Marion County Bridge No. 2408F 16th Street over White River



2016

Engineering Scoping Report

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1.0 Project Location

The project is located on 16th Street approximately 1.6 miles west of Interstate 65 in Indianapolis, Marion County, Indiana. More specifically the bridge is located in Center Township, Sections 33 and 34, Range 5 East, and Township 16 North. A Project Location Map is provided in Appendix A.

2.0 Project Need and Purpose

The primary need for improvement is based on the deteriorated condition of the existing structure. This is evident by the spalling concrete in the arches, corbels, and bridge deck. The purpose of this project is to extend the life of the historic arch bridge and to improve the aesthetics of the deteriorated bridge.

3.0 Existing Conditions

3.1 Bridge

The City of Indianapolis Department of Public Works (DPW) has copies of the 1948 Original Construction Plans and 2015 Sidewalk Repair Plans, which are available upon request. No other plans are available. It is not known if there were other rehabilitations to the structure besides the 2015 sidewalk repair. It is noted that this bridge is listed on the Indiana Historic Bridge Inventory as a "Select" Bridge.

Butler, Fairman and Seufert, Inc. (BF&S) performed an onsite field inspection on March 8, 2016 to assess the condition of the existing bridge.

The bridge is a 5 Span Reinforced Concrete Arch Bridge with Earth Fill. It is supported by large concrete spread footings on untreated timber piles. Table 3.1 shows the components of the existing bridge.

Table 3.1: Components of Existing Bridge

Structure Type:	Reinforced Concrete Arch (Earth Filled)
Wearing Surface Type:	Asphalt Overlay over Reinforced Concrete
Substructure Type:	Concrete Spread Footings on Untreated Timber Piles
Skew:	20 ° Left
Total Out to Out Bridge Length:	687 feet ±
Number of Spans:	5 Spans
Span Lengths:	105, 110, 120, 110, 105 feet
Bridge Clear Roadway Width:	58 feet
Typical Section:	5 feet 2 inch Sidewalk, 3 feet Left Curb Offset, 4-12 Feet Travel Lanes, 4 feet Raised Median
Out to Out Bridge Deck Width :	71 feet
Bridge Railing Type:	Steel Railing with Concrete Posts

The structure was last inspected in July of 2015. According to the Structure Inventory and Appraisal (SI&A) Report, the sufficiency rating for the bridge is 49.9 and is classified as structurally sufficient and is not functionally obsolete. The bridge has a load rating of 20 tons.

The existing bridge deck consists of reinforced concrete pavement and it appears to have been overlaid with asphalt since the original construction. The condition of the concrete pavement is unknown since it covered by the asphalt overlay. The asphalt overlay is in poor condition with severe cracking and spalling, especially near the concrete curbs. Several asphalt patching locations were noted on the structure. The sidewalk and concrete curbs were recently repaired and are in fair condition.

The bridge railing is in fair condition. Portions of the railing were recently repaired; however, the steel portion of the rail is heavily rusted in most locations. It should be noted that the railing is not crash tested.

The reinforced concrete arch is in fair condition and according to the SI&A Report the superstructure has a 6 rating. There are isolated areas of heavy deterioration, leaching, and exposed reinforcing steel on the underside of the arch. The majority of the deterioration is near the bottom of the arch rings, which indicates water is present within the arch fill. The corbels below the sidewalk are badly deteriorated on both sides of the structure. The spandrel walls have some areas of cracking and leaching, but are in overall fair condition.

The substructure is in satisfactory condition and according to the SI&A Report the substructure has 5 rating. The underwater inspection noted a number of locations with spalls and exposed reinforcing steel. There was up to 20 percent section loss noted on Pier No. 5 and a spall with exposed reinforcing steel on Pier No. 3.

The channel was rated as a 6 and described as satisfactory according to the SI&A Report. There is heavy debris on the upstream side of Pier No. 2 and 4. The report also noted that the bridge was stable for scour and no exposed footings were noticed.

The existing plans show bridge lighting on the structure and conduit for the lighting running below the sidewalk. The lights appear to have been removed, the remnants of the lighting foundations were noted on the structure during the field check.

3.2 Roadway

The bridge was built on a 600 feet crest vertical curve with 1 percent grades. The bridge was built on a tangent and there is not a horizontal curve present. The approach roadway is also asphalt and the width varies from 58 feet on the bridge to approximately 78 feet on the west approach and approximately 62 feet on the east approach. The approach pavement is in fair condition with minor transverse and longitudinal cracking. There is no approach guardrail present on the west approach. There appears to be new guardrail with a curved guardrail end treatment in the southeast quadrant. This guardrail is in good condition. There is also guardrail

in the northeast quadrant that is in fair condition. The height of the guardrail does not appear to meet current Indiana Department of Transportation (INDOT) requirements for crashworthiness.

Approximately 250 feet west of the bridge lies the intersection of 16th Street and Pershing Avenue. Prior to the intersection, the approach roadway widens to allow for a dedicated southbound left turn lane at the intersection.

Approximately 150 feet east of the bridge lies the intersection of 16th Street and Waterway Boulevard. Waterway Boulevard ends at 16th Street and there is no roadway north of 16th Street.

The White River Multi-Use Trail runs along the east side the White River. There is a dedicated crossing with ADA compliant curb ramps for the trail approximately 125 feet from the east end of the bridge. There is also a concrete median planter with landscaping prior to the trail crossing.

3.3 Traffic Data

See Table 3.2 below for traffic data along 16th Street at the location of the bridge. The 2011 traffic data information was obtained from INDOT Interactive Traffic Count Map. A 2 percent annual growth rate was assumed to determine the 2017 and 2037 traffic data.

Table 3.2 16th Street Traffic Data

Year:	AADT:	DHV:	Commercial Vehicles:
2011	13,805	-	6.6 % of AADT
2017	15,547	-	
2037	23,102	-	

4.0 Early Coordination

Early Coordination Letters were sent to various agencies and other potentially affected parties. A list of all Early Coordination Letter recipients is provided in Appendix D. Recipients were given a 30 day comment period to respond, which will end April 7, 2016. After that date any responses received will be forwarded to the design engineer.

5.0 Environmental Impacts

A Red Flag Investigation (RFI) was conducted on the project vicinity, covering a 0.5 mile radius around the project area. The purpose of this RFI was to identify potential environmental issues which merit further consideration. The RFI consisted of a review of available Geographic Information System (GIS) data layers provided by IndianaMap and the Indiana Geological

Survey and additional data sources including the Indiana Department of Environmental Management (IDEM) Virtual Filing Cabinet (VFC), the Indiana Historic Sites and Structures Inventory (IHSSI), the Indiana Historic Bridge Inventory, and the Indiana Natural Heritage Database. Two infrastructure resources, one water resource, and one cultural resource were found to be of potential concern.

5.1 Infrastructure

The White River Trail is mapped approximately 0.02 mile east of the project area. Lake Indy is mapped approximately 0.01 mile north of the project area. Coordination with the Indy Parks and Recreation Department to determine impacts, including possible temporary closure of the White River Trail, would be necessary.

5.2 Water Resources

The White River flows through the project limits, and is impaired for mercury and polychlorinated biphenyls. It is recommended the Contractor be notified of the impaired status of the river and a Health and Safety Plan be prepared. Proper Personal Protective Equipment should be used throughout construction. It is anticipated an IDNR Construction in a Floodway Permit, a Section 401 Water Quality Certification from the Indiana Department of Environmental Management and a Section 404 Dredge and Fill Permit from the US Army Corps of Engineers will be required.

5.3 Mining/Mineral Exploration

No mining or mineral resources were located within 0.5 mile of the project area.

5.4 Hazardous Materials

A total of 24 hazardous material sites were located within 0.5 mile of the project area. Given the scope of work proposed, the status of these sites, and their distance from the project area, no impacts would be anticipated. No additional investigation regarding hazardous waste sites appears to be warranted.

5.5 Ecological Species

Seven mussel species, one insect species, one fish species, four reptile species, eight bird species, one mammal species, and five plant species present in Marion County were listed as rare, threatened, or endangered. Early coordination with the U.S. Fish and Wildlife Service and the Indiana Department of Natural Resources regarding potential impacts will be necessary.

5.6 Cultural Resources

The 16th Street Bridge is designated a “Select” bridge in the Indiana Historic Bridge Inventory, and is listed in the National Register of Historic Places as part of the Indianapolis Parks and Boulevard System. It is recommended the project be evaluated by a DHPA-Qualified Professional and the results provided to the State Historic Preservation Officer for review to

complete the Section 106 process. It is anticipated a Section 4(f) Bridge Alternatives Analysis in accordance with the Project Development Process for Select Bridges outlined in 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, will be necessary.

6.0 Right of Way

BF&S has performed an initial property research and has identified the parcels that would be potentially within the project limits. The properties are situated in Section 33 and 34, Township 16 North, Range 3 East and they can be seen on the Right of Way Parcel Map in Appendix F.

The apparent existing right of way for 16th Street over the White River, as shown on the City GIS website (maps.indygov.org), is generally 5 feet off the existing edge of pavement but does have some variability. There appears to be sufficient right of way to complete this project, except in the northwest quadrant. A small amount of right of way may be required for approach work.

Additional research during the design phase will be required to determine the exact limits of existing right of way and the limits of right of way acquisition that will be required for this project.

7.0 Permits

Any work below the ordinary high water mark of the White River or within a jurisdictional wetland will require a Section 401/404 Water Quality Permit from the United States Army Corps of Engineers and IDEM. Impacts to water resources greater than 0.1 acres or 300 linear feet may require additional coordination with the regulatory agencies, and possibly mitigation.

A Rule 5 Permit from IDEM will be required if more than one acre of land disturbing activities are anticipated.

The drainage area at the bridge is 1288 square miles and the 100 year flow is 48,300 cfs, per the United States Geological Survey. Since this drainage area is greater than 1 square mile, an IDNR Construction in a Floodway Permit is required. See Appendix K for Hydraulic References.

A Notification of Demolition and Renovation Operations State Form 44593 (R2/8-99) shall be submitted to IDEM prior to any demolition activity.

A Flora Permit will be required to be submitted to the City of Indianapolis if there is any tree planting, tree removal, and landscaping that takes place within the city's right of way.

8.0 Utilities

Indiana 811 was contacted on April 6, 2016 by BF&S and a request was submitted for the utilities within the project limits to be located. During the field visit on March 8, 2015, BF&S noted the following utilities within or near the project limits: stream gage station, a manhole to service the telephone lines and a storm sewer man hole. The existing plans show four fiber optic conduits, eight telephone conduits, two water mains, and an electrical conduit for the existing lighting on the bridge buried within the bridge fill. There is a manhole located near Pier No. 4 that services the telephone conduits.

9.0 Level One Design Criteria

This segment of 16th Street should follow the INDOT 3R Geometric Design Criteria for a four lane Urban Principal Arterial. The surrounding area is a mixture of residential, industrial, and commercial development, so it would be classified as Intermediate Urban area. The guidelines for an Urban Arterial with four or more lanes are detailed in Indiana Design Manual (IDM) Figure 55-3E. Table 9.1 below summarizes the minimum design criteria that should be used for this project.

Table 9.1 Minimum Design Guidelines for 16th Street

Functional Classification:	Urban Arterial (Intermediate)
Design Speed:	35 mph
Min. Travel Lane Width:	11 feet
Min. Curb Offset:	1 feet
Min. Paved Shoulder Width:	1 feet (Right), 2 feet (Left)
Min. Stopping Sight Distance:	250 feet
Min. Sidewalk Width:	4 feet
Max. Grade:	9 percent
Min. Raised Island Median Width:	2 feet

It is anticipated that all Level One Design Criteria will be met for this project. A Proposed Typical Section of the Bridge can be found in Appendix H.

10.0 Construction Recommendations

A major rehabilitation of the existing concrete arch bridge is recommended to extend the life of the structure and to maintain safe thoroughfare over the White River. It is anticipated that federal funds will be used for this project; therefore, the project will be designed using the Level One Design Criteria of IDM Figure 55-3E. See Appendix H for the proposed typical section on the bridge. The designer will also need to adhere to the INDOT Historic Programmatic Agreement or conduct a full NEPA Section 106 review as previously stated. The recommended repairs to the structure are detailed below.

10.1 Bridge Scope of Work

The recommended repair items for the bridge are listed below:

- Patch and clean any areas with exposed reinforcement and deteriorated portions of the concrete arch ring, spandrel walls, abutments, and piers. Attach galvanic anodes to the exposed reinforcing steel, prior to placing the concrete patch. This will serve as cathodic protection for the existing reinforcing steel and extend the life of the structure.
- Remove all of the arch fill and replace with Structure Backfill, Type 3. Place a Waterproofing Membrane System on the top of the arch ring to protect the arch from further deterioration.
- Improper drainage of the arch appears to have had a big contribution to the current condition of the deteriorated structure. Add 6 inch Perforated PVC Pipes running longitudinally along the entire length of the arch ring, one on each side. These pipes should connect into a pipe at the bottom of the arch rings running transversely along the width of the arch, and should outlet at the bottom of the arch rings.
- Due to the bridge being classified as a "Select" structure on the Historic Registry, remove and replace the bridge railing in-kind. The historic railing is not crash tested and a crash worthy railing should be placed in front of the sidewalk to protect motorists and pedestrians. Recommend using a George Washington Parkway Memorial Bridge Railing, since it has been used previously on DPW historic bridge projects and has been viewed favorably with the historic agencies and consulting parties.
- Remove and replace concrete bridge deck with 8 inches of Class C Concrete over 9 inches of Subbase for PCCP.
- Add approximately 6 Type SQ Deck Drains adjacent to the sidewalk on each side of the structure. Exact number of drains should be finalized during the design phase.
- The historical agencies and consulting parties will likely request that bridge lighting be put back on the structure. Place 4 Washington Style Lights on the structure, one in each quadrant.
- Remove and replace cantilevered concrete sidewalk and corbels in kind. Remove and replace approximately 5 feet of the spandrel wall from the bottom of the sidewalk, to make the new cantilevered sidewalk integral with the spandrel wall. Use field drilled holes or clean and straighten the existing reinforcing to connect the existing and proposed portions of the spandrel wall.
- The bridge deck, raised median, the curb for the George Washington Bridge Railing, sidewalk, the concrete posts for the historic railing shall be surface sealed.
- The bottom of footing for the piers are approximately 10 feet below the flowline elevation. Due to the scour depth at the bridge being unknown, assume that the bridge would be classified as scour critical during the design phase. Add riprap and geotextile around the piers and abutments per INDOT Scour Requirements.
- The channel should be cleared of all debris and vegetation within the bridge limits. Any large trees in the channel, and within the right of way limits, should be removed.

