking east.

Photo 15: Standing on the bridge looking south (downstream) at the Eel River.

Photo 16: View of the SE bank.

Photo 17: View of the SW bank.

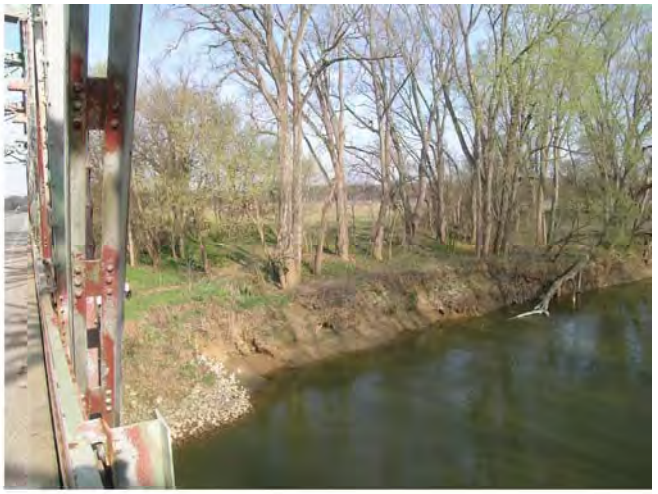


Photo 18: View of the NW bank.

Photo 19: View of the NE bank.

Photo 20: Looking at a ponded area near the eastern abutment.

Photo 21: Standing on SR 46 facing west towards the bridge.

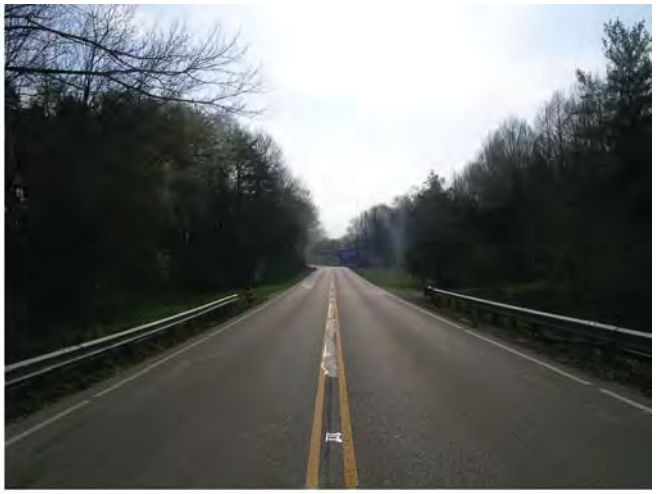


Photo 22: Standing on SR 46 facing east.

Photo 23: View of the NE shoulder.

Photo 24: View of the SE shoulder.

Photo 25: Standing in the floodplain, looking northwest at the bridge.

Photo 26: Looking south at the floodplain.

Photo 27: Looking north at the floodplain and ponded area adjacent to the eastern abutment.

Photo 28: View (2) of the ponded area.

Photo 29: Looking north at the floodplain.

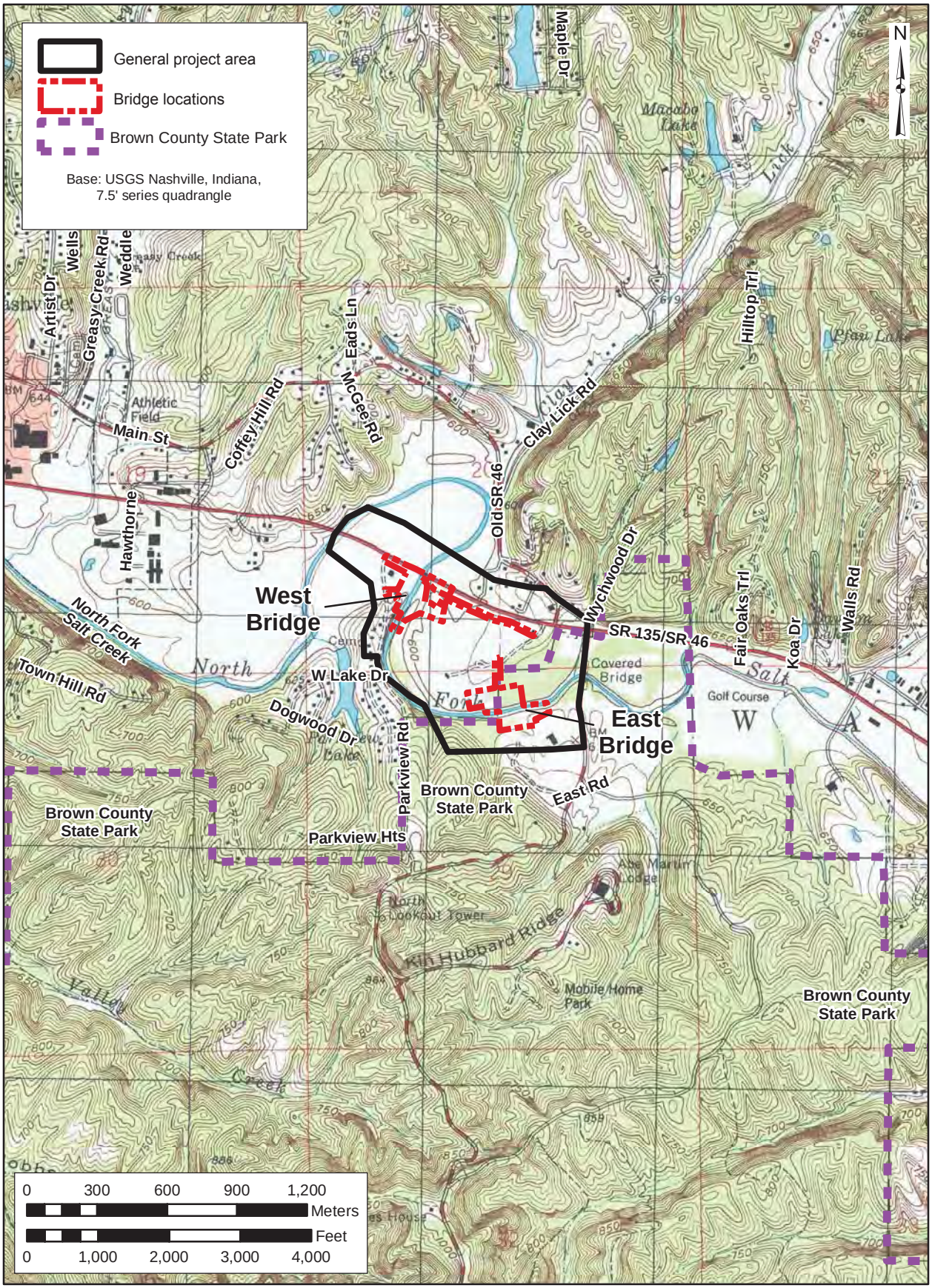
Photo 30: View of the western bank of the Eel River under the bridge.

Photo 31: View of the NE bank of the Eel River under the bridge.

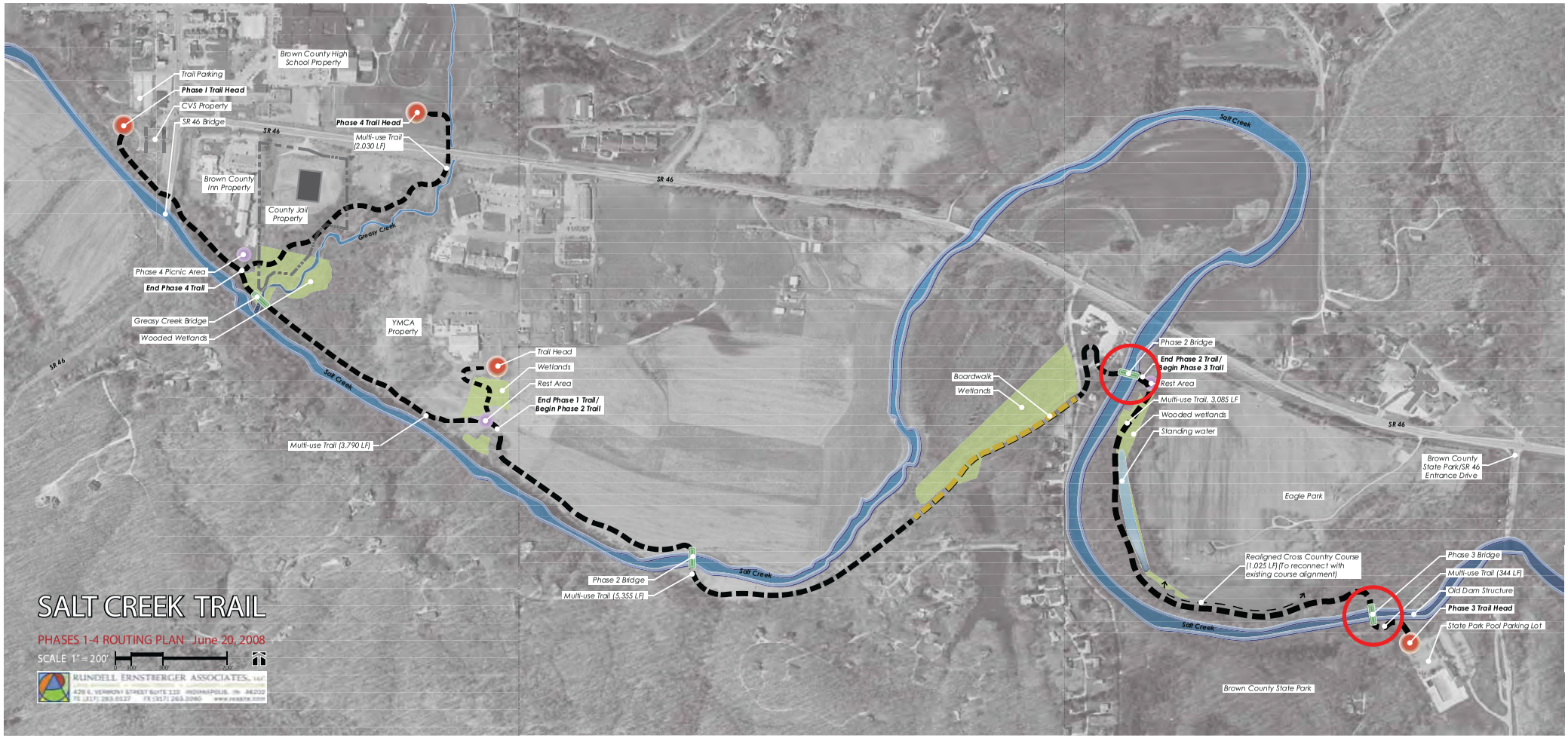
Photo 32: View of the SE bank of the Eel River under the bridge.

Appendix C

Photographs & Maps of the Proposed New Location



Portion of the 1998 Nashville, Indiana quadrangle (USGS 7.5′ topographic map) showing the APE and project area.



Proposed location of Relocated Eel River Bridge Span

Historic Bridge Relocation to Salt Creek Trail

Photo Location Map, West Bridge

Legend

Preliminary Construction Limits

Salt Creek photo locations

0 50 100 200 Feet

N

PARSONS

Photo 1: West bridge looking east from near west abutment.

Photo 2: West bridge looking south just north of west abutment.

Photo 3: West Bridge looking north from west abutment.

Photo 4: West bridge looking north (downstream).

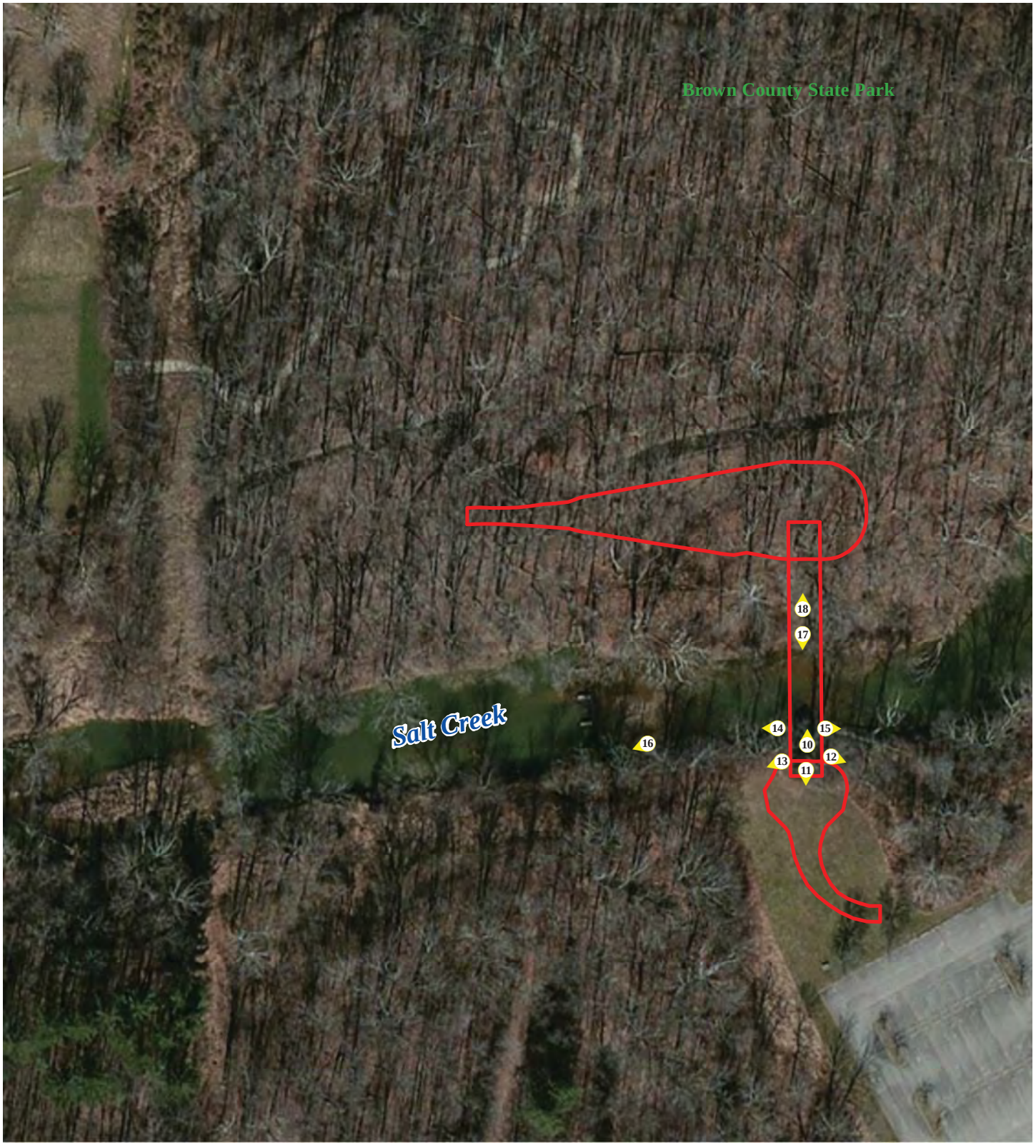
Photo 5: West bridge looking south (upstream) from 100 feet downstream (north) of location.

Photo 6: West bridge looking west from east bank at area of west abutment.

Photo 7: West bridge looking south from east bank.

Photo: 8 West bridge looking north from east bank.

Photo 9: West bridge looking south from east abutment.



Historic Bridge Relocation to Salt Creek Trail

Photo Location Map, East Bridge

Legend

Preliminary Construction Limits

Salt Creek photo locations

0 50 100 200 Feet

N

PARSONS

Photo 10: East bridge looking north from south bank

Photo 11: East bridge looking south from south bank

Photo 12: East bridge looking east from south bank

Photo 13: East bridge looking west from south bank

Photo 14: East bridge looking downstream (west)at old dam

Photo 15: East bridge looking upstream (east)

Photo 16: East bridge looking downstream (southwest) at south bank bluff and old dam

Photo 17: East bridge looking south at south bank from north bank

Photo 18: East bridge looking north from north bank

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Bridge No. 046-11-01316C
Name of Property
Clay County, Indiana
County and State
Name of multiple listing (if applicable)

Section 8 Significance

Statement of Significance Summary Paragraph

State Bridge No. 046-11-01316C is eligible for the National Register of Historic Places under Criterion C, at the state level, as a multiple-span example of an important, revised, third-generation Indiana State Highway Commission (ISHC) standard plan. The bridge is the longer example of the two remaining Parker through trusses in Clay County. It is also an excellent example of one of the few remaining works of a major Indiana bridge-building firm, the Vincennes Bridge Company. The bridge demonstrates distinctive characteristics of a type, period or method of construction and it represents the work of a master bridge builder. Bridge No. 046-11-01316C demonstrates the ISHC's ability to modify standardized plans to meet the needs of a specific location and it appears to be one of only four remaining examples of an ISHC-designed and Vincennes Bridge Company-constructed Parker through truss still in use on an Indiana state highway.

Narrative Statement of Significance

Bridge No. 046-11-01316C was designed and built in the midst of the Great Depression. It was a time when, despite many people experiencing great hardships and poverty across the nation, road building continued. Sustained work on America's highways was due, in part, to a growing obsession with the automobile. One Hoosier historian notes that in the decade leading up to the Great Depression, one car existed in Indiana for every four residents.[1] During the Depression, Hoosier automobile registrations did not decline very much, and automobile fuel consumption stayed at pre-Depression levels with a rapid increase in the late 1930s. This fervor for motorized transportation, coupled with President Franklin Delano Roosevelt's New Deal programs to put people back to work, resulted in improvements to roadways during the Depression era.[2] Across the country, from 1930 to 1940, the amount of surfaced roadways nearly doubled from 694,000 miles to 1,367,000 miles.[3]

The ISHC utilized federal money from a variety of programs to continue road building during the Depression. In 1932, it created a three-part approach for managing federal relief programs:

(1) adding local miles to the state system—almost 1,500 miles were added
(2) doing more contract construction, and
(3) creating day-labor projects.[4]

Design plans for Bridge No. 046-11-01316C indicate that it was part of "P.W.A. [Public Works Administration] Project No. 255."[5] The PWA was created soon after President Roosevelt took office and it distributed nearly $6 billion for construction projects in the 1930s on a 30 (federal)/70 (local) match basis. From March 1933 to September 1936, the timeframe in which this bridge was built, the PWA aided in construction of 60,361 miles of roads and 2,641 grade-crossing structures across the nation.[6]

Many roads and bridge crossings in Indiana, such as SR 46 in this area, were improved because of their upgrade from local road status to state highway status. As the ISHC obtained new

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[1] James H. Madison, *The Indiana Way* (Bloomington: Indiana University Press, 1986), 268.
[2] Madison, 268-269.
[3] M & H Architecture, *Indiana Historic Bridges Historic Context Study, 1830s to 1965* (Madison, WI: Mead and Hunt, Inc., 2007), 31. Prepared for the Indiana Department of Transportation. Available for download at the following URL: http://www.in.gov/indot/2531.htm.
[4] M&H Architecture, Inc., *Indiana Historic Bridges Historic Context Study*, 33.
[5] Indiana State Highway Commission, *Plans for Bridges of Spans Over 20 Feet for Proposed State Highway P.W.A. Project No.255 Section B, State Road No. 46 Section C & D,* November 17, 1933.
[6] M&H Architecture, Inc., *Indiana Historic Bridges Historic Context Study*, 31-32.

jurisdiction and responsibility for more local roadways each year, the need for maintenance and new construction projects continued to grow.

Although SR 46 was a route present on state highway maps from 1927 to 1929 from the Indiana-Ohio state line westward to the town of Spencer in Owen County, that is where the roadway stopped.[7] The ISHC's annual report from 1930 stated that the following roadway had been taken into the system on September 25, 1930: SR 46 – From Terre Haute to Spencer; 40.82 miles.[8] Additionally, the State Highway map for 1930 shows a route – identified as a continuation of SR 46 – going from Spencer through Bowling Green in Clay County to Terre Haute in Vigo County as an "authorized/proposed addition."[9] The 1931 map shows the road from Spencer to the Clay-Vigo County line as an "intermediate type," likely gravel or stone with some sort of surface treatment. From the Clay-Vigo County line to Terre Haute the road is designated as a "high" type of roadway, one that is composed of concrete or a bituminous material.[10]

The survey work by the ISHC for the Bridge No. 046-11-01316C site over the Eel River was conducted from December 3 to December 8, 1931.[11] Much of the recorded information deals with flooding at the site and the recorded high water marks over the years. The testimony of several local residents was gathered in relation to the floods of 1875 and 1913, in which the water was several feet deep over the roadway to the west of the existing covered bridge. Most blamed the high floodwaters on the fact that "the Narrows" area of the Eel River about 1.5 mile downstream from the bridge had been blocked with driftwood causing the river to back up. The blockage was so dense that one long-time resident stated that one could walk across the river on the driftwood at "the Narrows" in 1875. Local residents were contemplating how to obtain dynamite, a scarce resource at the time, to eliminate the blockage. However, it finally broke free on its own accord before that measure was taken.[12] All of the flooding information was essential in determining an appropriate new bridge deck elevation to attempt to avoid rising floodwaters in the future.

Bridge No. 046-11-01316C is an example of a Parker through truss. Parker spans developed in the 1870s as an adaptation of the Pratt truss. Parker trusses consist of five or more slopes on the top chord, and typically spanned between 40 and 300 feet.[13] This truss type was particularly well-suited to span long distances in many different locations. Thus, the Parker became the preferred choice for the through truss in Indiana, especially for ISHC designs. Although used as early as 1904, with that date being the earliest extant example in the state, they would reach wider circulation in the next several decades.[14] By the 1920s, the ISHC had developed standard drawings for Parker trusses.[15] Common

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[7] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1927.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1927.pdf on 26 May 2015; Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1928.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1928.pdf on 26 May 2015; Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1929.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1929.pdf on 26 May 2015.

[8] *Year Book of the State of Indiana for the Year 1930* (Fort Wayne: Ft. Wayne Printing Co., 1930), 1146.

[9] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1930.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1930.pdf on 26 May 2015.

[10] Indiana State Highway Commission, *State Highway System of Indiana. September 30, 1931.* Accessed from http://bl-libg-doghill.ads.iu.edu/gm-web/imdb/inhwy1931.pdf on 26 May 2015.

[11] Indiana State Highway Commission, *Surveyor's Field Notebook BR No. 512*, "46-C-1316 Eel River," December 1931 – May 1932, 33 and Indiana State Highway Commission, *Plans for Bridges of Spans Over 20 Feet for Proposed State Highway P.W.A. Project No.255.*

[12] *Surveyor's Field Notebook*, 47-48 and 61.

[13] M & H Architecture, *Indiana Historic Bridges Historic Context Study,* 65.

[14] James L. Cooper, *Iron Monuments to Distant Posterity: Indiana's Metal Bridges, 1870-1930* (Indianapolis: DePauw

truss lengths for ISHC-designed Parkers were 150', 175', and 200'.

Bridge No. 046-11-01316C is an example of the ISHC's revised version of the third-generation standard plan (#479A) for a 198-ft., riveted, Parker through truss for 24-ft. roadways.[16] The bridge is constructed upon a concrete pier and concrete abutments on a 398-ft vertical curve. The truss depth varies from 21ft-6 in. at the portal to 33 ft. at midspan.

The overall length of the structure sets this bridge apart from the other extant Parker through truss in Clay County, State Bridge No. 042-11-03101A, which carries SR 42 over the Eel River approximately 5 miles north of Bridge No. 046-11-01316C. Bridge No. 042-11-03101A, also built by the Vincennes Bridge Company, was constructed in 1939 and is a one-span example at 175'. It was listed in the National Register in 2000.

The ISHC's annual report for 1934 acknowledged the significance of Bridge No. 046-11-01316C by listing it in the narrative "Report of the Engineer of Design" as one of seven "large bridges" that were included in contracts awarded that year.[17] Bridges receiving this type of recognition in annual reports are rare and unique as most bridge contracts were simply listed in a table of aggregate data. The 1934 "Report of the Engineer of Construction" stated that 137 contracts for bridges over 20 ft. in length were awarded in that fiscal year. Out of the large group of bridge contracts awarded that year, it is noteworthy that the construction of Bridge No. 046-11-01316C was called out in a report that typically summarizes data on a state level with very few specific projects recognized.[18]

The Engineer of Construction, in his 1935 annual report, noted that: "During the past year we have demonstrated that bridges can be built on alignment curves with superelevation, as well as vertical curves, without sacrifice of careful workmanship and pleasing lines."[19] Although no bridges were individually identified in conjunction with the above statement, because of its 398-ft vertical curve and its recognition as a "large bridge" in the previous annual report, it is likely that Bridge No. 046-11-01316C was one of the examples in mind.

Bridge No. 046-11-01316C was constructed by the Vincennes Bridge Company, a major Indiana bridge-building firm, whose work could be found in at least eight states. In Indiana, they primarily concentrated in its southern counties. The company was founded by brothers John and Frank Oliphant and Jacob L. Riddle in Vincennes in 1899 and it was active through 1951. The firm specialized in metal trusses, focusing on functional and economical designs. In contrast to other manufacturing firms in Indiana, the Vincennes Bridge Company offered full-service bridge-building services even when other manufacturers took on a role of subcontractor. The company retained crews that could build a bridge from bottom to top and it routinely bid against contractors for construction contracts.

The Vincennes Bridge Company bid on many ISHC contracts, as well as those for other state highway departments, as new projects for these developing entities became more prevalent in the 1920s.[20] The extent of the company's work is evidenced in its annual production that reached 1,200 bridges and its annual sales, which reached approximately $1 million. Contract No. 684 for Bridge No. 046-11-01316C was awarded by the ISHC to the Vincennes Bridge Company on January 2, 1934 for a

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University, et. al, 1987), 76.
[15] M & H Architecture, *Indiana Historic Bridges Historic Context Study,* 65.
[16] M&H Architecture, Inc., *Indiana Historic Bridge Inventory,* Database, entry for "State Bridge Number 046-11-01316A," 2010. Prepared for the Indiana Department of Transportation. Available for download at the following URL: http://www.in.gov/indot/div/public/HistoricBridgeDatabase.mdb.
[17] *Year Book of the State of Indiana for the Year 1934* (Indianapolis: Wm. B. Burford, 1934), 650.
[18] Ibid., 651.
[19] *Year Book of the State of Indiana for the Year 1935* (Indianapolis: Wm. B. Burford, 1935), 525.
[20] Cooper, 28.

price of $63,058.13.[21] The contract was completed on April 10, 1935 with only $58,112.32 in payments expended.[22]

While many examples of the Vincennes Bridge Company's work once dotted the Indiana landscape, very few confirmed examples remain extant today. An analysis of the *Indiana Historic Bridge Inventory* database (2010 data) indicates that approximately 22 identified/known examples of the company's work remain, while eleven other examples can likely be attributed to the firm. Noted Indiana bridge historian James L. Cooper has observed that the Vincennes Bridge Company probably built more Parker through trusses in the state than any other Indiana firm.[23] However, of the 33 bridges mentioned above, only a handful (five) are Parker through trusses (Bridge No. 046-11-01316C included). Only four of these Parker through trusses carry state highways, making Bridge No. 046-11-01316C a rarity.[24]

Today, Bridge No. 046-11-01316C remains basically unchanged from the bridge that the Vincennes Bridge Company built in 1935. Major repair work has been undertaken on the bridge three times since its construction. In 1977, the bridge deck was reconstructed and various structural members were repaired. The deteriorated condition of the superstructure has required two closures of the bridge in recent years. In 2011 the bridge was closed to traffic requiring the Indiana Department of Transportation (INDOT) to complete repair work to some gusset plates and floor beams. In 2012 it was closed again after in-depth inspections revealed additional concerns. Additional gusset plate repairs were undertaken to reopen the bridge.

Additional major rehabilitation work is needed at this time because nearly all steel members show some amount of rusting and/or minor section loss and the lower portion of all sway bracing has been removed due to continued collision damage. However, the trusses remain intact and demonstrate the bridge's historical and engineering integrity/significance.

[21] M&H Architecture, Inc., *Indiana Historic Bridge Inventory,* Database, entry for "State Bridge Number 046-11-01316A," 2010 and *Year Book of the State of Indiana for the Year 1934,* 676.
[22] *Year Book of the State of Indiana for the Year 1935,* 525.
[23] Cooper, 77.
[24] Although more than 33 extant examples of the Vincennes Bridge Company's may be present in Indiana and simply not attributed to the firm, the number of ISHC-designed examples currently still on state highways is unlikely to change due to readily available and accurate state record-keeping.

Michael R. Pence, Governor
Cameron F. Clark, Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 · dhpa@dnr.IN.gov

March 5, 2015

SR 46-Eel River Project
c/o Parsons Transportation Group
101 West Ohio Street, Suite 2121
Indianapolis, Indiana 46204

Federal Agency: Federal Highway Administration ("FHWA")

State Agency: Indiana Department of Transportation ("INDOT")

Re: DUAL REVIEW: January 29, 2015, public meeting about the SR 46 bridge over the Eel River (INDOT Bridge No. 046-11-01316C/NBI No. 17050) near the community of Bowling Green, in Washington Township, Clay County, Indiana (Des. No. 0800910; DHPA No. 10596)

Dear Sir or Madam:

The Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology ("DHPA"), which also serves as the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO"), wishes to comment on the January 29 public meeting in Bowling Green, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (recently recodified at 54 U.S.C. § 306108), implementing regulations at 36 C.F.R. Part 800, and pertinent Section 106 programmatic agreements, as well as under Indiana Code 14-21-1-18 and 312 Indiana Administrative Code 20-4.

We thank FHWA, INDOT, and Parsons Transportation Group for having held the January 29 public meeting. Giving the residents of Clay County and others from that part of the state an opportunity to learn about and to comment on the project and how it might affect this Select Bridge is important.

Similarly, we welcome INDOT's extension of the timeframe in which another party could propose taking ownership of the SR 46 bridge over the Eel River from only 60 days after the January 29 meeting until approximately the first week of August 2015, when the public hearing on the project is anticipated to be held.

While accurately depicting the condition of some of the rusted connections and braces on the current bridge, the slides used in the presentation on January 29 might have given some in the audience the impression that such deterioration is not just widespread but typical of the connection plates, interior gusset plates, lateral bracing, truss vertical members, and chords. Some commented that all trucks (not just those over 14 tons, as the posted signs indicate) should be prohibited from using that crossing until the replacement bridge is open to traffic, and some in the audience expressed the opinion that the bridge should be closed to all traffic. A misimpression about the bridge's condition could cause the public to believe that the bridge would be unsafe for all uses, even pedestrian. Our understanding is that, while the condition of the bridge is poor, it is not yet such a safety risk that it would need to be closed until at least 2017. However, if the condition deteriorates more rapidly than expected, we would ask that all Section 106 consulting parties be notified of that discovery immediately.

During the explanation on January 29 of how the bridge could be moved, it was stated that the two trusses act independently and can be used separately. That is true from a purely engineering perspective, but it overlooks the reality that the bridge is listed in the National Register of Historic Places as a two-span structure. Emphasizing that the trusses can be used separately could cause the public to infer that using the trusses in two different locations also would result in

two historic bridges being saved. That seems unlikely. In our experience, two halves of a National Register-eligible and -listed structure do not equate to either one listed or eligible structure or two listed or eligible structures.

Furthermore, as the U.S. Department of the Interior has written:

> Properties listed in the National Register should be moved only when there is no feasible alternative for preservation. When a property is moved, every effort should be made to reestablish its historic orientation, immediate setting, and general environment. [36 C.F.R. § 60.14(b)(1)]

The National Register nomination, which refers to the bridge as Indiana State Highway Bridge 46-11-1316 or the Bowling Bridge, indicates that the bridge is listed under Criterion A for its transportation significance in the settlement and development of Clay County. If the bridge must be moved, then we would want it to remain listed during and after the move if at all possible (see 36 C.F.R. § 60.14[b][2]). If the bridge were to be moved before that procedure involving the Keeper of the Register is completed, it automatically would be deleted from the National Register (36 C.F.R. § 60.14[b][4]).

We think it is possible that the bridge, as it exists currently, also might be eligible under Criterion C for engineering significance, and we think it would be essential for INDOT to make a case for Criterion C significance when it submits to the Indiana SHPO the information necessary to attempt to keep the bridge listed in the National Register, if relocation is proven to be the only feasible alternative. Recent experience with moved properties has informed us that the U.S. Department of the Interior, National Park Service, considers them eligible under Criterion C, only, if at all. Although integrity of location and setting are not irrelevant to a property's being eligible under Criterion C, those kinds of integrity might not be as important as they would be to a property that is eligible only under Criterion A. Even though many Parker through trusses once stood on state and Federal highways in Indiana, they are becoming increasingly rare, as INDOT has been actively replacing them in recent years. The historical value of a once-plentiful type of bridge rises as the numbers of examples of that type decrease. Thus, the reference during the presentation to this bridge's having been built from a standard design may understate its current engineering significance.

The various requirements for keeping a property that will be moved listed in the National Register are spelled out in 36 C.F.R. § 60.14(b), and we will not discuss them all in this letter. We would look to INDOT to provide the necessary documentation in support of the move and of retention on the National Register. However, we should mention that since the SR 46 bridge was nominated to the National Register as a State nomination (i.e., the nomination originated in Indiana, rather than in the Federal government), the Indiana Historic Preservation Review Board, in addition to the Indiana SHPO, also would need to review the proposed move. Then the Indiana SHPO would submit the documentation to the Keeper of the National Register in the National Park Service, and await the Keeper's response. If that response is favorable, then documentation of the bridge after the move also would need to be prepared by INDOT and submitted to the Keeper by the Indiana SHPO. Given the short timeframe that INDOT has laid out for constructing a new bridge at this crossing of the Eel River, we would encourage INDOT not to wait until time to move the bridge has almost expired before beginning this National Register retention approval process, as it could take several months.

My staff recalls hearing during the January 29 presentation that 25 years after the bridge spans are moved, the two spans would need about $500,000 worth of cleaning and painting, although we are unable to find that in the slides of the presentation. We assume that figure takes into account anticipated inflation of the dollar over 25 years, or, in other words, that the present value of that cost figure would be considerably less. In any event, it is not a figure that we recall having heard or read before. We wonder whether that figure also includes desirable, but not necessarily essential, maintenance measures that even a vehicular bridge would be unlikely to receive just 25 years after a thorough rehabilitation. Are INDOT's metal truss bridges typically cleaned and painted every 25 years? Our concern is that if the $500,000 figure is what the cleaning and painting would cost in 2040 or includes work that might not be essential, then stating that in another 25 years $500,000 would have to be spent could present such a bleak picture of what it would take to preserve the bridge for the long term that it would diminish the chances that anyone would want to take responsibility for this bridge—or any other metal truss bridge that is, or will become, available for new ownership or relocation.

It is apparent that INDOT does not want to retain ownership of this Select bridge after it is bypassed to the south by the new bridge, but we ask that FHWA and INDOT give that option serious consideration. That option would be a second variation on a combination of Alternative 4 (leaving the current bridge in place and restricting it to non-vehicular use) and

Alternative 5C-S (bypassing the current bridge's location to the south with a new vehicular bridge—the preliminary preferred alternative). The first variation, which was discussed on January 29, was for another entity, such as Clay County, to take responsibility for the current bridge. Under the second variation, INDOT could maintain the current bridge as a roadside park. We sense that INDOT is reluctant to do so. However, if a bridge owner wants to replace a Select bridge that it owns using FHWA funds, it appears to us that, according to the 2006 Indiana Historic Bridges Programmatic Agreement, the bridge owner must preserve that bridge if no outside party comes forward to take ownership of and responsibility for the bridge. If moving pieces of a National Register-listed Select bridge to different locations would destroy the bridge's listing and eligibility for listing (for probably 50 years), is that a prudent alternative as long as the bridge owner's preserving the bridge in place as a unit is feasible and prudent?

A member of the audience commented that if the SR 46 bridge were left in place after being bypassed, children could play on it and possibly get hurt. We acknowledge that possibility. It would be true for a bridge on a trail, as well. Injury of that kind is usually a possibility to some degree, even on bridges that are still in vehicular use. We think that the possibility here might be somewhat less than usual, given that the new bypass bridge would be immediately adjacent to the current bridge, rather than in a remote location that, for the most part, is out of the public view.

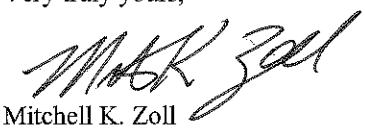
The January 29 presentation also brought up hydraulics issues that leaving the current SR 46 bridge in place while bypassing it with a new bridge are thought by the engineers to create. One of those was the anticipated need to align the new bridge's west abutment so as to be parallel with the west abutment of the current bridge. As a result, scouring of the new abutment is anticipated, which would require placement of rip-rap for protection. In our experience, rip-rap placement, for either new or rehabilitated bridges, is not unusual. Furthermore, the historic bridge alternatives analysis (Prevost, 11/17/2014) acknowledged that a detailed hydraulic analysis had not been done at that time. The January 29 presenters seemed to be more certain of the need to properly align the two bridges' west abutments than did the November alternatives analysis. Has that detailed hydraulic analysis been completed since November?

We would like to be informed of any formal decision that the Board of Commissioners of Clay County might have made or yet make and reported to you regarding the possibility of the County's taking ownership of the SR 46 bridge. Similarly, if any other party has requested to take ownership and responsibility for the bridge (in addition to Salt Creek Trail/Board of Commissioners of Brown County and Brown County State Park), we would appreciate being advised of that request.

If you have any questions regarding our Dual Review of the SR 46-Eel River Project near the community of Bowling Green in Washington Township, Clay County, please contact DHPA. Questions about historic buildings or structures pertaining to this review should be directed to John Carr at (317) 233-1949 or jcarr@dnr.IN.gov. Questions about archaeological issues should be directed to Mitch Zoll at (317) 232-3492 or mzoll@dnr.IN.gov.

In all future correspondence regarding this SR 46-Eel River Project (Des. No. 0800910), please refer to DHPA No. 10596.

Very truly yours,



Mitchell K. Zoll
Deputy State Historic Preservation Officer
Director, Division of Historic Preservation & Archaeology

MKZ:JLC:PCD:jlc

cc: Preservation Association of Clay County

emc: Daniel Prevost, Parsons Transportation Group
Allan Ball, Parsons Transportation Group
Sean Porter, Parsons Transportation Group
Andrew Campbell, ASC Group, Inc.
Ross Nelson, ASC Group, Inc.
Kevin Schwarz, Ph.D., RPA, ASC Group, Inc.

Lawrence Heil, P.E., Federal Highway Administration, Indiana Division
Rickie Clark, Indiana Department of Transportation
Tony Jones, Indiana Department of Transportation
Jessica Miller, Indiana Department of Transportation
Brock Ervin, Indiana Department of Transportation
Patrick Carpenter, Indiana Department of Transportation
Shaun Miller, Indiana Department of Transportation
Mary Kennedy, Indiana Department of Transportation
Susan Branigin, Indiana Department of Transportation
David Moffatt, Indiana Department of Transportation
Shirley Clark, Indiana Department of Transportation
Bryan Allender, Clay County Commissioner
Tony Fenwick, Clay County Commissioner
Paul Sinders, Clay County Commissioner
Board of Commissioners of Clay County, c/o Mary Jo Alumbaugh, County Recorder
Jeffrey Koehler, Clay County Historian
Vickie Mace, Clay County Historical Society
Bob Kirlin, Salt Creek Trail
Board of Commissioners of Brown County, c/o Dr. Michael Thompson, Administrator
Town Council, Town of Nashville, c/o Brenda Young, Clerk-Treasurer
Brown County Schools
Julia Pearson, Brown County Historical Society
Bob Bronson, Indiana Department of Natural Resources, Division of Outdoor Recreation
Dan Bortner, Indiana Department of Natural Resources, Division of State Parks & Reservoirs
Benjamin Clark, Indiana Department of Natural Resources, Division of State Parks & Reservoirs
Mark Dollase, Indiana Landmarks, Central Regional Office
Tommy Kleckner, Indiana Landmarks, Western Regional Office
Paul Brandenburg, Indiana Historic Spans Task Force
Dr. James L. Cooper, Professor Emeritus of History, DePauw University
Joshua Palmer, Indiana Historic Preservation Review Board
Daniel Kloc, Indiana Historic Preservation Review Board
Jim Corridan, Indiana Historic Preservation Review Board
Richard Butler, Indiana Historic Preservation Review Board
Kevin Orme, Indiana Historic Preservation Review Board
Beth McCord, Indiana Historic Preservation Review Board
Cameron Clark, Director, Indiana Department of Natural Resources and Indiana State Historic Preservation Officer
Christopher Smith, Deputy Director, Indiana Department of Natural Resources
Mitchell Zoll, Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology
Chad Slider, Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology
Paul Diebold, Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology
John Carr, Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology

May 29, 2015

Paul Diebold
Assistant Director, Preservation Services
Division of Historic Preservation and Archaeology
Staff of the Indiana State Historic Preservation Officer
402 W. Washington St., Room W274
Indianapolis, IN 46204

RE:		
	Des. Nos.:	0800910
	Roadway:	SR 46
	Project Description:	Bridge No. 046-11-01316C over the Eel River, 2.8 miles east of SR 59
	County:	Clay
	DHPA No.	10596

Dear Mr. Diebold,

As my staff has discussed with you and your colleagues in the Environmental Review section of your office, INDOT is proposing, with Federal Highway Administration ("FHWA") funding, a project involving Bridge No. 046-11-01316C. As you are aware, Bridge No. 046-11-01316C was listed in the National Register of Historic Places ("National Register") in 2000 under Criterion A for its association with events in the settlement and economic development of Clay County, Indiana. As part of the *Indiana Historic Bridge Inventory*, the bridge was determined to be Select. As you are probably aware, Select bridges are historic bridges that are most suitable for preservation and are excellent examples of a given type of historic bridge. The Individual Review conducted for the bridge as part of the *Inventory* process specifically designated the bridge "Select for Non-Vehicular Use," indicating it is better suited for bicycle and/or pedestrian use than for vehicles. Therefore, INDOT's preferred alternative for this bridge does involve the preservation of the structure for pedestrian use.

INDOT is proposing to dismantle and move the two spans of the bridge from its existing location in Clay County to two new locations along a trail in Brown County, Indiana. The existing bridge would be rehabilitated and relocated for use on the Salt Creek Trail, a 2.5-mile multi-use trail connecting Nashville to Brown County State Park, two heavily visited tourist destinations. The purpose of the trail project is to provide an alternative transportation mode for pedestrians that are currently using SR 46 to travel to land uses in and between Nashville and Brown County State Park. The conflict between pedestrians and the motoring public is currently unsafe. The trail will reduce traffic congestion between the County's three largest motels and the shops in Nashville by providing pedestrian access rather than visitors driving to the shopping areas. In addition, the trail will provide a safe means of transportation for the youth of Nashville and Brown County as it will connect the Brown County School Corporation sports facilities. The trail has been under development for several years, with construction of the first phase already underway. The project includes two crossings of Salt Creek, approximately 0.7 mile apart from one another. The two spans of the existing bridge would be separated to cross Salt Creek at these two locations.

A detailed alternatives analysis regarding the potential options for this bridge was undertaken and was reviewed by your colleagues in the Environmental Review section. We do want to summarize here a few of the alternatives that were examined. The option to rehabilitation the bridge for continued vehicular use was examined. However, the bridge was originally designed with an H-20 structural capacity (20-ton truck) and current design standards require accommodation for HS- 20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1

design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved.

The option of keeping the bridge in place in Clay County and bypassing it with a new bridge was explored both from the perspective of the existing bridge serving has one half of a one-way pair of bridges and with the existing bridge being confined to pedestrian use. The one-way pair alternative was dismissed because it would require the same Level 1 design exception from INDOT and FHWA for structural capacity as indicated above, which would not be approved.

The bypass for pedestrian use alternative at the bridge's existing location was dismissed based on the location of the bridge in a sparsely populated area. INDOT believes that the pedestrian usage of the existing bridge would be minimal and provide little value to the general public as a historic site compared to its potential use at other locations. At a December 4, 2014 meeting with consulting parties, a request was made to INDOT to conduct outreach to Clay County and the public to determine the level of interest in retaining the bridge in its current location. On January 29, 2015, INDOT held a public meeting in Bowling Green to provide an overview of the project, including the bridge's condition, the alternatives under consideration, and the potential to relocate the bridge to Brown County. The deadline for a party to step forward and take responsibility for the bridge will extend to the time of the project's public hearing, currently anticipated for the first week of August 2015. The final decision regarding the preferred alternative and/or the future location of the existing bridge will not be made before that time. However, to date, no parties have stepped forward to take responsibility for the structure and retain it in place.

At the Salt Creek Trail location, there is a strong demand for a pedestrian facility. It is anticipated that on the Salt Creek Trail, the span to be located adjacent to SR 46 at Eagle Park would be owned and maintained by Brown County, while the span located within Brown County State Park would be owned and maintained by DNR. Each party will be required to sign an agreement committing to maintain their respective structures for a minimum of 25 years. However, it is anticipated that, based on the expected visitation levels, the bridges would be retained far beyond that minimum. DNR and Brown County have each submitted a letter of intent to take responsibility for the bridge spans.

It should also be noted that an approach that would keep the two spans together as part of the Salt Creek Trail was evaluated; however, the topography, hydraulic conditions, and presence of wetlands in the area, make that option impractical. Preliminary investigations confirmed that using the spans at two separate locations was the only practical option.

Based on coordination with your colleagues in the Environmental Review section, there is concern that relocation of the trusses would result in their immediate removal from the National Register. There is also concern that, because the bridge is listed under Criterion A for its transportation significance in the settlement and development of Clay County, that its relocation to another county would make it ineligible for continued listing. As such, your colleagues asked that INDOT initiate a two-fold request to your office: (1) that the bridge also be considered eligible under Criterion C based on its engineering significance and (2) that the bridge keep its National Register listing during and following any relocation. This letter and its attachments serve as that request.

Please find attached two sets of documents that address the two aspects of National Register listing discussed above. The first packet of information includes National Register continuation pages that we think make the case for Criterion C eligibility. The second packet of information includes the request to retain National Register listing of the bridge during and following the proposed relocation to Brown County. Upon your concurrence with this information, we request that both sets of information be submitted to the Indiana Historic Preservation Review Board ("Review Board") for approval at their July 22, 2015 meeting to then be forwarded to the Keeper of the National Register in the National Park Service.

We look forward to your review of the attached information. We eagerly await your recommendation as to whether you think that Bridge No. 046-11-01316C is eligible for listing in the National Register under Criterion C in addition to its current listing under Criterion A, and whether you think the bridge may remain listed in the National Register during and after a proposed move to Brown County.

Due to the urgent need for a permanent solution for the bridge at its current location, we are happy to meet with you at your convenience should you have any questions about the attached information. To keep our current project schedule for this very important project, submittal to the Review Board for approval at their July 22, 2015 is imperative. We are ready and willing to make any suggested edits to the enclosed documents that you feel are necessary before submittal to the Review Board as soon as you relay them to us. We truly appreciate your assistance on this matter. If you have any questions, please do not hesitate to contact Mary Kennedy of my staff at 317-232-5215 or mkennedy@indot.in.gov.

Sincerely,

Patrick Carpenter

Patrick Carpenter, Manager
Cultural Resources Office
Environmental Services

PAC/MEK/mek
Enclosure

cc: ES project files

emc: Des. No. 0800910 Consulting Parties
Tony Jones, INDOT
Jessica Miller, INDOT
Larry Heil, FHWA
Dan Prevost, Parsons
Sean Porter, Parsons

INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204-2216 (317) 232-5348 FAX: (317) 233-4929

Michael R. Pence, Governor
Michael B. Cline, Commissioner

Date: March 14, 2014

To: Hazardous Materials Unit
Environmental Services
Indiana Department of Transportation
100 N Senate Avenue, Room N642
Indianapolis, IN 46204

From: Stephany Stamatis
Parsons
101 W Ohio Street, Suite 2121
Indianapolis, IN 46204
stephany.stamatis@parsons.com

Re: RED FLAG INVESTIGATION
DES # TBD
Salt Creek Bridge Relocation Project
Nashville, Brown County, Indiana

NARRATIVE

The proposed project is located along Salt Creek just south of SR 46 in Brown County, just east of Nashville Indiana. The purpose of the project is to provide a safe crossing over the North Fork of Salt Creek for a proposed multi-use trail while utilizing historic bridge spans relocated from the SR 46 over Eel River project in Clay County (Des No. 0800910). See attached Figures 1 and 2.

This project will include the construction of two bridges, utilizing spans relocated from SR 46 over Eel River in Clay County and trail approaches on either side of the bridge bringing the approaches back to the existing grade. Temporary and permanent Right-of-Way will be acquired for this project, however the acreage has not yet been determined. Additionally, there will be excavation work and the quantity of fill has not yet been determined. The bridges will each come from one span of a 2-span Parker pony steel-through-truss bridge, measuring 396 feet long (each span 198 feet in length) that was constructed in 1934. This bridge is currently classified as a "Select" bridge per the INDOT Historic Bridge Inventory. During the Historic Bridge Programmatic Agreement Project Development Process the Indiana Department on Natural Resources came forward requesting that the bridges be used for the aforementioned purpose, which necessitated the bridge relocation. These bridges will be part of a future trail, to be constructed as a separate project.

SUMMARY

Infrastructure Indicate the number of items of concern found within ½ mile, including an explanation why each item within the ½ mile radius will/will not impact the project. If there are no items, please indicate N/A:			
Religious Facilities	**2**	Recreational Facilities	**4**
Airports	**N/A**	Pipelines	**4**
Cemeteries	**N/A**	Railroads	**N/A**
Hospitals	**N/A**	Trails	**7**
Schools	**N/A**	Managed Lands	**1**

Explanation: See attached Figure 3.

Religious Facilities

- Rising Hope Baptist Church (named Fellowship Baptist Church in GIS layer, but Google search showed Rising Hope as its current name), located at 1267 Old SR 46 in Nashville, is within the half mile radius, but is outside the project limits and will not be impacted.
- Parkview Church of the Nazarene, located at 1750 Old SR 46 in Nashville, is within the half mile radius, but is outside the project limits and will not be impacted.

Recreational Facilities

- Brown County State Park, managed by DNR State Parks and Reservoirs, is within the project limits and is considered a Section 4(f) resource. More specifically, the swimming pool area for the park is also located within the project limits. A search of the National Park Service Land & Water Conservation Fund (LWCF) database shows the park has received LWCF grants, thus this park would qualify as a Section 6(f) resource. Early coordination with INDOT Cultural Resources, National Park Service, and DNR are required to assess potential impacts and mitigation measures.
- RedBarn Jamboree & RV Park, located at 71 Parkview Road in Nashville, is a privately owned full hook-up RV park and family recreation site that is within the project limits and may be impacted. Input from the owners of this facility will be sought during early coordination.
- Eagle Park is an athletic facility owned by Brown County School Corporation that is within the project limits and may be impacted. Note that this facility did not show up in the recreational facilities GIS layer provided by the IDNR or the schools layer, but was identified during a site visit. This resource was added to Figure 3. Early coordination with INDOT Cultural Resources and Brown County School Corporation will be required to determine potential Section 4(f) impacts and any necessary mitigation.
- Salt Creek Golf Retreat, located at 2359 SR 46 East in Nashville, is within the half mile radius, but is outside the project limits and will not be impacted.

Pipelines

- There are four natural gas pipelines owned by Indiana Natural Gas Corporation within the half mile radius. Two pipelines are located approximately 1,500 feet northwest of the project limits and the other two are approximately 700 feet east of the project limits. These facilities will not be impacted by this project.

Trails

- There are seven trails identified in the INDR Trails GIS Layer within the half mile radius. Two of the trails are planned for construction, YMCA to Eagle Park and Brown County State Park to Eagle Park. These planned asphalt trails will utilize the bridge spans being relocated as part of this project to cross the North Fork of Salt Creek. The remaining trails include two mountain bike trails and three hiking trails, all located within Brown County State Park. These trails are outside the project limits and will not be impacted.

Managed Lands

- Brown County State Park, managed by DNR State Parks and Reservoirs, is within the project limits and is considered a Section 4(f) and Section 6(f) resource. See explanation above for Recreational Facilities.

Water Resources Indicate the number of items of concern found within ½ mile, including an explanation why each item within the ½ mile radius will/will not impact the project. If there are no items, please indicate N/A:			
NWI - Points	**N/A**	NWI - Wetlands	**13**
Karst Springs	**N/A**	IDEM 303d Listed Lakes	**N/A**
Canal Structures – Historic	**N/A**	Lakes	**5**
NWI - Lines	**4**	Floodplain - DFIRM	**9**
IDEM 303d Listed Rivers and Streams (Impaired)	**N/A**	Cave Entrance Density	**N/A**
Rivers and Streams	**10**	Sinkhole Areas	**N/A**
Canal Routes - Historic	**N/A**	Sinking-Stream Basins	**N/A**

Explanation: See attached Figure 4.

NWI - Lines

- One PEMA NWI line is within the half mile radius, but is outside the project limits and will not be impacted.
- One R3UBH NWI line is within the half mile radius, but is outside the project limits and will not be impacted.
- One R2UBH NWI line, representing the North Fork of Salt Creek, is within the project limits and may be impacted.
- One PUBFh NWI line is within the half mile radius, but is not within the project limits and will not be impacted.

Rivers and Streams

- The North Fork of Salt Creek (HUC14 – 05120208050040) is within the project limits, and would flow under the proposed bridges for the project. There will likely be temporary impacts to the North Fork of Salt Creek during construction. Any disturbance or fill below the ordinary high water mark may require authorization or permits from the USACE and IDEM.
- Six unnamed tributaries of the North Fork of Salt Creek are within the half mile radius, but are outside the project limits and would not be impacted.
- Clay Lick Creek is within the half mile radius, but is outside the project limits and would not be impacted.
- Two unnamed tributaries of Clay Lick Creek are within the half mile radius, but are outside the project limits and would not be impacted.
- Any disturbance or fill below the ordinary high water mark may require authorization or permits from the USACE and IDEM.

NWI – Wetlands

- Five PUBGh NWI wetlands are within the half mile radius, but are not within the project limits and will not be impacted.
- Five PFO1A NWI wetlands are within the half mile radius, but are outside the project limits and will not be impacted.
- Two PFO1A NWI wetlands are within the project limits and may be impacted.
- One PEMA NWI wetland is within the project limits and may be impacted.
- NWI wetlands may be impacted by construction activities and this work will likely require authorization or permits from USACE and IDEM.

Lakes

- Five lakes are within the half mile radius, but are outside project limits and will not be impacted.

Floodplain – DFIRM

- Eight separate flood zone AE fields, representing the North Fork of Salt Creek floodplain, have been designated on the IDNR floodplain GIS layer within the half mile radius. This project would impact the floodplain and flood way of the North Fork of Salt Creek. One flood zone A field, representing the Clay Lick Creek floodplain, has been designated on the IDNR floodplains GIS layer within the half mile radius. The floodplain of Clay Lick Creek is outside the project limits and would not be impacted by the project.

- A Construction in a Floodway (CIF) Permit will be required from the IDNR prior to any construction within a floodplain.

Mining/Mineral Exploration Indicate the number of items of concern found within ½ mile, including an explanation why each item within the ½ mile radius will/will not impact the project. If there are no items, please indicate N/A:			
Petroleum Wells	**N/A**	Petroleum Fields	**N/A**
Mines – Surface	**N/A**	Mines – Underground	**N/A**

Explanation: No mining/mineral exploration concerns have been identified within the half mile radius of the project. No petroleum wells or fields were identified using the Petroleum Database Management System (PDMS). See attached Figure 5.

Hazmat Concerns Indicate the number of items of concern found within ½ mile, including an explanation why each item within the ½ mile radius will/will not impact the project. If there are no items, please indicate N/A:			
Brownfield Sites	**N/A**	Restricted Waste Sites	**N/A**
Corrective Action Sites (RCRA)	**N/A**	Septage Waste Sites	**N/A**
Confined Feeding Operations	**N/A**	Solid Waste Landfills	**N/A**
Construction Demolition Waste	**N/A**	State Cleanup Sites	**N/A**
Industrial Waste Sites (RCRA Generators)	**N/A**	Tire Waste Sites	**N/A**
Infectious/Medical Waste Sites	**N/A**	Waste Transfer Stations	**N/A**
Lagoon/Surface Impoundments	**N/A**	RCRA Waste Treatment, Storage, and Disposal Sites (TSDs)	**N/A**
Leaking Underground Storage Tanks (LUSTs)	**N/A**	Underground Storage Tanks	**N/A**
Manufactured Gas Plant Sites	**N/A**	Voluntary Remediation Program	**N/A**
NPDES Facilities	**N/A**	Superfund	**N/A**
NPDES Pipe Locations	**N/A**	Institutional Control Sites	**N/A**
Open Dump Sites	**N/A**		

Explanation: No hazardous materials concerns have been identified by secondary source data as existing within the half mile radius of the project. See attached Figure 6.

Ecological Information

The Brown County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is attached with ETR species highlighted. An early coordination letter will be sent to IDNR and USFWS. Any required commitments will be included in the project documents.

Cultural Resources

Per the "Programmatic Agreement Regarding Management and Preservation of Indiana's Historic Bridges" (Historic Bridge PA), INDOT, on behalf of the Federal Highway Administration (FHWA), will "satisfy its Section 106 responsibilities involving Select and Non-Select bridge" through the Project Development Process (PDP) of the Historic Bridge PA. INDOT, on behalf of FHWA, will comply with all Section 106 requirements and coordinate with consulting parties. All comments will be included in the environmental document. Phase 1 historic architecture and archaeological surveys will

be performed in coordination with INDOT-ES Cultural Resources Section. Any potential impacts to section 106 resources will be identified and evaluated in coordination with INDOT Cultural Resources and SHPO.

RECOMMENDATIONS

INFRASTRUCTURE: DNR State Parks and Reservoirs, is within the project limits and is considered a Section 4(f) resource. More specifically, the swimming pool area for the park is also located within the project limits. A search of the National Park Service Land & Water Conservation Fund (LWCF) database shows the park has received LWCF grants, thus this park would qualify as a Section 6(f) resource. Early coordination with INDOT Cultural Resources, National Park Service, and DNR are required to assess potential impacts and mitigation measures.

- Red Barn Jamboree & RV Park, located at 71 Parkview Road in Nashville, is a privately owned full hook-up RV park and family recreation site that is within the project limits and may be impacted. Input from the owners of this facility will be sought during early coordination.

- Eagle Park is an athletic facility owned by Brown County School Corporation that is within the project limits and may be impacted. Note that this facility did not show up in the recreational facilities GIS layer provided by the IDNR or the schools layer, but was identified during a site visit. This resource was added to Figure 3. Early coordination with INDOT Cultural Resources and Brown County School Corporation will be required to determine potential Section 4(f) impacts and any necessary mitigation.

Two trails are planned for construction, YMCA to Eagle Park and Brown County State Park to Eagle Park. These planned asphalt trails will utilize the bridge spans being relocated as part of this project to cross the North Fork of Salt Creek. Coordination will occur with Brown County Park and Recreation Department.

WATER RESOURCES:
-One R2UBH NWI line, representing the North Fork of Salt Creek, is within the project limits and may be impacted.
- The North Fork of Salt Creek (HUC14 – 05120208050040) is within the project limits, and would flow under the proposed bridges for the project. There will likely be temporary impacts to the North Fork of Salt Creek during construction.
- Two PFO1A NWI wetlands are within the project limits and may be impacted.
- One PEMA NWI wetland is within the project limits and may be impacted.
- Eight separate flood zone AE fields, representing the North Fork of Salt Creek floodplain, have been designated on the IDNR floodplain GIS layer within the half mile radius. This project would impact the floodplain and flood way of the North Fork of Salt Creek.

A full wetland delineation and Waters of the U.S. Report will be completed for the project to identify any jurisdictional resources in the area. Environmental permits including an IDEM Section 401 permit, USACE Section 404 Permit, an IDNR CIF permit, and an IDEM Rule 5 Permit shall be obtained for any impacts to these resources. Resource agencies responsible for issuance of these permits will be contacted to gather additional information regarding sensitive resources and permit or mitigation requirements.

MINING/MINERAL EXPLORATION: N/A

HAZMAT CONCERNS: N/A

ECOLOGICAL INFORMATION: An early coordination letter will be sent to IDNR and USFWS. Any required commitments will be included in the project documents.

CULTURAL RESOURCES: Phase 1 historic architecture and archaeological surveys will be performed in coordination with the INDOT Cultural Resources. Any potential impacts to Section 106 resources will be identified and evaluated in coordination with the Historic Bridge PA PDP.

INDOT Environmental Services concurrence: Marlene Mathas _____(Signature)

Prepared by:
Stephany Stamatis
Environmental Planner
Parsons

Graphics:

A map for each report section with a ½ mile radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

GENERAL SITE MAP SHOWING PROJECT AREA: YES
INFRASTRUCTURE: YES
WATER RESOURCES: YES
MINING/MINERAL EXPLORATION: YES
HAZMAT CONCERNS: YES

Waters of the U.S. Delineation Report

Historic Bridge Relocation to Salt Creek Trail
Brown County, Indiana
INDOT Des. Nos. 1400311 and 1400365




June 12, 2015

Prepared by:
PARSONS
101 West Ohio Street, Suite 2121
Indianapolis, IN 46204

Prepared for:
Indiana Department of Transportation
Environmental Services Division
100 North Senate Avenue, Room N642
Indianapolis, IN 46204

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WETLAND AND OTHER WATERS DELINEATION REPORT
Historic Bridge Relocation to Salt Creek Trail
Brown County, Indiana
INDOT Designation Numbers 1400311 and 1400365
Prepared By: Alan K. Ball, Senior Environmental Planner
June 12, 2015

I: Project Information

Fieldwork Dates:
Fieldwork was conducted on September 3 and November 11, 2014.

Principal Investigator:
Alan Ball, Senior Environmental Planner

Contributors:
Thomas J. Warrner, Environmental Planner
Wade Kimmon, GIS Specialist

Project Location:
Nashville Quadrangle:
Sections 20 and 29 of Township 9N, Range 3E

Washington Township, Brown County, Indiana

Project Description:
The Indiana Department of Transportation (INDOT) is planning a bridge project on SR 46 over the Eel River in Clay County, Indiana (Des. No. 0800910). The preliminary preferred alternative of that project is to build a new bridge over the Eel River to the south of the existing two-span Parker through truss bridge. INDOT, which is obligated under the Historic Bridge PA to ensure that the 2-span historic bridge over the Eel River in Clay County is preserved, will pay to relocate and rehabilitate the spans. Once the new bridge over the Eel River is open to traffic, the old steel bridge would be disassembled, rehabilitated, and relocated to two locations along the proposed Salt Creek Trail (Des. Nos. 1400311 and 1400365).

This project would take place at two locations over Salt Creek in Brown County, Indiana. The "West" span (Des. No. 1400365) would be located about 300 feet south of the SR 46 bridge over Salt Creek, just east of Parkview Road east of Nashville, IN. The "East" span (Des. No. 1400311) will be located just north of the Brown County State Park (BCSP) pool parking lot, about 600 feet west of the North entrance road to BCSP (see Appendix A for location maps). The West span is located in Section 20 of Township 9 North, Range 3 East, and the East span is located in Section 29 of Township 9 North, Range 3 East. Both locations are contained on the USGS Nashville quadrangle map (see Appendix B, Figure 3).

The preferred alternative includes the construction of a new abutment for each end of the two bridges (4 abutments total) plus placing fill to construct the approaches from the existing ground up to the level of the new bridges. It is anticipated that the West span would be owned and maintained by Brown County, and the East span (which would be within BCSP) would be owned and maintained by the Indiana Department of Natural Resources. Each agency has signed an agreement committing to maintain their respective structure for a minimum of 25 years.

This report describes the wetlands, streams and open water features that have been identified within or adjacent to the study area. The study area is the preliminary construction limits shown on the included figures. Water features were located during two field visits – on September 3 and November 11, 2014. The proposed project may result in impacts to these features. Therefore, INDOT anticipates the need to obtain verification from the US Army Corps of Engineers (USACE) and the Indiana Department of Environmental

Management (IDEM) regarding the jurisdictional status of wetlands, streams and open waters located within the study area, and that authorization from USACE and IDEM to discharge fill in these features is necessary.

II: Office Evaluation

Methodology
A desktop review of the project limits was conducted to identify potential waters or waters of the U.S. (streams, wetlands, ponds, etc.). This included review of historic and recent aerial photography for any areas with a water signature or a sharp change in vegetation. Any such areas were flagged for field follow-up. USGS topographic mapping, National Wetlands Inventory (NWI) mapping, mapped soil units, and historic drainage were also reviewed.

FEMA Floodplain Mapping
Figure 2 in Appendix A shows a recent aerial image with the FEMA floodplain (FIRM) mapping. The entire construction limits of the west bridge are within the mapped floodplain. At the eastern bridge, a portion of the southern approach from the Brown County State Park pool parking lot is outside of the floodplain, but the majority of the construction limits is within the floodplain also.

USGS Mapping:
The USGS 7.5 minutes series topographic map of the Nashville quadrangle shows only one water feature, Salt Creek, as being within the project limits. No other water resources are shown or indicated by contours within the project area. The USGS map is provided for reference in Appendix A, Figure 3.

NWI Mapping:
During NWI review, multiple potential wetland polygons were identified within the project limits. All of the NWI polygons are associated with Salt Creek, or its immediate riparian corridor. NWI maps are provided for reference in Appendix A, Figure 4.

Mapped Soil Units:
According to the Soil Survey Geographic (SSURGO) Database for Brown County, Indiana, the project area contains six mapped soil units. The Natural Resources Conservation Service (NRCS) classifies soil types as follows: hydric (100%), predominantly hydric (66-99%), partially hydric (33-65%), predominantly non-hydric (1-32%), and non-hydric (0%). None of the six mapped soils are hydric. All of the mapped soil units are listed as non-hydric (0%). Table 1 below details the soil units mapped within the project limits. Maps showing the location of soil types are provided in Appendix A, Figure 5.

Table 1: Soils in the Study Area

Symbol	Description	Hydric rating
Ba	Bartle silt loam, 0 to 3 percent slopes	Non-hydric (0%)
Be	Beanblossom channery silt loam, occasionally flooded	Non-hydric (0%)
BgF	Berks-Trevlac-Wellston complex, 20 to 70 percent slopes	Non-hydric (0%)
Hc	Haymond silt loam, frequently flooded	Non-hydric (0%)
PeB	Pekin silt loam, 2 to 6 percent slopes	Non-hydric (0%)
Sf	Steff silt loam, frequently flooded	Non-hydric (0%)

Historic Drainage:
A copy of the 1982 soil survey for Brown County was reviewed to identify areas with historic drainage. One historic drainage feature was identified within or near the project limits. This feature is on the south side of Salt Creek, near the proposed location of the east bridge. This area was investigated, and an ephemeral stream was identified and delineated (Stream 2). A map of the historic drainage features is located in Appendix A, Figures 6a and 6b (pages A6-A7).

III: Field Reconnaissance

Methodology

Parsons conducted fieldwork on September 3 and November 11, 2014 to determine the presence of streams, wetlands, and other water resources within the project limits. While specific areas identified via desktop review were targeted for review, the entire project was surveyed for water resources. When observed, features located adjacent to, but outside of the project limits were also noted. Resource maps showing all identified features are attached for reference in Appendix A, Figures 7a and 7b (pages A8-A9)

Photographs were taken throughout the project area, and specifically for each feature identified. Selected photographs are included within this report for reference (Appendix B).

Wetlands were delineated using the guidance provided in the *1987 Corps Manual* (Environmental Laboratory, 1987). Vegetation, soil, and hydrology data were collected using the methods described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0* (USACE 2012). Wetland indicator statuses for plants were obtained from the 2014 National Wetland Plant List. Each wetland polygon was classified utilizing the Cowardin Classification System (Cowardin et.al., 1979). Wetland data forms are provided in Appendix C for reference. A hand-held GPS unit (Geoexplorer XH 6000 Series) was used to collect the boundary of each identified wetland, as well as its data points. No wetlands were identified in or around the construction limits for the eastern bridge, but the NWI mapping shows a wetland polygon along Salt Creek. An additional data point (Upland Data Point A) was taken to document the conditions within the construction limits of the east bridge. This upland data point is also included in Appendix C, and is discussed below in the "Non-Wetland Data Point" section below.

Stream and open water boundaries were delineated in the field at the ordinary high water mark (OHWM), which was obtained using a measuring tape. Streams with an OHWM are identified as perennial, intermittent or ephemeral. Two different function and value assessment methodologies were used, depending on the size of the stream's immediate watershed (drainage area). These methodologies include the Qualitative Habitat Evaluation Index (QHEI, Ohio EPA 2006) for larger streams and the Headwater Habitat Evaluation Index (HHEI, Ohip EPA 2012) for smaller streams. The results of these evaluations are provided in Appendix D. A hand-held GPS unit (Geoexplorer XH 6000 Series) was used to collect the location of each identified stream.

Wetlands

Three wetlands were delineated within or adjacent to the study area, which, for the purpose of waters investigations, is considered to be the preliminary construction limits shown on the included figures. The largest two wetlands (Wetland 1 and 2) are classified as a palustrine forested wetlands (PFO), while the third is a palustrine emergent (PEM) wetland. The total area of the wetlands delineated is 2.38 acres. All three wetlands appear to have the hydrologic connectivity that would place them under the jurisdiction of the US Army Corps of Engineers. Table 2 summarizes the wetlands located within and adjacent to the study area. Figures 7a and 7b in Appendix A show the wetland boundaries and the locations of the data points. Appendix B contains photo location keys, and photographs of each wetland. Wetland determination forms are located in Appendix C as are photos of the soil profiles.

Table 2: Wetlands within the Study Area

Wetland ID	Photo Numbers	Lat. / Long.	Type	Delineated Area (acres)	Acres within Study Area [1]	Waters of the US?
1	4-6	39.198400 N 86.223900 W	PFO	1.5	0.00	Yes
2	7-9	39.198100 N 86.224700 W	PFO	0.72	0.09	Yes
3	13-15	39.195400 N 86.220700 W	PEM	0.16	0.00	Yes
Total Acres				**2.38**	**0.09**	

[1] The Study Area is defined as the preliminary construction limits shown on the included figures.

Wetland 1

This forested wetland (PFO) is actually a wetland mitigation site. The mitigation was constructed in the fall of 2013 to compensate for impacts to wetlands as a result of Phase 1 of the Salt Creek Trail. The wetland, which is 1.5 acres in size, was built by excavating 3-5 feet of soil to create a flat, shallow depression and then planting balled-and-burlapped trees. Because Wetland 1 is a mitigation site, it is protected by a perpetual conservation easement and must not be impacted in any way by the proposed project. No data points were located within the mitigation site because it must be avoided, regardless if it meets wetland criteria or not. The northwest tip of the mitigation site contains a small spillway lined with rip-rap that outlets into Salt Creek. The spillway appears to have been constructed to keep Wetland 1 from holding more than a couple inches of water. The boundary of Wetland 1 was surveyed and mapped for avoidance purposes (See Figure 7a in Appendix A). Photographs of Wetland 1 are included in Appendix B (photos 4-6).