10.2 Roadway Scope of Work

The recommended approach work items are listed below:

- The proposed bridge deck will be approximately 1.5 inches higher than the existing approach pavement due to a cross slope change from 1.5 percent to 2 percent. Assume a 90 feet wedge and level will be used to transition the approach pavement.
- The guardrail and guardrail end treatment in the southeast quadrant appears to be relatively new, in good condition, and meets current INDOT requirements for guardrail. This should be removed during construction and re-installed after construction is complete.
- The guardrail in the northeast quadrant is in poor condition and appears to not meet the current INDOT height requirements for guardrail. This should be removed and replaced with a Guardrail Transition, Type TGB, W-beam Guardrail and a Type OS End Treatment.
- Guardrail is not required in the northwest quadrant because it is outgoing and outside the clear zone for approaching traffic.
- A Guardrail Transition, Type TGB, W-Beam Guardrail and a Type OS End Treatment should be added to the southwest quadrant.

10.3 Traffic Maintenance

It is recommended to close the 16th Street Bridge during construction and employ a detour route to redirect traffic. Closing the bridge during construction would shorten the construction time frame, making the project more economical than building in phases. Also, since the arch fill is being replaced, it would be extremely difficult and expensive for the Contractor to place the fill in phases. The recommended detour route is North White River Parkway West Drive to 10th Street to Indiana Ave. to 16th Street. The approximate length of the detour is 2.5 miles. The recommended detour route was selected utilizing roadways with Arterial Functional Classifications.

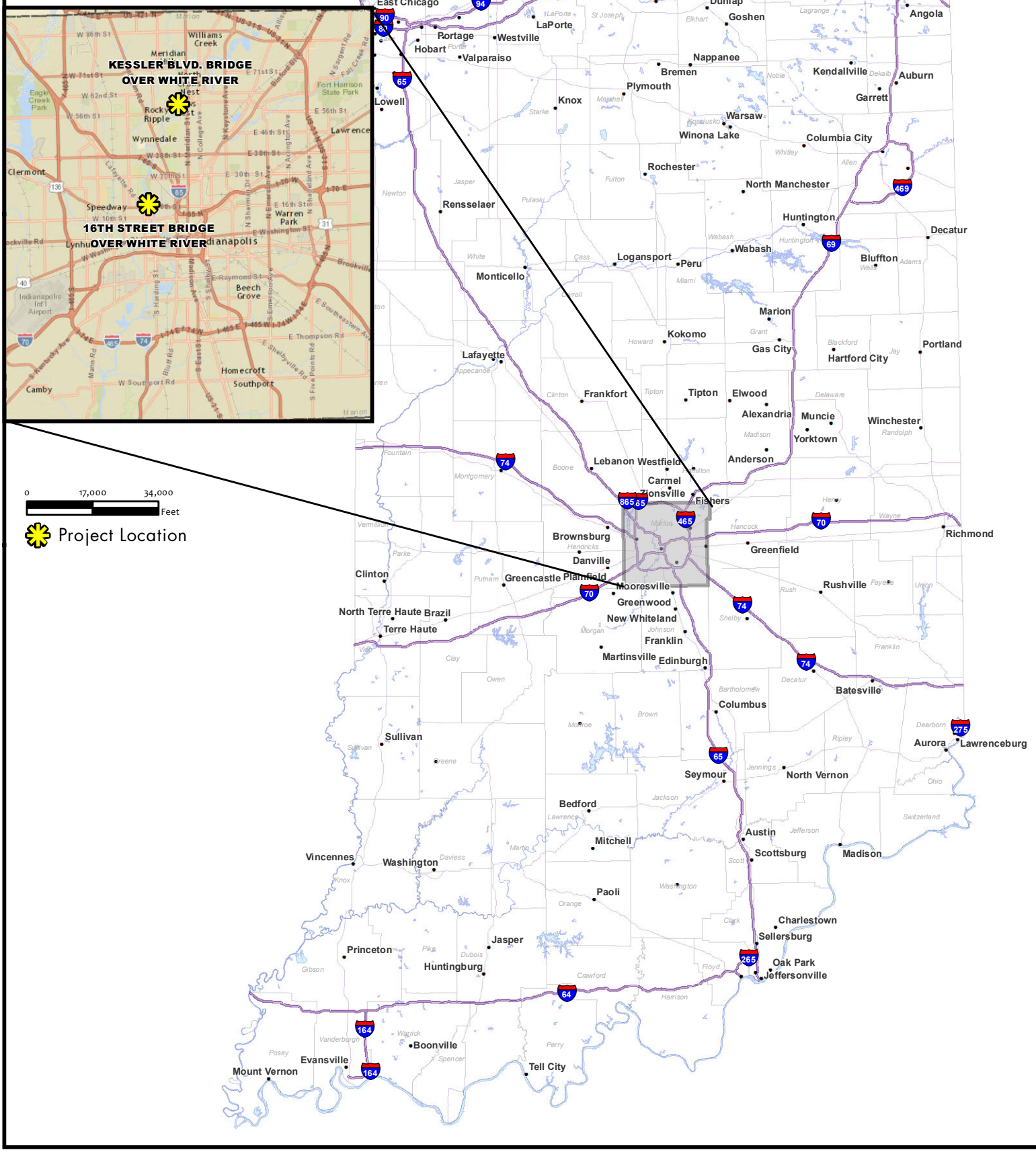
The intersection of North Pershing Avenue and 16th Street should remain open during construction. The intersection of 16th Street and Waterway Boulevard should also remain open during construction. The Contractor would likely access the channel in the southeast quadrant, and a portion of the White River Trail may need to be closed to facilitate the Contractor accessing the channel.

Although the bridge is located near a waterfall dam, the White River still has potential for boat traffic. The Contractor shall be responsible for maintaining waterway traffic and keeping waterway motorists safe. It is proposed to leave one bridge span open at all times to allow for boat traffic to continue through the structure.

11.0 Cost Estimate

The opinion of probable total construction cost to rehabilitate the bridge is $6,500,000. Refer to Appendix J for computations of the opinion of probable construction cost. The costs are based on 2015 unit prices. The cost includes the bridge rehabilitation, maintenance of traffic, and a 20 percent contingency. It is noted that costs for right of way acquisition, utility relocation, construction inspection, and design engineering are not included in the above cost.

Appendix A – State, Quad, & Aerial Maps

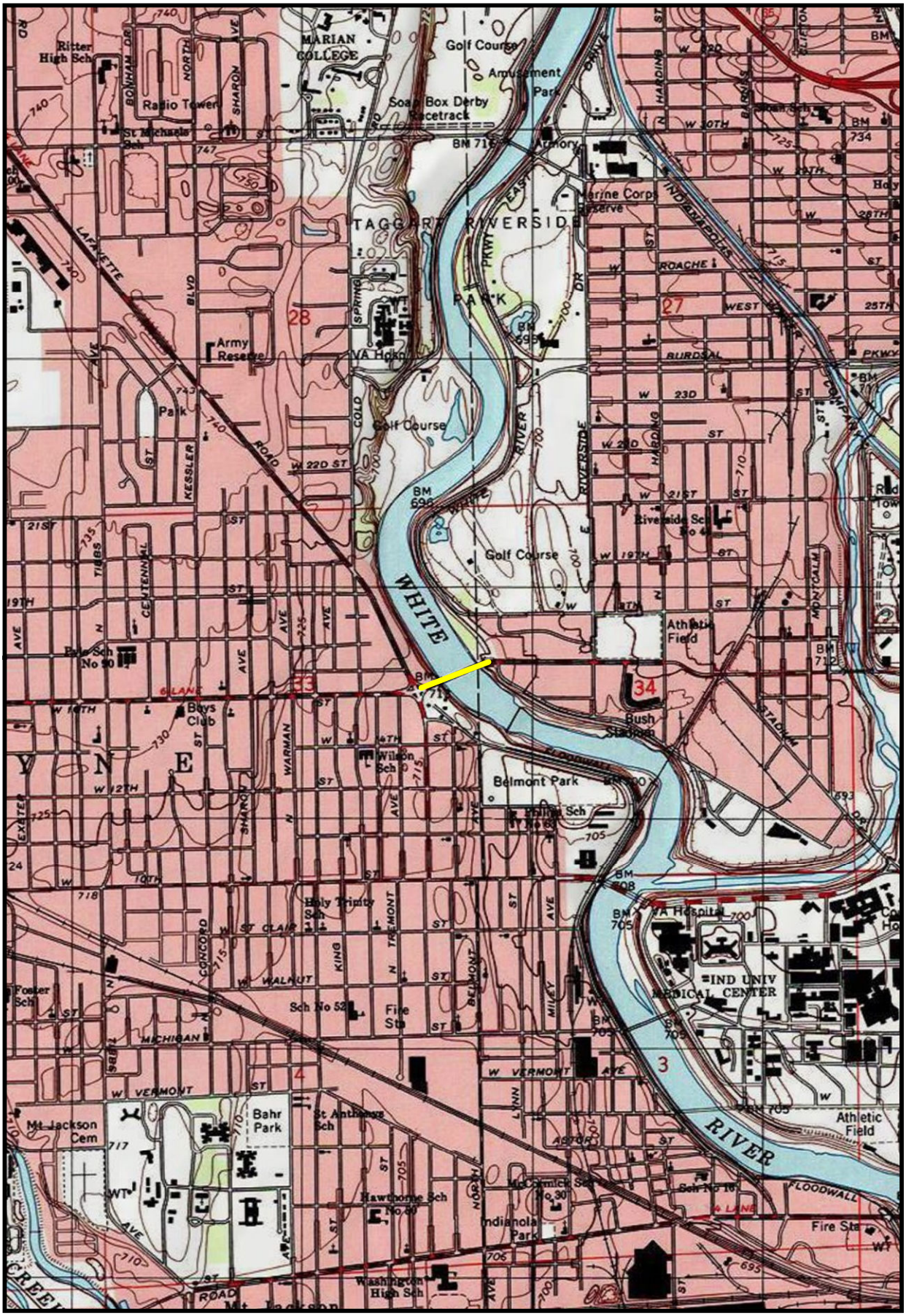


State Map

16th Street Bridge & Kessler Blvd. Bridge over White River
City of Indianapolis, Marion County, Indiana

Map Source: Indiana Map

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Legend

Project Area

0 750 1,500 3,000 Feet

USGS Indianapolis West Quadrangle

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

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Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

Project Area

0 187.5 375 750

Feet

Aerial Map

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

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Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.

Appendix B – Photographs



Photograph 1: Bridge Deck Looking East



Photograph 2: Deteriorated Corbel



Photograph 3: North Side of Pier No. 2, with Heavy Delamination and Debris Build-Up



Photograph 4: South Side of Pier No. 2



Photograph 5: Span A, Looking Northeast



Photograph 6: Stream Gage Station



Photograph 7: Span E, Looking Northwest



Photograph 8: Bridge Deck, Looking West

Appendix C – Structure Inventory and Appraisal Report (2015)

Bridge Inspection Report

49-2408F
16TH STREET
over
WHITE RIVER



Inspection Date: 07/24/2015

Inspected By: Kathryn Gillette

Inspection Type(s): Underwater

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IDENTIFICATION

(1) STATE CODE:	**185 - Indiana**
(8) STRUCTURE:	**4900207**
(5 A-B-C-D-E) INV. ROUTE:	**1 - 5 - 1 - 00000 - 0**
(2) HIGHWAY AGENCY DISTRICT:	**03 - Greenfield**
(3) COUNTY CODE:	**049 - MARION**
(4) PLACE CODE:	**36000 - INDIANAPOLIS**
(6) FEATURES INTERSECTED:	**WHITE RIVER**
(7) FACILITY CARRIED:	**16TH STREET**
(9) LOCATION:	**00.15 E OF LAFAYETTE ROAD**
(11) MILEPOINT:	**0000.000**
(12) BASE HIGHWAY NETWORK:	**1**
(13A) INVENTORY ROUTE:	**0000000001**
(13B) SUBROUTE NUMBER:	**01**
(16) LATITUDE:	**39.78877**
(17) LONGITUDE:	**-86.197792**
(98) BORDER	
A) STATE NAME:	
B) PERCENT	**%**
(99) BORDER BRIDGE STRUCT. NO:	

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE, MAIN:	
A) KIND OF MATERIAL/DESIGN:	**1 - Concrete**
B) TYPE OF DESIGN/CONSTR:	**11 - Arch - Deck**
(44) STRUCTURE TYPE, APPROACH SPANS:	
A) KIND OF MATERIAL/DESIGN:	**0 - Other**
B) TYPE OF DESIGN/CONSTR:	**00 - Other**
(45) NUMBER OF SPANS IN MAIN UNIT:	**005**
(46) NUMBER OF APPROACH SPANS:	**0000**
(107) DECK STRUCTURE TYPE:	**N - Not Applicable**
(108) WEARING SURFACE/PROT SYS:	
A) WEARING SURFACE:	**1 - Monolithic Concrete (concurrently placed with structural deck)**
B) DECK MEMBRANE:	**0 - None**
C) DECK PROTECTION:	**0 - None**