Wetland 2

This forested wetland (PFO) is contained within the patchy, wooded riparian corridor on the east side of Salt Creek at the west bridge location. It occupies a very shallow depression between the east bank of Salt Creek and the lawn areas around Brown County School Corporation's sports complex (Eagle Park). Wetland 2 (data point Wetland 2 point 1) lies within the Steff silt loam (Sf) soil unit, which is not hydric and has no hydric inclusions. Watercress (*Nasturtium officinale*, OBL) is the dominant herbaceous species, ash-leaf maple (*Acer negundo*, FAC) is the dominant sapling and river birch (*Betula nigra*, FACW) is the dominant tree. Wetland 2 has a soil profile with low chroma colors that meet field indicator F3, depleted matrix. Wetland hydrology was indicated by the presence of two secondary indicators (geomorphic position and FAC-neutral test).

Wetland 2 may have a surface connection with Wetland 1, but no evidence of water flowing between the two wetlands was observed. Because Wetland 1 (a mitigation site) has a designed outlet to Salt Creek, Wetland 2 would likely be considered jurisdictional. The eastern abutment of the proposed west bridge would impact about 0.09 acre of Wetland 1. The location chosen for the new bridge, as well as the skew of the bridge relative to the Salt Creek channel have been designed to impact Wetland 2 as little as possible.

Wetland 3

Wetland 3 is about 400 feet northwest of the east bridge location. It lies in a shallow depression and is bisected by an overhead utility easement that runs down the border between Eagle Park and Brown County State Park (see photos 13-15 in Appendix B). Wetland 3 is an emergent wetland (PEM), though there are a couple of trees and shrubs scattered within its boundary. At the wetland data point (Wet 3 pt 1), American sycamore (*Platanus occidentalis*, FACW) and buttonbush (*Cephalanthus occidentalis*, OBL) were the dominant, though sparse, woody dominants, and sweet-scented joe pye weed (*Eutrochium purpureum*, FAC), spotted touch-me-not (*Impatiens capensis*, FACW) and late goldenrod (*Solidago gigantea*, FACW) were the dominant herbaceous species. The wetland is within Steff silt loam (Sf) soils, which are not hydric and do not contain any hydric inclusions, but the soil profile meets field indicator F3, depleted matrix. Wetland hydrology was indicated within Wetland 3 by the presence of two secondary indicators, geomorphic position and FAC-neutral test.

Wetland 3 is well outside the construction limits for the bridges, but because it is already cleared, the utility corridor might be used for construction access. The over head electric utility was buried in directionally-bored conduit in the fall of 2014. As part of this work, the utility easement was cleared of all vegetation and partially graded. This work may have permanently altered a portion of Wetland 3, and this resource should be re-evaluated if temporary construction access is needed across its delineated boundary. Wetland 3 is drained by Stream 1 (see Streams section below) which connects to Salt Creek. Therefore, it should be considered a Water of the U.S.

Streams

Three streams were identified near the study areas. Two of these streams are classified as ephemeral, and are well outside of the proposed construction limits. The third stream, the North Fork of Salt Creek (Salt Creek), is classified as a perennial stream and will be crossed twice by this project. Some tree clearing may occur along the banks of Salt Creek to allow for the placement of the two bridges, but no work is anticipated below the OHWM of Salt Creek. The stream features are summarized below in Table 3.

Table 3: Streams within the Study Area

Stream ID	Photo Nos.	Waterbody Name	Stream Type	Rapanos Type	Avg. Width at OHW (ft.)	Avg. Depth at OHW (ft.)	Linear feet within Study Area [1]	Acres within Study Area	QHEI/ HHEI	Waters of the US?
Salt Creek	1-3, 25-28	North Fork of Salt Creek	PER	RPW	75	4	120 [2]	0.20	50.5	Yes
Stream 1	20-21	Unnamed Tributary to Salt Creek	EPH	Non-RPW	2	0.33	0	0.0	13	Yes
Stream 2	22-23	Unnamed Tributary to Salt Creek	EPH	Non-RPW	5	1.0	0	0.0	67	Yes
						Total	120	0.20		

[1] The Study Area is defined as the preliminary construction limits shown on the included figures.

[2] Approximately 60 feet of Salt Creek is within each of the 2 areas that will be used for reassembly and placing the relocated spans, but no work below the OHWM will take place.

Salt Creek

The Eel River is a perennial stream that generally flows to the west through the surrounding areas, as it does at the east bridge location. At the west bridge location, Salt Creek flows in a northerly direction. A Qualitative Habitat Evaluation Index (QHEI) rating sheet was prepared for Salt Creek (see Appendix D). The overall score was 50.5, which is at the low end of the "fair" rating range. Salt Creek scored well in the "bank erosion and riparian zone" metric (7.5 out of 10), but the scores for the other metrics were only moderate at best. This reach of the North Fork of Salt Creek is listed on the Roster of Indiana Waters Declared Navigable as a navigable stream and it is a jurisdictional Water of the US. The preferred alternative would not impact Salt Creek below the OHWM and no scour protection or bank stabilization below the OHWM is planned at this time.

Stream1

Stream 1 is an ephemeral stream that begins at Wetland 3 and runs south to Salt Creek (Appendix A, Figure7b). It appears to carry minimal, if any flows, and due to its uniform dimensions and straightness, it is

likely that Stream 1 was excavated through the upland areas between Wetland 3 and Salt Creek for the sole purpose of draining Wetland 3. At the time of field investigations (November 11, 2014) the stream bed was covered in dead leaves and there was no evidence of recent flows. Stream 1 scored very low on all three metrics (substrate, pool depth and bankfull width) on the HHEI evaluation and had a total score of 13. Stream 1 is an average of 4 inches deep at the OHWM and is 2 feet wide. This feature should be considered a Water of the U.S., but it will not be impacted by the proposed project.

Stream2

Stream 2 is a short stretch of ephemeral stream that flows northward to Salt Creek west of the proposed location of the east bridge (Appendix B, Figure 7b). On the HHEI rating, Stream 2 scored 67 with moderate scores on all three metrics. Near Salt Creek, Stream 2 is in a deeply-incised channel (5-6' deep) and is running at close to a 10 percent gradient. Because of its connection to Salt Creek, Stream 2 should be considered a Water of the U.S. Stream 2 is outside of the construction limits, and should not be impacted by this project.

Open Water

Three open water features were delineated within the study area, and all three of them can be considered vernal pools. There is a clear ordinary high water mark around the rim of these features, and this was delineated as the jurisdictional boundary. At the time of field investigations (September 3 and November 11, 2014) the water in these pools had mostly or completely dried up (see photos 10-12 and 16-19 in Appendix B). This allowed a sparse covering of emergent vegetation to take hold and made subsurface soil examination possible. All three vernal pools met hydric soil criteria and wetland hydrology was indicated. Vernal pools 1 and 2 contained sparse amounts of hydrophytic vegetation, while Vernal Pool 3 was completely devoid of vegetation. These features are likely isolated, or Waters of the State, as they do not have any surface connection to other jurisdictional water resources. All three vernal pools are outside of the proposed construction limits for this project and will not be impacted. Table 4 provides a summary of the open water features.

Table 4: Open water features within the Study Area

Feature ID	Photos	Lat. / Long.	Total Area of Open Water (acres)	Acres within Study Area [1]	Waters of the US?
Vernal Pool 1	10-12	39.197300 N 86.225300 W	0.83	0.00	Yes
Vernal Pool 2	16-17	39.194800 N 86.220300 W	0.06	0.00	Yes
Vernal Pool 3	18-19	39.194860 N 86.219100 W	0.07	0.00	Yes
		Total	0.96	0.00	

[1] The Study Area is defined as the preliminary construction limits shown on the included figures.

Non-Wetland Data Point

Upland Data Point A

This data point was taken near the proposed north abutment of the east bridge in an area mapped as a forested wetland (PFO) on the NWI mapping (see Figure 4 in Appendix A). The dominant tree species were silver maple (*Acer saccharinum*, FACW) and ash-leaf maple, both of which count as hydrophytic. However, the shrub and herbaceous strata were dominated by facultative upland (FACU) species: multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), and clustered black snakeroot (*Sanicula odorata*). The vegetation did not meet the hydrophytic vegetation criterion, and hydric soils and wetland hydrology were also lacking. This data point is representative of the upland forested areas that are within the areas mapped as NWI forested wetlands.

IV: Conclusions

Based on the field review, this project has features that are likely waters of the U.S. and within the project limits.

A total of three streams were identified near the project limits. All drainage features within the project limits were examined and only those that exhibited an OHWM or met wetland criteria are detailed in this report. A total of three wetlands totaling 2.38 acres were identified within or near the project area. All three are likely to be jurisdictional. Wetland 2 (forested) may be impacted by about 0.09 acres of permanent fill during construction of this project. None of the three vernal pools will be impacted by this project.

Every effort should be taken to avoid impacts to the resources outlined in this report. If impacts will occur, waterway permits will be required and mitigation may be required. Impacts must be minimized before mitigation can be considered. INDOT's Ecology and Waterway Permitting Office (EWPO) staff should be contacted immediately if impacts will occur.

The conclusions in this report are the best judgment of Parsons and based on the guidelines set forth by the USACE. ***The final determination of jurisdictional waters, however, is ultimately made by the USACE.***

A preliminary jurisdictional determination (pre-JD) form is provided in Appendix E.

V. References

Cowardin, L.M, V Carter, F.C Golet, and E.T LaRoe. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. 1979

Environmental Laboratory. *U.S. Army Corps of Engineers' Wetland Delineation Manual, Technical Report Y-87-1("1987 Corps Manual").* U.S. Waterways Experiment Station, Vicksburg, MS. 1987.

Ohio EPA. *Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams.* State of Ohio Environmental Protection Agency, Division of Surface Water. 2012.

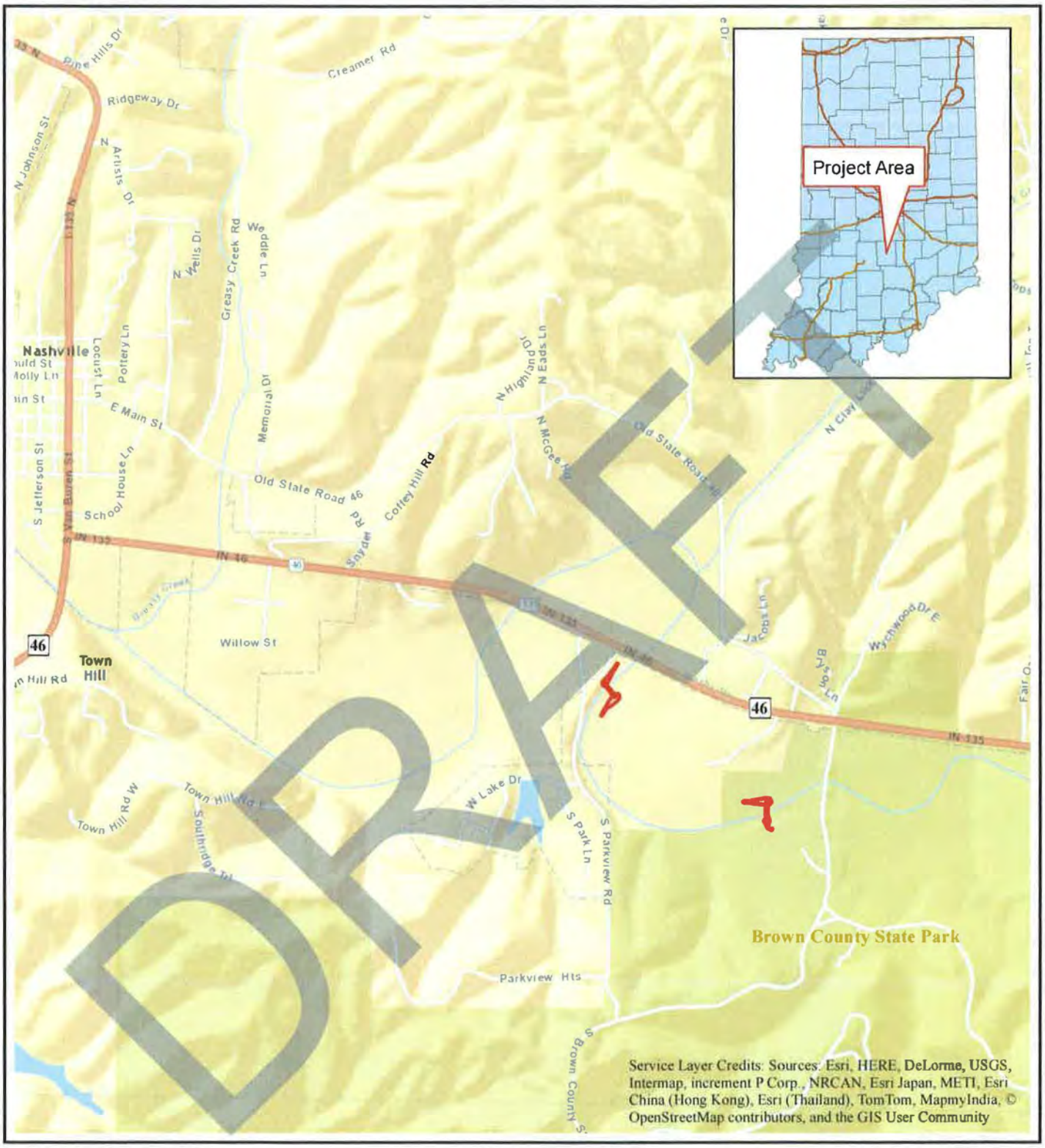
Ohio EPA. *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI).* State of Ohio Environmental Protection Agency, Division of Surface Water. 2006.

United States Army Corps of Engineers. *Midwest 2014 Regional Plant List.* Cold Regions Research and Engineering Laboratory. 2014.

United States Army Corps of Engineers. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).* U.S. Army Engineer Research and Development Center, Vicksburg, MS. 2012.

Appendix A

Figure 1: Project Location Map
Figure 2: Aerial Imagery and Floodplain Map
Figure 3: USGS Topographic Map
Figure 4: NWI Map
Figure 5: NRCS Soils Map
Figure 6: Historic Drainage Maps
Figure 7: Water Resources Maps



Legend

Preliminary Construction Limits

0 750 1,500 3,000 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. Nos. 1400311 and 1400365

Figure 1 - Project Location

PARSONS

Legend

Preliminary Construction Limits

Floodplain

0 750 1,500 3,000 Feet

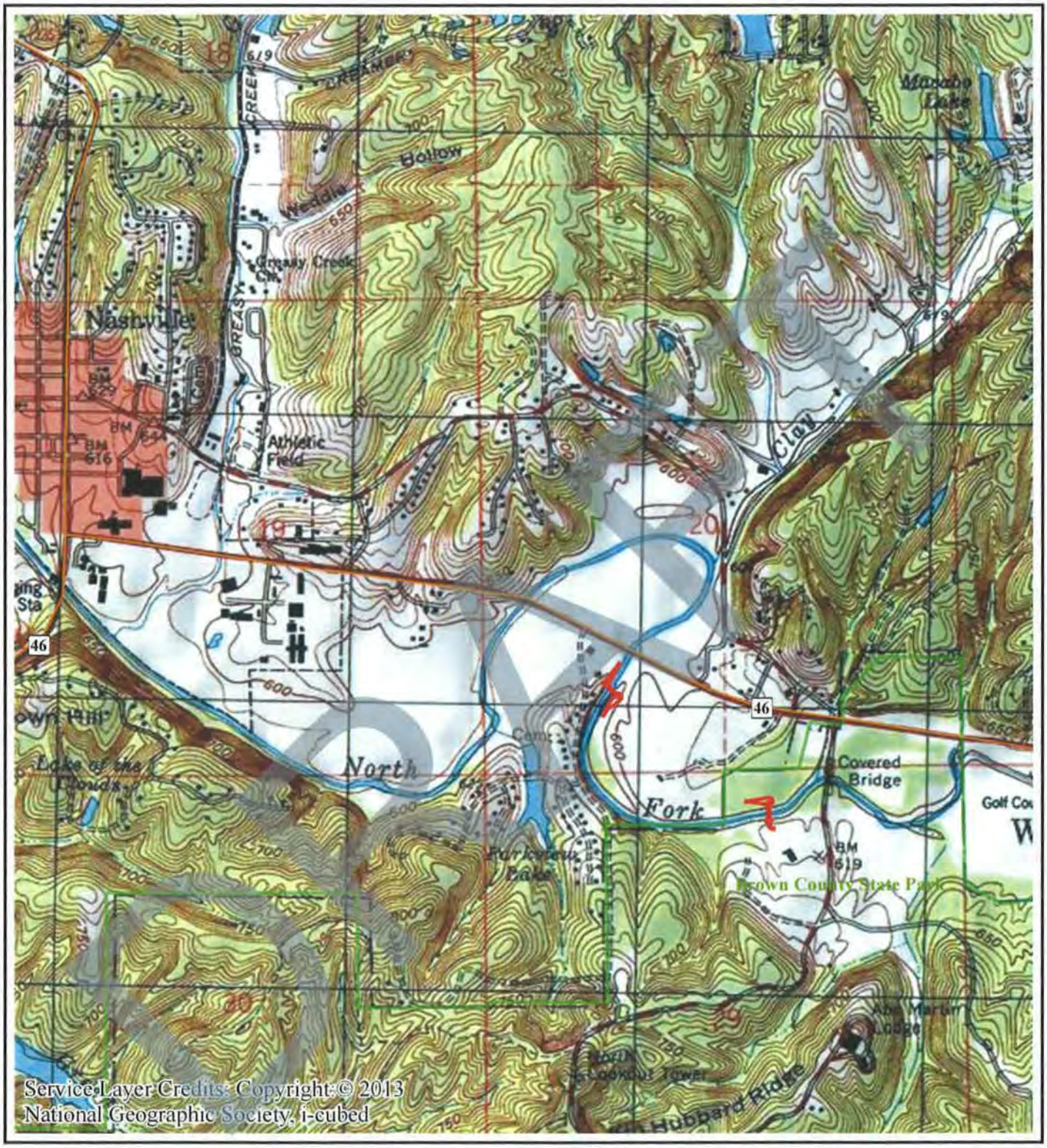
N

Historic Bridge Relocation to Salt Creek Trail

Des. Nos. 1400311 and 1400365

Figure 2 - Aerial Imagery and Floodplain Map

PARSONS



Legend

Preliminary Construction Limits

0 750 1,500 3,000 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. Nos. 1400311 and 1400365

Figure 3 - USGS Topographic Map

PARSONS

Legend

- Preliminary Construction Limits
- NWI Polygons
- Salt Creek Bridge locations

0 200 400 800 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. Nos. 1400311 and 1400365

Figure 4 - NWI Polygons

PARSONS

Legend

Preliminary Construction Limits

Salt Creek Bridge locations

0 200 400 800 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. Nos. 1400311 and 1400365

Figure 5 - NRCS Soils Map

PARSONS

Soil Survey of Clay County, Indiana. United States Department of Agriculture, Soil Conservation Service. 1982.

Historic Bridge Relocation to Salt Creek Trail
INDOT Des. No. 1400365
Figure 6a - Historic Drainage Map, West Bridge

SOIL MAP OF BROWN COUNTY AND PART OF BARTHOLOMEW COUNTY, INDIANA — SHEET NUMBER 33

Soil Survey of Clay County, Indiana. United States Department of Agriculture, Soil Conservation Service. 1982.

Historic Bridge Relocation to Salt Creek Trail
INDOT Des. No. 1400311
Figure 6b - Historic Drainage Map, East Bridge

Legend

- Preliminary Construction Limits
- Salt Creek Bridge locations
- vernal pool
- forested wetland
- Wetland Data Points

0 50 100 200 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. No. 1400365

Figure 7a - Water Resources, West Bridge

PARSONS

Legend

- Preliminary Construction Limits
- Salt Creek Bridge locations
- ephemeral channel
- vernal pool
- emergent wetland
- Wetland Data Points

0 50 100 200 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. No. 1400311

Figure 7b - Water Resources, East Bridge

PARSONS

Legend

- Preliminary Construction Limits
- ephemeral channel
- vernal pool
- forested wetland
- Wetland Data Points
- Wetland photo locations

0 75 150 300 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. No. 1400365

Photo Key Map, West Bridge

PARSONS

Legend

- Preliminary Construction Limits
- ephemeral channel
- vernal pool
- emergent wetland
- Wetland Data Points
- Wetland photo locations

0 50 100 200 Feet

N

Historic Bridge Relocation to Salt Creek Trail

Des. No. 1400311

Photo Key Map, East Bridge

PARSONS

Photo 1: Looking downstream (north) at Salt Creek from center of channel (August 12, 2013)

Photo 2: Looking upstream (south) at Salt Creek from center of channel (August 12, 2013)

Photo 3: Looking west across Salt Creek from east bank at the proposed location of the west bridge (November 11, 2014)

Photo 4: Looking southwest at Wetland 1 just north of the Eagle Park softball diamond (November 11, 2014)

Photo 5: Looking west from the southeast corner of the wetland mitigation site (Wetland 1) (November 11, 2014)

Photo 6: Looking northeast at Wetland 1 from near the southwest corner of the mitigation site (November 11, 2014)

Photo 7: Looking northeast at Wetland 2 (and Wetland 1 in the background) (November 11, 2014)

Photo 8: Looking north at a section of Wetland 2 (September 3 , 2014)

Photo 9: Looking south at emergent wetland vegetation in Wetland 2 (September 3, 2014)

Photo 10: Looking south at Vernal Pool 1 and data point "vernal pool 1 point 1" during a low-water period (September 3, 2014)

Photo 11: Looking north at Vernal Pool 1 from 300 feet south of "vernal pool 1 point 1" (November 11, 2014)

Photo 12: Looking north at Vernal Pool 1 from 150 feet south of "vernal pool 1 point 1" (September 3, 2014)

Photo 13: Looking east at Wetland 3 and the overhead utility lines (September 3, 2014)

Photo 14: Looking north at Wetland 3 and "Wetland 3 point 1"(September 3, 2014)

Photo 15: Looking south down utility easement and portions of Wetland 3 (November 11, 2014)

Photo 16: Looking east at Vernal Pool 2 from near the middle of this feature (September 3, 2014)

Photo 17: Looking west at Vernal Pool 2 from near the middle of this feature (September 3, 2014)

Photo 18: Looking east at Vernal Pool 3 from near the middle of this feature (November 11, 2014)

Photo 19: Looking west at Vernal Pool 3 from near the middle of this feature (November 11, 2014)

Photo 20: Looking south towards Salt Creek (downstream) along Stream 1 (November 11, 2014)

Photo 21: Looking north away from Salt Creek (upstream) along Stream 1 (November 11, 2014)

Photo 22: Looking south (upstream) at Stream 2 (November 11, 2014)

Photo 23: Looking north (downstream) at Stream 2 (November 11, 2014)

Photo 24: Looking northeast at Upland Data Point A (November 11, 2014)

Photo 25: Looking downstream (west) at Salt Creek from 150 feet upstream of the former dam (November 11, 2014)

Photo 26: Looking upstream (east) at Salt Creek from 150 feet upstream of the former dam (November 11, 2014)

Photo 27: Looking north-to-south across Salt Creek at the proposed bridge location (November 11, 2014)

Photo 28: Looking upstream (east) at Salt Creek from just upstream of the former dam (November 11, 2014)

Appendix C

Omitted from CE document.
Available upon request.

Wetland Data Sheets

Soil Profile Photos

Appendix D

Omitted from CE document.
Available upon request.

Stream Evaluation Forms

Appendix E

Preliminary JD Form and Table

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): June 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Parsons Transportation Group (Contact: Alan Ball), 101 West Ohio Street, Suite 2121, Indianapolis, IN 46204

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: INDOT plans to relocate an historic 2-span steel truss bridge from its current location on SR 46 over the Eel River in Clay County, Indiana (INDOT Des. No. 0800910) to two locations on the proposed Salt Creek Trail project between Nashville, IN and Brown County State Park (INDOT Des. Nos. 1400311 and 1400365).

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: IN County/parish/borough: Brown County City: Nashville
Center coordinates of site (lat/long in degree decimal format):
Lat. 39.194300°N, Long. -86.218900° W

Universal Transverse Mercator: Northing 4338629.19, Easting 567451.85 (Zone 16S)

Name of nearest waterbody: North Fork of Salt Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: None
Wetlands: 0.09 acre
Cowardin Class: See attached table

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: None
Non-Tidal: None

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Dates: September 3, 2014, November 11, 2014 (by Consultant)

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Various maps (See attached report).
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 24k, Nashville quad (see Figure 3)
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: NRCS SSURGO (see Figure 5)
- ☒ National wetlands inventory map(s). Cite name: See Figure 4
- ☐ State/Local wetland inventory map(s):
- ☒ FEMA/FIRM maps: See Figure 2
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): 2005, IN Geographic Information Council.
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

	June 2015
Signature and date of Regulatory Project Manager (REQUIRED)	Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

PJD Form Table: SR 46 over the Eel River, Clay County, IN – Des. Nos. 1400311 and 1400365

Site Number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource impacted by construction	Class of aquatic resource
Wetland 1	39.198400	-86.223900	PFO (mitigation site)	0.00 acre	non-section 10 – wetland
Wetland 2	39.198100	-86.224700	PEM1	0.09 acre	non-section 10 – wetland
Wetland 3	39.195400	-86.220700	PEM1	0.00 acre	non-section 10 – wetland
Salt Creek	39.198200	-86.225300	Riverine, perennial	0.0 linear feet	non-section 10 – non-wetland
Stream 1	39.194360	-86.220800	Riverine, ephemeral	0.0 linear feet	non-section 10 – non-wetland
Stream 2	39.194090	-86.219550	Riverine, ephemeral	0.0 linear feet	non-section 10 – non-wetland
Vernal Pool 1	39.197300	-86.225300	PUS3C	0.00 acre	non-section 10 – non-wetland
Vernal Pool 2	39.194800	-86.220300	PUS3C	0.00 acre	non-section 10 – non-wetland
Vernal Pool 3	39.194860	-86.219100	PUS3C	0.00 acre	non-section 10 – non-wetland

INDIANA DEPARTMENT OF TRANSPORTATION

Request to move the SR 46 Bridge over the Eel River
Bridge No. 046-11-01316C
from Clay County, Indiana to Brown County, Indiana

Related to INDOT Des. No. 0800910

Prepared per 36 CFR § 60.14 (b)(1)

by INDOT Cultural Resources Office staff

Contact: Mary Kennedy, mkennedy@indot.in.gov

May 2015

Introduction

Per 36 CFR § 60.14 (b)(1), properties listed in the National Register of Historic Places (National Register) should be moved only when there is no feasible alternative for preservation. Additionally, when a property is moved, every effort should be made to reestablish its historic orientation, immediate setting, and general environment.

As part of the Indiana Department of Transportation (INDOT)'s project Des. No. 0800910, with funding provided by the Federal Highway Administration (FHWA), INDOT has identified a preferred alternative that calls for dismantling and moving the two spans of the National Register-listed State Bridge No. 046-11-01316C from its existing location in Clay County to two new locations along a trail in Brown County, Indiana.

Per 36 CFR § 60.14 (b)(2), if it is proposed that a property listed in the National Register be moved and the State Historic Preservation Officer (SHPO) wishes the property to remain in the National Register during and after the move, the SHPO shall submit documentation to the National Park Service (NPS) prior to the move. Also, per 36 CFR § 60.14 (b)(3), any such proposal with respect to the new location shall follow the required notification procedures, shall be approved by the State Historic Preservation Review Board (Review Board) if it is a State nomination and shall continue to follow normal review procedures. The Keeper of the National Register (Keeper) shall also follow the required notification procedures for nominations. The Keeper shall respond to a properly documented request within 45 days of receipt from the SHPO.

In a letter to INDOT's consultant, Parsons Transportation Group (Parsons), dated March 5, 2015, the SHPO stated that if Bridge No. 046-11-01316C must be moved, "then we would want it to remain listed during and after the move if at all possible." As such, INDOT has prepared the following information to aid in the Indiana SHPO's required documentation submittal to the Review Board and Keeper in order for Bridge No. 046-11-01316C to remain in the National Register during and after the move.

Reasons for the proposed move of Bridge No. 046-11-01316C - per 36 CFR § 60.14 (b)(2)(i)

Bridge No. 046-11-01316C was listed in the National Register National Register in 2000. As part of the *Indiana Historic Bridge Inventory,* the bridge was determined to be Select. Select bridges are historic bridges that are most suitable for preservation and are excellent examples of a given type of historic bridge. The Individual Review conducted for the bridge as part of the *Inventory* process specifically designated the bridge "Select for Non-Vehicular Use," indicating it is better suited for bicycle and/or pedestrian use than for vehicles.

Major rehabilitation work is needed on Bridge No. 046-11-01316C at this time because nearly all steel members show some amount of rusting and/or minor section loss and the lower portion of all sway bracing has been removed due to continued collision damage. The deteriorated condition of the superstructure has required two closures of the bridge in recent years. In 2011 the bridge was closed to traffic requiring INDOT to complete repair work to some gusset plates and floor beams. In 2012 it was closed again after in-depth inspections revealed additional concerns. Additional gusset plate repairs were undertaken to reopen the bridge.

A detailed alternatives analysis for this bridge summarizing the bridge's existing conditions and exploring rehabilitation/re-use options was prepared by INDOT's consultant (Parsons, 5-21-15). A summary is provided below. The full text of the alternatives analysis can be found in Appendix A. The appendices of

the alternatives analysis are not included since they are over 450 pages long, but they are available upon request.

Despite its Select designation for Non-Vehicular Use, INDOT nonetheless examined the rehabilitation option to keep the bridge in continued vehicular use. This alternative would be expected to extend the life of the structure by approximately 25 years and would undertake the following work:

- Replacement of
  - Approximately 80% of lower chord members;
  - All gusset plates at the end bents and center pier;
  - Approximately 50% of other gusset plates;
  - Approximately 75% of splice plates, cover plates, and batten plates;
  - Approximately 50% of the lower lateral cross bracing and corner support angles;
  - Approximately 25% of vertical members;
  - Floor beams at each end bent and pier;
  - Existing bridge deck;
  - All bridge railing;
  - Rivets with round-headed bolts where members are replaced;
  - Exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Cleaning and painting of the entire bridge; and
- Patching of concrete on the abutments and center pier.

This alternative would be designed to meet "3R" (Resurfacing, Restoration, and Rehabilitation) standards as defined in the *Indiana Design Manual*. Due to the nature of truss bridges, it is not possible to address deficiencies related to the width of the structure without completely reconstructing the bridge. As such, design exceptions for lane, shoulder, and clear roadway width would be required. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS- 20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved. Therefore, this is not a prudent and feasible alternative.

The alternative to construct a new bridge parallel to the existing bridge and rehabilitate the existing bridge, with each structure carrying a single lane of traffic, was examined. This alternative includes constructing a new bridge approximately 20' to the south of the existing structure to carry eastbound traffic, retaining westbound traffic on the existing structure. The new bridge would be constructed to accommodate future 2-way travel, for the time when the existing bridge can no longer be maintained. The existing bridge would be rehabilitated in the same way described above with the same service life expectations. It would also have the same structural capacity limitations and would still require a Level 1 design exception. Additionally, this alternative is very costly. Therefore, this is not a prudent and feasible alternative.

INDOT is proposing to dismantle and move the two spans of the bridge from its existing location in Clay County to two new locations along a trail in Brown County, Indiana. The existing bridge would be relocated and rehabilitated for use on the Salt Creek Trail, a 2.5-mile multi-use trail connecting Nashville to Brown County State Park (BCSP), two heavily visited tourist destinations. The purpose of the trail project is to provide an alternative transportation mode for pedestrians that are currently using SR 46 to

travel to land uses in and between Nashville and BCSP. The conflict between pedestrians and the motoring public is currently unsafe. The trail will reduce traffic congestion between the County's three largest motels and the shops in Nashville by providing pedestrian access rather than visitors driving to the shopping areas. In addition, the trail will provide a safe means of transportation for the youth of Nashville and Brown County as it will connect the Brown County School Corporation sports facilities. The trail has been under development for several years, with construction of the first phase already underway. The project includes two crossings of Salt Creek, approximately 0.7 mile apart from one another. The two spans of the existing bridge would be separated to cross Salt Creek at these two locations.

The option of keeping the bridge in place at or near its original location in Clay County as a pedestrian structure and bypassing it with a new bridge was explored. This alternative was dismissed based on the location of the bridge in a sparsely populated area. A sidewalk or multi-use path could be provided from the nearby unincorporated town of Bowling Green to the bridge. The town is located approximately 0.25 mile to the east of the existing bridge with a population of approximately 250. Although it is the closest population center, Bowling Green does not commonly draw visitors from other areas. In 2009, INDOT reached out to Clay County regarding the possibility of relocating the bridge immediately adjacent to the existing location so that the County could create a park with the bridge as a feature. Clay County indicated that they had no interest in creating a park facility utilizing the bridge.

At a December 4, 2014 meeting with Consulting Parties, a request was made to INDOT to conduct outreach to Clay County and the public to determine the level of interest in retaining the bridge in its current location. On January 29, 2015, INDOT held a public meeting in Bowling Green to provide an overview of the project, including the bridge's condition, the alternatives under consideration, and the potential to relocate the bridge to Brown County. The deadline for a local party to step forward and take responsibility for the bridge was originally set as March 30, 2015; however, based on comments received at the meeting and during the comment period, INDOT extended this deadline to the time of the public hearing, currently anticipated for the first week of August 2015, a period of more than six months from the date of the public meeting. To date, no parties have stepped forward to take responsibility for the structure and retain it in place.

INDOT believes that the pedestrian usage of the existing bridge in its current location would be minimal and provide little value to the general public as a historic site compared to its potential use at other locations. At the Salt Creek Trail location, there is a strong demand for a pedestrian facility. When complete, it is anticipated that approximately 10,000 people will use the trail each year. It is anticipated that on the Salt Creek Trail, the span to be located adjacent to SR 46 at Eagle Park would be owned and maintained by Brown County, while the span located within BSCP would be owned and maintained by DNR. Each party will be required to sign an agreement committing to maintain their respective structures for a minimum of 25 years. However, it is anticipated that, based on the expected visitation levels, the bridges would be retained far beyond that minimum. DNR and Brown County have each submitted a letter of intent to take responsibility for the bridge spans.

It should also be noted that an approach that would keep the two spans together as part of the Salt Creek Trail was evaluated; however, the topography, hydraulic conditions, and presence of wetlands in the area, make that option impractical. Preliminary investigations confirmed that using the spans at two separate locations was the only practical option.

Effect of the move on Bridge No. 046-11-01316C's historical integrity - per 36 CFR § 60.14 (b)(2)(ii)

Given the decreased loading associated with pedestrian use, the extent of rehabilitation of Bridge No. 046-11-01316C for use on the Salt Creek Trail would not be quite as extensive as required for vehicular

use. The scope of the rehabilitation described here is based on visual inspection and engineering judgment only and includes:

- Replacement of:
  - Approximately 25% of lower chord members;
  - All gusset plates at the end bents and center pier;
  - Approximately 50% of other gusset plates;
  - Approximately 25% of splice plates, cover plates, and batten plates;
  - Approximately 10% of the lower lateral cross bracing and corner support angles;
  - Approximately 10% of vertical members;
  - Floor beams at each end bent and pier;
  - Existing bridge deck;
  - All bridge railing;
  - Rivets with round-headed bolts where members are replaced;
  - Exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Cleaning and painting of the entire bridge;
- Construction of new abutments at the new bridge locations;
- Construction of ADA compliant shared-use trail approaches to the bridges that connect to the existing ground elevation.