AGE OF SERVICE

(27) YEAR BUILT:	**1946**
(106) YEAR RECONSTRUCTED:	**0000**
(42) TYPE OF SERVICE:	
A) ON BRIDGE:	**5 - Highway-pedestrian**
B) UNDER BRIDGE:	**5 - Waterway**
(28) LANES:	
A) ON BRIDGE:	**04**
B) UNDER BRIDGE:	**00**
(29) AVERAGE DAILY TRAFFIC:	**029785**
(30) YEAR OF AVERAGE DAILY TRAFFIC:	**2014**
(109) AVERAGE DAILY TRUCK TRAFFIC:	**05 %**
(19) BYPASS DETOUR LENGTH:	**003 MI**

GEOMETRIC DATA

(48) LENGTH OF MAX SPAN:	**0126.0 FT**
(49) STRUCTURE LENGTH:	**00587.0 FT**
(50) CURB/SIDEWALK WIDTHS:	
A) LEFT	**05.3 FT**
B) RIGHT:	**05.3 FT**
(51) BRDG RDWY WIDTH CURB-TO-CURB:	**054.0 FT**
(52) DECK WIDTH, OUT-TO-OUT:	**071.0 FT**
(32) APPROACH ROADWAY	**067.0 FT**
(33) BRIDGE MEDIAN:	**2 - Closed median (no barrier)**
(34) SKEW:	**20 DEG**
(35) STRUCTURE FLARED:	**0 - No flare**
(10) INV RTE, MIN VERT CLEARANCE:	**99.99 FT**
(47) TOT HORIZ CLEARANCE:	**054.0 FT**
(53) VERT CLEAR OVER BR RDWY:	**99.99 FT**
(54) MIN VERTICAL UNDERCLEARANCE:	
A) REFERENCE FEATURE:	**N**
B) MIN VERT UNDERCLEAR:	**0 FT**
(55) LATERAL UNDERCLEARANCE RIGHT:	
A) REFERENCE FEATURE:	**N**
B) MIN LATERAL UNDERCLEAR:	**000.0 FT**
(56) MIN LATERAL UNDERCLEAR ON LEFT:	**000.0 FT**

INSPECTIONS

(90) INSPECTION DATE:	**08/14/2014**
(92) CRITICAL FEATURE INSPECTION:	
A) FRACTURE CRITICAL REQUIRED/FREQUENCY:	**N**
B) UNDERWATER INSPECTION REQUIRED/FREQUENCY:	**Y 48**
C) OTHER SPECIAL INSPECTION REQUIRED/FREQUENCY:	**N**
(91) DESIGNATED INSPECTION FREQUENCY:	**24 MONTHS**
(93) CRITICAL FEATURE INSPECTION DATE:	
A) FRACTURE CRITICAL DATE:	
B) UNDERWATER INSP DATE:	**07/24/2015**
C) OTHER SPECIAL INSP DATE:	

CONDITION

(58) DECK:	**N - Not Applicable**
(58.01) WEARING SURFACE:	**N - Not Applicable**
(59) SUPERSTRUCTURE:	**6 - Satisfactory Condition (minor deterioration)**
(60) SUBSTRUCTURE:	**5 - Fair Condition (minor section loss)**
(61) CHANNEL/CHANNEL PROTECTION:	**6 - Bank slump. widespread minor damage**
(62) CULVERTS:	**N - Not Applicable**

CONDITION COMMENTS

(58) DECK: **N - Not Applicable**

Comments:
N/A
Material:
N/A

(58.01) WEARING SURFACE: **N - Not Applicable**

Comments:
N/A
Material:
N/A

(59) SUPERSTRUCTURE: **6 - Satisfactory Condition (minor deterioration)**

Comments:
SATISFACTORY - SOUTH SIDEWALK HAS NUMEROUS HOLES WITH THE LARGEST BEING 2 FEET BY 1 FOOT. CURB SPALLED WITH EXPOSED STEEL. BRIDGE RAIL RUSTED, DETERIORATED AND DAMAGED. APPROXIMATELY 12 FEET OF MISSING BRIDGE RAIL ON SOUTH COPING THAT IS PROTECTED WITH TEMPORARY CONCRETE BARRIER RAIL. SPANDREL WALLS ARE CRACKED WITH LEACHING, SPALLING AND EXPOSED STEEL. SOME SIDEWALK CORBELS ARE HEAVILY DETERIORATED. AREA OF HEAVY SPALLING WITH EXPOSED STEEL ON UNDERSIDE OF SIDEWALK OVERHANGS, ARCH AND ARCH RING.
Material:
REINFORCED CONCRETE ARCH

(60) SUBSTRUCTURE: **5 - Fair Condition (minor section loss)**

Comments:
FAIR - ENDS OF PIERS DETERIORATED. SPALLS AT PIER CAP TYPICAL UNDER DRAINS WITH EXPOSED REBAR, CRACKING, EFFLORESCENCE. UP TO 20% SECTION LOSS IN STEEL REBAR AT PIER NO. 5.
Material:
CONCRETE

(61) CHANNEL/CHANNEL PROTECTION **6 - Bank slump. widespread minor damage**

Comments:
SATISFACTORY - HEAVY DEBRIS AT PIERS 2 AND 4.
Material:
EARTH

(62) CULVERTS: **N - Not Applicable**

Comments:
N/A
Material:
N/A

LOAD RATING AND POSTING

(31) DESIGN LOAD:	**4 - H 20**	(66) INVENTORY RATING:	**27**
(70) BRIDGE POSTING	**5 - Equal to or above legal loads**	(65) INVENTORY RATING METHOD:	**0 - Field evaluation and documented engineering judgment**
(41) STRUCTURE OPEN/POSTED/CLOSED:	**A - Open**	(66B) INVENTORY RATING (H):	**20**
(64) OPERATING RATING:	**36**	(66D) DATE POSTED/CLOSED:	
(63) OPERATING RATING METHOD:	**0 - Field evaluation and documented engineering judgment**		

APPRAISAL

SUFFICIENCY RATING:	**49.9**	(36) TRAFFIC SAFETY FEATURE:	
STATUS:	**0**	36A) BRIDGE RAILINGS:	**0**
(67) STRUCTURAL EVALUATION:	**5**	36B) TRANSITIONS:	**0**
(68) DECK GEOMETRY:	**4**	36C) APPROACH GUARDRAIL:	**0**
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL:	**N**	36D) APPROACH GUARDRAIL ENDS:	**0**

(71) WATERWAY ADEQUACY: **8 - Bridge Above Approaches**
Comments:
APPEARS ADEQUATE

(72) APPROACH ROADWAY ALIGNMENT: **6 - Equal to present minimum criteria**
Comments:
Material:
BITUMINOUS
72: LEVEL, HORIZONTAL CURVES AT ENDS.

(113) SCOUR CRITICAL BRIDGES: **8 - Stable for scour conditions**
Comments:
SCOUR IS ABOVE TOP OF FOOTING (NO FOOTING EXPOSED)

CLASSIFICATION

(20) TOLL:	**3 - On Free Road**	(21) MAINT. RESPONSIBILITY:	**04 - City or Municipal Highway Agency**
(22) OWNER:	**04 - City or Municipal Highway Agency**	(26) FUNCTIONAL CLASS OF INVENTORY RTE:	**14 - Urban - Other Principal Arterial**
(37) HISTORICAL SIGNIFICANCE:	**2 - Eligible for National Register**	(100) STRAHNET HIGHWAY:	**Not a STRAHNET route**
(101) PARALLEL STRUCTURE:	**N - No parallel structure**	(102) DIRECTION OF TRAFFIC:	**2-way traffic**
(103) TEMPORARY STRUCTURE:		(104) HIGHWAY SYSTEM OF INVENTORY ROUTE:	**1 - Structure/Route is on NHS**
(105) FEDERAL LANDS HIGHWAYS:	**0-Not Applicable**	(110) DESIGNATED NATIONAL NETWORK:	**Inventory route on National Truck Network**
(112) NBIS BRIDGE LENGTH:	**Yes**		

NAVIGATION DATA

(38) NAVIGATION CONTROL:	**0 - No navigation control on waterway (bridge permit not required)**	(39) NAVIGATION VERTICAL CLEAR:	**000.0 FT**
		(116) MINIMUM NAVIGATION VERT. CLEARANCE, VERT. LIFT BRIDGE:	**FT**
(111) PIER OR ABUTMENT PROTECTION:		(40) NAV HORIZONTAL CLEARANCE:	**0000.0 FT**

PROPOSED IMPROVEMENTS

(75A) TYPE OF WORK:	**35 - Rehabilitation - Deterioration**	(95) ROADWAY IMPROVEMENT COST:	**$ 000450**
(75B) WORK DONE BY:	**1 - Work to be done by contract**	(96) TOTAL PROJECT COST:	**$ 002550**
(76) LENGTH OF IMPROVEMENT:	**000587 FT**	(97) YR OF IMPROVEMENT COST EST:	**2014**
(94) BRIDGE IMPROVEMENT COST:	**$ 002100**	(114) FUTURE AVG DAILY TRAFFIC:	**036344**
		(115) YR OF FUTURE ADT:	**2034**



PHOTO 1 Elevation

Description South Elevation of Bridge



PHOTO 2 Elevation

Description North Elevation of Bridge



PHOTO 3 Other

Description Channel Looking North



PHOTO 4 Other

Description Channel Looking South



PHOTO 5 Other

Description Northwest Embankment



PHOTO 6 Other

Description Northeast Embankment



PHOTO 7 Other

Description Southwest Embankment



PHOTO 8 Other

Description Southeast Embankment



PHOTO 9 Elevation

Description West Elevation Pier No. 2



PHOTO 10 Elevation

Description East Elevation Pier No. 2



PHOTO 11 Elevation

Description West Elevation Pier No. 3



PHOTO 12 Elevation

Description East Elevation Pier No. 3



PHOTO 13 Elevation

Description West Elevation Pier No. 4



PHOTO 14 Elevation

Description East Elevation Pier No. 4



PHOTO 15 Elevation

Description West Elevation Pier No. 5



PHOTO 16 Elevation

Description East Elevation Pier No. 5



PHOTO 17 Elevation

Description West Elevation Abutment No. 6



PHOTO 18 Condition

Description Pier No. 2 Cap Spall, Crks, & Efflo.



PHOTO 19 Condition

Description Pier No. 2 Spall w/ Efflo



PHOTO 20 Condition

Description Timber Debris @ US Nose Pier No. 4



PHOTO 21 Condition

Description Spall, Exp Rebar, Stain. US Nose Pier 3



PHOTO 22 Condition

Description Spalls, Efflo, Staining DS E El. Pier 2



PHOTO 23 Condition

Description S. Side of Span B, Spall w/ Exp Rebar

Date Reported: 08/14/2014

Priority:

Work Code:

Deficiency Description:

Work Description:

REHABILITATE STRUCTURE. REMOVE RAILING AND SIDEWALKS, REPLACE THE SPANDREL WALLS, REPLACE A PORTION OF THE ARCH RINGS AND PLACE A CONCRETE DECK WITH BRIDGE RAIL AND SIDEWALKS.

Date Repairs Completed:

Maintenance Comments:

UNTIL REHABILITATED, INSTALL STANDARD BRIDGE RAIL AND APPROACH RAIL WITH END TREATMENTS. REPAIR HOLES IN SIDEWALKS AND DAMAGED RAIL. CLEAN DECK. CLEAR VEGETATION UNDER BRIDGE. CLEAR DEBRIS IN CHANNEL.

Appendix D – Early Coordination Letter

March 7, 2016

This letter was sent to the attached.

RE: Engineering Scoping Report; 16th Street Bridge over the White River, Indianapolis, Marion County, Indiana

Dear:

The City of Indianapolis Department of Public Works is developing a project to rehabilitate the 16th Street Bridge (Marion County Bridge No. 2408F) crossing the White River. The 16th Street Bridge is located in Sections 33 and 34, Township 16 North, Range 3 East of the USGS Indianapolis West Quadrangle, within the City of Indianapolis, Wayne and Center Townships, Marion County, Indiana. Information on potential impacts is being sought to inform an Engineering Scoping Report.

The 16th Street Bridge is a reinforced concrete arch bridge constructed in 1946. The bridge is listed on the National Register of Historic Places as a contributing resource to the Indianapolis Park and Boulevard System. The bridge is also classified as a "Select" bridge in the Indiana Historic Bridge Inventory.

Work to the 16th Street Bridge would include patching to the underside of the arch ring and installation of cathodic protection, which would likely include the use of a temporary causeway. The bridge deck, sidewalks, railings, and corbels would be replaced in-kind. Portions of the spandrel walls would be reconstructed. Work may also occur up to approximately 100 feet on the approaches for the purpose of tying-in to the existing roadway. Construction will likely take place in phases under traffic, with no road closure taking place. This scope of work is preliminary and will be refined after the design is sent to bid by the Department of Public Works.

The purpose of this project is to address the ongoing deterioration of the 16th Street Bridge. The need derives from the condition of the bridge and the desire to maintain a historic "Select" bridge. There is spalling, leaching and exposed steel on the underside of the arch and spandrel walls. The ends of the piers are spalling, and the east and west piers have scour buildup. The sidewalks and rail have expanses of rusting, exposed steel, and spalling.

The following preliminary environmental concerns have been identified:

- *It is anticipated an Indiana Department of Natural Resources Construction in a Floodway Permit will be required*
- *It is anticipated a Section 401 Water Quality Certification from the Indiana Department of Environmental Management will be required*

- *It is anticipated a Section 404 Dredge and Fill Permit will be required from the U.S. Army Corps of Engineers*
- *The 16th Street Bridge is a "Select" bridge in the Indiana Historic Bridge Inventory. It is anticipated a Section 4(f) Bridge Alternatives Analysis in accordance with 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, will be necessary*
- *The 16th Street Bridge is listed on the National Register of Historic Places within a historic district. Completion of the Section 106 process by a Qualified Professional will take place*
- *It is anticipated tree clearing for construction access will be necessary, and therefore mitigation may be required. For every removed tree of two-inch diameter-at-breast height (dbh) or greater, five trees of at least 2 dbh would be planted*
- *The White River is under advisory for elevated levels of mercury and polychlorinated biphenyls (PCBs). It is anticipated a Health and Safety Plan for construction will be needed*
- *The White River Trail crosses 16th Street just east of the bridge. Subject to the final scope of work, temporary closure of this crossing may be necessary*

Additional project information is enclosed. Please respond with any comments within 30 days so project planning can proceed as scheduled. If we have not received a response within 30 days, we will assume you have no comments. Project information and graphics are enclosed. If you have any questions, do not hesitate to contact this office.

Thank you for your consideration of this request.

Sincerely,

BUTLER, FAIRMAN and SEUFERT, INC.

Elizabet Biggio
ebiggio@bfsengr.com

EB:lm

Enclosures
State Map
USGS Indianapolis West Quadrangle Map
Red Flag Investigation Infrastructure Map
Red Flag Investigation Water Map

Red Flag Investigation Mining and Mineral Exploration Map
Red Flag Investigation Hazmat Map
Red Flag Investigation SHAARD Map
Excerpt from the Marion County Interim Report
Excerpt from the Indianapolis Park and Boulevard System National Register Nomination
Indiana County Endangered, Threatened and Rare Species List
Excerpt from the IPaC Trust Resource Report
Soil Map
Structure Inventory and Appraisal Report
Additional Photographs

Copy:
Richard J. Marquis, Federal Highway Administration
Karstin Carmany-George, INDOT Greenfield District
Christie Stanifer, IDNR Division of Water, Environmental Unit
Ernest Quintana, National Park Service
Robin McWilliams, U.S. Fish and Wildlife Service
Jane Hardisty, Natural Resources Conservation Service
James W. Kinder, INDOT Office of Aviation
Nancy Hasenmueller, Indiana Geological Survey
Paul M. Leffler, U.S. Army Corps of Engineers
Steve Vahl, US Department of Housing and Urban Development
Anna Gremling Indianapolis Metropolitan Planning Organization
Chad Slider, Indiana Division of Historic Preservation and Archeology
Andre Denman, Indianapolis Department of Parks & Recreation
David Baker, Indianapolis Historic Preservation Commission
Scott Martin, Indianapolis Public Schools
Emily Mack, Indianapolis Department of Metropolitan Development
Dawn Snyder, Indianapolis Metropolitan Police
David Hofmann, Indianapolis Metropolitan Police
Sheriff John R. Layton, Marion County Sheriff's Office
Ernest Malone, Indianapolis Fire Department
Raina Regan, Indiana Landmarks
David G. Vanderstel, Marion County Historian
William L. McNiece, Marion County Historical Society
John Herbst, Indiana Historical Society
Chandler Lighty, Indiana Historical Bureau
Jason Shelley, American Institute of Architects, Indiana
Philip Scarpino, IUPUI Department of History
Beuford Hall, Wayne Township Historical Society

Mr. Richard J. Marquis
Acting Division Administrator
Federal Highway Administration
Federal Building, Room 254
575 North Pennsylvania Street
Indianapolis, IN 46204-1576

Ms. Karstin Carmany-George
Environmental Manager
INDOT Greenfield District
32 South Broadway
Greenfield, IN 46140

Ms. Christie Stanifer
Environmental Coordinator
Division of Water, Environmental Unit
Indiana Department of Natural Resources
402 West Washington Street, W-264
Indianapolis, IN 46204-2641

Mr. Ernest Quintana
Regional Director, Midwest Regional Office
National Park Service
601 Riverfront Drive
Omaha, NE 68102

Ms. Robin McWilliams, Supervisor
U.S. Fish and Wildlife Service
Bloomington Field Office
620 South Walker Street
Bloomington, IN 47403-2121

Ms. Jane Hardisty
State Conservationist
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indianapolis, IN 46278

Mr. Paul M. Leffler
Project Manager
U.S. Army Corps of Engineers
Chicago District Regulatory Branch
231 S. LaSalle Street, Suite 300
Chicago, IL 60604

Ms. Nancy Hasenmueller
Indiana Geological Survey
Environmental Geology Section
611 North Walnut Grove
Bloomington, IN 47405

Mr. Steve Vahl
Regional Environmental Officer
Chicago Regional Office
US Department of Housing and Urban Development
Metcalf Fed. Bldg.
77 W. Jackson Blvd. Room 2401
Chicago, IL 60604

Mr. James W. Kinder
Chief Airport Inspector
INDOT Office of Aviation
Room N955, IGC North
100 North Senate Avenue
Indianapolis, IN 46204-2891

Ms. Emily Mack, Director
Indianapolis Department of Metropolitan Development
City-County Building
200 E. Washington St. Suite 2042
Indianapolis, IN 46204

Ms. Anna Gremling
Executive Director
Indianapolis Metropolitan Planning Organization
200 East Washington Street, Suite 1922
Indianapolis, IN 46204

Mr. Chad Slider
Assistant Director for Environmental Review
Division of Historic Preservation and Archeology
Indiana Department of Natural Resources
402 West Washington Street, Room 274
Indianapolis, IN 46204

Mr. Andre Denman
Principal Parks & Greenways Planner
Indianapolis Department of Parks & Recreation
City-County Building 1868
200 E. Washington St.
Indianapolis, IN 46204

Mr. David Baker, Administrator
Indianapolis Historic Preservation Commission
200 East Washington Street
Indianapolis, IN 46204

Ms. Dawn Snyder
Commander, Northwest District
Indianapolis Metropolitan Police
3821 Industrial Boulevard
Indianapolis, IN 46254

Mr. David Hofmann
Commander, Southwest District
Indianapolis Metropolitan Police
551 N. King Avenue
Indianapolis, IN 46202

Sheriff John R. Layton
Marion County Sheriff's Office
40 S. Alabama St.
Indianapolis, IN 46204

Mr. Ernest Malone, Chief
Indianapolis Fire Department
555 N. New Jersey Street
Indianapolis, IN 46204

Ms. Raina Regan
Community Preservation Specialist
Indiana Landmarks, Central Regional Office
1201 Central Avenue
Indianapolis, IN 46202

Mr. David G. Vanderstel
Marion County Historian
4415 Broadway
Indianapolis, IN 46205

Mr. William L. McNiece, President
Marion County Historical Society
P.O. Box 2223
Indianapolis, IN 46206

Mr. John Herbst, President and CEO
Indiana Historical Society
450 West Ohio Street
Indianapolis, IN 46202

Mr. Chandler Lighty, Director
Indiana Historical Bureau
140 North Senate Avenue
Indianapolis, IN 46204

Mr. Jason Shelley, Executive Director
American Institute of Architects, Indiana
47 South Pennsylvania Street
Indianapolis, IN 46204

Indianapolis Coalition for Neighborhood Development
2105 N. Meridian Street, Suite 102
Indianapolis, IN 46202

Mr. Philip Scarpino
IUPUI, Department of History
425 University Boulevard
Indianapolis, IN 46202

Mr. Beuford Hall
Wayne Township Historical Society
1155 S. High School Road
Indianapolis, IN 46241

Mr. Scott Martin
Chief- Facilities Management Division
Indianapolis Public Schools
1129 East Washington Street
Indianapolis, IN 46202

Appendix E – Environmental Coordination

Date: April 5, 2016

From: Elizabet Biggio
Butler, Fairman, & Seufert, Inc.
8450 Westfield Blvd., Suite 300
Indianapolis, IN 46240-8302
ebiggio@bfsengr.com

Re: RED FLAG INVESTIGATION
Bridge Rehabilitations
16th Street Bridge (Marion County Bridge No. 2408F) over the White River
City of Indianapolis, Wayne and Center Townships, Marion County, Indiana

NARRATIVE

The City of Indianapolis Department of Public Works is developing a project to rehabilitate the 16th Street Bridge (Marion County Bridge No. 2408F) crossing the White River. Work would include patching of spalled concrete on the underside of the arch ring and installation of cathodic protection to control ongoing corrosion of the bridge's metal elements. The deck, sidewalls, railings, and corbels would be replaced. Portions of the spandrel walls would be reconstructed. Replacements and repairs would be made with similar materials, appearance, and design. Work may also occur on the immediate approaches, up to a distance of approximately 100 feet, for the purpose of tying-in to the existing roadway and replacing the guardrail. Construction would likely take place in phases under traffic, without a detour. The use of a causeway, likely on the south side of the bridge, would be necessary. A small amount of right-of-way acquisition from the property north of the bridge's west approach may be necessary.

The purpose of this project is to address the ongoing deterioration of the 16th Street Bridge. The need derives from the condition of the bridge. There is spalling, leaching, and exposed steel present on the underside of the arch and spandrel walls. The ends of the piers are spalling, and the east and west piers have scour buildup. The sidewalks and rail have expanses of rusting, exposed steel, and spalling.

The 16th Street Bridge is located in Sections 33 and 34, Township 16 North, Range 3 East of the USGS Indianapolis West Quadrangle, within the City of Indianapolis, Wayne and Center Townships, Marion County, Indiana.

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	**3**
Airports	**N/A**	Pipelines	**1**
Cemeteries	**N/A**	Railroads	**N/A**
Hospitals	**N/A**	Trails	**1**
Schools	**3**	Managed Lands	**7**

Explanation:

Religious Facilities: There are two (2) religious facilities mapped within 0.5 mile of the project area. The closest religious facility, New Light Baptist Church, is mapped approximately 0.49 mile southwest of the project area. Given the distance from the project area and that construction is not expected to impede access to any properties, no impacts to this or any mapped religious facilities are anticipated.

Recreational Facilities: There are three (3) recreational facilities mapped within 0.5 mile of the project area. The closest recreational facility is South Grove Golf Course, which is mapped approximately 0.17 mile north of the project area. South Grove Golf Course is maintained by Indy Parks and Recreation. Given the distance from the project area and the scope of the proposed project, no negative impacts to this or any mapped recreational facilities are anticipated from this project.

Pipelines: There is a total of one (1) pipelines mapped within 0.5 mile of the project area. A Citizens Gas & Coke Utility 16-inch natural gas pipeline is mapped approximately 0.32 mile northwest of the project area. Given the distance from the project area and the scope of the proposed project, no negative impacts to this or any mapped pipelines are anticipated from this project.

Trails: There is one (1) trail mapped within 0.5 mile of the project area. The White River Trail is mapped approximately 0.02 mile east of the project area. The paved trail is managed by Indy Parks and Recreation. Depending on the final scope of work, temporary closure of this trail at its crossing of 16th Street may be necessary to facilitate construction equipment. No permanent impacts to this trail are anticipated. Coordination with Indy Parks and Recreation would be recommended.

Schools: There are three (3) school mapped within 0.5 mile of the project area. Wendell Phillips School is mapped approximately 0.25 mile south of the project area. Given the nature of the proposed project and the distance from proposed construction work, no impacts to Wendell Phillips or any mapped schools are anticipated from this project. No road closures would be anticipated for this project, however, coordination with Indianapolis Public Schools would be recommended.

Managed Lands: There are a total of seven (7) managed lands mapped within 0.5 mile of the proposed project area. Lake Indy, managed by Indy Parks and Recreation, is mapped approximately 0.01 mile north of the bridge. Given the scope of the proposed project and that construction is not expected to impede access to any properties, no impacts to managed lands are anticipated from this project. However, coordination with Indy Parks and Recreation would be recommended prior to the start of construction.

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	**4**
Karst Springs	**N/A**	IDEM 303d Listed Lakes	**N/A**
Canal Structures – Historic	**N/A**	Lakes	**1**
NWI - Lines	**N/A**	Floodplain - DFIRM	**N/A**
IDEM 303d Listed Rivers and Streams (Impaired)	**1**	Cave Entrance Density	**N/A**
Rivers and Streams	**1**	Sinkhole Areas	**N/A**
Canal Routes - Historic	**N/A**	Sinking-Stream Basins	**N/A**

Explanation:

NWI-Wetlands: There are four (4) wetlands mapped within 0.5 mile of the project area. The closest wetland is mapped underneath the project area along the White River. This wetland is listed as a Riverine wetland (R2UBH) of approximately 1758 acres. The 16th Street Bridge spans this wetland. Tree clearing for the use of a causeway may be necessary during construction, and, therefore mitigation may be necessary. Coordination with the US Army Corps of

Engineers, Indiana Department of Natural Resources (IDNR), and Indiana Department of Environmental Management (IDEM) would be recommended.

Lakes: There is a total of one (1) lake mapped within 0.5 mile of the project area. The lake is mapped approximately 0.36 mile north of the project area and is listed as a LakePond of 0.006 square kilometers. Given its distance from the project area and the nature of the work proposed, no impacts to this lake would be anticipated.

IDEM 303d Listed River and Streams (Impaired): There is one (1) impaired river mapped within 0.5 mile of the project area. The 16th Street Bridge spans the White River, which is under a fish consumption advisory for mercury and polychlorinated biphenyls (PCBs). It is recommended the contractor be notified of the impaired status of the White River prior to the start of construction. It is further recommended a Health and Safety Plan be prepared and proper Personal Protective Equipment be used throughout construction. Coordination with the US Army Corps of Engineers, IDNR, and IDEM would be recommended.

River and Streams: There is one (1) river mapped within 0.5 mile of the project area. The 16th Street Bridge spans the White River. It would be recommended the contractor prepare a Health and Safety Plan prior to construction due to the likely presence of mercury and PCBs in the White River. This project may impact the White River below the ordinary high water mark and, therefore, a permit from the US Army Corps of Engineers and Indiana Department of Environmental Management is anticipated to be necessary. Although there is no mapped floodplain, the White River has an upstream drainage area of over one (1) square mile at the project site and, therefore, an IDNR Construction in a Floodway permit would be required. Preparation of a Waters of the U.S. Report, as well as coordination with the US Army Corps of Engineers, IDNR, and IDEM would be recommended.

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:

There are no mining or mineral resources mapped within 0.5 mile of the project area, however, coordination with the Indiana Geological Service is recommended.