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation (Secretary's Standards)*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and missing sway bracing would be re-installed. In accordance with Attachment B of the *Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management and Preservation of Indiana's Historic Bridges* (Historic Bridge PA)[1], the rehabilitation plans will be reviewed by the Indiana SHPO to ensure compliance with the *Secretary's Standards* and to incorporate context sensitive design features, where practicable.

With regard to relocating the bridge, INDOT shall disassemble the bridge while match-marking and mapping its components. The disassembly will be conducted as non-destructively as possible and shall incorporate principles and guidance (as feasible and relevant to bridges) from the publication "Moving Historic Buildings" by John Obed Curtis (published originally by the United States Department of the Interior). If the bridge must be stored before reassembly at the new locations, the larger components shall be placed on blocks or railroad tie and stored off the ground. Smaller components and other detached members shall be stored indoors or in an otherwise locked facility. As has successfully occurred with several other bridge projects in the past, INDOT will submit the detailed disassembly plan to the Indiana SHPO and FHWA for review and approval before disassembly shall take place.

Even though the trusses will be separated at the new locations on the Salt Creek Trail, the trusses are structurally independent and once reassembled and rehabilitated, each truss will retain its historical and evolutionary integrity/significance as examples of Indiana State Highway Commission (ISHC)-designed Parker through trusses.

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[1] The Historic Bridge PA can be downloaded here: http://www.in.gov/indot/files/HistoricBridgePA.pdf.

New setting and general environment of the proposed site - per 36 CFR § 60.14 (b)(2)(iii)

The current setting of Bridge No. 046-11-01316C is on SR 46 over the Eel River, approximately 4.84 miles east of SR 59, in Clay County. SR 46 is functionally classified as a Rural Minor Arterial on Indiana's 3R system. The speed limit across the structure and on SR 46 west of the bridge is 55 mph, but it is reduced east of the bridge as SR 46 nears the small town of Bowling Green. Specifically, this bridge is located in Sections 13 & 24 of Township 11 North, Range 6 West and Sections 19 of Township 11 North, Range 5. This location is in Washington Township in Clay County, which can be seen on the USGS Center Point Quadrangle Map.

The Eel River is a perennial stream and exhibits an ordinary high-water mark (OHWM). It is listed on the "Roster of Indiana Waters Declared Navigable or Non-navigable" as a navigable stream. Three other bodies of water are within the project area, though they are not shown on the USGS topographic map. Stream 1 is an unnamed tributary (UNT) to the Eel River, and is located in the southeast quadrant of the project area. Stream 1 is an ephemeral stream that exhibits an OHWM, and has a confluence with the Eel River just downstream of the project area. Streams 2 and 3 are both unnamed tributaries to Stream 1. They are both ephemeral streams with an OHWM, located in the southeast quadrant of the project area.

The land in the northwest and southwest quadrants is primarily used for row-crop agriculture while the eastern quadrants are primarily forested. Terrestrial habitat in the project area primarily consists of the forests east of the river, a narrow wooded riparian corridor along the west bank of the river, grassy roadside, and the farmland. The project area supports a variety of flora and fauna typical to these habitats

The proposed new setting of Bridge No. 046-11-01316C is in rural Brown County, between the small town of Nashville, Indiana and the BCSP. Specifically, the new location is located in Sections 20 and 29, Township 9N, Range 3E. This location is in Washington Township in Brown County, which can be seen on the USGS Nashville Quadrangle Map. Salt Creek meanders through the project vicinity and is crossed by SR 46 three times between the project area and Nashville. There are currently no pedestrian facilities that cross Salt Creek, although Phase 1 of the Salt Creek Trail Project is now open from the south side of Nashville (near the CVS Pharmacy), east along Salt Creek to near the Brown County YMCA at the end of Hawthorne Drive.

Within the local community surrounding the project area, this creek is simply called Salt Creek, but the full name of this watercourse is actually North Fork of Salt Creek. There are several streams in the area with "Salt Creek" in the name (North Fork, Middle Fork, South Fork, Little Fork, etc). All of these creeks merge in what is now Monroe Lake. The outflow of Monroe Lake is actually called just "Salt Creek."

Within the project area, the North Fork of Salt Creek is a perennial stream and exhibits an OHWM. It is listed on the "Roster of Indiana Waters Declared Navigable or Non-navigable" as a navigable stream from its junction with Salt Creek for 36.7 river miles to its junction with David Branch (which is near the SR 46/SR135 junction, 1.5 miles upstream from the project area).

At the proposed West bridge location, the west abutment would be on residential and commercial property. The east abutment would be in a wooded riparian corridor along Salt Creek on property that is owned by the Brown County School Corporation that is known as Eagle Park. At the proposed East bridge location, the north abutment would be in a wooded area consisting of floodplain forest. The south abutment would be in a grassy-covered lawn area adjacent to the BCSP pool parking lot. Terrestrial habitat in the project area primarily consists of floodplain forest, a narrow, wooded riparian corridor along

Salt Creek, and grassy lawns. The project area supports a variety of flora and fauna typical to these habitats.

Every effort would be made to reestablish the bridge's historic orientation, immediate setting, and general environment after the move. At its existing location, Bridge No. 046-11-01316C crosses the Eel River at in a general east-west alignment (on a slight diagonal). At the proposed West bridge location, the span would also be generally east-west oriented (on a diagonal). At the proposed East bridge location, the alignment of the span would generally be north-south due to the general east-west route of Salt Creek in this area, the desire to connect the trail near existing facilities in BCSP, and constraints related to topography and hydraulic conditions.

The bridge's existing conditions and immediate setting of forested land, a wooded riparian corridor, and grassy areas would be similar at both of the proposed new span locations. Additionally, at both the existing and new locations, the structure will span a navigable stream with several other small streams located in the greater area. Although miles from the exiting location, the proposed new bridge locations would also be in proximity to the alignment of the roadway that the bridge currently carries, SR 46. While the commercial and residential property near the West bridge location and BCSP near the East bridge location are slightly different features than found at the existing location, they are not completely out of context. The outskirts of the town of Bowling Green, located approximately 0.25 mile east of the existing bridge, are visible when looking eastward from the bridge. Namely the large billboard that outlines the history of Bowling Green is discernible year-round while some buildings are discernible when foliage is off the trees.

The compatibility of the new site to the resource is ideal. At the proposed new locations, the bridge's historic orientation will be reestablished for one of the spans and for both of the spans, the immediate setting, and general environment will be reestablished. The fact that the spans can be placed across another navigable stream amidst similar flora and fauna and in proximity to the route that the bridge historically carried is a unique and desirable opportunity.

It should be noted that the proposed site does not possess historical or archeological significance that would be adversely affected by the relocation of Bridge No. 046-11-01316C. The new locations have been subjected to the appropriate archaeological and above-ground studies for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. A *Phase Ia Archaeological Survey Report* (Schwarz, 11/26/14) for the new sites of the bridge was prepared and determined that three archaeological sites within the Area of Potential Effects (APE) do not appear to be eligible for the National Register. The SHPO agreed with this recommendation in a letter dated December 15, 2014. The historic properties report for the proposed new locations (Nelson, 10/27/14) recommended two properties located within the APE, the Ramp Creek Covered Bridge and the BCSP North Gate House, as being eligible for the National Register, both under Criteria A and C. The SHPO issued a letter on December 22, 2014 concurring with the recommendations of the report. No adverse effects on these properties are anticipated as a result of the bridge relocation as both properties are located over 750' away from the location of the closest span with some trees and buildings partially blocking the view.

Justification for National Register Eligibility Under Criterion C During and After the Move

As mentioned above, even though it is necessary to separate the trusses at the new location on the Salt Creek Trail, the trusses are structurally independent. The ISHC utilized a varied number of spans of Parker trusses as the conditions of a specific crossing dictated. Examples ranged from one single span to nine spans at one location. Once reassembled and rehabilitated, each truss of Bridge No. 046-11-01316C

will retain its historical and evolutionary integrity/significance as an example of ISHC-designed Parker through trusses.

The relocation of the bridge would remove its association from events and historical patterns related to its original location and era. Therefore, it seems likely that it would only be considered eligible for inclusion in the National Register under Criterion C and no longer under Criterion A. Criterion C is applicable to structures that embody the distinctive characteristics of a type, period, or method of construction. Although originally listed in the National Register under Criterion A only, INDOT has prepared information to justify the bridge's listing under Criterion C as well at the state level. The bridge's Criterion C significance lies in being an important example of a revised, third-generation ISHC standard plan and an excellent and rare extant example of the work of a major Indiana bridge-building firm, the Vincennes Bridge Company.

In its new location, Bridge No. 046-11-01316C would still be an excellent example of an important ISHC standard plan. Common truss lengths for Parkers designed by the ISHC were 150', 175', and 200'. Therefore, even when functioning as two separate 198' trusses, they will still be two of the longer extant examples of an ISHC Parker truss. Additionally, the trusses will still be rare extant examples of Parkers built by the Vincennes Bridge Company. Due to relocation, the bridge spans' significance would limited to the original date of construction, 1935.

Under National Register Criteria Consideration B, a property removed from its original or historically significant location can be eligible if it is significant for architectural value, or perhaps more appropriately in the case of a bridge, engineering value. Additionally, moved properties must still have an orientation, setting, and general environment that are comparable to those of the historic location and that are compatible with the property's significance. As explained above, the bridge will still retain significance under Criterion C and its new location is comparable to its original location and compatible with the bridge's significance. In its new location, the bridge will maintain its integrity of design, materials, workmanship, and feeling as an ISHC-designed and Vincennes Bridge Company-built Parker through truss.

Finally, it might be helpful to take into consideration the argument of noted Indiana bridge historian James L. Cooper that metal truss bridges are still significant after being moved, which was made in his July 2004 paper titled "Nomads of the Roadways: Metal Bridges on the Move." Even though written in the context of type of effects under Section 106 and not specifically related to National Register criteria, Cooper explains that metal bridges have traditionally been treated as "eminently moveable resources" and that their ability to be transported from one location to another is an "inherent and desirable characteristic." Specifically with regard to ISHC bridges, Cooper states that some of the once-prevalent standard designs no longer exhibit any extant examples on Indiana roadways and others are now "close to extinction." Therefore, he argues, "relocated examples of state-design may be our best hope for retaining elements of ISHC's trajectory on Hoosier highways."

Appendix A

Excerpt from Alternatives Analysis Document

HISTORIC BRIDGE ALTERNATIVES ANALYSIS

Bridge Number: 046-11-01316C
Designation Number: 0800910

SR 46 OVER EEL RIVER
Clay County
NBI Number: 017050

Eel River, 4.84 miles east of SR 59 at reference post 22+05

PREPARED BY:

PARSONS

Dan Prevost, AICP CTP, ENV-SP

May 21, 2014

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APPENDICES

I. INTRODUCTION

A. Section 4(f) Alternatives Analysis Framework

The Indiana Department of Transportation (INDOT) has identified a need to improve the structural and operational condition of the SR 46 bridge over the Eel River in Clay County (Appendix A, Figures 1-4). The bridge is listed on the National Register of Historic Places (NRHP) and was identified in the Indiana Historic Bridge Inventory (August 2009) as "Select". Select bridges are those "that are most suitable for preservation and are excellent examples of a given type of historic bridge."[1]

Section 4(f) of the US Department of Transportation Act of 1966 (Title 49, USC, Section 303) requires special considerations be made regarding the "use" of any publicly owned park, recreation area, wildlife/waterfowl refuge or historic property that is listed in or eligible for the NRHP. Prior to any "use" of a Section 4(f) property, an alternatives analysis must be conducted that confirms that there are no "feasible and prudent" alternatives to the "use" of the resource.

Alternatives for this project were developed in accordance with INDOT's *Historic Bridge Programmatic Agreement Project Development Process* (Historic Bridge PA PDP) and include no build, rehabilitation, and replacement options, with and without relocation of the existing bridge. The evaluation below follows INDOT's *Historic Bridge Alternatives Analysis Layout* for documentation of this process.

B. Indiana Historic Bridge Inventory

As noted above, the SR 46 bridge over the Eel River was evaluated as part of INDOT's Historic Bridge Inventory survey. That process, developed in conjunction with the Federal Highway Administration and the Indiana Department of Natural Resources-Division of Historic Preservation and Archaeology (IDNR-DHPA), evaluated the NRHP-eligibility of every state-owned bridge in Indiana and established a systematic framework for how historic bridges shall be considered in the project development process.

Because the SR 46 bridge was already listed in the NRHP, its historic eligibility was not reevaluated (see Appendices E-1, E-2, and E-3). Determination of a bridge's Select or Non-Select status involves a multi-step process that incorporates both the historic eligibility and the current condition of the bridge. The SR 46 bridge received a "high" eligibility rating (based on its NRHP listing), but a "low" condition rating (29 out a possible 45) (See Appendix E-4). Bridges with this combination of ratings received an "Individual Review" that considered its condition, the feasibility of rehabilitation, and the potential to correct nonstandard elements without affecting its historic integrity. The Individual Review also considered whether the bridge was suitable for reuse as a non-vehicular (bicycle/pedestrian) structure either in its existing location or at a new location.

Through the Individual Review, the SR 46 bridge was found to be Select, based largely on the fact that the structural deficiencies could be corrected without jeopardizing the character-defining features that made it NRHP-eligible (see Appendix E-5). However, the Individual Review also recognized that while a major rehabilitation could make the bridge structurally sound, some deficiencies could not be corrected. As a result, the Historic Bridge Inventory identified the SR 46 bridge as Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles (see Appendix E-6).

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[1] *Programmatic Agreement Regarding Management and Preservation of Indiana's Historic Bridges*, July 17, 2006 (Historic Bridge PA).

C. Project Development History

In 2009, INDOT determined that action was required to address the deteriorated condition of the bridge. At the time, the Historic Bridge Inventory was not yet complete; however, the bridge was already listed on the NRHP. Due to the condition of the bridge, it was not yet known whether the bridge would be listed as Select or Non-Select. In August 2009, INDOT conducted a field check, during which it was decided that the deterioration was so severe that replacement was appropriate. INDOT reached out to Clay County regarding the possibility of relocating the bridge immediately adjacent to the existing location so that the County could create a park with the bridge as a feature. Clay County indicated that they had no interest in creating a park facility utilizing the bridge.

Volume 4 of the Indiana Historic Bridge Inventory finalized the list of Select and Non-Select bridges, identifying the Eel River Bridge as "Select for Non-Vehicular Use" as described above. While the "Select" designation effectively requires that the bridge remain in use (vehicular or non-vehicular), the "Non-Vehicular Use" label was utilized for bridges that may be more suitable for non-vehicular use due to condition and/or nonstandard geometric features. The Indiana Historic Bridge Inventory did not evaluate whether non-vehicular use was appropriate at the bridge's existing site, but did consider whether the bridge type was suitable for relocation. In 2009, based on the lack of interest from Clay County to take ownership of the bridge for a park, INDOT reversed its previous decision and decided to proceed with a rehabilitation project.

During 2011, INDOT's system-wide approach to fracture-critical bridge inspections became more rigorous due to an increased concern that risks were not being fully identified. Prior to that change, the bridge was inspected primarily via climbing from the bridge deck, the use of ladders where possible, and binoculars for inspecting the areas over the water. The use of under-bridge inspection trucks had previously been minimal due to their availability (INDOT owns only two) and the difficulty of threading the truck's inspection bucket through the truss members. The 2011 inspection used an under-bridge inspection truck allowing the inspector to remove rust and make a more accurate assessment of the condition of the floor beams.

In 2011, Parsons was selected to prepare design plans for the rehabilitation of the Eel River Bridge. During INDOT's inspection of the Eel River Bridge in November 2011, applying these more rigorous inspection techniques, failed gusset plates and a close-to-failure floor beam were identified, resulting in closure of the bridge. In December 2011, INDOT completed an expedited repair that allowed the structure to reopen, although it still required a more permanent repair. On July 31 and August 1, 2012, Parsons performed an in-depth inspection to determine the scope of the rehabilitation effort. During that inspection, Parsons identified additional concerns regarding the condition of the bridge, including serious deterioration of additional gusset plates and bottom chord splice plates. Based on these findings, Parsons requested the bridge be closed until an additional expedited repair could be designed and implemented. The bridge was closed July 31, 2012 and reopened November 2, 2012 after the repair was complete.

The 2011 and 2012 inspections identified structural deficiencies that were far more serious than those identified previously. During each of the closures numerous complaints from the public and businesses were received due to the long (21.9 miles) detour route. This bridge carries more than 3,300 vehicles per day and is an arterial route and part of the National Truck Network. Based on the public's negative response to the detour during those closures INDOT determined that it would be prudent to select an option that requires no (or very limited) closure. The severity of the deterioration and need to minimize closures led INDOT to reconsider the appropriateness of rehabilitation and reevaluate all alternatives, which is the purpose of this document.II. EXISTING STRUCTURE DATA

This section provides a summary of the structural and geometric features of the existing SR 46 bridge over the Eel River.

A. Identification/History

Bridge No.	046-11-01316C
NBI Number	017050
Project Location	SR 46 over the Eel River, Clay County, INDOT Crawfordsville District
Designation No.	0800910
Year Built	1933
Years Repaired	1977, 2011, 2012
Most Recent Field Inspection Date	5/1/2014
Average Daily Traffic (ADT)/Year of ADT	3,310 (2011) / 4,071 (2034)
Percentage of Commercial Vehicles	9%
Low volume road?	No
Functional Classification	Rural Minor Arterial
Detour Length	21.9 miles
Load Rating	14 tons
Sufficiency Rating	7.0
National Register of Historic Places Status	Listed
Historic Bridge Prioritization Status	Select

B. Structure/Dimensions

Surface Type	1 ½" modified concrete overlay placed on a 6 ½" concrete deck (1977)
Out to Out of Copings	25'-0"
Out to Out of Bridge Floor	402'-4"
Clear Roadway Width	24'-0"
Number of Lanes on Structure	2
Skew	0 degrees
Type of Superstructure	Parker steel through truss
Spans	2 – 198'-0" each
Type of Substructure/Foundation	End bents are reinforced concrete wall on spread footings; Intermediate pier is a solid reinforced concrete wall on piles
Seismic Zone	Zone 1

C. Appurtenances

Bridge Railing	C6 x 8.2 steel channel handrail, 2'-10 ¾" height
Curbs	Concrete 6" wide by 5" high, both sides
Sidewalks	None
Utilities	Overhead electric to south; Buried fiber optic to north
Railroad	None

D. Approaches

Roadway Width	24'-0"
Surface Type	Asphalt over concrete
Guardrail	Steel W-beam, class D-S
Guardrail End Treatment	Curved terminals on the west approach, type OS on the east approach

III. EXISTING CONDITIONS

This section summarizes the condition of the bridge's structural elements. Except where noted, the information below was obtained from the May 1, 2014 *Bridge Inspection Report* (see Appendix D-2) prepared by INDOT, the most recent INDOT inspection report available. Representative photos from the Inspection Report are provided in Appendix B.

The numerical or condition ratings assigned to each bridge element are on a scale from 0 through 9 in accordance with the Federal Highway Administration's *Recording and Coding Guide for the Inventory and Appraisal of the Nations Bridges*. The condition ratings are as follows:

9 Excellent or new condition

8 Very good condition—no problems noted

7 Good condition—some minor problems

6 Satisfactory condition—structural elements show some minor deterioration

5 Fair condition—all primary structural elements are sound but have minor section loss, cracking, spall or scour

4 Poor condition—advanced section loss, deterioration, spall or scour

3 Serious condition—loss of section, deterioration, spall or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present

2 Critical condition—Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored, it may be necessary to close the bridge until corrective action is taken

1 Imminent Failure—Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but repairs may put back into light service

0 Failed—out of service and beyond repair

A. Roadway Geometrics

State Road 46 is on Indiana's "3R" (Resurfacing, Restoration, and Rehabilitation) System and it is not anticipated that the route would require any change in that status in the next 25 years. 3R design criteria, as outlined in Chapter 55 and Figure 55-3A of the *Indiana Design Manual*, are appropriate for the existing bridge and approaches and would apply if the bridge were rehabilitated. If the bridge is replaced, "4R" (Resurfacing, Restoration, Rehabilitation, and Reconstruction) design criteria, provided in Chapter 53 and Figure 53-2 would apply. The table below shows the Level 1 design criteria (3R) as well as the bridge's existing dimensions. Level 1 criteria are those that are the most critical indicators of a highway's safety and serviceability.

SR 46 runs due east-west across most of Clay County, with very few curves. The bridge lies within the tangent section between a slight reverse curve (radii of 8,596 and 11,458) with a computed design speed at or above the posted 55 mph speed limit. The approach roadway is generally flat to either side of the bridge, with grades less than 1%. All curves meet the minimum design speed of 55 mph based on Figures 43-3A(3) (horizontal), 44-3A (crest curves), and 55-4A (sag curves) of the *Indiana Design Manual*.

TABLE 1: LEVEL 1 DESIGN CRITERIA AND EXISTING BRIDGE VALUES

Criteria	Minimum Design Criteria [1]	Existing Value	Meets Standard	Possible to Reconstruct to Standard
Travel Lane Width	12'	11'	No	Yes[2]
Usable Shoulder	6'	1'	No	No
Paved Shoulder	2'	1'	No	No[2]
Cross Slope	2%	1.5%	No	No[3]
Structural Capacity	HS-20	H-20	No	No
Clear Road Width	39'4"[4]	24'0"	No	No
Vertical Clearance	14'	14'-8"[5,6]	Yes	N/A

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) If travel lanes were marked at 12', the usable shoulder width on the bridge would be 0. It is not feasible to widen a through truss bridge without replacing nearly all of the structural components with larger, stronger members.
(3) This truss is unlikely to be able to support additional dead load from increased deck thickness without decreasing the live load capacity.
(4) This is based on two 12' travel lanes, 7' shy line offset distance and 8" barrier offset either side.
(5) This clearance has been obtained by removing the lower sway bracing, which has impacted the historic material integrity of the bridge.

B. Bridge Deck

The deck is in overall satisfactory condition. The wearing surface has transverse cracking over top of every floor beam along with longitudinal cracking. There are a total of 31 patches in the wearing surface, numerous areas of delamination, and several spalls. The curbs exhibit vertical cracking and require repair. Several of the downspouts have rusted off entirely.

TABLE 2: BRIDGE DECK CONDITION RATINGS

	Condition Rating
Wearing Surface	5
Deck Underside	6
Curbs	6
Copings	6
Railings	5
Painted Lines	5
Drains	7
Downspouts	4
Joints	6
Deck (overall)	**6**

C. Superstructure

The deteriorated condition of the superstructure has required two closures of the bridge in the past three years. During an inspection of the bridge by INDOT in November 2011, failed gusset plates and a close-to-failure floor beam were identified, resulting in a rating of 1 ("Imminent Failure") and closure of the bridge. In December 2011, INDOT completed an expedited repair that allowed the structure to reopen, although it still had an overall rating of 4 ("Poor") and required a more permanent repair. On July 31 and August 1, 2012, Parsons performed an inspection to determine the scope of the rehabilitation effort (see Appendix D-1). During that inspection, Parsons identified additional concerns regarding the condition of the bridge and requested the bridge be closed until an additional expedited repair could be designed and implemented. The bridge was closed July 31, 2012 and reopened November 2, 2012 after the repair was complete.

Following these repairs, the condition of the bridge has been reevaluated. The stringers are in Fair condition with minor section loss and continued rusting. Most of the floor beams have some section loss, with individual beams exhibiting section loss ranging from 10-50%. Several of the lower bracing laterals have section loss of 50% or more. Vertical truss members have minor section loss and several members have been damaged by collision. Nearly all steel members show some amount of rusting and/or minor section loss. The lower portion of all sway bracing was removed due to continued collision damage (Appendix B, Photos 26-27). Every gusset plate shows some section loss, while some exhibit significant or complete section loss resulting in a condition rating of 1. The most serious of these gusset plate deficiencies were addressed by the temporary repair. The paint is failing in many areas and was rated as Poor. Photos 20-36 in Appendix B show the generally deteriorated nature of the superstructure.

The 2012 repair designed by Parsons (Appendix B, Photo 37) is anticipated to have a service life of a minimum of 5 years (2017). Following that repair, and based on the findings of Parsons' 2012 inspection, the superstructure condition was given a rating of 3 in its 2013 inspection (see Appendix D-2). INDOT continues to inspect this bridge annually to monitor its condition.

TABLE 3: SUPERSTRUCTURE CONDITION RATINGS

	Condition Rating		Condition Rating
Bearings	5	Gusset Plates	1
Stringers	5	Stay/Batten Plates	4
Floor Beams	4	Lacings	4
Knee Braces	N/A	Rivets	5
Trusses	4	Bolts	5
Verticals	4	Splice Plates	5
Diagonals	6	Brackets	6
Upper Chords	6	Pins	5
Lower Chords	4	Nuts	6
Upper Bracings	6	Collision Damage	5
Portals	4	Alignment of Members	6
Top Laterals	6	Deflections	6
Lateral Strut	6	Vibrations	6
Sway Bracing	4	Impact	6
Lower Bracing Laterals	3	Noise	6
Connection Plates	3		
Superstructure (overall)	**3**		
Paint	**4**		

D. Substructures and Foundations

The substructure is in overall Good condition with some cracking and spalling identified. The river flows from north to south and the channel runs along the west face of the center pier. Originally, the river channel was located under the east span of the bridge. However, due to the high velocity of the river, it has migrated to the west, eroding and destabilizing the channel bank, causing large trees to fall into the river. Today, during a Q100 storm, a rain event that has a 1 percent chance of occurring in a given year, water overtops the west bank by 5000 feet and causes approximately 2 feet of backwater (Appendix B, Photos 16-17), During Parsons' 2012 inspection, significant erosion was noted on the west bank under the bridge. The calculated scour depths exceed the pier footing depth and it is likely that within 20 years the west abutment and approach embankment will become unstable. Without proper bank protection, the end bent would eventually be undermined and the bridge would require closure.

TABLE 4: SUBSTRUCTURE AND CHANNEL CONDITION RATINGS

	Condition Rating		Condition Rating
Abutments		Channel	
Bridge Seat	7	Scour upstream	7
Backwall	7	Scour downstream	6
Breastwall	7	Drift	7
Wing Walls	5	Vegetation	7
Scour	7	Channel Change	7
Erosion/Undermining	6	Adequacy of Opening	7
Settlement	7	Channel Protection	5
Intermediate Pier		Waterway Adequacy	6
Pier Cap	7	**Channel (overall)**	**5**
Column	7		
Erosion/Undermining	7		
Scour/Undermining	7		
Settlement	7		
General			
Concrete	6		
Debris on Bridge Seat	7		
Substructure (overall)	**7**		

E. Approaches

The roadway approaches are in overall good condition following a road resurfacing project approximately 10 years ago (Appendix B, Photos 2, 3, and 6).

TABLE 5: APPROACH CONDITION RATINGS

	Condition Rating
Alignment	8
Approach Slab	7
Approach Guardrail	7
Approach Pavement	7
Approach Shoulders	7
Approach (overall)	**7**

IV. PURPOSE AND NEED

The purpose of this project is to provide a safe and structurally sufficient bridge to carry SR 46 over the Eel River.

The primary need for a project at this location is the advanced deterioration, section loss and fatigue affecting critical load-bearing components of this fracture critical bridge. The SR 46 bridge has been closed to traffic twice—once in 2011 and once in 2012—due to an 'imminent failure' condition of fracture critical components discovered during inspections by INDOT and Parsons. Expedited repairs were made on both occasions sufficient to reopen the bridge to traffic; however much more extensive reconstruction would be needed for the bridge to remain in long-term service. The bridge is considered structurally deficient and has a sufficiency rating of 45.6.

The nature and volume of existing and proposed traffic on SR 46 necessitates that the bridge be capable of safely carrying modern highway loadings including commercial vehicles, grain haulers, school buses, and emergency vehicles.

In addition to this need, other desired outcomes of the project include:

- Improvements to the hydraulic capacity of the structure and implementation of scour countermeasures;
- A bridge that provides standard lane widths and shoulders and can safely accommodate agricultural equipment;
- An improved intersection at CR 475 East that provides sufficient sight distance;
- Guardrail transitions and end treatments that meet current standards; and
- A bridge that is not subject to frequent or long-term closures for construction, maintenance, or inspection due to the lack of safe, efficient alternative routes and high user costs;

Alternatives meeting this purpose and need will be weighed based on their ability to balance feasibility, cost-effectiveness, and environmental impacts.

V. ALTERNATIVES

As described above, Section 4(f) and the INDOT Historic Bridge PA PDP require the systematic evaluation of alternatives for this project. The alternatives analysis must prove why each alternative either is or is not feasible and prudent, and it should document the justification for the decision to proceed with the preferred alternative. The regulations state that a potential avoidance alternative is not "feasible" if it cannot be built as a matter of sound engineering judgment (23 CFR 774.17), it is not possible to engineer, design and build. The term "prudent" means there are no unique problems or unusual factors involved with the use of such alternatives. Per 23 CFR 774.17, an alternative is not prudent if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- After reasonable mitigation, it still causes:
    - Severe social, economic, or environmental impacts;
    - Severe disruption to established communities;
    - Severe disproportionate impacts to minority or low income populations; or
    - Severe impacts to environmental resources protected under other Federal statutes;
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The Historic Bridge PA PDP establishes the criteria for determining feasibility and prudence for projects involving historic bridges in Indiana. The Historic Bridge PA PDP is available at: http://www.in.gov/indot/2531.htm.

A. Alternative 1: No Build

Alternative Description

The No Build alternative would make no improvements to this bridge at this time (Appendix A, Figure 5). INDOT would continue its current inspection program to identify structural deficiencies and would address issues as required. As described in Section III above, the expedited repair implemented by INDOT in 2012 has an anticipated minimum lifespan of five years. Therefore, it is anticipated that sometime in 2017 or later, the bridge would require a permanent solution or would need to be closed to traffic. INDOT would continue to monitor the structure to ensure the safety of motorists.

Because of the age and condition of this structure, it is impossible to anticipate the cost of repairs that would be needed or when the bridge would require closure.

Compliance with Design Standards

The No Build Alternative would make no improvements to the structure, leaving all design elements in their current state. As shown in Table 6, the bridge does not meet INDOT Design Criteria for travel lane width and shoulder width on the bridge and approaches, clear roadway width and structural capacity on the bridge, and cross slope on the approaches.

TABLE 6 - DESIGN CRITERIA FOR ALTERNATIVE 1

Design Element	Minimum Design Criteria [1]	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features				
Travel Lane	12'	11'	11'	Yes
Shoulder	6' (minimum)	1'	1'	Yes
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40'	24'	24'	Yes
Vertical Clearance	14'	14'-8"[2]	14'-8"	No
Roadway Features				
Travel Lane	12'	11'	11'	Yes
Shoulder Width	6'	1'	1'	Yes
Stopping Sight Distance at Vertical Curve	495'	1,124'	1,124'	No
Maximum Grade	5%	0.59%	0.59%	No
Through Lane Cross Slope	2%	1.5%	1.5%	Yes

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.

Hydraulics

The lowest point of the existing bridge is located at approximately elevation 574.05 feet above sea level. The Q_{100}, the elevation at which there is a 1% chance of a storm event of the magnitude in any given year, for this bridge is 573.00 above sea level. The *Indiana Design Manual* requires a minimum of 2 feet of freeboard, clearance between the Q_{100} and the bottom of the bridge, to allow for passage of ice and debris. The existing SR 46 bridge over the Eel River does not meet that standard and the No Build alternative would not alter that condition.

Historic Bridge Effects

This alternative would not alter the historic elements of the structure. The lower sway bracing, which was removed by INDOT, would remain as-is. However, the bridge would continue to deteriorate until closure was required.

Right-of-Way

The No Build alternative would require no right-of-way.

Utilities

The No Build alternative would have no impact on existing utilities in the corridor.

Maintenance of Traffic

Because there is no construction associated with this alternative, no maintenance of traffic plan is required. However, if, as a result of its continued deterioration, the bridge was closed temporarily for repairs or permanently, the official detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. SR 246 is a narrow, winding rural roadway not well suited to carry 159 commercial vehicles a day. When the bridge was closed in 2011 due to the condition of the bridge, the district received complaints and safety concerns from the public about the number of trucks on SR 246. When SR 46 was closed again in 2012, commercial traffic was routed along SR 59, I-70 and US 231 through Spencer, an additional approximately 22.5 miles. The district again received complaints from users and elected officials due to the additional distance. There is no adequate local road detour. CR 200 crosses the Eel River to the southwest, but doesn't afford significant time or mileage savings over the SR 59 and SR 246 official state detour.

Environmental Issues

This alternative would cause no direct environmental impacts. If the bridge required closure for a long duration, the diversion of traffic could have traffic-related impacts on other communities along the alternative route(s) that vehicles utilized.

Cost

The No Build Alternative does not include any improvements and, therefore, has no cost. As noted above, it is not possible to estimate the costs associated with any repairs that would be required or the user costs associated with any temporary or permanent closures. If the structure were closed for a long duration (or permanently) it may be necessary to make improvements to other roadways in the area to improve access or to allow them to accommodate the additional traffic.

Section 4(f) Evaluation

The No Build Alternative requires no design or construction; therefore, **it is a feasible alternative**. It would, however, retain the non-standard features identified above and the hydraulic capacity would remain insufficient. Further, this alternative does not provide a safe, reliable transportation facility for the SR 46 corridor. **It does not, therefore, meet the project's purpose and need** and is **not a prudent alternative**. It will, however, be retained throughout the project's development for comparison purposes as required by the National Environmental Policy Act.

B. Alternative 2: Rehabilitation for Continued Vehicular Use

Alternative Description

The scope of the rehabilitation described here is based on visual inspection and engineering judgment only. A detailed three-dimensional model could be used to refine the extent of improvements if this alternative was to be investigated further. This alternative would undertake a major rehabilitation of the existing bridge (Appendix A, Figure 6) including:

- Replacement of approximately 80% of lower chord members;
- Replacement of all gusset plates at the end bents and center pier;
- Replacement of approximately 50% of other gusset plates;
- Replacement of approximately 75% of splice plates, cover plates, and batten plates;
- Replacement of approximately 50% of the lower lateral cross bracing and corner support angles;
- Replacement of approximately 25% of vertical members;
- Replacement of the floor beams at each end bent and pier;
- Replacement of the existing bridge deck;
- Replacement of exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing (will be thicker, more compact section to allow vertical clearance requirement to be met);
- Replacement of all bridge railing;
- Replacement of rivets with round-headed bolts where members are replaced;
- Cleaning and painting of the entire bridge; and
- Patching of concrete on the abutments and center pier.

This alternative would be expected to extend the life of the structure by approximately 25 years. If the work was completed in 2016, the bridge would require additional rehabilitation in 2041, when major remaining elements would be 108 years old.

On the east side of the bridge, the approach roadway would be reconstructed for a length of approximately 300 feet to provide wider shoulders, add guardrail, and modify the driveway entrance to improve sight distance. On the west side, the reconstruction would also include relocating the intersection of CR 475 E and SR 46 approximately 200 feet to the west in order to improve the sight distance for vehicles entering from CR 475 E.

Compliance with Design Standards

This alternative would be designed to meet 3R standards as defined in the *Indiana Design Manual*. Due to the nature of truss bridges, it is not possible to address deficiencies related to the width of the structure without completely reconstructing the bridge (see Table 7). As such, design exceptions for lane, shoulder, and clear roadway width would be required. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS-20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved.

Hydraulics

Alternative 2 would make no changes to the elevation of the bridge, the substructure, or the channel. As such, this alternative would not meet the 2-foot freeboard requirement.

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity. Sway bracing would be re-installed – with some modifications – so as to not recreate the clearance issues that led to its removal.

Right-of-Way

Alternative 2 would require approximately 2.0 acres of new right-of-way from adjacent properties to allow for the improvements to the bridge, its approaches, and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 2 would require the relocation of approximately 2 utility poles as part of the realignment of CR 475 E.