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	**3**
Industrial Waste Sites (RCRA Generators)	**3**	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)	**7**	Underground Storage Tanks	**6**

Manufactured Gas Plant Sites	**N/A**	Voluntary Remediation Program	**N/A**
NPDES Facilities	**N/A**	Superfund	**N/A**
NPDES Pipe Locations	**4**	Institutional Control Sites	**1**
Open Dump Sites	**N/A**		

Explanation:

State Cleanup Sites: There are three (3) state cleanup sites mapped within 0.5 mile of the project area. The closest state cleanup site is the Speedway International Incorporated site, mapped approximately 0.08 mile east of the project area on 16th Street. According to records in the IDEM Virtual Filing Cabinet (VFC), three (3) 275 gallon oil tanks were removed from this site on November 17, 1988.

The Do All Company site (1850 W 16th Street) is mapped approximately 0.09 mile east of the project area. According to files in the IDEM VFC, this site had two (2) 1,000 gallon steel heating oil USTs removed on August 11, 2004. Soil excavation in the amount of 230.92 tons was conducted on August 30 and September 1, 2004, necessitated by the levels of total petroleum hydrocarbons diesel range organics (TPH-DRO). IDEM issued a "No Further Action" Determination on July 29, 2010. This site has an environmental restrictive covenant (ERC) due to continued presence of TPH-DRO, Naphthalene, 2-Methylnapthalene, and additional carcinogenic polycyclic aromatic hydrocarbons (c-PAHs) in the subsoil. An Environmental Restrictive Covenant (ERC) on the property dictated disturbed soil be restored in a manner preventing further health and environmental threats, consistent with IDEM's Risk Integrated System of Closure (RISC). The affected area is mapped behind the existing building, approximately 150 feet north of the roadway. Given the scope of work proposed and their distance from the project area, no excavation in this vicinity of and thus no impacts to or from any mapped state cleanup sites would be anticipated.

Industrial Waste Sites: There are three (3) industrial waste sites mapped within 0.5 mile of the study area. The closest Industrial Waste site is the Phillips 66 Station 27301 (2411 W 16th Street), mapped approximately 0.06 mile west of the project area. According to records in the IDEM VFC, one (1) 10,000 gallon unleaded gasoline tank was closed in-place on March 6, 1995. IDEM issued a "No Further Action" determination on July 18, 2007, recognizing TPH soil contamination above the industrial default closure levels at a depth of 26-30 feet within the Tremont Street right-of-way. Given the scope of proposed, no excavation in this area and this no impacts from this site would be anticipated, however, it would be recommended the contractor be informed about the remaining contamination below Tremont Street.

Leaking Underground Storage Tanks (LUSTs): A total of seven (7) LUST sites are mapped within 0.5 mile of the project area. The closest LUST site is the Phillips Petroleum W 16th St 66 site (2411 W 16th Street), mapped approximately 0.06 mile west of the project area. According to records in the IDEM VFC, one (1) 10,000 gallon unleaded gasoline tank was closed in-place on March 6, 1995. IDEM issued a "No Further Action" determination on July 18, 2007, recognizing TPH soil contamination above the industrial default closure levels at a depth of 26-30 feet within the Tremont Street right-of-way. Given the limits of potential work to approximately 100 feet from the bridge, no excavation in this area would be expected and no impacts from this or any mapped LUST site would be anticipated, however, it is recommended the contractor be informed about the remaining contamination below Tremont Street.

Underground Storage Tanks (USTs): A total of six (6) UST sites are mapped within 0.5 mile of the project area. The closest UST site is the Speedway International Incorporated site (1930 W 16th Street), mapped approximately 0.08 mile east of the project area on 16th Street. According to records in the IDEM VFC, this site had three (3) 275 gallon oil tanks removed on November 17, 1988.

The Speedway Mazda Subaru Volkswagon Used Cars site (1935 W 16th Street) is mapped approximately 0.09 mile east of the project area on 16th Street. There are no records in the IDEM VFC matching this site. Given the name and address of the site, it may be the same as the Speedway International Incorporated site identified above. Given their status and distance from the project area, no impacts from any mapped USTs would be anticipated for this project.

NPDES Pipe Locations: There are four (4) NPDES Pipe Locations mapped within 0.5 mile of the project area. The closest NPDES pipe is the Indianapolis Belmont and Southport AWTP pipe, a combined sewer overflow mapped approximately 0.23 mile southeast of the project area. Given the scope of the proposed work and their distance from the project area, no impacts to or from mapped NPDES Pipe Locations would be anticipated.

Institutional Control Sites: There is one (1) mapped Institutional Control Site within 0.5 mile of the project area. The Do All Company site (1850 W 16th Street) is mapped approximately 0.09 mile east of the project area on the north side of 16th Street. According to files in the IDEM VFC, this site had two (2) 1,000 gallon steel heating oil USTs removed on August 11, 2004. Soil excavation in the amount of 230.92 tons was conducted on August 30 and September 1, 2004, necessitated by the level of total petroleum hydrocarbons diesel range organics (TPH-DRO).

IDEM issued a "No Further Action" Determination on July 29, 2010. This site has an environmental restrictive covenant (ERC) due to continued presence of TPH-DRO, Naphthalene, 2-Methylnapthalene, and additional carcinogenic polycyclic aromatic hydrocarbons (c-PAHs) in the subsoil. An ERC on the property dictated disturbed soil be restored in a manner preventing further health and environmental threats, consistent with IDEM's RISC. The affected area is mapped behind the existing building, approximately 150 feet north of the roadway. Due to its distance from the project area, no excavation in this vicinity and thus no impacts to or from this site would be anticipated.

Ecological Information

The Marion 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. Seven (7) mussel species, one (1) insect species, one (1) fish species, four (4) reptile species, eight (8) bird species, one (1) mammal species, and five (5) plant species were listed. An Information for Planning and Conservation Report from the US Fish and Wildlife Service (USFWS) concerning endangered, threatened, or rare species in the vicinity of the project identified the Indiana Bat and Northern Long-eared Bat as species that could be potential affected by construction in the vicinity. The report identified no critical habitat within the project vicinity.

It is recommended early coordination with the IDNR and USFWS be initiated during the preliminary planning phases of this project.

Cultural Resources

The *Marion County Interim Report* for Center and Wayne Townships was consulted and cross-referenced with the Indiana State Historic Architectural and Archaeological Research Database (SHAARD) of the Division of Historic Preservation and Archaeology (DHPA), which includes data collected from previously conducted cultural resource inventories, National and State Register listings, research projects, and cultural resource management project reports, was referenced to determine if any listed sites occur within 0.5 mile of the project. Six (6) previously-surveyed resources were located within 0.5 mile of the project area.

The 16th Street Bridge is a contributing resource to the National Register-listed Indiana Parks & Boulevard System. The 16th Street Bridge is a "Select" bridge in the 2010 Indiana Historic Bridge Inventory. A review of the project by a DHPA-Qualified Professional is recommended to analyze the potential effect to historic properties. It is anticipated this project would require a Section 4(f) Bridge Alternatives Analysis in accordance with 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.

RECOMMENDATIONS

INFRASTRUCTURE: The White River Trail and Lake Indy are in close proximity to the project area, therefore coordination with Indy Parks and Recreation would be recommended. It is recommended coordination with area properties take place to inform business owners, Indianapolis Public Schools, and residents of the construction duration and maintenance of traffic plan.

WATER RESOURCES: The project is within the floodplain of the White River. It is recommended the contractor be notified the White River is impaired for mercury and PCBs prior to the start of construction. It is further recommended a Health and Safety Plan be prepared and proper Personal Protective Equipment be used throughout construction. Preparation of a Waters of the U.S. Report and coordination with the U.S. Army Corps of Engineers, IDNR, and IDEM would be recommended. It is anticipated an IDNR Construction in a Floodway Permit, a Section 401 Water Quality Certification from IDEM a Section 404 Dredge and Fill Permit from the U.S. Army Corps of Engineers will be required.

MINING/MINERAL EXPLORATION: N/A

HAZMAT CONCERNS: N/A

ECOLOGICAL INFORMATION: It is recommended early coordination with USFWS and IDNR be initiated.

CULTURAL RESOURCES: The subject bridge is an Indiana Historic Bridge Survey "Select" bridge and is listed on the National Register of Historic Places as part of the Indianapolis Parks and Boulevard System. It is recommended the project be evaluated by a DHPA-Qualified Professional and the results provided to the State Historic Preservation Officer for review and concurrence to complete the Section 106 process. It is anticipated a Section 4(f) Bridge Alternatives Analysis in accordance with the Project Development Process for "Select Bridges" outlined in 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, will be necessary.

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

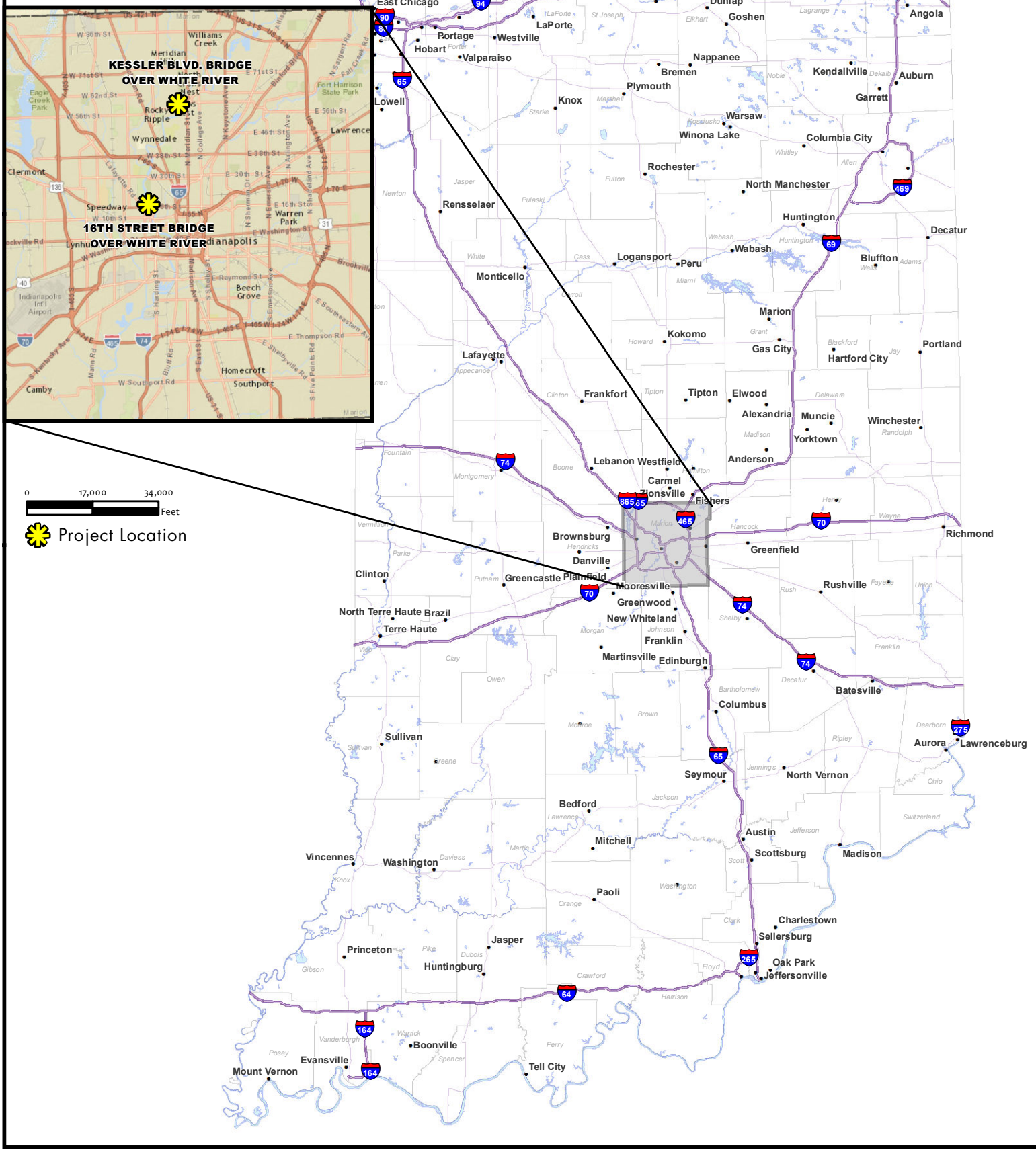
INFRASTRUCTURE: YES

WATER RESOURCES: YES

MINING/MINERAL EXPLORATION: YES

HAZMAT CONCERNS: YES

SHAARD Map: YES



State Map

16th Street Bridge & Kessler Blvd. Bridge over White River
City of Indianapolis, Marion County, Indiana