TABLE 7 - DESIGN CRITERIA FOR ALTERNATIVE 2

Design Element	Minimum Design Criteria [1]	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features				
Travel Lane	12'	11'	11'	Yes
Shoulder	6' (minimum)	1'	1'	Yes
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40'	24'	24'	Yes
Vertical Clearance	14'	14'-8"[2]	14'-8"	No
Roadway Features				
Travel Lane	12'	11'	12'	No
Shoulder Width	6'	1'	8'	No
Stopping Sight Distance at Vertical Curve	495'	415'	501'	No
Maximum Grade	5%	3.7%	3.7%	No
Through Lane Cross Slope	2%	1.5%	2%	No

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.

Maintenance of Traffic

Rehabilitation of the existing bridge would require the full closure of SR 46 for approximately 9 months. During this time, the posted detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. This is the same detour route used during the closure in 2011. As noted previously, SR 246 is a narrow, winding rural roadway not well suited to large trucks, resulting in numerous complaints from the public when this was used as a detour route during the 2011 repair project.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction work on the approaches to the bridge would potentially cause minor impacts to a stream located in the southeast quadrant of the bridge. The jurisdictional status of other water features in the area

has not been determined. Minimal tree clearing may also be required. Impacts could potentially be minimized or eliminated during final design through the use of steeper slopes or retaining walls. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's Categorical Exclusion (CE) document and mitigated as appropriate. This alternative would also result in traffic-related impacts on other communities along the alternative route(s) that vehicles utilized during construction.

Cost

Alternative 2 would cost $4,838,780 to construct and would have user costs[2], resulting from time and operating expenses associated with the longer, slower detour of $4,848,363, for a total project cost of $9,687,143. Additional cost details are provided in Appendix C, pages 1-4 and pages 47-48. Due to its fracture critical nature, the bridge would continue to be inspected at one-year intervals (instead of the typical two-year interval for non-fracture-critical bridges), requiring expenditures not captured above.

Construction Cost*	$4,768,780
ROW/Utilities	$70,000
Project Cost	**$4,838,780**
User Costs	$4,848,363
TOTAL COST	**$9,687,143**

*Includes bridge rehabilitation and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 2; however, it would not meet structural capacity requirements. The H-20 load rating does not meet the needs of the corridor and, therefore, this alternative **does not meet the project's purpose and need**.

During the Individual Review for this bridge as part of the Historic Bridge Inventory Select/Non-Select analysis, it was determined that this bridge could not be rehabilitated to meet current applicable design standards and that design exceptions would not be appropriate for this bridge. As a result, the Individual Review designated the bridge Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles. Therefore, Alternative 2 **is not a feasible alternative**. While Alternative 2 would provide a reliable transportation corridor for at least 25 years, it requires an investment of almost $5 million and would cause user costs of an equal amount during the rehabilitation process. The Historic Bridge PA PDP establishes that if the cost of rehabilitation is equal to or greater than 80% of the replacement cost, it may not be suitable for rehabilitation. Alternative 2 exceeds this threshold when compared to several of the replacement alternatives (see Table 14). This alternative would retain the non-standard features identified above, it would not meet the 2-foot freeboard requirement, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. Based on this evaluation, Alternative 2 is **not a prudent alternative**.

[2] User costs were included in the evaluation due to the concerns raised by businesses and the public regarding safety and delays during the short-term closures associated with the 2011 and 2012 repair projects. User costs were calculated based on the methodology provided in the *Indiana Design Manual*, Section 81-4.02(2). User cost calculations for each alternative are provided in Appendix C.

C. Alternative 3: Rehabilitation for Continued Vehicular Use/One-Way Pair

Alternative Description

This alternative would construct a new bridge parallel to the existing bridge and rehabilitate the existing bridge, with each structure carrying a single lane of traffic. This alternative includes constructing a new bridge approximately 20' to the south of the existing structure (Appendix A, Figure 7) to carry eastbound traffic, retaining westbound traffic on the existing structure. To accommodate this directional split, the eastbound SR 46 roadway would shift to the south starting approximately 0.5 mile west of the bridge, travel across the new bridge over the Eel River, and re-join the existing SR 46 alignment approximately 0.25 mile east of the river. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years. In accordance with the *Historic Bridge Alternatives Analysis Layout*, the new bridge would be constructed to accommodate future 2-way travel, for the time when the existing bridge can no longer be maintained.

To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet.

The existing bridge would be rehabilitated in the same way described above for Alternative 2, with the same service life expectations (25 years).

Compliance with Design Standards

The new bridge would be designed to meet 4R standards as defined in the *Indiana Design Manual*, while the existing bridge would be rehabilitated to 3R standards, as shown in Table 8.

TABLE 8 - DESIGN CRITERIA FOR ALTERNATIVE 3

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features – Existing Bridge [1]				
Travel Lane	12'	11'	12'	No
Shoulder	6' (minimum)	1'	6'	No
Structural Capacity	HS-20	H-20	H-20	Yes
Clear Roadway Width	40'	24'	24'	No
Vertical Clearance	14'	14'-8"[2]	14'-8"	No
Bridge Features – New Bridge [3]				
Travel Lane	12'	11'	12'	No
Shoulder	6' (minimum)	1'	8'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	40'	24'	40'	No
Vertical Clearance	14'	14'-8"[2]	N/A [4]	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	6'	1'	10'	No
Stopping Sight Distance at Vertical Curve	495'	415'	501'	No
Maximum Grade	5%	6.74	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 55 and Figure 55-3A
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(4) The new bridge will have no vertical obstructions.

The new bridge would meet all applicable design criteria. With only one lane utilizing the 24-foot wide bridge, the rehabilitated existing bridge would meet design standards for lane width and shoulders. The bridge was originally designed with an H-20 structural capacity (20-ton truck) and the rehabilitation would restore this capacity. However, current design standards require accommodation for HS-20 structural capacity (36 ton truck); therefore, this alternative would require a Level 1 design exception from INDOT and FHWA. Based on this bridge's location on a National Truck Route and the number of heavy trucks known to use the bridge, INDOT and FHWA have indicated that this design exception would not be approved.

The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green. This grade exists today and correcting it would be cost-prohibitive.

Hydraulics

The new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). Alternative 3, however, would make no changes to the elevation of the existing bridge, its substructure, or the channel. As such, the rehabilitated existing bridge would not meet the 2 foot freeboard requirement. Further, while a detailed hydraulic analysis has not been completed, it is anticipated that the analysis would show that the new bridge's west abutment would be required to line up with the existing bridge's abutment. Therefore, it would be subject to the same scour issues experienced by the existing bridge and would require regular maintenance of the installed countermeasures (likely riprap). As per the Historic Bridge PA, the existing bridge would be maintained for a minimum of 25 years; however, should it be removed after that time, the new bridge would remain in its hydraulically undesirable location for the rest of its service life (75 years).

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity. Sway bracing would be re-installed – with some modifications – so as to not recreate the clearance issues that led to its removal.

Right-of-Way

Alternative 3 would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the new eastbound bridge and approach roadways and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 3 would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. All traffic would then be shifted to the new bridge during the rehabilitation of the existing bridge. No disruption to SR 46 traffic is anticipated except at the

location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 3 would cost $11,349,048 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total project cost of $11,430,129. Additional cost details are provided in Appendix C, pages 5-10 and page 50. Due to its fracture critical nature, the bridge would continue to be inspected at one-year intervals (instead of the typical two-year interval for non-fracture-critical bridges), requiring expenditures not captured above.

Construction Cost*	$11,075,048
ROW/Utilities	$274,000
Project Cost	**$11,349,048**
User Costs	$81,081
TOTAL COST	**$11,430,129**

*Includes rehabilitation of existing bridge, the new bridge, and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 3; however, it would not meet structural capacity requirements. The H-20 load rating does not meet the needs of the corridor and, therefore, this alternative **does not meet the project's purpose and need**.

During the Individual Review for this bridge as part of the Historic Bridge Inventory Select/Non-Select analysis, it was determined that this bridge could not be rehabilitated to meet current applicable design standards and that design exceptions would not be appropriate for this bridge. As a result, the Individual Review designated the bridge Select for Non-Vehicular Use, indicating it may be better suited for bicycle and/or pedestrian use than for vehicles. Therefore, Alternative 3 **is not a feasible alternative**. Alternative 3 would address some of the geometric deficiencies by only placing a single lane of traffic on the existing bridge, but the existing bridge would retain its insufficient freeboard, leaving it at risk for damage due to ice or debris, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. The Historic Bridge PA PDP establishes that if the cost of rehabilitation is equal to or greater than 80% of the replacement cost, it may not be suitable for rehabilitation. At a cost of $11,349,048, this is the most expensive alternative to construct and would exceed this threshold (see Table 14). Based on this evaluation, Alternative 3 is **not a prudent alternative**.

D. Alternative 4: Bypass/Non-Vehicular Use

Alternative Description

This alternative includes constructing a new bridge approximately 20' to the south of the existing structure (Appendix A, Figure 8). The alignment of SR 46 would need to be adapted to access this new structure. Starting about 0.5 mile west of the bridge, SR 46 would diverge to the south of the existing alignment and require a reverse curve formation in order to merge back into the

existing roadway alignment approximately 0.25 mile east of the bridge. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years.

Once complete, all SR 46 traffic would utilize the new structure. The existing bridge would be retained for non-vehicular (pedestrian) use. Given the decreased loading associated with pedestrian use, the extent of rehabilitation would not be quite as extensive as required for vehicular use. The scope of the rehabilitation described here is based on visual inspection and engineering judgment only. A detailed three-dimensional model could be used to refine the extent of improvements if this alternative was to be investigated further. Based on this review, the following improvements are proposed:

- Replacement of approximately 25% of lower chord members;
- Replacement of all gusset plates at the end bents and center pier;
- Replacement of approximately 50% of other gusset plates;
- Replacement of approximately 25% of splice plates, cover plates, and batten plates;
- Replacement of approximately 10% of the lower lateral cross bracing and corner support angles;
- Replacement of approximately 10% of vertical members;
- Replacement of the floor beams at each end bent and pier;
- Replacement of the existing bridge deck;
- Replacement of exterior stringers (once the deck is removed additional stringers may be identified for replacement);
- Reinstallation of portal and sway bracing;
- Replacement of bridge railing;
- Replacement of rivets with round-headed bolts where members are replaced; and
- Cleaning and painting of the entire bridge.

The existing roadway approaches would provide access to the existing bridge for vehicles and/or pedestrians. While not included in the current design, a sidewalk or multi-use path could be provided from Bowling Green as well. The unincorporated town of Bowling Green, located approximately 0.25 mile to the east of the existing bridge with a population of approximately 250, is the closest population center and does not commonly draw visitors from other areas.

At a December 4, 2014 meeting with Consulting Parties, a request was made to INDOT to conduct outreach to Clay County and the public to determine the level of interest in retaining the bridge in its current location. On January 29, 2015, INDOT held a public meeting in Bowling Green to provide an overview of the project, including the bridge's condition, the alternatives under consideration, and the potential to relocate the bridge to Brown County. The presentation also included the requirements for a party seeking to take ownership of the bridge. A copy of the materials presented at the meeting, as well as the comments received is provided in Appendix F-7.

The deadline for a party to step forward was originally set as March 30, 2015; however, based on comments received at the meeting and during the comment period, INDOT extended this deadline to the time of the public hearing, currently anticipated for the first week of August 2015, a period of more than six months from the date of the public meeting.

To date, no parties have stepped forward to take responsibility for the structure and retain it in place.

Compliance with Design Standards

The new bridge would be designed to meet 4R standards as defined in the *Indiana Design Manual* as shown in Table 9.

The new bridge would meet all applicable design criteria. The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green. The steep grade exists today and correcting it would be cost-prohibitive.

The structural capacity of the pedestrian bridge is based on an H10 design vehicle, which would accommodate typical maintenance vehicles that may need to utilize the bridge.

Hydraulics

The new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). Alternative 4, however, would make no changes to the elevation of the existing bridge, its substructure, or the channel. As such, the existing bridge, repurposed for pedestrian use, would not meet the 2 foot freeboard requirement. Further, while a detailed hydraulic analysis has not been completed, it is anticipated that the analysis would show that the new bridge's west abutment would be required to line up with the existing bridge's abutment. Therefore, it would be subject to the same scour issues experienced by the existing bridge and would require regular maintenance of the installed countermeasures (likely riprap). As per the Historic Bridge PA, the existing bridge would be maintained for a minimum of 25 years; however, should it be removed after that time, the new bridge would remain in its hydraulically undesirable location for the rest of its service life (75 years).

TABLE 9 - DESIGN CRITERIA FOR ALTERNATIVE 4

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder	10'	1'	10'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44'	24'	44'	No
Vertical Clearance	16.5'	14'-8"[2]	N/A [3]	No
Pedestrian Bridge Features [4]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	10'	1'	10'	No
Stopping Sight Distance at Vertical Curve	570'	415'	579'	No
Maximum Grade	3%	2.74%	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed.

Right-of-Way

Alternative 4 would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the new eastbound bridge and approach roadways and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 4 would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. No disruption to SR 46 traffic is anticipated except at the location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 4 would cost $10,260,836 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $10,341,917. Additional cost details are provided in Appendix C, pages 11-16 and page 50.

Construction Cost*	$9,986,836
ROW/Utilities	$274,000
Project Cost	**$10,260,836**
User Costs	$81,081
TOTAL COST	**$10,341,917**

*Includes rehabilitation of existing bridge, the new bridge, and roadway improvements

Section 4(f) Evaluation

It would be possible to design and build Alternative 4; therefore, **it is a feasible alternative**. Alternative 4 would provide a safe, reliable, and cost-effective structure to carry all traffic in the SR 46 corridor. The bridge and roadway would meet nearly all design criteria, with a design exception required only for the grade approaching Bowling Green. The existing bridge, repurposed for pedestrian use, would retain its insufficient freeboard, leaving it at risk for damage due to ice or debris, and the location of the west abutment would leave it subject to scour and the need for countermeasure maintenance. Based on the location of the bridge in a sparsely populated area, INDOT believes that the pedestrian usage of the existing bridge would be minimal and provide little value to the general public as a historic site compared to its

potential use at other locations. As described below, several groups expressed interest in utilizing the bridge as part of planned, high-demand trail networks.

Based on the reasons above, Alternative 4 has been identified as **not prudent**, pending outreach to local stakeholders regarding the potential demand for the bridge to remain in place.

E. Alternative 5: Bridge Replacement/Relocation of Historic Bridge

Alternative Description

This alternative includes the construction of a new bridge over the Eel River and relocation of the existing bridge to a new location for use as a pedestrian/bicycle facility. As is the case in any bridge replacement project, there are several options for construction methods and alignment. Five options – or subalternatives – were developed for consideration under this alternative:

- 5A – Bridge Replacement on Existing Alignment – Full Detour
- 5B-S – Bridge Replacement on Existing Alignment – Temporary Bridge to South
- 5B-N – Bridge Replacement on Existing Alignment – Temporary Bridge to North
- 5C-S – Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)
- 5C-N – Bridge Replacement on New Alignment to North

Each option would provide a new bridge that would provide a safe, reliable, cost-effective structure for vehicles in the SR 46 corridor. The new bridge would be a 5-span, 525-foot long structure with an estimated service life of 75 years. Each would also relocate the existing historic bridge to a new location where it would be highly utilized and maintained for a minimum of 25 years. The primary differences are in the location of the new bridge, the approach to maintaining traffic during construction, and potential user costs.

Bridge Relocation Options

In accordance with the Historic Bridge PA PDP, this alternative would require the identification of a suitable location for the structure, as well as an organization willing to commit to taking ownership and maintenance responsibility. It would also require INDOT, as the bridge's current owner, to pay for the cost to rehabilitate and relocate the structure. The IDNR Division of Outdoor Recreation maintains an email list of individuals and organizations involved in the development and improvement of recreational trails. At INDOT's request, information regarding the existing SR 46 bridge, including dimensions, conditions, and adoption requirements, was distributed to more than 300 people (see Appendix F-1).

Three interested parties responded to IDNR's solicitation: John Bawcum, Friends of the Panhandle Pathway, Inc. (see Appendices F-2 and F-3); Cliff Kunze, Covered Bridge Gateway Trails Association (see Appendix F-4); and Mike List, Indiana State Parks & Reservoirs (see Appendix F-5). The Panhandle Pathway was interested in using the SR 46 bridge (or more likely, one of the spans) to provide a grade-separated trail crossing of SR 14 in Winamac, Indiana. The Covered Bridge Gateway Trails Association expressed interest in relocating the SR 46 bridge as part of a rails-to-trails project in Parke County. The proposal from Indiana State Parks & Reservoirs was to use the bridges at two locations of the Salt Creek Trail, which is under development near Brown County State Park.

INDOT reviewed the three requests and determined that the Salt Creek Trail option was the best option for preserving the bridge and in the best interest of the State (see Appendix F-6). The Salt Creek Trail project has been under development for approximately 10 years and, as of this year, one segment is open and three of its four remaining segments (including the one

where the bridges would be placed) are fully funded. A Categorical Exclusion (CE) document was completed in 2007 for the entire trail; due to some alignment changes a portion of the trail will be re-evaluated in a new CE document in the next year. The anticipated high usage (10,000 people per year) and the location of one of the bridge spans immediately adjacent to SR 46 at Eagle Park will provide a high level of visibility for the spans. While using the bridge for the Salt Creek Trail project would require separation of the bridge into its two component spans, based on the other responses received and INDOT's past experience with bridge relocation for recreational trails, due to the length of this bridge any other proposal to reuse the bridge would likely do the same.

Since selecting the Salt Creek Trail location as the proposed relocation option, additional investigations and analyses have been conducted in the areas where the two spans would be placed. A hydraulic analysis has been conducted to confirm the requirements for span lengths and location and preliminary field investigations have been conducted to identify potential environmental resources. An approach that would keep the two spans together as part of the Salt Creek Trail was evaluated; however, the topography, hydraulic conditions, and presence of wetlands in the area, make that option impractical. These preliminary investigations confirmed that using the spans at two separate locations was the only practical option.

The Salt Creek Trail

Under each of the Alternative 5 options (A, B-S, B-N, C-S, and C-N), the existing bridge would be rehabilitated and relocated for use on the Salt Creek Trail, a 2.5-mile multi-use trail connecting Nashville, Indiana to Brown County State Park, two heavily visited tourist destinations (See Figure 9). The purpose of the trail project is to provide an alternative transportation mode for pedestrians that are currently using State Road 46 to travel to land uses in and between Nashville and Brown County State Park. The conflict between pedestrians and the motoring public is currently unsafe. The trail will reduce traffic congestion between the County's three largest motels and the shops in Nashville by providing pedestrian access rather than visitors driving to the shopping areas. In addition, the trail will provide a safe means of transportation for the youth of Nashville and Brown County, as the trail will connect with the Brown County School Corporation sports facilities.

The trail has been under development for several years, with construction of the first phase breaking ground earlier this year. The project includes two crossings of Salt Creek, approximately 0.7 mile apart from one another. The SR 46 bridge is comprised of two 198 foot long trusses that are structurally independent and are of an appropriate length to span the two Salt Creek crossings. The current cost estimate for the trail project, assuming the construction of new bridges at the two stream crossings, is $5,000,000 with construction to be completed in 2017.[3] **When complete, it is anticipated that approximately 10,000 people will use the trail each year.**

While a formal agreement will be developed later in the project process, under the plan INDOT, which is obligated under the Historic Bridge PA to ensure the bridge is preserved, will pay to dismantle the existing bridge, replace or rehabilitate any elements that require it, construct new foundations, and install the truss spans in their new locations. It is anticipated that the span to be located adjacent to SR 46 at Eagle Park would be owned and maintained by Brown County, while the span located within Brown County State Park would be owned and maintained by IDNR. Each agency will be required to sign an agreement committing to maintain their

[3] The trail project is being built in segments as funding becomes available. This cost estimate was developed prior to the availability of the Eel River spans and assumed construction of two new bridges at these locations. As such, the cost estimate for the trail would be reduced by some amount if the Eel River spans were relocated to the trail.

respective structures for a minimum of 25 years. However, it is anticipated that, based on the anticipated visitation levels, the bridges would be retained far beyond that minimum. IDNR and Brown County have each submitted a letter of intent to take responsibility for the bridge spans (Appendix F-8).

Compliance with Design Standards

Each of the Alternative 5 options would be designed to meet 4R standards as defined in the *Indiana Design Manual*. None of the options would address the maximum grade on the approach into Bowling Green. Design standard compliance details for each option are provided in the sections below.

Hydraulics

Under each Alternative 5 option, the new bridge would be constructed with a low elevation of 576.00 feet above sea level, providing more than 3 feet of freeboard above the Q100 elevation (573.00 feet above sea level). The west abutment of the new, longer structure would be located such that scour would not be a concern.

Historic Bridge Effects

No formal determination has been made as to whether the improvements described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed. In accordance with Attachment B of the Historic Bridge PA, the rehabilitation plans will be reviewed by SHPO to ensure compliance with the Secretary of Interior's Standards for Rehabilitation and to incorporate context sensitive design features, where practicable.

Based on coordination with SHPO, there is concern that relocation of the trusses would result in their immediate removal from the NRHP. There is also concern that, because the bridge is listed under Criterion A for its transportation significance in the settlement and development of Clay County, that its relocation to another county would make it ineligible for continued listing. SHPO has requested that INDOT initiate a request that the bridge also be considered under Criterion C based on its engineering significance as well as its continued listing during and following any relocation. INDOT is in the process of submitting such a request.

Right-of-Way

Each of the Alternative 5 options would require right-of-way, ranging from 7-16 acres. No relocations would be required. Details for each option are provided in the sections below.

Utilities

Each option would require the relocation of some utilities; details for each option are provided below. None of these relocations are anticipated to be complicated or excessively costly.

Maintenance of Traffic

Alternative 5A would require a full detour resulting in high user costs. Each of the other options would maintain traffic on SR 46 except for limited periods. Details for each option are provided in the sections below.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Each of the alternatives would result in minor to moderate impacts to environmental resources, but would not impact any

unique or exceptional resources for which mitigation is not possible. Additional information is provided in the sections below.

Cost

Estimated project costs (right-of-way, utilities, construction, and rehabilitation/relocation of the existing bridge) for the Alternative 5 options range from $8.2 – 11.0 million. User costs associated with closures and detours range from $80,000 to $4.8 million, the latter associated with the 9-month closure required to construct Alternative 5A. Total estimated costs range from $9.7 million to $13.0 million.

Section 4(f) Evaluation

It would be possible to design and build each of the Alternative 5 options; therefore, **each is a feasible alternative**.

Each of the Alternative 5 options would construct a safe, reliable structure to carry all traffic in the SR 46 corridor, thus meeting the project's purpose and need. Under each, the existing bridge would be relocated to the Salt Creek Trail, where there is a strong demand for a pedestrian facility and the truss spans can be installed to meet all hydraulic requirements.

Impacts associated with each of the Alternative 5 options vary; however, none would be considered severe. Long-term operation and maintenance costs would be similar for each and, while construction and user costs vary, none are of an extraordinary magnitude. Based on this evaluation, **each is a prudent alternative**.

The Section 4(f) analysis for each alternative is summarized in Table 14.

The sections below provide additional details about each Alternative 5 option and provide the basis for the selection of the preliminary preferred alternative.

Alternative 5A – Bridge Replacement on Existing Alignment – Full Detour

Alternative 5A would replace the bridge over the Eel River utilizing the existing SR 46 alignment (Appendix A, Figure 10). The roadway would be closed throughout construction and all traffic detoured. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. This would require reconstruction of SR 46 for approximately 800 feet to the west of the existing bridge and approximately 600 feet to the east in order to transition back to existing grade.

Accelerated Bridge Construction (ABC) techniques were investigated in an effort to minimize the duration of the closure. These methods include the use of prefabricated bridge elements or construction of the bridge offline and then sliding it into place. These techniques are typically applied when a structure is being replaced on its existing alignment and closures incur substantial impacts. At this location, both prefabricated elements and slide-in structures were considered. However, as noted earlier, the roadway profile at this location must be raised by 6-8 feet to accommodate the additional structure depth of a new bridge and provide adequate freeboard above the river. Additionally, any new bridge would need to be longer than the existing one, likely with a different span arrangement, to satisfy hydraulic requirements. While these techniques could be applied to the SR 46 bridge, they would be cost-prohibitive compared to alternative methods of maintaining traffic. As such, Alternative 5A did not include any of these techniques.

Compliance with Design Standards

The new bridge would be designed to meet 4R as defined in the *Indiana Design Manual* as shown in Table 10.

The new bridge would meet all applicable design criteria. The approach roadways would also meet all design criteria; however, it should be noted that the nonstandard grade on the approach to Bowling Green identified in other alternatives would exist under this alternative as well, but would lie outside the project limits and, therefore, not require a Level 1 design exception.

Right-of-Way

Alternative 5A would require approximately 7.0 acres of new right-of-way from 5 parcels to allow for the grading required to raise the roadway profile and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5A would require the relocation of approximately 2 utility poles to allow for the realignment of CR 475 E.

Maintenance of Traffic

Alternative 5A would require the full closure of SR 46 for approximately 9 months. During this time, the posted detour would use SR 59 and SR 246 (see Appendix C, page 51), adding 7 miles to a through trip. This is the same detour route used during the closure in 2011. As noted previously, SR 246 is a narrow, winding rural roadway not well suited to large trucks, resulting in numerous complaints from the public when this was used as a detour route during the 2011 repair project.

TABLE 10 - DESIGN CRITERIA FOR ALTERNATIVE 5A

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder	10'	1'	10'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44'	24'	44'	No
Vertical Clearance	16.5'	14'-8"[2]	N/A [3]	No
Pedestrian Bridge Features [4]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	10'	1'	10'	No
Stopping Sight Distance at Vertical Curve	570'	415'	588'	No
Maximum Grade	3%	3.7%	2.8%	No
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction work on the approaches to the bridge would potentially cause minor impacts to a stream located in the southeast quadrant of the bridge. The jurisdictional status of other water features in the area has not been determined. Minimal tree clearing may also be required. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate. This alternative would also result in traffic-related impacts on other communities along the alternative route(s) that vehicles utilized.

Cost

Alternative 5A would cost $8,179,880 to construct and would have user costs, resulting from time and operating expenses associated with the longer, slower detour of $4,848,363, for a total cost of $13,028,243. Additional cost details are provided in Appendix C, pages 17-22 and pages 47-48.

Construction Cost*	$8,029,880
ROW/Utilities	$150,000
Project Cost	**$8,179,880**
User Costs	$4,848,363
TOTAL COST	**$13,028,243**

*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements

Alternative 5B-S – Bridge Replacement on Existing Alignment – Temporary Bridge to South

Alternative 5B-S would replace the bridge over the Eel River utilizing the existing SR 46 alignment (Appendix A, Figure 11). In order to maintain traffic during construction, a temporary bridge would be constructed to the south of the existing bridge. To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet. This would require reconstruction of SR 46 for approximately 800 feet to the west of the existing bridge and approximately 600 feet to the east in order to transition back to existing grade.

The temporary bridge would be designed as a 6-span, 372-foot long, single lane structure with temporary signals on either end to control traffic flow. The temporary bridge would be constructed with a low structure elevation of 567.6. This elevation, equivalent to the Q_2 storm event (a storm that has a 50% chance of occurrence in any given year), would allow water to overtop the roadway and not create a backwater issue upstream. In the event of a storm greater than the Q_2 storm, the bridge would be closed to traffic. Throughout construction, the temporary bridge would need to be monitored for the accumulation of debris at the piers that could create scour concerns. The contractor would be required to remove debris immediately.

Compliance with Design Standards

The new bridge would be designed to meet 4R as defined in the *Indiana Design Manual* as shown in Table 11.

The new bridge would meet all applicable design criteria. The approach roadways would also meet all design criteria; however, it should be noted that the nonstandard grade identified in other alternatives would exist under this alternative as well, but would lie outside the project limits and, therefore, not require a Level 1 design exception.

Right-of-Way

Alternative 5B-S would require approximately 10.6 acres of new right-of-way from 5 parcels to allow for the construction of the temporary bridge, the grading required to raise the roadway profile, and the realignment of CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5B-S would require the relocation of approximately 5 utility poles.

Maintenance of Traffic

As described above, a single-lane temporary bridge would be in place throughout construction, with temporary signals at either end controlling traffic. While vehicles would experience some delay associated with the signals, reduced speeds, and roadway curvature, SR 46 would remain open to all traffic.

TABLE 11 - DESIGN CRITERIA FOR ALTERNATIVE 5B-S

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
New Bridge Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder	10'	1'	10'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44'	24'	44'	No
Vertical Clearance	16.5'	14'-8"[2]	N/A [3]	No
Pedestrian Bridge Features [4]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	10'	1'	10'	No
Stopping Sight Distance at Vertical Curve	570'	415'	588'	No
Maximum Grade	3%	3.7%	2.8%	No
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the temporary bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species

and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 5B-S would cost $11,025,257 to construct and would have user costs, resulting from time and operating expenses associated with the construction zone of $576,445, for a total cost of $11,601,702. Additional cost details are provided in Appendix C, pages 23-28 and page 49. Note the user costs presented here do not include the costs associated the closure of the temporary bridge due to a large storm event. Depending on the magnitude and duration of the event the user cost could increase substantially.

Construction Cost*	$10,814,257
ROW/Utilities	$211,000
Project Cost	**$11,025,257**
User Costs	$576,445
TOTAL COST	**$11,601,702**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5B-N – Bridge Replacement on Existing Alignment – Temporary Bridge to North

Alternative 5B-N would be similar to Alternative 5B-S except that the temporary structure would be built to the north of the existing bridge (Appendix A, Figure 12). Only features that differ from Alternative 5B-S are described below.

Right-of-Way

Alternative 5B-N would require approximately 11.0 acres of new right-of-way from 5 parcels to allow for the construction of the temporary bridge, the grading required to raise the roadway profile, and the realignment of CR 475 E.

Utilities

Buried fiber optic lines parallel the roadway to the north. Alternative 5B-N would require the lines to be relocated. This alternative would also require the relocation of approximately 2 utility poles on the south side of the roadway in order to realign CR 475 E.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Reconstruction of the roadway approaches would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. Construction of the temporary bridge to the north would require additional tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Construction Cost*	$10,828,285
ROW/Utilities	$200,000
Project Cost	**$11,028,285**
User Costs	$576,445
TOTAL COST	**$11,604,730**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5B-N would cost $11,028,285 to construct and would have user costs, resulting from time and operating expenses associated with the construction zone of $576,445, for a total cost of $11,604,730. Additional cost details are provided in Appendix C, pages 29-34 and page 49. Note the user costs presented here do not include the costs associated the closure of the temporary bridge due to a large storm event. Depending on the magnitude and duration of the event the user cost could increase substantially.

Alternative 5C-S – Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)

Alternative 5C-S would construct a new bridge over the Eel River approximately 20 feet to the south of the existing bridge and permanently realign the SR 46 roadway (Appendix A, Figure 13). To allow for the additional structure depth of a new bridge and to provide a minimum 2 feet of freeboard, the profile of the existing roadway would need to be raised approximately 8 feet.

The alignment of SR 46 would need to be adapted to access this new structure. Starting about 0.5 mile west of the bridge, SR 46 would diverge to the south of the existing alignment and require a reverse curve formation in order to merge back into the existing roadway alignment approximately 0.25 mile east of the bridge.

Compliance with Design Standards

The new bridge would meet all applicable design criteria. The approach roadways would meet all design criteria, except for maximum grade at the eastern end of the project as the roadway approaches Bowling Green as shown in Table 12. The steep grade exists today and correcting it would be cost-prohibitive.

TABLE 12 - DESIGN CRITERIA FOR ALTERNATIVE 5C-S

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder	10'	1'	10'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44'	24'	44'	No
Vertical Clearance	16.5'	14'-8"[2]	N/A [3]	No
Pedestrian Bridge Features [4]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	10'	1'	10'	No
Stopping Sight Distance at Vertical Curve	570'	415'	588'	No
Maximum Grade	3%	6.74%	7.16%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Right-of-Way

Alternative 5C-S would require approximately 13.9 acres of new right-of-way from 7 parcels to allow for the construction of the bridge and the realignment of SR 46 and CR 475 E.

Utilities

Overhead utility lines parallel the roadway to the south. Alternative 5C-S would require the relocation of approximately 8 utility poles.

Maintenance of Traffic

During construction of the new bridge and approaches traffic would be maintained on the existing SR 46 roadway and bridge. No disruption to SR 46 traffic is anticipated except at the location where the new road is tied into the existing one. At no time is it anticipated that SR 46 would be completely closed to traffic.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the south would potentially cause moderate impacts to a stream located in the southeast quadrant of the bridge and would require moderate tree clearing. The jurisdictional status of other water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

Cost

Alternative 5C-S would cost $9,663,935 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $9,745,016. Additional cost details are provided in Appendix C, pages 35-40 and page 50.

Construction Cost*	$9,389,935
ROW/Utilities	$274,000
Project Cost	**$9,663,935**
User Costs	$81,081
TOTAL COST	**$9,745,016**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternative 5C-N – Bridge Replacement on New Alignment to North

Alternative 5C-N would be similar to Alternative 5C-S except that the new bridge would be built to the north of the existing bridge (Appendix A, Figure 14). Only features that differ from Alternative 5C-S are described below.

Compliance with Design Standards

Like Alternative 5C-S, this alternative would require a Level 1 design exception for maximum grade based on the grade approaching Bowling Green, as shown in Table 13. Alternative 5C-N would also require a Level 1 design exception for the curve radius in the same area. While a full sight distance analysis has not been completed, it is likely that sight distance would be further compromised due to the likely need to install guardrail on the inside of this curve. Flattening out this curve to make it standard would require acquisition of right-of-way from multiple residential parcels in Bowling Green.

Right-of-Way

Alternative 5C-N would require approximately 16.1 acres of new right-of-way from 13 parcels to allow for the construction of the bridge and the realignment of SR 46 and CR 475 E. It is also likely that this alternative would require the relocation of one residence in Bowling Green.

Utilities

Buried fiber optic lines parallel the roadway to the north. Alternative 5B-N would require the lines to be relocated. This alternative would also require the relocation of approximately 2 utility poles in order to realign CR 475 E.

Environmental Issues

Environmental surveys, including the Waters of the U.S. Determination Report, are still in progress; therefore, this assessment is preliminary and qualitative. Construction of the new bridge to the north would require moderate tree clearing. The jurisdictional status of water features in the area has not been determined. Impacts to Waters of the US would be mitigated as required through the Section 404/401 permitting process. Potential impacts to other resources, including threatened and endangered species and the Eel River floodway will be reported in the project's CE document and mitigated as appropriate.

TABLE 13 - DESIGN CRITERIA FOR ALTERNATIVE 5C-N

Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Level 1 Design Exception Required
Bridge Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder	10'	1'	10'	No
Structural Capacity	HL-93	H-20	HL-93	No
Clear Roadway Width	44'	24'	44'	No
Vertical Clearance	16.5'	14'-8"[2]	N/A [3]	No
Pedestrian Bridge Features [4]				
Structural Capacity	H-10	H-20	H-10	No
Roadway Features [1]				
Travel Lane	12'	11'	12'	No
Shoulder Width	10'	1'	10'	No
Horizontal Curvature	1200'	1,432'	1000'	Yes
Stopping Sight Distance at Vertical Curve	570'	415'	588'	No
Maximum Grade	3%	6.74%	7.36%	Yes
Through Lane Cross Slope	2%	2%	2%	No

(1) *Indiana Design Manual*, Chapter 53 and Figure 53-2
(2) Vertical clearance has been achieved through the removal of the lower sway bracing.
(3) The new bridge will have no vertical obstructions.
(4) LRFD Guide Specifications for the Design of Pedestrian Bridges

Cost

Alternative 5C-N would cost $10,015,307 to construct and would have user costs, resulting from time and operating expenses associated with reduced speeds through the construction zone of $81,081, for a total cost of $10,096,388. Additional cost details are provided in Appendix C, pages 41-46 and page 50.

Construction Cost*	$9,458,840
ROW/Utilities	$371,000
Project Cost	**$10,015,307**
User Costs	$81,081
TOTAL COST	**$10,096,388**
*Includes rehabilitation and relocation of existing bridge, the new bridge, and roadway improvements	

Alternatives Evaluation

While the project cost of Alternative 5A is the lowest of these options, it would cause substantial user costs ($4.8 million) as a result of the closure of SR 46 for approximately 9 months. Based on the response to the previous closures, both of which were much shorter, INDOT has determined that this alternative is not in the interest of the traveling public and eliminated it from consideration.

Alternatives 5B-N and 5B-S would each utilize a temporary bridge and signal to construct a new bridge on the existing alignment. Either alternative would reduce the user costs compared to Alternative 5A, with only a couple short term closures required. However, the temporary bridge's low elevation would introduce a risk that it would be overtopped requiring additional closures. Finally, these options would cost more than $1 million more than Alternative 5C-S or 5C-N.

Alternatives 5C-N and 5C-S would each maintain traffic on the existing bridge and roadway throughout construction, minimizing user costs associated with delay or detours. Project costs are similar for each, as are environmental and right-of-way impacts. Both would require a Level 1 design exception for the maximum grade approaching Bowling Green; Alternative 5C-N, would introduce a horizontal curve on its approach to Bowling Green that would require an additional Level 1 design exception. Eliminating this non-standard curve would require impacts to several residential properties.

Based on the analysis above, INDOT has identified Alternative 5C-S as the preliminary preferred alternative. A comparison of all alternatives is provided in Table 14.

VI. MINIMIZATION AND MITIGATION

In addition to evaluating if there is a feasible and prudent avoidance alternative, minimization and mitigation of unavoidable impacts to the historic resource is required.

A. Minimization

As noted above, no formal determination has been made as to whether the rehabilitation of the existing bridge described above would meet the *Secretary of the Interior's Standards for Rehabilitation*. However, it is anticipated that structural materials would be replaced in-kind and the integrity of the truss would be retained. Rivets would be replaced with round-headed bolts to retain visual similarity and sway bracing would be re-installed, as it would meet the 10 foot minimum clearance for a shared use path. In accordance with Attachment B of the Historic Bridge PA, the rehabilitation plans will be reviewed by SHPO to ensure compliance with the Secretary of Interior's Standards for Rehabilitation and to incorporate context sensitive design features, where practicable.

B. Mitigation

INDOT will consult with the SHPO to determine if photo documentation of the existing bridge is needed. Any requirement for documentation will be included in the Section 106 Findings documentation. INDOT will work with IDNR to determine if interpretive signage regarding the bridge's history and origin could be provided nearby.

VII. PRELIMINARY PREFERRED ALTERNATIVE

As noted above, Alternative 5C-S was found to be both feasible and prudent and has been identified as the preliminary preferred alternative.

TABLE 14: ALTERNATIVES ANALYSIS SUMMARY

Alternative		Meets Project Purpose & Need	Project Cost	User Cost	Total Cost	Feasible & Prudent
1	No Build	No (non-standard features, hydraulics, continued closures/repairs)	N/A*	$6,482,243 per year of closure*	N/A*	Feasible: Yes Prudent: No – Does not meet purpose and need; cost associated with road closure
2	Rehabilitation for Continued Vehicular Use	No (structural capacity)	$4,838,780	$4,848,363	$9,687,143	Feasible: No – Cannot be rehabilitated to meet current design standards Prudent: No – Non-standard features, hydraulics, user costs
3	Rehabilitation for Continued Vehicular Use/ One-Way Pair	No (structural capacity)	$11,349,048	$81,081	$11,430,129	Feasible: No – Cannot be rehabilitated to meet current design standards Prudent: No – Non-standard features, hydraulics
4	Bypass/Non-Vehicular Use	Yes	$10,260,836	$81,081	$10,341,917	Feasible: Yes Prudent: No – Pedestrian bridge hydraulics; very low pedestrian usage
5A	Bridge Replacement on Existing Alignment – Full Detour	Yes	$8,179,880	$4,848,363	$13,028,243	**Feasible: Yes** **Prudent: Yes**
5B-S	Bridge Replacement on Existing Alignment – Temporary Bridge to South	Yes	$11,025,257	$576,445	$11,601,702	
5B-N	Bridge Replacement on Existing Alignment – Temporary Bridge to North	Yes	$11,028,285	$576,445	$11,604,730	
5C-S	Bridge Replacement on New Alignment to South (Preliminary Preferred Alternative)	Yes	$9,663,935	$81,081	$9,745,016	
5C-N	Bridge Replacement on New Alignment to North	Yes	$10,015,307	$81,081	$10,096,388	

* While the No Build Alternative does not include any improvements, it is not possible to estimate the costs associated with any repairs that would be required or the user costs associated with any temporary or permanent closures.

Appendix B

Photographs & Maps of the Bridge in its Existing Location

Image: USGS, Center Point quad
Data: USFWS, National Wetlands Inventory

0 500 1,000 2,000 Feet

Legend

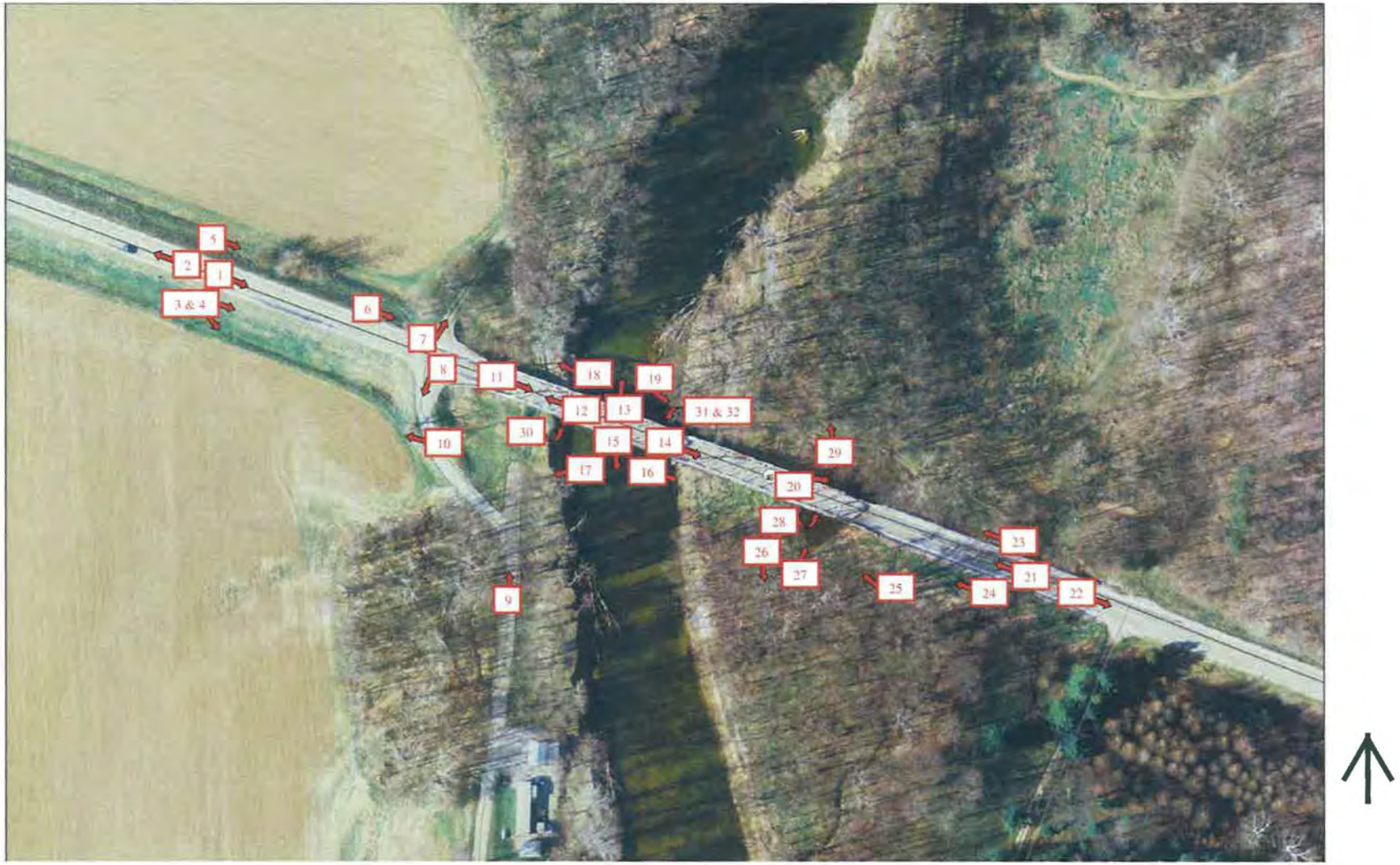
NWI Polygons

PARSONS

DES: 0800910

S.R. 46 Bridge Project over Eel River; 4.84 Miles East of S.R. 59; Clay County

Project Area Photographs; Photograph Location Map



Des: 0800910

SR 46 Bridge Project (Bridge # 046-11-01316A) over the Eel River; 4.84 Miles East of S.R. 59
Near Bowling Green, in Washington Township, in Clay County, Indiana
Project Area Photographs

Photo 1: Standing on SR 46 facing east towards the bridge (Bridge # 046-11-01316A).

Photo 2: Standing on SR 46 facing west.

Photo 3: View (1) of the SW ditch.

Photo 4: View (2) of the SW ditch and farmland where CR 475 E will be relocated.

Photo 5: View of the NW shoulder.

Photo 6: View of the farm filed entrance adjacent from CR 475 E.

Photo 7: Looking north at the farm field entrance intersection with SR 46.

Photo 8: Looking south at the SR 46/CR 475 E intersection.

Photo 9: Standing on CR 475 E looking north.

Photo 10: Standing on CR 475 looking west to where CR 475 E will be relocated.

Photo 11: Standing on SR 46 looking east at the bridge.

Photo 12: Standing on the bridge looking west.

Photo 13: Standing on the bridge looking north (upstream) at the Eel River.

Photo 14: Standing on the bridge looking east.

Photo 15: Standing on the bridge looking south (downstream) at the Eel River.

Photo 16: View of the SE bank.

Photo 17: View of the SW bank.

Photo 18: View of the NW bank.

Photo 19: View of the NE bank.

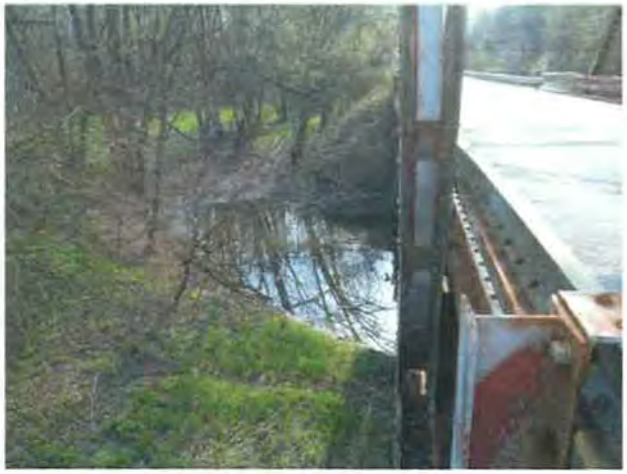


Photo 20: Looking at a ponded area near the eastern abutment.

Photo 21: Standing on SR 46 facing west towards the bridge.

Photo 22: Standing on SR 46 facing east.

Photo 23: View of the NE shoulder.

Photo 24: View of the SE shoulder.

Photo 25: Standing in the floodplain, looking northwest at the bridge.

Photo 26: Looking south at the floodplain.

Photo 27: Looking north at the floodplain and ponded area adjacent to the eastern abutment.

Photo 28: View (2) of the ponded area.

Photo 29: Looking north at the floodplain.

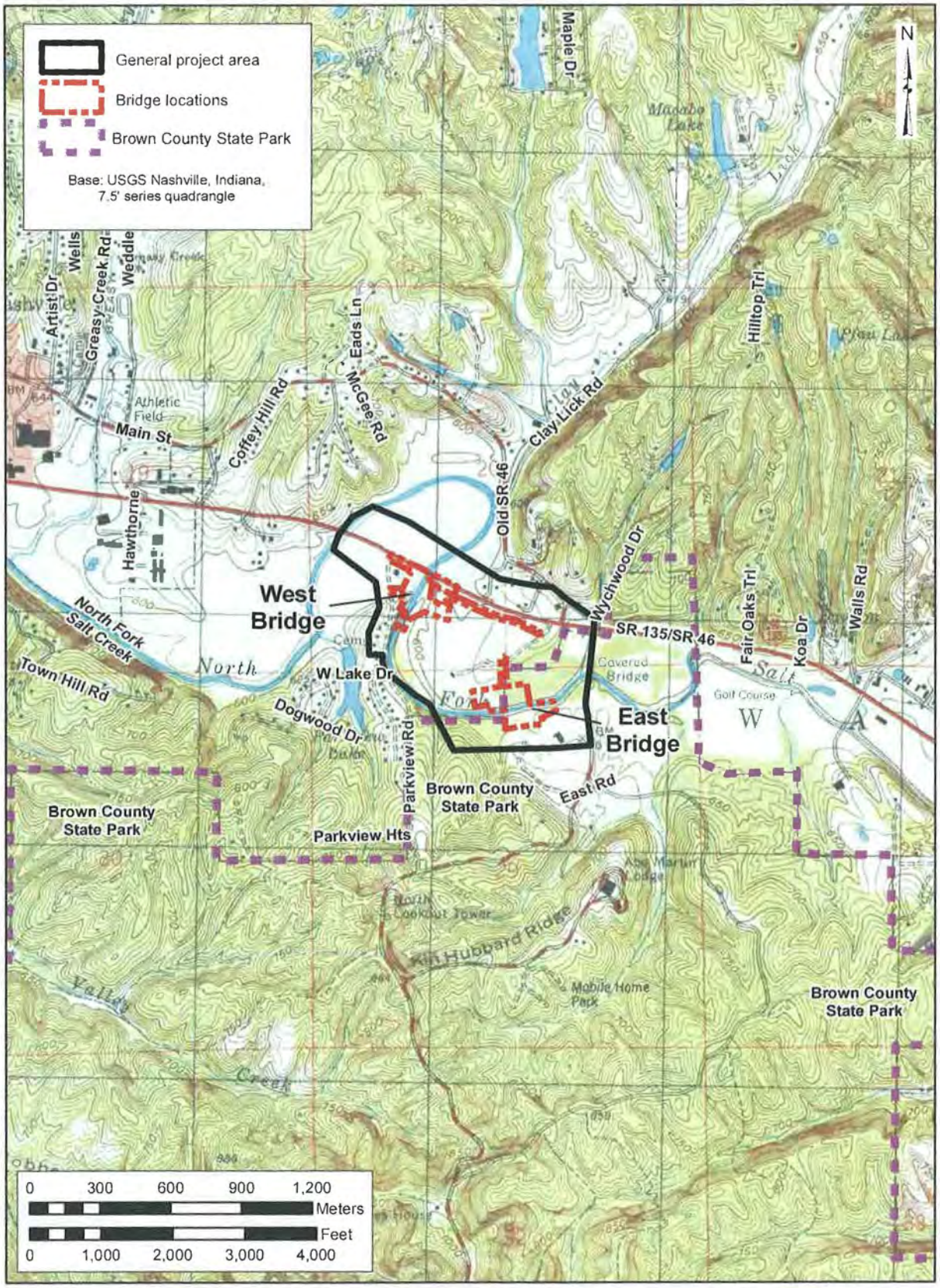
Photo 30: View of the western bank of the Eel River under the bridge.

Photo 31: View of the NE bank of the Eel River under the bridge.

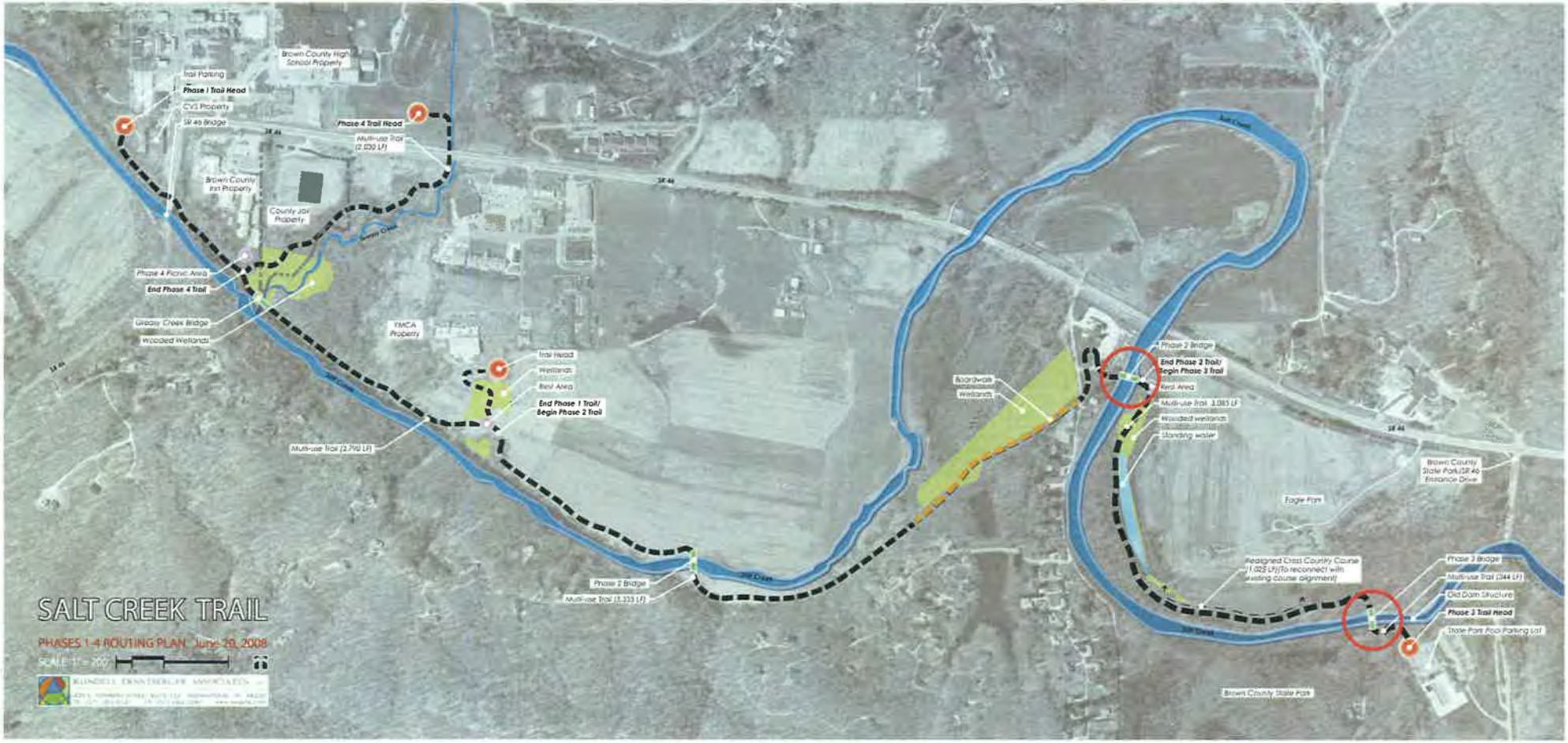
Photo 32: View of the SE bank of the Eel River under the bridge.

Appendix C

Photographs & Maps of the Proposed New Location



Portion of the 1998 Nashville, Indiana quadrangle (USGS 7.5′ topographic map) showing the APE and project area.



Proposed location of Relocated Eel River Bridge Span

Historic Bridge Relocation to Salt Creek Trail

Photo Location Map, West Bridge

Legend

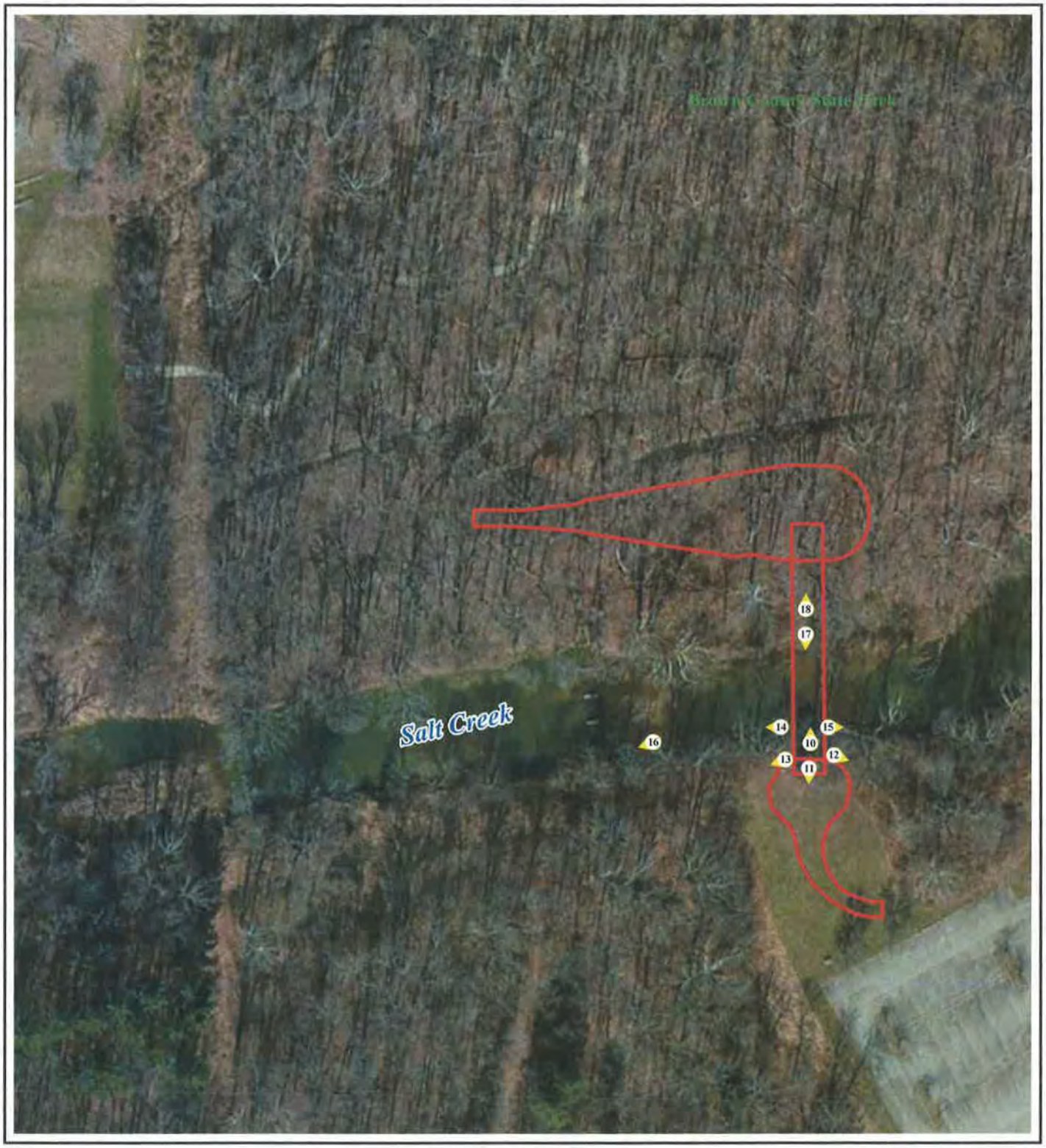
Preliminary Construction Limits

Salt Creek photo locations

0 50 100 200 Feet

N

PARSONS



Historic Bridge Relocation to Salt Creek Trail

Photo Location Map, East Bridge

Legend

Preliminary Construction Limits

Salt Creek photo locations

0 50 100 200 Feet

N

PARSONS

Michael R. Pence, Governor
Cameron F. Clark, Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov • www.IN.gov/dnr/historic

July 27, 2015

Dr. Stephanie Toothman
Keeper of the National Register
National Park Service 2280
National Register of Historic Places
1201 "I" (Eye) Street, N.W.
Washington D.C. 20005

Re: Indiana State Highway Bridge 46-11-1316, Clay County, Indiana; submittal of additional documentation and request to relocate to new sites in Brown County, Indiana

Dear Dr. Toothman,

Enclosed is a request from the Indiana Department of Transportation regarding Indiana State Highway Bridge 46-11-1316, Clay County, Indiana. The bridge was listed in the National Register of Historic Places on March 5, 2000.

We believe the action(s) requested constitute two separate requests to our office, to the Indiana Historic Preservation Review Board, and to the National Register of Historic Places / NPS:

1) The applicant has included continuation pages that document the significance of the bridge under Criterion C (bridge was listed under Criterion A only, see enclosed paper copy of original nomination).

2) INDOT has requested that the board render an opinion regarding the relocation of the bridge to Brown County, Indiana. Under this proposal, the bridge's two spans would be separated and installed on a trail system several hundred feet apart from one another (see INDOT documentation for proposed move).

After much discussion and public input, the Indiana Historic Preservation Review Board passed two separate motions at their July 22, 2015 meeting:

1) The board believes that the bridge meets Criterion C, and recommended the acceptance of the additional documentation continuation pages by the National Register of Historic Places.

2) The board believes that the proposal to move the bridge, in the fashion and to the sites proposed, would render the bridge ineligible for the National Register of Historic Places. However, due to the unusual nature of the request, the board requests a review from the National Register of Historic Places for future guidance.

The Indiana Division of Historic Preservation & Archaeology, therefore, requests that the NPS act upon these two items.

The enclosed disc contains the true and correct copy of the continuation pages for Indiana State Highway Bridge 46-11-1316 (Clay County, Indiana) to amend the National Register of Historic Places nomination. The disc also contains information regarding the proposed move.

Please address any questions you or your staff may have about the two requests to my National Register staff members, Paul Diebold or Holly Tate.

Sincerely,

Cameron F. Clark

Cameron F. Clark
State Historic Preservation Officer

CFC:PCD:pcd

enclosure: disc with documentation, paper copy of original nomination, staff comments

The Federal Register

The Daily Journal of the United States Government

Notice

National Register of Historic Places; Notification of Pending Nominations and Related Actions

A Notice by the **National Park Service** on **08/28/2015**

16th day Sept 15

Sept Arrived 8/7/

15th day 9/21/15

Table of Contents

Jefferson County

Jefferson County Courthouse, 34 SE. D St., Madras, 15000614

Washington County

Masters, Andrew Jackson and Sarah Jane, House, (Settlement-era Dwellings, Barns and Farm Groups of the Willamette Valley, Oregon MPS) 20650 SW. Kinnaman Rd.,Aloha, 15000615

SOUTH CAROLINA

Spartanburg County

Apalache Mill, 2200 Racing Rd., Greer, 15000616

TEXAS

Bexar County

Travelers Hotel, 220 Broadway, San Antonio, 15000617

Galveston County

Quigg—Baulard House, 2628 Broadway, Galveston, 15000618

Travis County

Covert Park at Mount Bonnell, 3800 Mount Bonnell Rd., Austin, 15000619

A request to move has been received for the following resource:

INDIANA

Clay County

Indiana State Highway Bridge 46-11-1316, IN 46 over Eel R.,Bowling Green, 00000211

A request for removal has been received for the following resources:

GEORGIA

Elbert County

Allen, William, House, 9 mi. E of Elberton on GA 6, Elberton, 75000591

Fulton County

Glenridge Hall, 6615 Glenridge Dr., Atlanta, 82002418

INDIANA

Clay County

Indiana State Highway Bridge 46-11-1316, IN 46 over Eel R.,Bowling Green, 00000211

[FR Doc. **2015-21292** Filed 8-27-15; 8:45 am]

BILLING CODE 4312-51-P

ACTION: NATIONAL REGISTER INFORMATION SYSTEM

Id 00000211 LI 03/15/2000 IN Clay Indiana State Highway Bridge >
01 More

Name Indiana State Highway Bridge 46-11-1316

Address IN 46 over Eel R

City Bowling Green Vicinity X Restrict
State INDIANA County Clay
Status LISTED IN THE NATIONAL REGISTER Date 03/15/2000
Day45 03/23/2000 Resource Type STRUCTURE Acreage 0.9

Multiple

Contributing bldg Site Strc 1 Obj Total
Noncontributing bldg Site Strc Obj Total
Park

Andrus, Patrick <patrick_andrus@nps.gov>

SR 46 Bridge Clay County

1 message

Vickie Mace <vmace72@gmail.com> Sat, Aug 29, 2015 at 7:36 PM
To: patrick_andrus@nps.gov

Patrick,

Attached is my letter and files to support my letter. I contend that INDOT apparently started this process in September of 2009, and no one in Clay County, especially the preservationists, had any idea this bridge was changed from a rehab status to a new status with removal of old bridge until November 19, 2014. We have been working closely with Indiana Landmarks and as you can see in these documents, they also did not know the status had been changed. So something is wrong with this process! Or at least in the State of Indiana, we have a serious problem.

We sincerely believe there is more to this than meets the eye and we have been combing over letter, articles, etc to try and piece together a time line. We feel that INDOT has handled this VERY poorly and are concerned not only for our bridge, but for the National Register designations for other properties in the future. We have other bridges that are just down stream on the Eel River that are also on the National Register and we had just began working with Indiana Landmarks and a local college to do a feasibility study on two of those bridges and working with Clay City on a rails to trails project. If we get to keep our bridge, it will now be be a trail head park start of a waterway to one of the other bridges. We have CAD drawings which we will include in some other comments.

Thank you for your prompt return of my phone call on Friday and I'll be looking forward to seeing a copy of the new nomination that you received. Your help has been greatly appreciated!!

Sincerely,

Vickie Mace

10 attachments

Brazil Times_ Local News_ Two residents explain why the Bowling Green bridge should remain in place (06_22_15).html
44K

NPS letter.pdf
1594K

BC Gets Bridge.pdf
798K

DNR nps.pdf
783K

INDOT EMAIL DEC NPS.pdf
2934K

TRIB STAR EDIT.pdf
1728K

Zoll Aug13.pdf
223K

INDOT Parson April 2013.pdf
1403K

INDOT Dec 4.pdf
172K

INDOT NPS.pdf
2473K

[The Brazil Times nameplate]

Fair ~ 59°F
High: 81°F ~ Low: 64°F
Friday, Aug. 28, 2015

Two residents explain why the Bowling Green bridge should remain in place

Monday, June 22, 2015
By FRANK PHILLIPS, Times Reporter

(Photo)

Submitted photo. Sue Lightfoot of Bowling Green sits before blueprints of the Bowling Green bridge on S.R. 46.

BOWLING GREEN -- Historic structures mean a great deal to folks. Ask those who benefit from the annual Covered Bridge Festival in Parke County. Clay County's Robert Hostetler and Sue Lightfoot see the metal bridge on S.R. 46 at Bowling Green to have similar significance.

For the first 52 years of the county's existence it was the county seat, the white settlement, had the first jail and the first post office in the county. Then, the county seat was moved to Brazil. The metal bridge over Eel River is one of the few historic structures that testify to a glorious past.

"We have the oldest brick house in the county," Lightfoot said in a recent telephone interview. She is a life long resident of Bowling Green. "We have the old jail. It's just a nice little community. It's part of Bowling Green, part of history. Whenever we would go some place and come home, we would get to the top of that hill, looking over the bottoms, and there was the Bowling Green bridge. The children would say, 'We're almost home.' It's part of us."

Lightfoot's father, James Campbell, was interested in the history of Bowling Green. He helped build S.R. 46 through the town and he obtained a copy of the blueprints for the bridge, which Lightfoot now possesses.

The bridge was built as a public works project and land was donated by property owners to widen the road to make it a state road and to benefit their neighbors.

Local people were hired to build the bridge as well as to build S.R. 46.

Hostetler points out the rarity of the metal bridges built by the Vincennes Bridge Corporation.

There are 13 Vincennes Bridge Corp. bridges on the National Register. Four are in Clay County, one is in Monroe County and the rest are out of state, Hostetler said.

There are 18,000 bridges of all types in Indiana; 5,000 are state owned and 435 have received the designation "select" bridges.

"That means that they meet historic architectural (standards)," Hostetler said. "They're so unique in their design, their environment, their history that they're considered a select bridge that needs to be preserved."

If the bridge is moved, as proposed, its status on the National Register will be jeopardized.

The Indiana Department of Natural Resources has scheduled a hearing July 22 to discuss the bridge's status on the national register. The e-mail from INDOT District Deputy Commissioner Alan Plunkett states the bridge is currently on the national register but the purpose of the meeting is to discuss a proposal to put the bridge on the same register. Confused?

Hostetler said that if the bridge is relocated, it will have to go back on the national register or lose its current status, a situation that he thinks would be a shame.

The bridge at Bowling Green may be the only two-span bridge still in existence manufactured by the Vincennes company. Plans to move the bridge to Brown County include separating it into two, one-span bridges to be located at separate places.

Another issue Hostetler is seeking an answer to is the cost the state to take the bridge apart, move it to Brown County, paint and repair it and reassemble it.

One estimate is rumored to be $2 million, Hostetler said, though the DNR has not given him that information.

"Wouldn't there be a savings in keeping the bridge here?" Hostetler asked. "Every engineer says there would be savings."

Meanwhile, no one in Clay County has stepped up to take ownership of the bridge to keep it here.

On May 22, INDOT's Mary Kennedy sent an e-mail giving an update on the bridge's status.

This email serves as a reminder that INDOT still anticipates holding the public hearing for this project approximately the first week of August and that we are over halfway through the 6-month period in which organizations considering taking ownership of the SR 46 Eel River Bridge can express their interest," Kennedy wrote. "It should be noted that, to date, only the Indiana Department of Natural Resources (IDNR) and Brown County have formally expressed interest in taking ownership of this bridge. The letters of intent from each organization are attached. Any organization intending to take ownership of this bridge must be prepared to sign a legally binding agreement within a few weeks following the public hearing. INDOT strongly encourages organizations considering stepping forward to do so as soon as possible to allow sufficient time to work through the details of an agreement. INDOT is currently working with IDNR and Brown County regarding such agreements should the preferred alternative involve the relocation of the bridge to Brown County."

At a public meeting on Jan. 29 attended by an estimated 140 people in Bowling Green, the cost to a group to keep the bridge in place at Bowling Green would be $100,000 in 10 years for periodic repair to the steel structure and $500,000 in 25 years for cleaning and painting the bridge, stated Dan Provost of Parsons Corp., a company that works with INDOT on bridges in this area of Indiana.

On Feb. 7, a photo was taken of a sign on the bridge that indicates the bridge was painted was in 1994. Hostetler and others believe that was the last time maintenance was performed on the bridge.

After the Jan. 29 meeting, County Commissioner Paul Sinders suggested the cost needs to be considered.

"I came here for the purpose being informed because I know in the county there are many people who are in favor of this," Sinders said. "I know there

are many people very much opposed to this in the county and probably the majority are somewhere in the middle. One of the major factors everybody talks to me about is, 'How much is this going to cost the county?' I think all of us have to look at this very carefully as to what the projected cost to the county is going to be. Where are we going to get the money?"

That could be the million dollar question for the state as well.

Respond to this story

You are logged in as **shopgirl54** [Logout now]

Your comments:
Please be respectful of others and try to stay on topic.