Map Source: Indiana Map

Butler Fairman Seufert
CIVIL ENGINEERS





Legend

Project Area

0 187.5 375 750

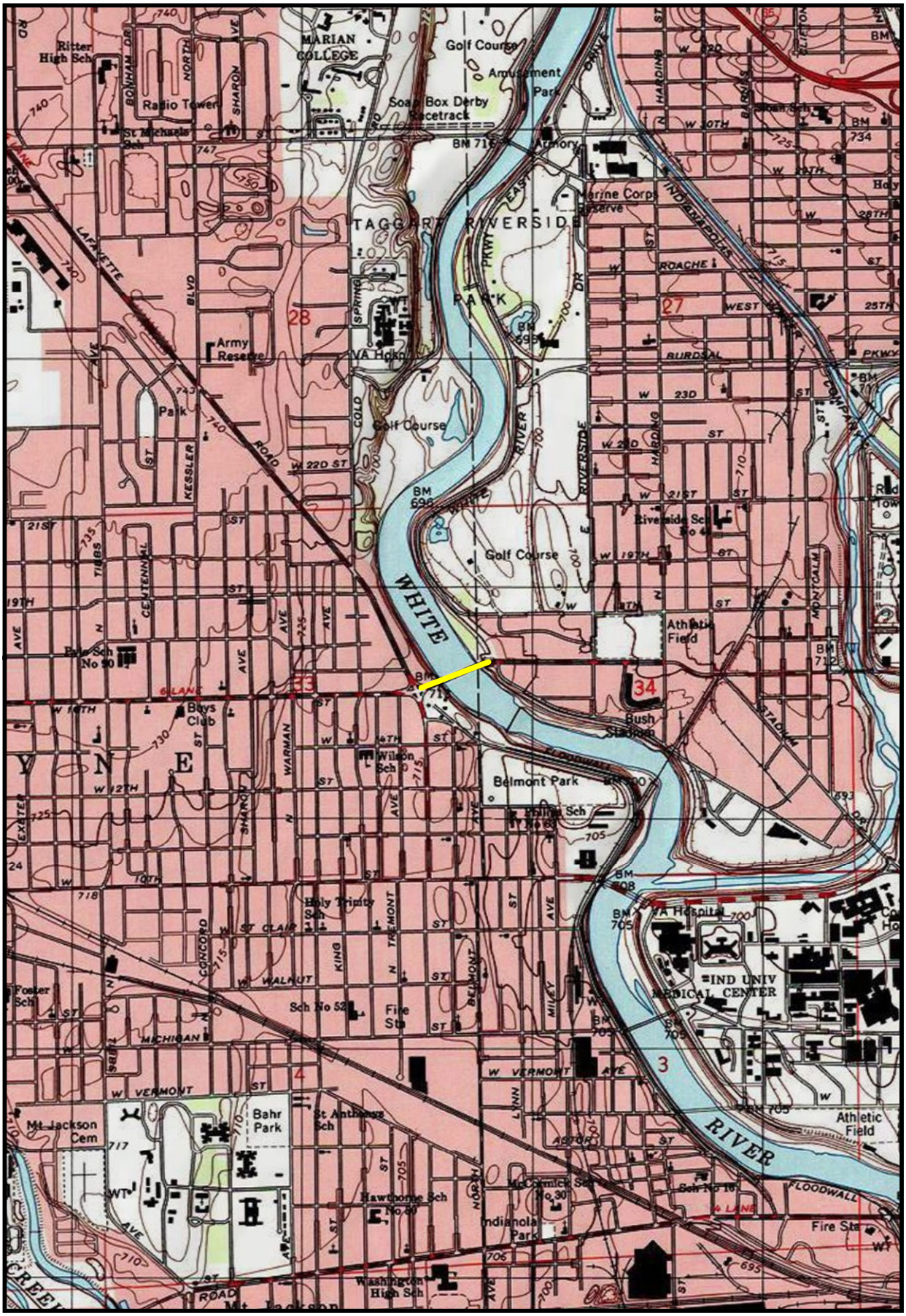
Feet

Aerial Map

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

BF&S
Butler Fairman Seufert
CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

Project Area

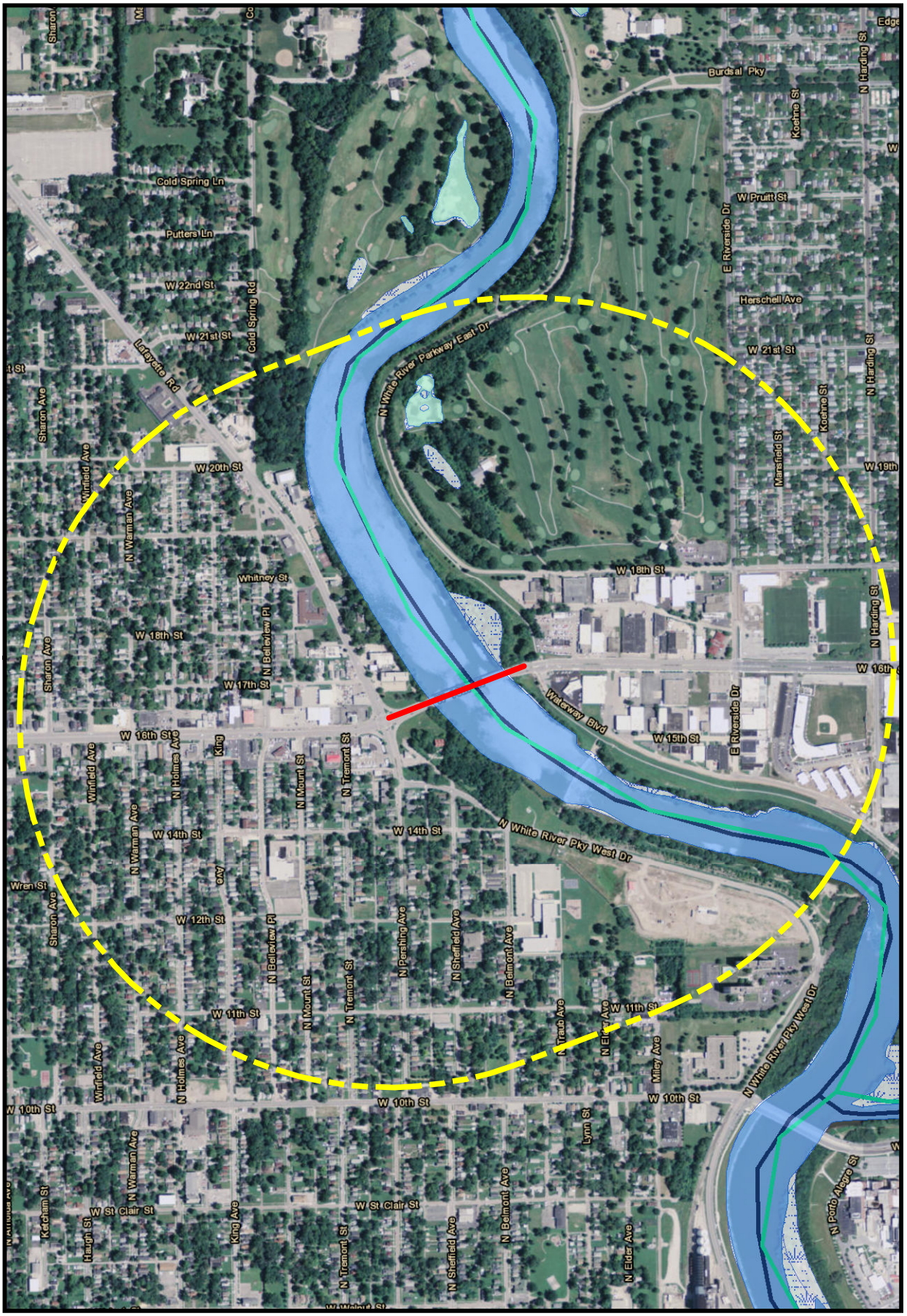
0 750 1,500 3,000 Feet

USGS Indianapolis West Quadrangle

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

Butler Fairman Seufert CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

- Project Area
- Half Mile Radius
- Karst Springs
- Canal Structures Historic
- Wetland Points (NWI)
- Canal Routes Historic
- IDEM 303d Listed Rivers and Streams (Impaired)
- Streams (NHD)
- Wetland Lines (NWI)
- Rivers (NHD)
- Lakes (NHD)
- Floodplains DFIRM
  - A,
  - AE,
  - AE, FLOODWAY
  - AH,
  - AO,
  - X,
- IDEM 303d Listed Lakes (Impaired)
- Sinkhole Areas
  - Sinkhole Area
  - Sinking Stream Basin
- Wetlands (NWI)
- Cave Entrance Density
- Entrances/sqkm
  - 0-1
  - 2-5
  - 6-10
  - 11-15

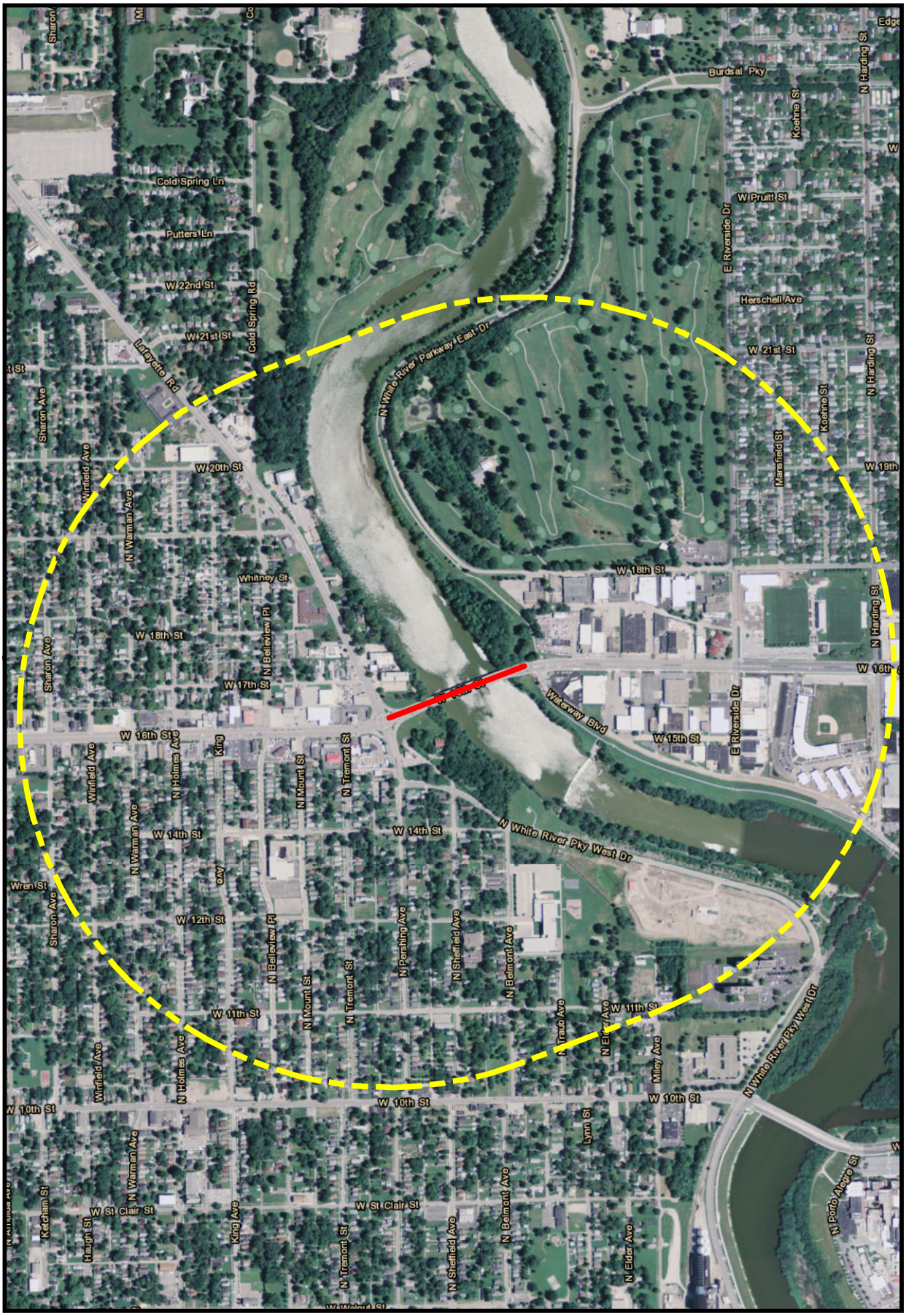
0 375 750 1,500 Feet

Red Flag Investigation
Water

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

BF&S Butler Fairman Seufert CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

ProjectArea_5839

ProjectBuffer_5839

Mines Surface

Mines Underground

Petroleum Fields (2015)

- Gas
- Oil
- Oil/gas

Petroleum Wells (IGS, 2015)

- Gas Wells
- Gas Storage Wells
- Oil Wells
- Service Wells
- Stratigraphic Test Wells
- Dry Wells
- Unknown Wells

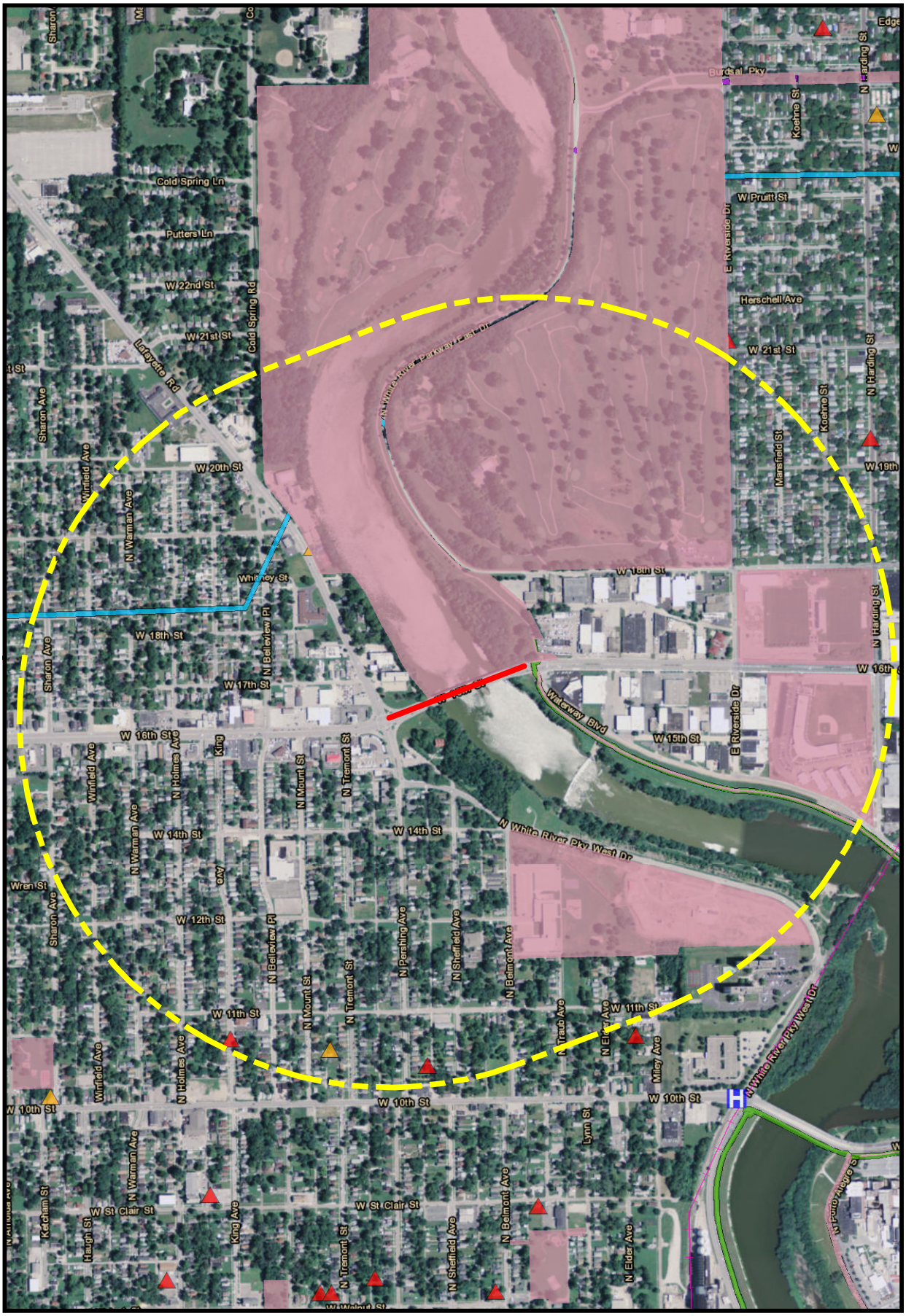
0 375 750 1,500 Feet

Red Flag Investigation
Mining Mineral Exploration

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

BF&S
Butler Fairman Seufert
CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