Preview your comment > >

National Register Of Historic Places

Clay County Historical Society
100 East National Avenue
Brazil, Indiana 47834

August 28, 2015

RE: Clay County, Indiana
IN SH 46-11-1316/ 00000211
SR46 Eel River Bridge

Dear Mr. Beall:

I found this pending list last night on your NPS website, which I did not know we would have access to. But it says that we may write comments and therefore I would like very much to do that. We are waiting with great concern to learn what your answer will be in regard to our Bowling Green SR 46 Bridge. Granted, as we have been told many times it is not our bridge, but to our community it is our bridge. This bridge was nominated to the National Register of Historic Places, along with four other bridges, by concerned preservationists in 2000. It was not until November of 2014 that we learned that our National Register bridge was in jeopardy, and that was only by an INDOT notice that had to go out to consulting parties that alerted us to the peril this bridge was in.

A long story short, is that INDOT had decided possibly in September of 2009 that this bridge might be replaced. The INDOT employee has not identified the county official or person that they talked to, as it was not taken before the Board of Commissioners or in the minutes of any county meetings that this event occurred. In March of 2013 the Bowling Green Bridge was put up for grabs by INDOT and by April of 2013 a selection had been made and plans were being made for the removal of this bridge and a new bridge would replace it. Clay County had NO notice of any of this until November 19, 2014 when we were advised of a meeting in Indianapolis, 55 miles away, set for December 4, 2015. We then had to practically force them to have a local meeting, as should have been done in the beginning. We were told that if we got a group, it would be possible that we could keep the bridge, and the battle has been on every since. We did get a group, we do have the commissioners in agreement with the Clay Parks Association, a 25 year old group that has raised over 1 million dollars for our county parks, and now we are trying to protect our National Register Bridge with the Criterion A nomination which was designated in 2000. But it appears from INDOT's application they have asked you to either give this bridge the Criterion C or strip it totally of it's nomination, and I do not understand how this can be done?

Historic Cabins In Forest Park

On July 22, we attended the Indiana SHPO meeting in Indianapolis, (because the DNR Preservation said they needed to apply to the keeper for a decision) where the SHPO board debated that splitting the bridge apart should fall under Criterion C, but they were sure the keeper would not pass it to Criterion C, but sent it on for your approval anyway. My problem with this whole process is that what good is a National Register nomination if a government entity can strip it away, by changing the Criterion and then destroy the integrity of bridge by splitting it into two parts to put over a small creek in a wetlands area that floods? We have done everything that they told us we had to do, and we were told at that SHPO meeting that with or without the nomination, that bridge was going to be moved!! So how did this National Register Status protect this bridge? As a historian this disturbs me greatly! The preservationists nor consulting parties were ever made aware that this NR Historic bridge was slated for replacement let alone the fact it was offered up to another county without proper channels being followed until it was a done deal! (Attached is also an article posted the morning of our SHPO meeting that the bridge was going to Brown County, per INDOT, we were several weeks away from the final meeting set for Aug 5).

Many people have come forward in favor of Clay County keeping this bridge because of the importance it has played in our history, which I am sure you can read in the original nomination.. We've only had about 7 months to get this put together to save this bridge, but the county where it is destined to go has been working about 12 years on this trail to nowhere. I hope that you will find that we have a grassroots effort to protect and save our historic treasures for what they have meant to our community and I am sure you will give this requested change your utmost consideration. I am still trying to understand how the 106 section fits into this whole process, but at this point I have not seen much protection for the Historic nomination that I thought would protect this bridge and keep it in the place for which it received it's nomination. This is a very alarming situation as that this whole process has occurred with little respect to the history of this PWA Historic Bridge!

Sincerely,

Vickie Mace

Vickie Mace
President Clay County Historical Society
812-443-1844

Attachments: Editoral from the Trib-Star Terre Haute, IN
Article from Brazil Times Sue Lightfoot
Article about DNR
Documents about the "No Build Alternative"
Document Public Involvement
Minutes and Emails from December 4, 2014 meeting
Press Release from INDOT in the Bloomington Herald 7/22/2015
(the morning of the SHPO meeting)
Zoll Letter August

Historic Clay County bridge gets new home

By Lesley Lane 812-231-4292 | llane@heraldt.com | 2 comments

Clay County gets a wide modern bridge over Eel Creek courtesy of the Indiana Department of Transportation. And Brown County takes possession of the old two-span steel through-truss bridge, which will be reused on the under-construction Salt Creek Trail.

The repurposing of the historic Ind. 46 bridge near Center Point, built in 1933 and supported by concrete abutments and a center pier, also saves Brown County trail supporters about a million dollars.

Volunteers have worked 12 years to construct a 3.7-mile Nashville-area walkway, and the cost of two bridges to span Salt Creek was estimated at more than $900,000.

Tom Tuley from the Salt Creek Trail Committee was elated when he heard the bridge news. The group has money to develop the next portion of the trail, but the project is on hold until the Eel Creek bridge gets dismantled, which may not happen until 2017.

"We have the money to do the trail there, but since we will have to wait on the bridge, we are letting the money stay in the bank to get some investment return right now," Tuley said. "Having those bridges means there's a million dollars we don't have to raise."

One of the arched bridge spans will be placed cross Salt Creek about a mile east of Nashville, where a Mexican restaurant had been located. The other will span the creek near the west entrance to Brown County State Park. Tuley said the bridge will be taken somewhere for refurbishing and fitted for its new purpose at the state's expense, before being reassembled as two bridges and hauled to Brown County.

The bridge has a special "select" rating and is listed in the National Register of Historic Places for its transportation significance in Clay County's settlement and development. Bridges with that designation may not be destroyed, so a six-month period was set aside to see if any private entity would come forward to buy the bridge. "When we heard about it being available, we jumped for it," Tuley said.

In searching for a new home for the bridge, the state determined the multi-use trail being developed in Brown County, that eventually will connect the state park with downtown Nashville, was the ideal site.

"The two independent truss spans that comprise the bridge would be separated and relocated to provide two pedestrian bridges along the Salt Creek Trail," an INDOT news release explained. "One of the spans would be located within Brown County State Park and owned by Indiana Department of Natural Resources. The other would be located outside the park and would be owned by Brown County, which is developing the trail project."

So far, three-fourths of a mile of the Salt Creek Trail has been built along Greasy Creek, between the CVS and the YMCA. Volunteers are scheduled to gather at the Greasy Creek trail bridge next week to clean off mud from recent flooding.

INDOT has scheduled a public hearing for Clay County's proposed new bridge, which will have three spans extending across the Eel River, 12-foot travel lanes and wide berms. The meeting will be at 6 p.m. Wednesday, Aug. 5, at Center Point United Methodist Church, 200 S. Cherry St. in Center Point.

Michael R. Pence, Governor
Cameron F. Clark, Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov

August 13, 2015

Daniel Prevost
Parsons Transportation Group
101 West Ohio Street, Suite 2121
Indianapolis, Indiana 46204

Federal Agency: Federal Highway Administration ("FHWA")

State Agency: Indiana Department of Transportation ("INDOT")

Re: DUAL REVIEW PROJECT: August 5, 2015, public hearing at Center Point, Indiana, regarding Bridge Project, SR 46 over the Eel River, Bridge No. 046-11- 01316C/NBI No. 17050, Bowling Green, Washington Township, Clay County, Indiana (Des. No. 0800910; DHPA No. 10596)

Dear Mr. Parsons:

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108), implementing regulations at 36 C.F.R. Part 800, the "Programmatic Agreement Among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management and Preservation of Indiana's Historic Bridges" ("Indiana Historic Bridges PA"), and the "Programmatic Agreement (PA) Among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation and the Indiana State Historic Preservation Officer Regarding that Implementation of the Federal Aid Highway Program In the State of Indiana" ("Indiana Minor Projects PA"), as well as under Indiana Code 14-21-1-18 and 312 Indiana Administrative Code ("IAC") 20-4, we wish to comment on some issues that we understand were discussed at the August 5, 2015, public hearing on this project, although we did not send a representative to the hearing, as well has some issues about which we have commented previously but that still appear relevant.

We are aware that a majority of the members of the Board of Commissioners of Clay County and the president of the Clay Community Parks Association, Inc., have signed a memorandum of agreement, which, if accepted by INDOT, would keep the SR 46 bridge over the Eel River in its current, historical location. We realize that additional information about the proposal embodied in the agreement must be gathered, but we ask that INDOT and FHWA give careful consideration to the proposal. At least until the Keeper of the National Register determines whether or not the bridge spans would remain listed in the National Register of Historic Places if they were to be moved to two locations on the Salt Creek Trail in Brown County, keeping the bridge in its current location is the most likely way to keep it listed in the National Register.

In our March 5, 2015, letter about this project, we raised an issue about another, potential alternative treatment of the bridge that would keep it in its historical location. We asked that INDOT and FHWA seriously (i.e., formally) consider a second variation on a combination of Alternative 4 (leaving the current bridge in place and restricting it to non-vehicular use) and Alternative 5C-S (bypassing the current bridge's location to the south with a new vehicular bridge—the preliminary preferred alternative). The first variation would require another entity, such as Clay County, to take responsibility for the current bridge. In the second variation, INDOT would maintain the current bridge as a roadside park. We realize that INDOT would rather not do so. We expressed the opinion that the 2006 Indiana Historic Bridges PA appears to require the owner of a Select Bridge to preserve that bridge, if no outside party comes forward with a viable proposal to take ownership of and responsibility for the bridge. If the Keeper of the National Register ultimately determines that moving the spans of this National Register-listed Select bridge to different locations would destroy the

bridge's listing (and, we guessed, also its eligibility for listing for as long as 50 years), we wondered whether doing so could be considered a prudent alternative, even where preservation of the bridge in place, as one structure, by the bridge owner would be feasible and prudent. It is our understanding that FHWA and INDOT have sought guidance on those issues, and we would appreciate being notified in writing of the position that FHWA and INDOT plan to take on those issues, as well as the reasons for that position.

The presentation at the January 29, 2015, public meeting in Bowling Green brought up hydraulics problems that leaving the historic SR 46 bridge in place while bypassing it with a new bridge were thought by the engineers to create. One of those was the anticipated need to align the new bridge's west abutment so that it would be parallel to the west abutment of the current bridge. As a result, scouring of the new abutment is anticipated, which would require placement of rip-rap for protection. In our experience, rip-rap placement, for either new or rehabilitated bridges, is not unusual. Furthermore, the historic bridge alternatives analysis (Prevost, 11/17/2014) acknowledged that a detailed hydraulic analysis had not been done at that time. The presenters at the January 29 public meeting seemed to be more certain of the need to properly align the two bridges' west abutments than did the November alternatives analysis. Has that detailed hydraulic analysis been completed since November of 2014? If so, we would appreciate receiving a written explanation of what the analysis found.

The documentation that was provided in support of INDOT's June 30, 2015, federal Section 106 finding, made on behalf of FHWA, of "No Historic Properties Affected" stated, "One alternative includes constructing a new bridge approximately 20' to the south of the existing structure and retaining the existing structure for non-vehicular use." However, an article about the August 5 public hearing found on the web site of the Brazil Times (http://www.thebraziltimes.com/story/2219559.html) said, "The estimate to leave the historic bridge in place, and build a new bridge 5 to 8 feet south of it, is $10.2 million and the cost to build a new bridge and move the historic bridge to Brown County is estimated to be $9.6 million. The cost to keep the bridge in place is higher because the road will have to be moved and there will be other expenses, Prevost said." It was our understanding that even the preliminary preferred alternative would require the road to be moved, because that alternative would leave the historic bridge in place to continue to carry SR 46 traffic until the new bridge is ready to be opened to traffic. Furthermore, if the newspaper account is accurate, than have the plans been revised to call for the new bridge to be built 12 to 15 feet farther to the north (i.e., closer to the historic bridge)? If, so then please explain that revision.

Thank you for considering our comments. Even though we did not attend the August 5 hearing, we thought that it would be important at this time to ask or to reiterate some concerns about the preliminary preferred alternative that we have, based on our understanding of that alternative.

Once the hearing certification package becomes available, we would appreciate receiving a copy of it.

If you have questions regarding our dual review of this project, please contact the Division of Historic Preservation and Archaeology. Questions about historic buildings or structures pertaining to this review should be directed to John Carr at (317) 233-1949 or jcarr@dnr.IN.gov. Questions about archaeological issues should be directed to Mitch Zoll at (317) 232-3492 or mzoll@dnr.IN.gov.

In all future correspondence regarding Bridge Project, SR 46 over the Eel River, in Clay County (Des. No. 0800910), please refer to DHPA No. 10596.

Very truly yours,

Mitchell K. Zoll
Deputy State Historic Preservation Officer
Director, Division of Historic Preservation & Archaeology

MKZ:JLC:jlc

emc: Daniel Prevost, Parsons Transportation Group
Allan Ball, Parsons Transportation Group

Sean Porter, Parsons Transportation Group
Andrew Campbell, ASC Group, Inc.
Douglas Terpstra, ASC Group, Inc.
Ross Nelson, ASC Group, Inc.
Kevin Schwarz, Ph.D., RPA, ASC Group, Inc.
Lawrence Heil, P.E., Federal Highway Administration, Indiana Division
Rickie Clark, Indiana Department of Transportation
Alan Plunkett, Deputy Commissioner, Indiana Department of Transportation
Crawfordsville District Office, Indiana Department of Transportation
Tony Jones, Indiana Department of Transportation
Jessica Miller, Indiana Department of Transportation
Patrick Carpenter, Indiana Department of Transportation
Shaun Miller, Indiana Department of Transportation
Mary Kennedy, Indiana Department of Transportation
Susan Branigin, Indiana Department of Transportation
C. David Moffatt, Indiana Department of Transportation
Shirley Clark, Indiana Department of Transportation
Bryan Allender, Clay County Commissioner
Tony Fenwick, Clay County Commissioner
Paul Sinders, Clay County Commissioner
Jennifer Flater, Clay County Auditor, Secretary to the Board of Commissioners of Clay County
Jeffrey Koehler, Clay County Historian
Vickie Mace, Clay County Historical Society
Bob Kirlin, Salt Creek Trail
Board of Commissioners of Brown County, c/o Dr. Michael Thompson, Administrator
Michael Magner, Brown County Highway Superintendent
Town Council, Town of Nashville, c/o Brenda Young, Clerk-Treasurer
Brown County Schools
Julia Pearson, Brown County Historical Society
Bob Bronson, Indiana Department of Natural Resources, Division of Outdoor Recreation
Dan Bortner, Indiana Department of Natural Resources, Division of State Parks and Reservoirs
Benjamin Clark, Indiana Department of Natural Resources, Division of State Parks and Reservoirs
Mark Dollase, Indiana Landmarks, Central Regional Office
Raina Regan, Indiana Landmarks, Central Regional Office
Tommy Kleckner, Indiana Landmarks, Western Regional Office
Paul Brandenburg, Indiana Historic Spans Task Force
Dr. James L. Cooper, Professor Emeritus of History, DePauw University
Joshua Palmer, Indiana Historic Preservation Review Board
Daniel Kloc, Indiana Historic Preservation Review Board
Jim Corridan, Indiana Historic Preservation Review Board
Richard Butler, Indiana Historic Preservation Review Board
Kevin Orme, Indiana Historic Preservation Review Board
Beth McCord, Indiana Historic Preservation Review Board
Cameron Clark, Director, Indiana Department of Natural Resources and Indiana State Historic Preservation Officer
Christopher Smith, Deputy Director, Indiana Department of Natural Resources
John Davis, Deputy Director, Indiana Department of Natural Resources
Marian England, Office of Legal Counsel, Indiana Department of Natural Resources
Mitchell Zoll, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Chad Slider, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Paul Diebold, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Holly Tate, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
John Carr, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology

PARSONS

INDIANA 46

Subject: SR 46 over Eel River, Clay County

Date/Time: April 10, 2013, 2:30 PM

Location: INDOT Central Office, Room N642

Attendees:		
	Ellie Dieckmeyer	INDOT-Crawfordsville District Project Manager
	Shakeel Baig	INDOT-Director of Production
	Anne Rearick	INDOT-Bridge Design, Inspection, Hydraulics Director
	Louis Feagans	INDOT-Project Management Manger
	Abigail Weingardt	INDOT-State and Federal Legislative Director
	Patrick Carpenter	INDOT-Sec 106 Specialist
	Susan Branigin	INDOT-Historian
	Sean Porter	Parsons-Project Manager
	Dave Ayala	Parsons-Road Lead
	Dan Prevost	Parsons-Environmental Lead

Overview

This meeting was held to discuss the current direction for the SR 46 over Eel River Bridge.

Ellie handed an agenda with the following design alternatives identified:

1) Keep current alignment, move truss, use temporary run-around
2) New bridge on the current alignment using accelerated bridge construction.
   This alternative would only have a 30-45 day closure and make use of A+B construction to accelerate the construction
3) New alignment to south and move truss
4) New alignment to south and keep truss as pedestrian (i.e. sidewalk)
   It was discussed that the new alignment to south could have wetland impacts that will have cost and time effects. This potential wetland needs to be identified in the field ASAP.

ACTION ITEM: Parsons will schedule a field visit of the area.

The following two alternatives were added at the meeting:

5) New alignment to north and move truss
6) New alignment to north and keep truss as pedestrian (i.e. sidewalk)

Analysis of each alternative should consider:

- Cost including life cycle / user cost
- Time required building new bridge
- Time required moving old bridge

- Minimization of any closure periods
- Maintenance of Traffic Cost and sequence

Because the project involves a historic bridge, a Section 4(f) alternatives analysis and a public hearing will be required. The alternatives identified above will be considered along with those required by the INDOT *Historic Bridge Alternatives Analysis Layout*. Parsons will compile a complete list of alternatives to be evaluated for concurrence by INDOT. INDOT understands the bridge will be either bypass or be relocated, but the 4(f) alternative analysis will need to support whatever decision is made. The Section 4(f) alternatives analysis document will also serve as the project scoping alternative analysis.

It was discussed that DNR will split the trusses and this might be considered an adverse effect but other interested parties will most likely split them apart also. The conclusion was that DNR will most likely be given the truss bridge as it's another state agency and INDOT may use other state DNR funds to help move and rehab the bridges.

Patrick had mentioned that INDOT and DNR will need to execute an agreement for the maintenance of the bridges to be transferred. INDOT will be required to design and construct the new foundations and reassemble the bridges. DNR has already identified two locations, on the same recreational trail, where the trusses could be relocated.

The NEPA document for construction of the new bridge over the Eel River will need to incorporate all impacts associated with relocation of the bridge, including construction of foundations, etc.

The repairs will last until at least 2018 or beyond per Parsons. So the new bridge can be on a letting at the end of the year in 2015 or early 2016 with construction in calendar year 2016 & 2017.

Patrick had mentioned we will NOT have to post announcement signs on site as we do for other historic bridges since a new owner has already been identified. We will, however, be required to have a hearing.

Louis indicated that, under MAP 21, INDOT can use federal funds for ROW acquisition prior to completion of NEPA.

Abby will contact DNR to ensure we have management approval. (John Davis, DNR) She had also mentioned that there might be a news release about the project with general information.

Anne stated that we should assume the project will be required to meet 4R standards.

INDOT stated that central office will be doing the survey.

ACTION ITEM: Parsons will provide Ellie with the survey limits ASAP to get this started.

Without additional survey, Parsons wouldn't be able to get a profile, construction limits, earthwork, and get an accurate cost. This might delay the alternatives analysis document depending on how fast we receive this information. Assuming Parsons receives this survey by the first week of May the report will be completed by end of June 2013. Required coordination with DNR and the availability of information on the new pedestrian trail could also impact completion of the alternatives analysis document.

These meeting minutes were taken by Sean Porter. Please contact Sean at 317-616-1001 or sean.porter@parsons.com if you have any questions or corrections.

Meeting Concludes at 3:30 pm.

Gmail

Vickie Mace <vmace72@gmail.com>

SR 46 bridge over Eel River - Consulting Party Meeting - Summary

7 messages

Prevost, Daniel <Daniel.Prevost@parsons.com> Fri, Dec 19, 2014 at 2:44 PM
To: "jlcooper@ccrtc.com" <jlcooper@ccrtc.com>, "IndianaBridges@sbcglobal.net" <IndianaBridges@sbcglobal.net>, "koehlerjm@frontier.com" <koehlerjm@frontier.com>, "west@indianalandmarks.org" <west@indianalandmarks.org>, "Vmace72@gmail.com" <Vmace72@gmail.com>, "bryan.allender@frontier.com" <bryan.allender@frontier.com>, "central@indianalandmarks.org" <central@indianalandmarks.org>, "dlynbid@gmail.com" <dlynbid@gmail.com>, "julia@browncountyhistorycenter.org" <julia@browncountyhistorycenter.org>, "thompsonme@browncounty-in.us" <thompsonme@browncounty-in.us>, "mzoll@dnr.in.gov" <mzoll@dnr.in.gov>, "ccarson@ascgroup.net" <ccarson@ascgroup.net>, "acampbell@ascgroup.net" <acampbell@ascgroup.net>, "Ball, Alan" <Alan.Ball@parsons.com>, Ross Nelson <RNelson@ascgroup.net>, "dterpstra@ascgroup.net" <dterpstra@ascgroup.net>, "mkennedy@indot.in.gov" <mkennedy@indot.in.gov>, "pacarpenter@indot.in.gov" <pacarpenter@indot.in.gov>, "Porter, Sean" <Sean.Porter@parsons.com>, "lheil@dot.gov" <lheil@dot.gov>, "Muellner, Kyle" <Kyle.Muellner@parsons.com>, "bbronson@dnr.in.gov" <bbronson@dnr.in.gov>, "rregan@indianalandmarks.org" <rregan@indianalandmarks.org>, "MDollase@indianalandmarks.org" <MDollase@indianalandmarks.org>
Cc: "bob.kirlin@sbcglobal.net" <bob.kirlin@sbcglobal.net>, "Jones, Tony W" <TWJones@indot.in.gov>, "Ervin, Brock" <BErvin@indot.in.gov>, "Kohut, Matthew" <Matthew.Kohut@parsons.com>

All –

Attached is a summary of the Consulting Party meeting held December 4, 2014 regarding the SR 46 Bridge over the Eel River. As noted, several action items were generated during the meeting. We will provide updates on those items as appropriate.

In the meantime, if you have questions regarding the project please let me know.

Thank you.

- Dan

Dan Prevost, AICP-CTP, ENV-SP
Project Manager
Phone – 513.552.7013 • Mobile – 513.368.0614
daniel.prevost@parsons.com • www.parsons.com

PARSONS

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SR 46 Eel River_Consulting Party Meeting 2014-12-04_Summary.pdf
172K

Western Regional Office <west@indianalandmarks.org> Sat, Dec 20, 2014 at 11:52 AM
To: "Prevost, Daniel" <Daniel.Prevost@parsons.com>, Jim Cooper <jlcooper@ccrtc.com>, Paul Brandenburg <indianabridges@sbcglobal.net>, "koehlerjm@frontier.com" <koehlerjm@frontier.com>, "Vmace72@gmail.com" <Vmace72@gmail.com>, "bryan.allender@frontier.com" <bryan.allender@frontier.com>, Raina Regan <rregan@indianalandmarks.org>, "dlynbid@gmail.com" <dlynbid@gmail.com>, "julia@browncountyhistorycenter.org" <julia@browncountyhistorycenter.org>, "thompsonme@browncounty-in.us" <thompsonme@browncounty-in.us>, Mitchell Zoll <MZoll@dnr.in.gov>, "ccarson@ascgroup.net" <ccarson@ascgroup.net>, "acampbell@ascgroup.net" <acampbell@ascgroup.net>, "Ball, Alan" <Alan.Ball@parsons.com>, Ross Nelson <RNelson@ascgroup.net>, "dterpstra@ascgroup.net" <dterpstra@ascgroup.net>, "mkennedy@indot.in.gov" <mkennedy@indot.in.gov>, "pacarpenter@indot.in.gov" <pacarpenter@indot.in.gov>, "Porter, Sean" <Sean.Porter@parsons.com>, "lheil@dot.gov" <lheil@dot.gov>, "Muellner, Kyle" <Kyle.Muellner@parsons.com>, "bbronson@dnr.in.gov" <bbronson@dnr.in.gov>, Mark Dollase <MDollase@indianalandmarks.org>
Cc: "bob.kirlin@sbcglobal.net" <bob.kirlin@sbcglobal.net>, "Jones, Tony W" <TWJones@indot.in.gov>, "Ervin, Brock" <BErvin@indot.in.gov>, "Kohut, Matthew" <Matthew.Kohut@parsons.com>, Tommy Kleckner <TKleckner@indianalandmarks.org>

I find the wording "if a meeting is held" in action item #9 on Page 3 of the December 4 meeting summary to be completely unacceptable. The 2009 e-mail correspondence referenced in the summary took place three years before INDOT changed the scope of the project from rehab to replacement. It's now more than five years since that e-mail exchange. I don't even believe any of the current Clay County commissioners were in office at that time. There should be no question as to *if* a public meeting in Clay County is held. This action item should state "*when a meeting is held in Clay County.*" It was my impression at the meeting that INDOT and FHWA expected such a meeting to be scheduled. As a consulting party working with local consulting parties in an effort to give Clay County the opportunity to keep this historic transportation resource *in* Clay County for public use by local residents and visitors to the county, I formally request that a public meeting be held in Clay County.

Also, I respectfully ask that my direct e-mail, tkleckner@indianalandmarks.org be included in all future correspondence.

Tommy Kleckner, Director

Western Regional Office

Indiana Landmarks

From: Prevost, Daniel <Daniel.Prevost@parsons.com>
Sent: Friday, December 19, 2014 2:44 PM
To: Jim Cooper; Paul Brandenburg; koehlerjm@frontier.com; Western Regional Office; Vmace72@gmail.com; bryan.allender@frontier.com; Raina Regan; dlynbid@gmail.com; julia@browncountyhistorycenter.org; thompsonme@browncounty-in.us; Mitchell Zoll; ccarson@ascgroup.net; acampbell@ascgroup.net; Ball, Alan; 'Ross Nelson'; dterpstra@ascgroup.net; mkennedy@indot.in.gov; pacarpenter@indot.in.gov; Porter, Sean; lheil@dot.gov; Muellner, Kyle; bbronson@dnr.in.gov; Raina Regan; Mark Dollase
Cc: bob.kirlin@sbcglobal.net; Jones, Tony W; 'Ervin, Brock'; Kohut, Matthew
Subject: SR 46 bridge over Eel River - Consulting Party Meeting - Summary

[Quoted text hidden]

Kennedy, Mary <MKENNEDY@indot.in.gov> Tue, Dec 23, 2014 at 3:39 PM
To: Tommy Kleckner <TKleckner@indianalandmarks.org>
Cc: "bob.kirlin@sbcglobal.net" <bob.kirlin@sbcglobal.net>, "Jones, Tony W" <TWJones@indot.in.gov>, "Ervin, Brock" <BErvin@indot.in.gov>, "Kohut, Matthew" <Matthew.Kohut@parsons.com>, "Prevost, Daniel" <Daniel.Prevost@parsons.com>, Jim Cooper <jlcooper@ccrtc.com>, Paul Brandenburg <indianabridges@sbcglobal.net>, "koehlerjm@frontier.com" <koehlerjm@frontier.com>, "Vmace72@gmail.com" <Vmace72@gmail.com>, "bryan.allender@frontier.com" <bryan.allender@frontier.com>, Raina Regan <rregan@indianalandmarks.org>, "dlynbid@gmail.com" <dlynbid@gmail.com>, "julia@browncountyhistorycenter.org" <julia@browncountyhistorycenter.org>, "thompsonme@browncounty-in.us" <thompsonme@browncounty-in.us>, "Zoll, Mitchell K" <MZoll@dnr.in.gov>, "ccarson@ascgroup.net" <ccarson@ascgroup.net>, "acampbell@ascgroup.net" <acampbell@ascgroup.net>, "Ball, Alan" <Alan.Ball@parsons.com>, Ross Nelson <RNelson@ascgroup.net>, "dterpstra@ascgroup.net" <dterpstra@ascgroup.net>, "Carpenter, Patrick A" <PACarpenter@indot.in.gov>, "Porter, Sean" <Sean.Porter@parsons.com>, "lheil@dot.gov" <lheil@dot.gov>, "Muellner, Kyle" <Kyle.Muellner@parsons.com>, "Bronson, Bob" <bbronson@dnr.in.gov>, Mark Dollase <MDollase@indianalandmarks.org>, "Branigin, Susan" <sbranigin@indot.in.gov>, "Carr, John" <JCarr@dnr.in.gov>

Tommy,

We have noted your email address request. The language in the meeting summary was based on initial feedback from Clay County. Following the consulting party meeting, but before the summary was distributed, our team spoke to both the county highway supervisor as well as one of the county commissioners. Both indicated that there was no interest in utilizing the bridge within Clay County and the Commissioner indicated that he didn't feel it necessary for the team to present to the full board of commissioners, but that he would inquire with the rest to see if there was interest. Since that time, the team was contacted by one of the other commissioners who indicated that he would be interested in having the team present information to the full board of commissioners.

As a result, we anticipate presenting the project information and potential re-use options at a Clay County Board of Commissioners meeting in late January or early February. Once the date/time/location is finalized we will

distribute that information to all consulting parties. Board of Commissioners meetings are open to the public and provide an opportunity for public input and we are currently developing a notification strategy to let the general public know that this topic will be on the agenda. We think that this is an appropriate mechanism to reach both County decision-makers as well as the general public.

Please let us know if you have any questions. We'll be in touch again in the near future.

Happy holidays to all.

Mary E. Kennedy
Architectural Historian/History Team Lead

Cultural Resources Office

Environmental Services

100 N. Senate Ave., Room N642

Indianapolis, IN 46201

Office: (317) 232-5215

Email: mkennedy@indot.in.gov

From: Western Regional Office [mailto:west@indianalandmarks.org]
Sent: Saturday, December 20, 2014 11:52 AM
To: Prevost, Daniel; Jim Cooper; Paul Brandenburg; koehlerjm@frontier.com; Vmace72@gmail.com; bryan.allender@frontier.com; Raina Regan; dlynbid@gmail.com; julia@browncountyhistorycenter.org; thompsonme@browncounty-in.us; Zoll, Mitchell K; ccarson@ascgroup.net; acampbell@ascgroup.net; Ball, Alan; 'Ross Nelson'; dterpstra@ascgroup.net; Kennedy, Mary; Carpenter, Patrick A; Porter, Sean; lheil@dot.gov; Muellner, Kyle; Bronson, Bob; Raina Regan; Mark Dollase
Cc: bob.kirlin@sbcglobal.net; Jones, Tony W; Ervin, Brock; Kohut, Matthew; Tommy Kleckner
Subject: Re: SR 46 bridge over Eel River - Consulting Party Meeting - Summary

[Quoted text hidden]

Vickie Mace <vmace72@gmail.com> Thu, Dec 25, 2014 at 10:56 PM
To: psinders@gmail.com

Paul,

Just now getting to my emails in my new account. I think you should read these, it appears you are being left out of the loop on the email, I'll fix that!

Editorial: A bridge too far

Story

Print Font Size

INDOT should listen to Bowling Green, leave bridge at home

On Aug. 27, when the Clay County town of Bowling Green kicks off its 2015 Old Settlers Picnic, community spirit will be on full display through rural Hoosier fun such as tractor pulls, carnival attractions, cute kid contests, bingo, a chicken noodle dinner and a gospel sing. It will be the 147th year for the event.

That community spirit also was abundant Wednesday night when Nancy Lankford stood — and stood up — to tell representatives of the Indiana Department of Transportation that the bridge that spans Eel River just at the west edge of town needs to stay put, even if a replacement bridge is built to take over the traffic load from the 80-year-old steel superstructure, as undoubtedly is needed.

"That bridge talks to us," Lankford said at a public hearing on the bridge. "It tells us about our lives."

More eloquent words could hardly be spoken.

The matter arises because INDOT is pondering whether to leave the existing bridge in place next to a new bridge — or to move it 50 miles east on Indiana 46 to Brown County. There, it would be divided into two parts and used along Salt Creek Trail, connecting the state park to the lovely town of Nashville.

at's fine for Nashville, but not for Bowling Green.

eft in place at Bowling Green, the existing bridge would be converted to pedestrian use, separated and otected from the traffic that slows as it goes up the hill into the town. The old bridge could be used for a creational area. It could, in fact, be an added attraction to the Old Settlers events. The old bridge could be signed er to the Clay County Commissioners. Already the Clay County Parks Association has said in writing to the mmissioners that it will help fund the bridge's maintenance if the county takes over ownership. Surely, a community fundraising effort could raise thousands from current and former residents.

It's not only re-use but past use that supports leaving the bridge in place. It is part of the town, county and region's history, a connection that is more than steel. It connects people within and between communities. As long as it can, that bridge should stand as part of Indiana history, every bit as meaningful as our treasured covered bridges. That bridge did not yet stand when Bowling Green was Clay's county seat and home to its first three courthouses, but the bridge has seen days of destitution at the end of the Depression and more prosperous days of a better economy. It has seen times of war and of peace. It has seen community pride and borne community sadness.

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Editorial: A bridge too far

Posted Wednesday, August 12, 2015 12:00 am

nstruction on a new bridge could begin in April 2017, but the time to join Lankford in speaking up is now. DOT is taking public comments, in addition to those voiced at Wednesday's hearing, only through Aug. 21.

e will take INDOT at its word that what the public says really does matter when decisions are made. So speak up, Clay Countians, Owen Countians and Vigo Countians. Unite, Clay County government officials and let INDOT know you advocate keeping your bridge. Send mailed comments to a representative of INDOT's contracted engineering firm: Dan Prevost, Parsons Corp., 101 W. Ohio St., Suite 2121, Indianapolis, IN, 46204. By email, send comments to DanielPrevost@Parsons.com; by phone to 317-616-1017.

The bridge at Bowling Green — which perhaps should be formally named as part of its preservation — needs to continue to span a stream, but that needs to be at home over the Eel River not over Salt Creek, transplanted from a hill in Clay County.

« ‹ 1 2 › »

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2015 Visitor's Guide

Michael R. Pence, Governor
Cameron F. Clark, Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 - Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

August 13, 2015

Daniel Prevost
Parsons Transportation Group
101 West Ohio Street, Suite 2121
Indianapolis, Indiana 46204

Federal Agency: Federal Highway Administration ("FHWA")

State Agency: Indiana Department of Transportation ("INDOT")

Re: DUAL REVIEW PROJECT: August 5, 2015, public hearing at Center Point, Indiana, regarding Bridge Project, SR 46 over the Eel River, Bridge No. 046-11- 01316C/NBI No. 17050, Bowling Green, Washington Township, Clay County, Indiana (Des. No. 0800910; DHPA No. 10596)

Dear Mr. Parsons:

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 306108), implementing regulations at 36 C.F.R. Part 800, the "Programmatic Agreement Among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Management and Preservation of Indiana's Historic Bridges" ("Indiana Historic Bridges PA"), and the "Programmatic Agreement (PA) Among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation and the Indiana State Historic Preservation Officer Regarding that Implementation of the Federal Aid Highway Program In the State of Indiana" ("Indiana Minor Projects PA"), as well as under Indiana Code 14-21-1-18 and 312 Indiana Administrative Code ("IAC") 20-4, we wish to comment on some issues that we understand were discussed at the August 5, 2015, public hearing on this project, although we did not send a representative to the hearing, as well has some issues about which we have commented previously but that still appear relevant.

We are aware that a majority of the members of the Board of Commissioners of Clay County and the president of the Clay Community Parks Association, Inc., have signed a memorandum of agreement, which, if accepted by INDOT, would keep the SR 46 bridge over the Eel River in its current, historical location. We realize that additional information about the proposal embodied in the agreement must be gathered, but we ask that INDOT and FHWA give careful consideration to the proposal. At least until the Keeper of the National Register determines whether or not the bridge spans would remain listed in the National Register of Historic Places if they were to be moved to two locations on the Salt Creek Trail in Brown County, keeping the bridge in its current location is the most likely way to keep it listed in the National Register.

In our March 5, 2015, letter about this project, we raised an issue about another, potential alternative treatment of the bridge that would keep it in its historical location. We asked that INDOT and FHWA seriously (i.e., formally) consider a second variation on a combination of Alternative 4 (leaving the current bridge in place and restricting it to non-vehicular use) and Alternative 5C-S (bypassing the current bridge's location to the south with a new vehicular bridge—the preliminary preferred alternative). The first variation would require another entity, such as Clay County, to take responsibility for the current bridge. In the second variation, INDOT would maintain the current bridge as a roadside park. We realize that INDOT would rather not do so. We expressed the opinion that the 2006 Indiana Historic Bridges PA appears to require the owner of a Select Bridge to preserve that bridge, if no outside party comes forward with a viable proposal to take ownership of and responsibility for the bridge. If the Keeper of the National Register ultimately determines that moving the spans of this National Register-listed Select bridge to different locations would destroy the

bridge's listing (and, we guessed, also its eligibility for listing for as long as 50 years), we wondered whether doing so could be considered a prudent alternative, even where preservation of the bridge in place, as one structure, by the bridge owner would be feasible and prudent. It is our understanding that FHWA and INDOT have sought guidance on those issues, and we would appreciate being notified in writing of the position that FHWA and INDOT plan to take on those issues, as well as the reasons for that position.

The presentation at the January 29, 2015, public meeting in Bowling Green brought up hydraulics problems that leaving the historic SR 46 bridge in place while bypassing it with a new bridge were thought by the engineers to create. One of those was the anticipated need to align the new bridge's west abutment so that it would be parallel to the west abutment of the current bridge. As a result, scouring of the new abutment is anticipated, which would require placement of rip-rap for protection. In our experience, rip-rap placement, for either new or rehabilitated bridges, is not unusual. Furthermore, the historic bridge alternatives analysis (Prevost, 11/17/2014) acknowledged that a detailed hydraulic analysis had not been done at that time. The presenters at the January 29 public meeting seemed to be more certain of the need to properly align the two bridges' west abutments than did the November alternatives analysis. Has that detailed hydraulic analysis been completed since November of 2014? If so, we would appreciate receiving a written explanation of what the analysis found.

The documentation that was provided in support of INDOT's June 30, 2015, federal Section 106 finding, made on behalf of FHWA, of "No Historic Properties Affected" stated, "One alternative includes constructing a new bridge approximately 20' to the south of the existing structure and retaining the existing structure for non-vehicular use." However, an article about the August 5 public hearing found on the web site of the Brazil Times (http://www.thebraziltimes.com/story/2219559.html) said, "The estimate to leave the historic bridge in place, and build a new bridge 5 to 8 feet south of it, is $10.2 million and the cost to build a new bridge and move the historic bridge to Brown County is estimated to be $9.6 million. The cost to keep the bridge in place is higher because the road will have to be moved and there will be other expenses, Prevost said." It was our understanding that even the preliminary preferred alternative would require the road to be moved, because that alternative would leave the historic bridge in place to continue to carry SR 46 traffic until the new bridge is ready to be opened to traffic. Furthermore, if the newspaper account is accurate, than have the plans been revised to call for the new bridge to be built 12 to 15 feet farther to the north (i.e., closer to the historic bridge)? If, so then please explain that revision.

Thank you for considering our comments. Even though we did not attend the August 5 hearing, we thought that it would be important at this time to ask or to reiterate some concerns about the preliminary preferred alternative that we have, based on our understanding of that alternative.

Once the hearing certification package becomes available, we would appreciate receiving a copy of it.

If you have questions regarding our dual review of this project, please contact the Division of Historic Preservation and Archaeology. Questions about historic buildings or structures pertaining to this review should be directed to John Carr at (317) 233-1949 or jcarr@dnr.IN.gov. Questions about archaeological issues should be directed to Mitch Zoll at (317) 232-3492 or mzoll@dnr.IN.gov.

In all future correspondence regarding Bridge Project, SR 46 over the Eel River, in Clay County (Des. No. 0800910), please refer to DHPA No. 10596.

Very truly yours,

Mitchell K. Zoll
Deputy State Historic Preservation Officer
Director, Division of Historic Preservation & Archaeology

MKZ:JLC:jlc

emc: Daniel Prevost, Parsons Transportation Group
Allan Ball, Parsons Transportation Group

Sean Porter, Parsons Transportation Group
Andrew Campbell, ASC Group, Inc.
Douglas Terpstra, ASC Group, Inc.
Ross Nelson, ASC Group, Inc.
Kevin Schwarz, Ph.D., RPA, ASC Group, Inc.
Lawrence Heil, P.E., Federal Highway Administration, Indiana Division
Rickie Clark, Indiana Department of Transportation
Alan Plunkett, Deputy Commissioner, Indiana Department of Transportation
Crawfordsville District Office, Indiana Department of Transportation
Tony Jones, Indiana Department of Transportation
Jessica Miller, Indiana Department of Transportation
Patrick Carpenter, Indiana Department of Transportation
Shaun Miller, Indiana Department of Transportation
Mary Kennedy, Indiana Department of Transportation
Susan Branigin, Indiana Department of Transportation
C. David Moffatt, Indiana Department of Transportation
Shirley Clark, Indiana Department of Transportation
Bryan Allender, Clay County Commissioner
Tony Fenwick, Clay County Commissioner
Paul Sinders, Clay County Commissioner
Jennifer Flater, Clay County Auditor, Secretary to the Board of Commissioners of Clay County
Jeffrey Koehler, Clay County Historian
Vickie Mace, Clay County Historical Society
Bob Kirlin, Salt Creek Trail
Board of Commissioners of Brown County, c/o Dr. Michael Thompson, Administrator
Michael Magner, Brown County Highway Superintendent
Town Council, Town of Nashville, c/o Brenda Young, Clerk-Treasurer
Brown County Schools
Julia Pearson, Brown County Historical Society
Bob Bronson, Indiana Department of Natural Resources, Division of Outdoor Recreation
Dan Bortner, Indiana Department of Natural Resources, Division of State Parks and Reservoirs
Benjamin Clark, Indiana Department of Natural Resources, Division of State Parks and Reservoirs
Mark Dollase, Indiana Landmarks, Central Regional Office
Raina Regan, Indiana Landmarks, Central Regional Office
Tommy Kleckner, Indiana Landmarks, Western Regional Office
Paul Brandenburg, Indiana Historic Spans Task Force
Dr. James L. Cooper, Professor Emeritus of History, DePauw University
Joshua Palmer, Indiana Historic Preservation Review Board
Daniel Kloc, Indiana Historic Preservation Review Board
Jim Corridan, Indiana Historic Preservation Review Board
Richard Butler, Indiana Historic Preservation Review Board
Kevin Orme, Indiana Historic Preservation Review Board
Beth McCord, Indiana Historic Preservation Review Board
Cameron Clark, Director, Indiana Department of Natural Resources and Indiana State Historic Preservation Officer
Christopher Smith, Deputy Director, Indiana Department of Natural Resources
John Davis, Deputy Director, Indiana Department of Natural Resources
Marian England, Office of Legal Counsel, Indiana Department of Natural Resources
Mitchell Zoll, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Chad Slider, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Paul Diebold, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
Holly Tate, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
John Carr, Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology

Indiana Department of Transportation

County Brown Route Salt Creek Trail Des. Nos. 1400311 and 1400365

Name and Organization of CE/EA Preparer: Alan K. Ball, Parsons Transportation Group

Part I - PUBLIC INVOLVEMENT

Every Federal action requires some level of public involvement, providing for early and continuous opportunities throughout the project development process. **The level of public involvement should be commensurate with the proposed action.**

	Yes	No
Does the project have a historic bridge processed under the Historic Bridges PA*?		✓
If No, then:		
Opportunity for a Public Hearing Required?	✓	

**A public hearing is required for all historic bridges processed under the Historic Bridges Programmatic Agreement between INDOT, FHWA, SHPO, and the ACHP.*

Discuss what public involvement activities (legal notices, letters to affected property owners and residents (i.e. notice of entry), meetings, special purpose meetings, newspaper articles, etc.) have occurred for this project.

Remarks:

This project involves the relocation of Bridge Number 046-11-01316C, a two-span truss structure listed on the National Register of Historic Places (NRHP) and identified as "Select" in the Indiana Historic Bridge Inventory (August 2009). Bridge Number 046-11-01316C is currently proposed for replacement under Des. Number 0800910. Through this project, the bridge would be relocated to the Salt Creek Trail in Brown County, where the spans would be separated and used for two pedestrian crossings of Salt Creek. A separate CE document, to be approved concurrently with this one, has been prepared for the impacts associated with the Eel River bridge project. As such, public involvement associated with the proposed relocation of the Eel River bridge is described in that CE document. The activities described below are focused exclusively on the placement of the historic bridge spans as part of the Salt Creek Trail.

The Salt Creek Trail has been under development for more than 10 years, with substantial support from the community and stakeholders.

Due to the limited impacts associated with this project, and because much of the project would take place on state and county-owned lands, public involvement to date has been focused on coordinating with relevant agencies. Multiple meetings with representatives from the Brown County School Corporation and the Brown County State Park have been held to discuss this project so that impacts to these public lands are minimized.

Section 106 of the National Historic Preservation Act affords interested parties a chance to comment on the project's impacts on historic properties. For the purposes of Section 106, this project and the Clay County portion of the project were combined in terms of outreach to consulting parties. As described in Section C, invitations to participate as consulting parties were sent to relevant individuals and organizations.

During the consultation process, several Section 106 consulting parties indicated a preference for the bridge to remain in its current location or elsewhere in Clay County. In order to assess the public's interest in retaining the bridge in its current location, INDOT held a public meeting on January 29, 2015 at the Bowling Green Community Building in Bowling Green, approximately one mile east of the bridge. The meeting included a presentation made by INDOT and the project team, followed by an opportunity for the public to provide comments on the alternatives being considered, including the preliminary preferred alternative, which would relocate the bridge to Salt Creek. Approximately 150 people attended the meeting, with 10 persons making statements during the comment period and an additional 14 comments received in written form. A summary of the public meeting, including the presentation and comments received both during and following the meeting, is provided in the CE for the Eel River bridge.

During the public meeting, INDOT explained that it would consider requests to retain the bridge in Clay County if a party (local government or private organization) was willing to take ownership of the bridge and

maintain it for public use for a minimum of 25 years. The public hearing, tentatively scheduled for the first week of August, will be the last opportunity for a party to come forward. To date, no party has stepped forward to assume ownership in order to retain the bridge in Clay County.

A public notice indicating FHWA's finding of "No Adverse Effect" for the proposed placement of the historic bridge spans as part of the Salt Creek Trail was published in the *Brown County Democrat* on July 8, 2015 (Appendix D, page 90) with comments requested no later than August 6, 2015. No comments have been received to date.

Because of this project's relationship to the SR 46 Eel River bridge project, the Federal Highway Administration (FHWA) has determined that an opportunity to request a public hearing is warranted for this project. INDOT will publish a "Public Notice of Planned Improvement," which is a formal legal notice of the action that INDOT is proposing. The notice will be published in the local newspaper and may be mailed to adjacent property owners, local elected officials, and appropriate agencies.

Following the completion and certification of the public involvement requirements, this CE document will be revised as necessary and resubmitted for approval.

Public Controversy on Environmental Grounds

Will the project involve substantial controversy concerning community and/or natural resource impacts?	Yes	No
	☐	☑

Remarks: The proposed project would relocate the National Register listed SR 46 bridge to a new multi-use recreational trail between Brown County State Park and Nashville, IN, where the two spans would be separated in order to form two pedestrian crossings over Salt Creek. Environmental impacts have been addressed through coordination with the U.S. Fish and Wildlife Service (USFWS), the Indiana Department of Natural Resources (IDNR), and other Resource Agencies (see Appendix C). The preferred alternative would require minimal new permanent right-of-way (0.25 acre) and no relocations. To date, this project has not generated substantial controversy concerning community or natural resource impacts.

Part II - General Project Identification, Description, and Design Information

Sponsor of the Project: Indiana Department of Transportation INDOT District: Seymour

Local Name of the Facility: Salt Creek Trail

Funding Source (*mark all that apply*): Federal ☑ State ☑ Local ☐ Other* ☐

*If other is selected, please indentify the funding source: _____

PURPOSE AND NEED:

Describe the transportation problem that the project will address. The solution to the traffic problem should NOT be discussed in this section. (Refer to the CE Manual, Section IV.B.2. Purpose and Need)

During development of the SR 46 bridge project at Eel River in Clay County (Des. No. 0800910), relocation alternatives were evaluated for the National Register listed Bridge 046-11-01316C. Based on those efforts, INDOT and FHWA determined that the Salt Creek Trail, a project developed jointly by Brown County and the Indiana Department of Natural Resources (IDNR), was the best alternative to ensure the continued use and upkeep of the historic bridge.

Nashville, Indiana is a regionally popular tourist attraction located in Brown County, and is noted for its arts and craft shops and galleries. Brown County State Park is Indiana's largest and most visited state park, and is approximately 2 miles east of Nashville. Many visitors to the Brown County State Park also visit Nashville's tourist-based commercial

OTHER ALTERNATIVES CONSIDERED:

Describe all discarded alternatives, including the Do-Nothing Alternative and an explanation of why each discarded alternative was not selected.

No Build Alternative

The "No Build" alternative would have no associated costs or environmental impacts. However, IDNR and Brown County have demonstrated a persistent desire to establish a multi-use trail between Nashville and Brown County State Park, as demonstrated by the approved CE for Des. No. 0401063, the completion of Phase 1 of the Trail, and their request to incorporate the SR 46 bridge into the remaining phases of the Salt Creek Trail system. The previously approved environmental document for the trail system has established the appropriate need for the trail and the related crossings of Salt Creek, therefore, the "No Build" alternative has not been given any further consideration.

The Do Nothing Alternative is not feasible, prudent or practicable because (*Mark all that apply*):

It would not correct existing capacity deficiencies;	✓
It would not correct existing safety hazards;	✓
It would not correct the existing roadway geometric deficiencies;	
It would not correct existing deteriorated conditions and maintenance problems; or	
It would result in serious impacts to the motoring public and general welfare of the economy.	
Other (Describe)	✓

Other: The Do-Nothing Alternative would not allow for the re-use of the two spans currently in use on SR 46 over the Eel River in Clay County (Bridge Number 046-11-01316C). As explained in the companion CE-4 document also under Des. Number 0800910 ("SR 46 Bridge over Eel River, Clay County") the preferred alternative in that project would relocate the historic spans to a non-vehicular use. Of the non-vehicular uses considered, the Salt Creek Trail project described above was determined to be the best re-use of the two spans. Not only would the Do-Nothing Alternative not place two new pedestrian spans across the Salt Creek in Brown County, but it would also keep the Preferred Alternative from the SR 46 Bridge over the Eel River project from being implemented.

ROADWAY CHARACTER:

Functional Classification: N/A – This project does not involve construction or modification of any roadways.

Current ADT: _____ VPD (year) _____ Design Year ADT: _____ VPD (year) _____

Design Hour Volume (DHV): _____ Truck Percentage (%) _____

Designed Speed (mph): _____ Legal Speed (mph): _____

	Existing		Proposed	
Number of Lanes:	N/A		N/A	
Type of Lanes:	N/A		N/A	
Pavement Width:	N/A	ft.	N/A	ft.
Shoulder Width:	N/A	ft.	N/A	ft.
Median Width:	N/A	ft.	N/A	ft.
Sidewalk Width:	N/A	ft.	N/A	ft.

Setting:		Urban		Suburban	✓ Rural
Topography:	✓	Level		Rolling	Hilly

If the proposed action has multiple roadways, this section should be filled out for each roadway.

Andrus, Patrick <patrick_andrus@nps.gov>

Clay County Bridge 46-11-1316

1 message

Vickie Mace <vmace72@gmail.com> Wed, Sep 2, 2015 at 3:30 PM
To: "Andrus, Patrick" <patrick_andrus@nps.gov>, edson_beall@nps.gov

http://www.tribstar.com/features/valley_life/year-old-wilmadean-schepper-instrumental-in-preserving-heritage-of-clay/article_42bc7ecf-6862-5db2-8524-730aed08e0d2.html

Gentlemen,

Attached please find a letter from Wilmadean Schepper in regards to this bridge listed above. Wilmadean was instrumental in placing all but two of the listed nominations on her list. Her preservation efforts have been invaluable to Clay County for many years.

She asked me to email her letter to you on her behalf.

Sincerely,

Vickie Mace

Wilmadean NPS Letter.pdf
634K

Place in file

Wilmadean Schepper
112 Park Place Drive
Brazil, IN 47834

Patrick andrus@nps.gov

September 1, 2015

To Whom It May Concern,

I am writing to you asking that you leave the Bridge 46-11-1316 over Eel River on State Road 46 in Clay County.

The bridge over Eel River has played a part of history for Clay County. We realized this importance and thus worked to get it on the National Register. Its importance was felt not only because of its location, but also because of its structure. We were therefore able to get it on the National Register of Historic Places and Structures in 2000.

Clay County has a proven record of being able to recognize and preserve these historic buildings and structures. Through individuals and organizations, Clay County has been able to put several items of history on the National Register.

1991 Poland Historic Chapel built in 1869, on the National Register
1995 United Post Office Building built in 1911-1913, on the National Register
1996 Brazil Downtown Historic District 1875 – 1935, on the National Register
1996 Brazil, Meridian- Forest Historic District 1800- 1940, on the National Register
1997 Inventoried and Published Clay County Indiana Historic Sites and Structures Inventory, Interim Report
1998 Eagelsfield Place 1855 – 1933, on the National Register
1998 Clay County Hospital, built 1928, on the National Register
1998 Clay County Court House, built 1914, on the National Register
1998 Tide Water Pumping Station, 1915 – 1948, on the National Register
1998 YMCA McGregor House, 503 N Meridian, Architectural Façade and Conservation Easement
2000 Shakamak State Park Historic District 1930 -1949, on the National Register
2000 Clay County's 5 Iron Bridges, on the National Register

I believe this shows the dedication and interest our residents of Clay County have in historic places and their importance to us. With this being the location which was where the first white man put his feet, being where the first settlers settled in Clay County and it being our first county seat, we felt the importance of this area and this bridge, thereby doing the work to get it on the National Register back in 2000.

Please help us keep this bridge, which is a part of our history, here in Clay County.

Sincerely

Wilmadean Schepper
Former President of Preservation Association of Clay County 1994 - 2001

Andrus, Patrick <patrick_andrus@nps.gov>

Clay County, Indiana Bridge 046-11-01316C

1 message

Vickie Mace <vmace72@gmail.com> Sun, Sep 13, 2015 at 9:42 PM
To: edson_beall@nps.gov
Cc: "Andrus, Patrick" <patrick_andrus@nps.gov>

NPS Relocation of Historic Bridge.pdf

Gentlemen,

Attached please find a letter from Mr. Thomas Reberger, President of the Clay Community Parks Association, the group that has signed an inter-local agreement with the Clay County Commissioners for ownership of this bridge. Also, attached please find the documents pertaining to the wetlands reports that are part of the original reports from Parsons, that seem to be missing from their nomination. We thought these were important. I hope this download comes through. Attached is the web address where you can find this report in it's entirety if there is a problem. Pages 175-233 are in this report.
http://www.in.gov/indot/files/PI_SR46EelRiver-ReleaseforPublicInvolvement.Des._Nos._1400311_and_1400365-Salt_Creek.pdf

Again, we thank you very much for the chance to comment on this bridge and what it means to our community!

Sincerely,

Vickie Mace, President of the Clay County Historical Society and Consulting Party

CCPA NPS Letter.pdf
4041K

4q pages

CLAY COMMUNITY PARKS ASSOCIATION

P.O.BOX 308 BRAZIL, INDIANA 47834

CCPA is very happy to announce that this is our twenty-fifth year of service to the community. Established in 1990, we have completed numerous projects to supplement the local park budgets. The continuing support of our community members has been a major source for our operating expences, locally sponsored projects and successful grant awards.

One of our first projects was the giant wood playground at Forest Park. We have maintained it, and it looks as good today as the day it was built. Over 150 new trees have been planted at Forest Park over the past twenty-five years. A new roof and painting of the Forest Park Pavilion is still being enjoyed everyday. Our list of park improvements totals nearly ONE MILLION DOLLARS raised both localiy and with numerous grants.

We have also partnered with local groups to help them complete related projects. These projects include the Forest Park Bandshell park benches, the community skateboard park and the ASK softball field at Craig Park. We hope to hear soon if the CCPA partnership with the Clay County Commissioners will result in a historic bridge park and boat trail launch area on Eel River at Bowling Green.

We were so proud to open the walking track...Wilmadean's Trail...at Craig Park in 2013. Phase Two of that project is now underway to obtain a bridge to be placed beyond the lake overflow to connect the two wings of the trail. Fund raising is progressing, and we are working with Pike County to obtain a refurbished historic iron road bridge for pedestrian use. It is the oldest bridge of its type in Indiana. We think the historic significance can amplify interest in the park that was named for Governor George Craig.

CCPA is also working with Indiana Landmarks to obtain a study grant to make major repairs to the Brazilian fountain at Forest Park. We feel confident that this project can be completed within the next year.

Again, allow me to say.....This is the twenty-fifth year of existance for CCPA...This year CCPA signed an agreement with the Clay County Commissioners. The agreement was for CCPA to maintain the Eel River Bridge at Bowling Green, once INDOT totally refurbishes the Clay County landmark as a pedestrian bridge park and location for boating access to the Eel River. This Eel River access will be the launch point for a five mile water trail that will extend to Feeder Dam bridge, one of five other historic steel bridges, also listed on the National Registry and owned by Clay County. The history of Bowling Green being the first county seat of Clay County only adds to the significance of this development. The Bowling Green Old Settlers Festival is still celebrated annually with a photo and history of the Eel River bridge shown

prominately in the festival booklet.

It only makes sense that leaving the Eel River bridge in its original location reinforces the historic significance established with its original placement on the National Registry in 2000 by the people of Clay County. Moving the bridge to another community makes it just two old pieces of an old bridge...not a grand historic landmark structure of Clay County, as it stands today.

Recent articles from the Brazil Times have shown the frustration of the people of Clay County and Brown County. Both are confused and left without logical answers for decisions made by state officials and engineers responsible for this project. Reading the articles illustrate the "promises made", misleading information, and preconceived plans that have swirled around this project. No documentation of written communication with Clay County officals exists until well after the bridge was offered to Brown County. It should also be noted that even in the preengineering studies of the "promised" Brown County project, the land proposed for half of the bridge is not owned by Brown County, the 200 foot long pieces of bridge each cross the same narrow stream and a proposed bridge site is currently listed as a wetlands and native creature habitat. Since they are proposing bridges in natural habitat wetlands, I question what other problems are bound to arise?

Attached please find part of the Parson's plan from the "Relocation of Historic Bridge to Salt Creek Trail Categorical Exclusion Level 4, Brown County, Indiana/Des. Nos. 1400311 and 14000365" July, 2015, in detail about the wetlands that they did not include in INDOT's revised nomination to the Keeper.

Please give careful consideration to our concerns and the historic significance of this bridge to the people of Clay County.

A sincere Thank you,

Thomas Reberger

Thomas Reberger President Clay Community Parks Association

rebergert@clay.k12.in.us

Andrus, Patrick <patrick_andrus@nps.gov>

Clay County, Indiana, IN SH 46-11-1316/ 00000211, SR46 Eel River Bridge

1 message

Robert <roberth@ccrtc.com> Mon, Sep 14, 2015 at 2:19 PM
To: edson_beall@nps.gov
Cc: patrick_andrus@nps.gov

Mr. Beal,
Please see attached letter for Clay County, Indiana, IN SH 46-11-1316/ 00000211, SR46 Eel River Bridge.
Thanks Robert Hostetler

NRS letter.docx
20K

RE: Clay County, Indiana

IN SH 46-11-1316/ 00000211

SR46 Eel River Bridge

Dear Mr. Beal:

According to local research, the Clay County Bowling Green Bridge is the last remaining two span 1930's Vincennes built bridge in the State of Indiana. It was a product of the PWA project in the heart of the depression. It was nominated by Clay County residents in 1999 to be placed on the National Register of Historic Places in 2000. It holds a position as one of 14 National Register items in Clay County. The bridge holds the same status to Clay County residents as the Clay County Courthouse, Shakamak State Park, Old Federal Post Office (which houses Clay County Historical Society and History Museum), Brazil City Historical District and others. INDOT has not been forthright with Clay County residents on the history, the possible uses and outreach to Clay County with this project. INDOT should have reached out to the community that put the bridge on the National Register over 15 years ago.

The Bowling Green Bridge has been mentioned in numerous newspapers as a National Registered Bridge. The story behinds its nomination and placement on the National Register by Clay County Residents was not shared with the community. Newspaper accounts stated that building S.R. 46 made the area as active as a bee hive. The Brazil Times also stated that local residents gave 85% of the land and right of ways for S.R. 46 at no cost to taxpayers. The bridge is a symbol of that time and reminder of the good that came out of the Depression. As mentioned earlier, it was the PWA program that funded the bridge.

Dr. James L. Cooper gives the following account of the bridge, "The state highway commission decided to bypass the Bowling Green covered bridge with a steel structure in 1934. The crossing of the Eel River was long established in the neighborhood as it was the location for the busiest ferry in the county for half a century. A timber wagon bridge tenuously spanned the river at Bowling Green from 1852-53 until 1858. Rarick and Black built a two-span covered timber-truss structure in 1870.

The Vincennes Bridge Company of Vincennes, Indiana, won the contract to build the state's two-span steel structure with a bid in January 1934 of $63,058.13, about 7,000 dollars below the state engineers' estimates. Vincennes completed the structure by the spring of 1935.

The state relied on a slightly-revised third-generation standard plan (#479A) for its 198-foot, riveted, Parker through-trusses with 24-foot roadways. The state ordered the structure erected upon its typical concrete abutments and pier but – atypically -- on a 398-foot vertical curve. Truss depth varied from 21 ft. 6 in. at the portal to 33 ft. at mid-span. Each truss carried eleven 18-ft. panels bounded by verticals made of a pair o-foot and 10-inch channels (@15.3#, except for the second from the end @20#). To protect the quite-tall trusses against wind and vehicle-induced stress, the verticals are buttressed with substantial latticed struts and heavy upper sway framing above the 15 ft. of roadway clearance. The

portals used latticed sections. The diagonals combined angles with battens into heavier members in the outer panels than toward center: in the outermost, two pairs of angles (4"x3.5"Ls); in the second and third, a pair (7"x4"Ls); in the fourth, a pair (3.5"x3"Ls). A pair of angles (4"x3.5"Ls) and battens provide counters in the three most central panels. Each of the top chord's members is differently sloped; only the central panel's is parallel with the lower chord; and all were fabricated from a pair of 15-in. channels getting heavier toward mid-span (from 35-50#). Two pairs of angles -- all of the same size (6"x4"Ls) – riveted together with battens and buttressed in all but the two most outer panels with plates provide the lower chord's members.

The ISHC used 33-inch I floor-beams (@141#) riveted to the verticals above the lower chord. Eight rows of heavier rolled I stringers (16"@40#) are attached to the floor-beams' sides. Together, the floor-beams and the stringers carry the concrete deck. A pair of angles supplies each lower sway bracing member. Latticed hand rails originally lined the inner sides of all the trusses, and coped concrete rails with bush-hammered panels marked the approaches.

The crossing of the Eel River at Bowling Green by ferry and bridge has been quite active since its early inception. The latest bridge is a multi-span example of an important, revised, third-generation state standard plan additionally significant for the structure's vertical curve. While the trusses retain their original members, the guard rails have been replaced."

The Indiana Department of Natural Resources web site states the following:

"Preservation is more than saving single sites or buildings; preservation maintains features of our environment and communities that contribute to our overall quality of life. Although part of a larger American history, Indiana has its own unique heritage of early peoples, settlement, development, and culture.

If preserving a sense of place sounds too philosophical, there is the demonstrated tangible effect of preservation to consider. Preservation is a significant economic tool in the revitalization of blighted neighborhoods and declining commercial downtowns. Stabilizing properties in neighborhoods and business districts reduces vacancy, vandalism, and crime. Economic development through preservation slows urban sprawl, conserves prime agricultural land, promotes job creation, and increases the local tax base. In short, preservation also contributes to sustaining the economic lifeblood of our communities." source of the above quote http://www.in.gov/dnr/historic/3742.htm

INDOT, during the presentations, has never given cost estimates of restoration if left in place. It was not the preferred option. The cost of rehabilitation for Brown County was the preferred alternative because of non-community efforts of INDOT. INDOT still shows neglect to the Citizens of Clay County by holding the meetings in Clay County only after being forced by Indiana Landmarks and the efforts of the County Historian.

In our latest effort s of looking through the National Register, we show Clay County has four of the thirteen Vincennes Bridges on the National Register of Historic Places in United States. I would like to

point out that in our community we have bridges unique to neighboring counties as I feel this will help with the history of Indiana in telling of the early days of overcoming the obstacles of past. I believe in the short future these vanishing superstructures will be attractions to earlier times. The bridge is already the last known Vincennes double span remaining in the state of Indiana constructed during the depression.

The change for the criterion A to C is INDOT's strategy to enable the move of the bridge out of Clay County. It negates the local effort in 2000 placing the Bridge on the N.R.S. to preserve our local history, not add to it so they could move it. The addition of Criterion C related to the bridge's engineering significance should not come at the expense of the existing Criterion A, due to its importance in the settlement, history and development of Clay County. Any future listing should retain both Criterion, and leave the bridge in its historic location in Clay County, Indiana, thus keeping its National Register status. Otherwise, broken into two trusses, each placed in separate locations in a distant county from its original location should result in its de-listing from the National Register of Historic Places (action of Indiana State Historic Preservation Review Board, July 2015).

Sincerely,

Robert Hostetler

2454 N Sonnefield Rd.

Centerpoint, IN 47840

Andrus, Patrick <patrick_andrus@nps.gov>

Clay County Bridge, Indiana #046-11-01316C

1 message

Tommy Kleckner <TKleckner@indianalandmarks.org> Mon, Sep 14, 2015 at 7:03 PM
To: "edson_beall@nps.gov" <edson_beall@nps.gov>
Cc: "patrick_andrus@nps.gov" <patrick_andrus@nps.gov>, "Robert (roberth@ccrtc.com)" <roberth@ccrtc.com>, "vmace72@gmail.com" <vmace72@gmail.com>, "koehlerjm@frontier.com" <koehlerjm@frontier.com>, "rebergert@clay.k12.in.us" <rebergert@clay.k12.in.us>, "psinders@gmail.com" <psinders@gmail.com>, "bryan.allender@frontier.com" <bryan.allender@frontier.com>, Mark Dollase <MDollase@indianalandmarks.org>, John Carr <jcarr@dnr.in.gov>, Paul Brandenburg <indianabridges@sbcglobal.net>

Mr. Beall –

Please find attached a comment letter regarding the above referenced historic structure for which you are considering action related to its National Register-listed status.

Thank you,

Tommy Kleckner

Tommy Kleckner

Director

Indiana Landmarks

Western Regional Office

669 Ohio Street

Terre Haute, IN 47807

Ph. 812-232-4534

Fax: 812-234-0156

www.indianalandmarks.org

Clay County Bridge, Indiana #046-11-01316C - Comment letter from Indiana Landmarks.pdf
133K

INDIANA LANDMARKS
Western Regional Office
609 Ohio Street, Terre Haute, IN 47807
812.232.4534 / 800.450.4534 / [illegible]

September 14, 2015

Mr. Edson Beall, Historian
National Park Service
National Register of Historic Places
1201 I Street, N.W.
Washington D.C. 20005

RE: Clay County Bridge, Indiana #046-11-01316C

Dear Mr. Beall:

On behalf of Indiana Landmarks, I wish to provide comment on the above referenced historic resource for which you are considering additional action that may affect its National Register-listed status.

Clay County Bridge, Indiana #046-11-01316C was listed in the National Register of Historic Places on March 5, 2000 as Indiana State Highway Bridge 46-11-1316 under Criterion A in recognition of the bridge's significance to the transportation history of Clay County and its immediate context. During a July 22, 2015 meeting of the Indiana Historic Preservation Board, the Indiana Department of Transportation (INDOT) requested the following: 1) the state review board accept continuation pages that documented the significance of the bridge under Criterion C; 2) the state review board render an opinion regarding relocation of the bridge to Brown Count, Indiana whereby the bridge's two spans would be separated and installed in separate locations on a trail system.

Following INDOT's presentation of the two requests at the July 22 state review board meeting, Indiana Landmarks testified that while it doesn't object to the addition of Criterion C significance for the bridge it seems unnecessary to add this additional documentation since the bridge is already listed. Furthermore, it's Indiana Landmarks opinion that the motivation for INDOT's request is to establish justification for the bridge retaining Criterion C significance and thus National Register eligibility if the two spans were to be split and relocated to Brown County. Indiana Landmarks is very much in agreement with the decision of the state review board that the bridge meets Criterion C but that it would be rendered ineligible for the National Register if moved in the fashion and to the sites proposed.

Indiana Landmarks has been providing support to the local bridge coalition and broader community in Clay County that wishes to see the landmark structure remain in its original location which would not only ensure pedestrian reuse but also protect its National Register-

listed status. You have received comments from members of the local bridge coalition, Clay County residents and, I believe, Clay County officials. I echo the words shared in those letters that reiterate the importance of the historic bridge to Clay County's history, its people and its future.

A viable alternative has been made available to INDOT that would see Clay County Bridge, Indiana #046-11-01316C rehabilitated and preserved in place rather than separated and moved. This alternative affords protection of the structure's historic integrity and National Register-listed status which should be of paramount importance. I respectfully ask that you consider the comments of this letter and those of others received as you prepare to render an opinion on the requests before you.

Thank you for your time and for the opportunity to comment on this important matter.

Sincerely,

Tommy Kleckner

Tommy Kleckner, Director
Western Regional Office

Andrus, Patrick <patrick_andrus@nps.gov>

Clay County, Indiana Bridge #046-11-01316C

1 message

Vickie Mace <vmace72@gmail.com> Mon, Sep 14, 2015 at 2:22 PM
To: edson_beall@nps.gov, "Andrus, Patrick" <patrick_andrus@nps.gov>

Gentlemen,

Attached please find a letter from our County Historian in reference to the listed bridge.

Thank you for your consideration in this matter.

BGbridge Edited.docx
13K

I am writing this letter to request that you use careful consideration in changing the criteria of the National Register status of the State Road 46 Bridge in Clay County, Indiana. This bridge was placed on the National Register by local people for its importance in the crossing of the Eel River at Bowling Green, Indiana. We feel that the bridge project was handled very badly from the very beginning. No historic organization was contacted about the opportunity to have this bridge preserved in our county. INDOT claims to have contacted someone in Clay County; however, we have scoured the minutes of all the meetings of our county officials and found nothing was recorded on official record in regard to this topic. By keeping this bridge and all the remaining iron bridges in our county, we had hoped that they might be preserved for future generations to see how bridges used to be built. The fact is the only reason for the request to change the criteria is so the bridge, with all the federal money, goes to another area of the state, a place that does not care about the bridge's history and only wants a free bridge. The idea that things like this can be changed at the whim of a politician, or a state agency, would make me question whether it is beneficial to place anything on the National Register.

Jeffrey Koehler
Clay County Historian

2544 N County Road 200 E
Center Point, IN 47840