Project Area

Half Mile Radius

Airports

Cemeteries

Hospitals

- Church Hospital
- Hospital District
- Local Hospital
- Other Hospital
- Private Hospital
- Proprietary Hospital
- Rural Health Clinic
- State Hospital

Managed Lands IDNR

Pipelines

- Crude Oil
- Natural Gas
- Refined Products

Railroad 100k

Recreational Facilities

Religious Centers

Schools IDOE

Trails - IDNR

- Open
- Under Development
- Planned

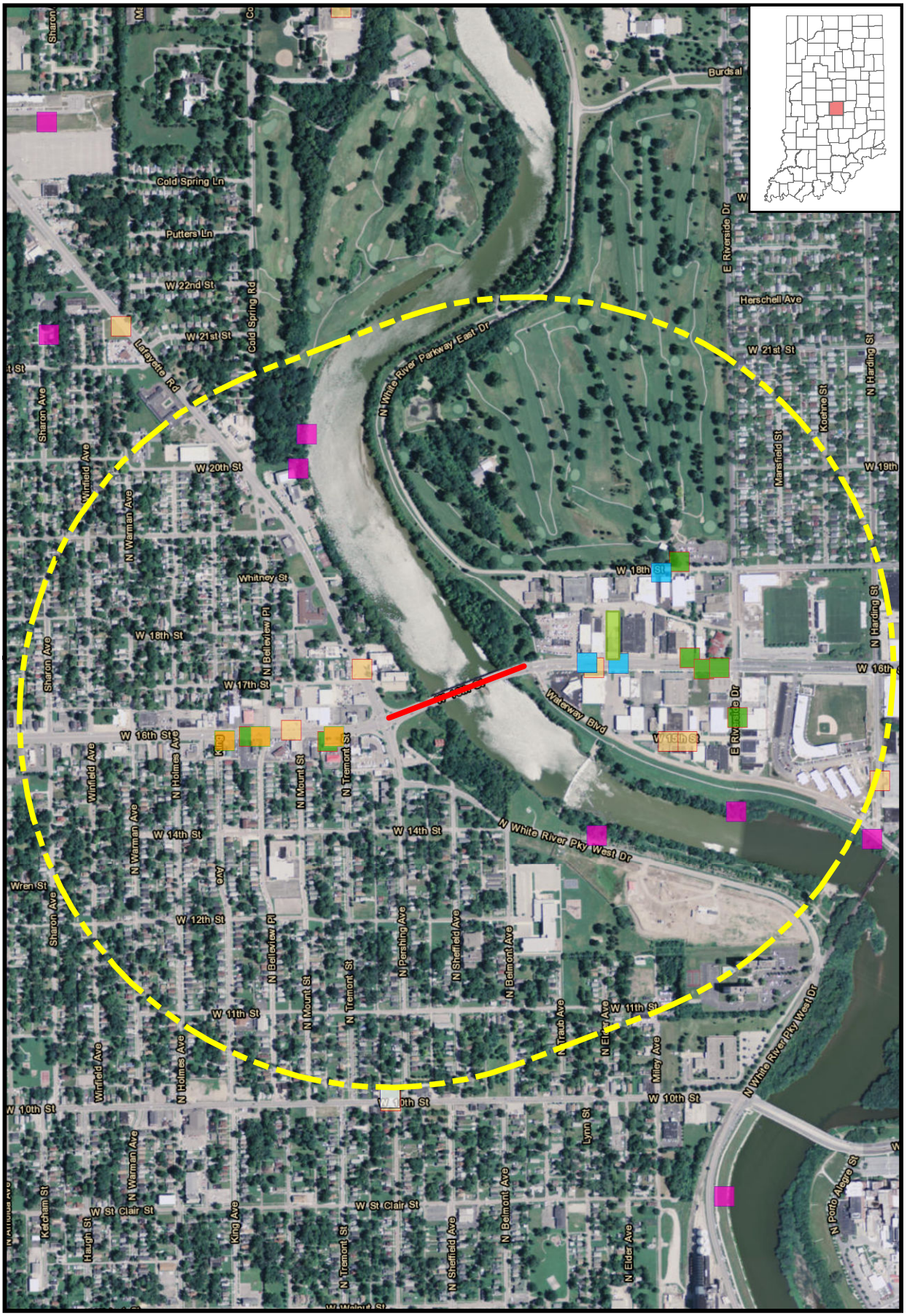
0 375 750 1,500 Feet

Red Flag Investigation
Infrastructure

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

BF&S
Butler Fairman Seufert
CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.



Legend

- Project Area
- Half Mile Radius
- Brownfield Sites
- Confined Feeding Operations
- Construction Demolition Waste
- Corrective Action Sites (RCRA)
- Industrial Waste Sites (RCRA Generators)
- Institutional Control Sites
- Manufactured Gas Plant Sites
- NPDES Facilities
- NPDES Pipe Locations
- Open Dump Sites
- RCRA Waste Treatment, Storage, and Disposal Sites (TSDs)
- Restricted Waste Sites
- Septage Waste Sites
- Solid Waste Landfills
- State Cleanup Sites
- Superfund
- Tire Waste Sites
- Underground Storage Tanks
  - No Leaking
  - Leaking
- Voluntary Remediation Program
- Waste Disposal Storage Handling
  - Infectious Waste Incinerator (<7 tons/day)
  - Medical Waste Processor
  - Surface Impoundment/ Lagoon
- Waste Transfer Stations

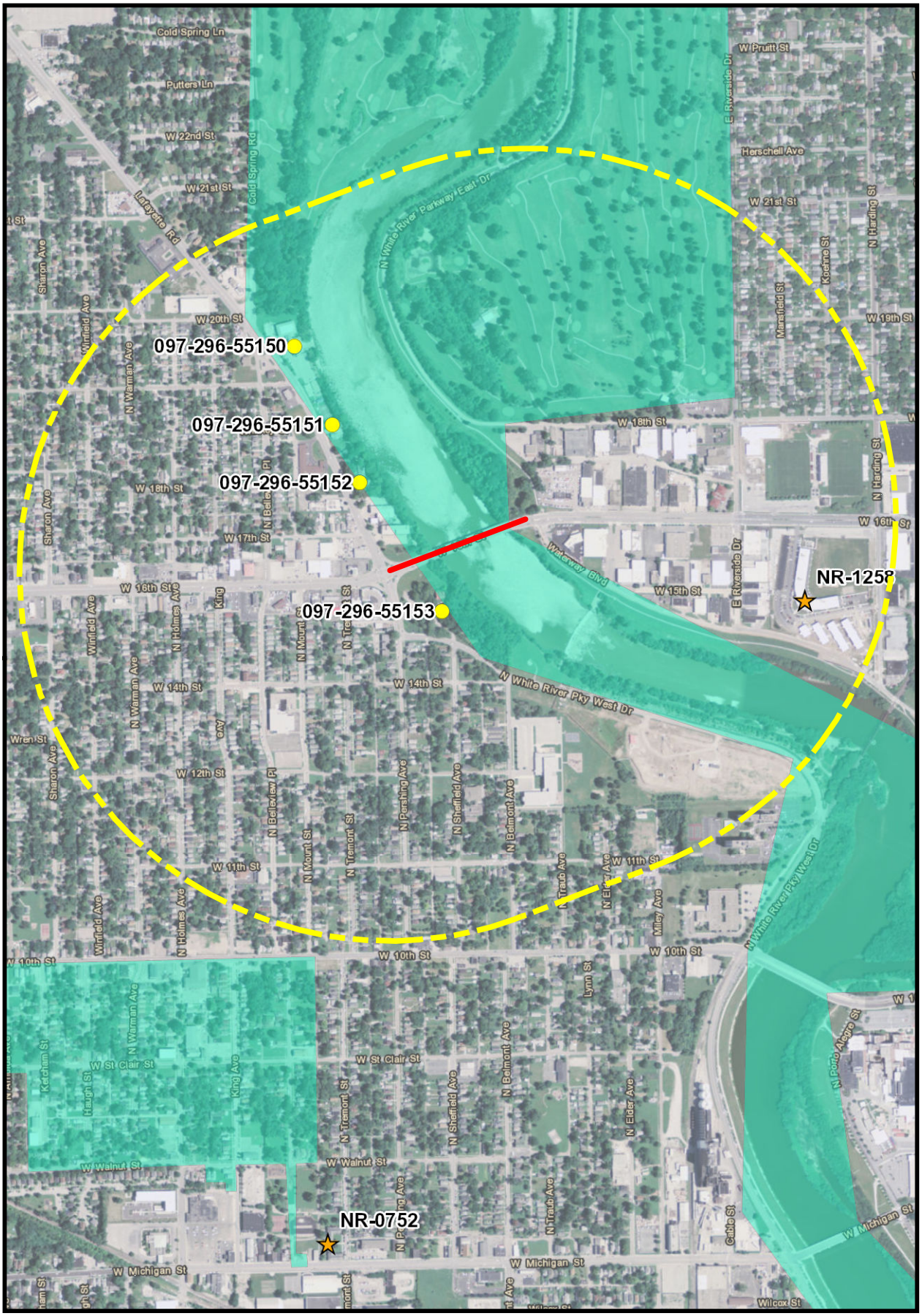
0 375 750 1,500 Feet

Red Flag Investigation
Hazmat Concerns

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

BF&S Butler Fairman Seufert CIVIL ENGINEERS

Map Source: Indiana Geological Survey (IGS), IndianaMap, ArcGIS Online (ESRI) World Imagery.





Legend

- Cemeteries

County Survey Sites

RATING

- Outstanding
- Notable
- Contributing
- Non-Contributing
- Demolished
- Unknown

Historic Bridges

RATING

- Outstanding
- Notable
- Contributing
- Non-Contributing
- Demolished
- Unknown
- National Register Sites
- Historic Districts

Map Source: IndianaMap, ArcGIS Online (ESRI) World Imagery, IDNR - Division of Historic Preservation and Archaeology (SHAARD)

0 375 750 1,500 Feet

Butler Fairman Seufert CIVIL ENGINEERS

SHAARD Map

16th Street Bridge over White River
City of Indianapolis, Marion County, Indiana
Section 33 & 34, Township 16 North, Range 3 East

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations and therefore may not exactly reflect the flood elevation data presented in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in the FIS report in conjunction with the data shown on this FIRM.

Elevation Reference Mark (ERM) elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at WWW.NGS.NOAA.GOV. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on this map can be made available on CD-ROM by request. The files are currently archived in MicroStation design (DGN) file format referenced to the Universal Transverse Mercator (UTM) projection and the North American Datum of 1927 (NAD27). To obtain the digital files, send a written request to: Flood Insurance Information Specialist, 2977 Prosperity Avenue, Fairfax, Virginia 22031. Telephone (703) 876-0148, FAX (703) 876-0073.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

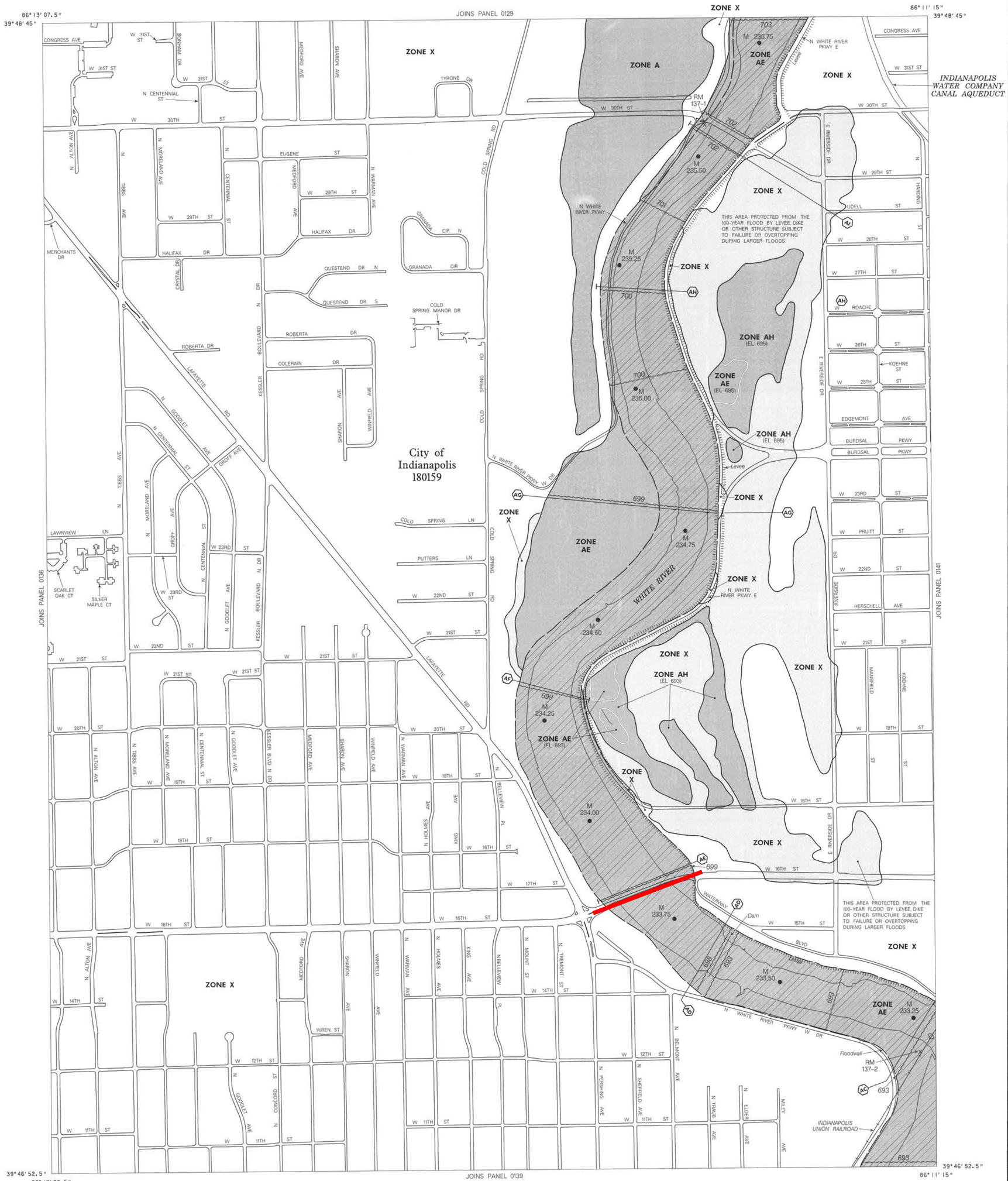
Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Planimetric base map files were provided in digital format by the City of Indianapolis Department of Public Works. These files were photogrammetrically compiled in 1988 from aerial photography. Additional information was derived from orthophotographs and other sources.

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 137-1	716.294	Bronze disk set on top of southwest guardrail of West 30th Street bridge over White River.
RM 137-2	700.743	Indiana Flood Control and Water Resources Commission standard bronze tablet stamped NAR 58 located on west end of south abutment of Indianapolis Union Railroad bridge over White River, approximately 0.4 mile north of 10th Street.

[1] National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- (A)—(A) — Cross Section Line
- (23)- - - -(23) — Transect Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- ●M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
JANUARY 5, 2001

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Please refer to the Listing of Communities table on the FIRM Index for NFIP Initial Identification and Post-FIRM dates for all jurisdictions shown on this map.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE
500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARION COUNTY, INDIANA
(ALL JURISDICTIONS)

PANEL 137 OF 290
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
INDIANAPOLIS, CITY OF	180159	0137	E

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
18097C0137 E

EFFECTIVE DATE:
JANUARY 5, 2001

Federal Emergency Management Agency

Indiana County Endangered, Threatened and Rare Species List

County: Marion

Species Name	Common Name	FED	STATE	GRANK	SRANK
Mollusk: Bivalvia (Mussels)					
Epioblasma torulosa rangiana	Northern Riffleshell	LE	SE	G2T2	SX
Epioblasma triquetra	Snuffbox	LE	SE	G3	S1
Lampsilis fasciola	Wavyrayed Lampmussel		SSC	G5	S3
Obovaria subrotunda	Round Hickorynut		SE	G4	S1
Plethobasus cyphyus	Sheepnose	LE	SE	G3	S1
Pleurobema clava	Clubshell	LE	SE	G1G2	S1
Pleurobema plenum	Rough Pigtoe	LE	SE	G1	S1
Ptychobranchus fasciolaris	Kidneyshell		SSC	G4G5	S2
Quadrula cylindrica cylindrica	Rabbitsfoot	LT	SE	G3G4T3	S1
Toxolasma lividus	Purple Lilliput		SSC	G3Q	S2
Venustaconcha ellipsiformis	Ellipse		SSC	G4	S2
Villosa lienosa	Little Spectaclecase		SSC	G5	S3
Insect: Lepidoptera (Moth)					
Hyperaeschra georgica	A Prominent Moth			G5	S2
Insect: Neuroptera					
Sisyra sp. 1	Indiana Spongilla Fly		ST	GNR	S2
Fish					
Percina evides	Gilt Darter		SE	G4	S1
Amphibian					
Lithobates pipiens	Northern Leopard Frog		SSC	G5	S2
Reptile					
Clemmys guttata	Spotted Turtle		SE	G5	S2
Clonophis kirtlandii	Kirtland's Snake		SE	G2	S2
Emydoidea blandingii	Blanding's Turtle		SE	G4	S2
Thamnophis butleri	Butler's Garter Snake		SE	G4	S1
Bird					
Aimophila aestivalis	Bachman's Sparrow			G3	SXB
Ardea alba	Great Egret		SSC	G5	S1B
Bartramia longicauda	Upland Sandpiper		SE	G5	S3B
Botaurus lentiginosus	American Bittern		SE	G4	S2B
Buteo lineatus	Red-shouldered Hawk		SSC	G5	S3
Buteo platypterus	Broad-winged Hawk		SSC	G5	S3B
Certhia americana	Brown Creeper			G5	S2B
Chordeiles minor	Common Nighthawk		SSC	G5	S4B
Dendroica cerulea	Cerulean Warbler		SE	G4	S3B
Falco peregrinus	Peregrine Falcon		SSC	G4	S2B
Haliaeetus leucocephalus	Bald Eagle		SSC	G5	S2
Helmitheros vermivorus	Worm-eating Warbler		SSC	G5	S3B

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List

County: Marion

Species Name	Common Name	FED	STATE	GRANK	SRANK
Ixobrychus exilis	Least Bittern		SE	G5	S3B
Lanius ludovicianus	Loggerhead Shrike		SE	G4	S3B
Mniotilta varia	Black-and-white Warbler		SSC	G5	S1S2B
Nycticorax nycticorax	Black-crowned Night-heron		SE	G5	S1B
Pandion haliaetus	Osprey		SE	G5	S1B
Rallus elegans	King Rail		SE	G4	S1B
Sitta canadensis	Red-breasted Nuthatch			G5	S1B
Wilsonia citrina	Hooded Warbler		SSC	G5	S3B
Mammal					
Lasiurus borealis	Eastern Red Bat		SSC	G5	S4
Myotis lucifugus	Little Brown Bat		SSC	G3	S2
Myotis septentrionalis	Northern Myotis		SSC	G1G3	S2S3
Myotis sodalis	Indiana Bat or Social Myotis	LE	SE	G2	S1
Taxidea taxus	American Badger		SSC	G5	S2
Vascular Plant					
Chelone obliqua var. speciosa	Rose Turtlehead		WL	G4T3	S3
Deschampsia cespitosa	Tufted Hairgrass		SR	G5	S2
Hydrastis canadensis	Golden Seal		WL	G4	S3
Juglans cinerea	Butternut		WL	G4	S3
Melanthium virginicum	Virginia Bunchflower		SE	G5	S1
Panax quinquefolius	American Ginseng		WL	G3G4	S3
Poa wolfii	Wolf Bluegrass		SR	G4	S2
Rubus odoratus	Purple Flowering Raspberry		ST	G5	S2
Trifolium stoloniferum	Running Buffalo Clover	LE	SE	G3	S1
High Quality Natural Community					
Forest - flatwoods central till plain	Central Till Plain Flatwoods		SG	G3	S2
Forest - floodplain mesic	Mesic Floodplain Forest		SG	G3?	S1
Forest - floodplain wet	Wet Floodplain Forest		SG	G3?	S3
Forest - floodplain wet-mesic	Wet-mesic Floodplain Forest		SG	G3?	S3
Forest - upland dry-mesic	Dry-mesic Upland Forest		SG	G4	S4
Forest - upland mesic	Mesic Upland Forest		SG	G3?	S3
Wetland - fen	Fen		SG	G3	S3
Wetland - marsh	Marsh		SG	GU	S4

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

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State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

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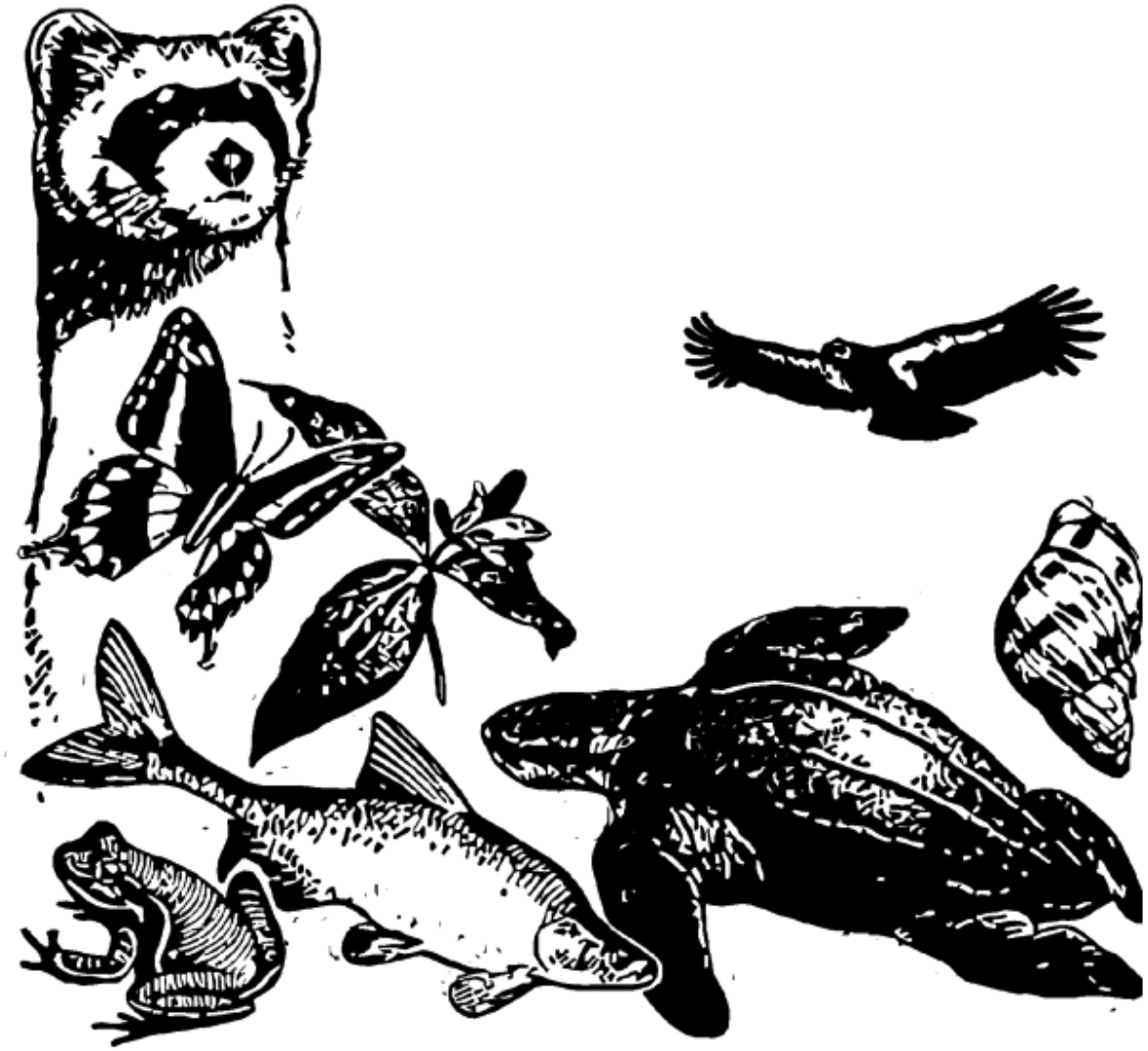
SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

16th Street Bridge over the White River

IPaC Trust Resource Report

Generated March 02, 2016 10:47 AM MST, IPaC v2.3.2

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

US Fish & Wildlife Service

IPaC Trust Resource Report

NAME

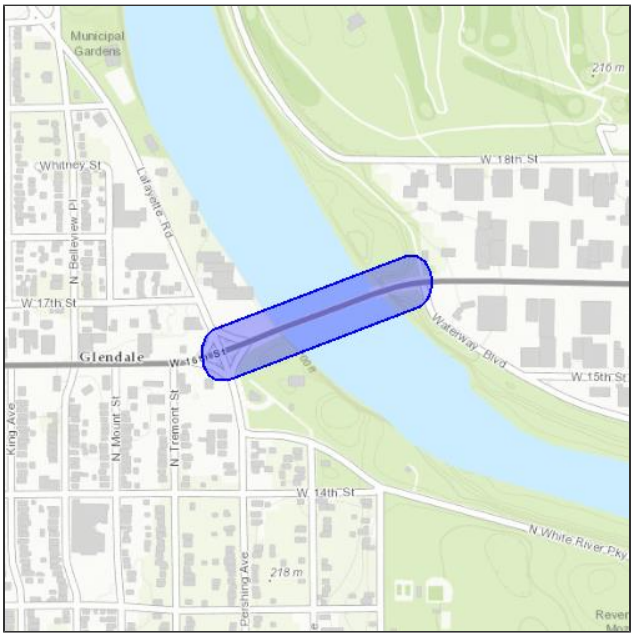
16th Street Bridge over the White River

LOCATION

Marion County, Indiana

IPAC LINK

https://ecos.fws.gov/ipac/project/QHPMC-W624F-GHDIS-RAWEG-FB4LMA



U.S. Fish & Wildlife Contact Information

Trust resources in this location are managed by:

Bloomington Ecological Services Field Office
620 South Walker Street
Bloomington, IN 47403-2121
(812) 334-4261

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require FWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from the Regulatory Documents section in IPaC.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Mammals

Indiana Bat Myotis sodalis — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.

https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A000

Northern Long-eared Bat Myotis septentrionalis — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.

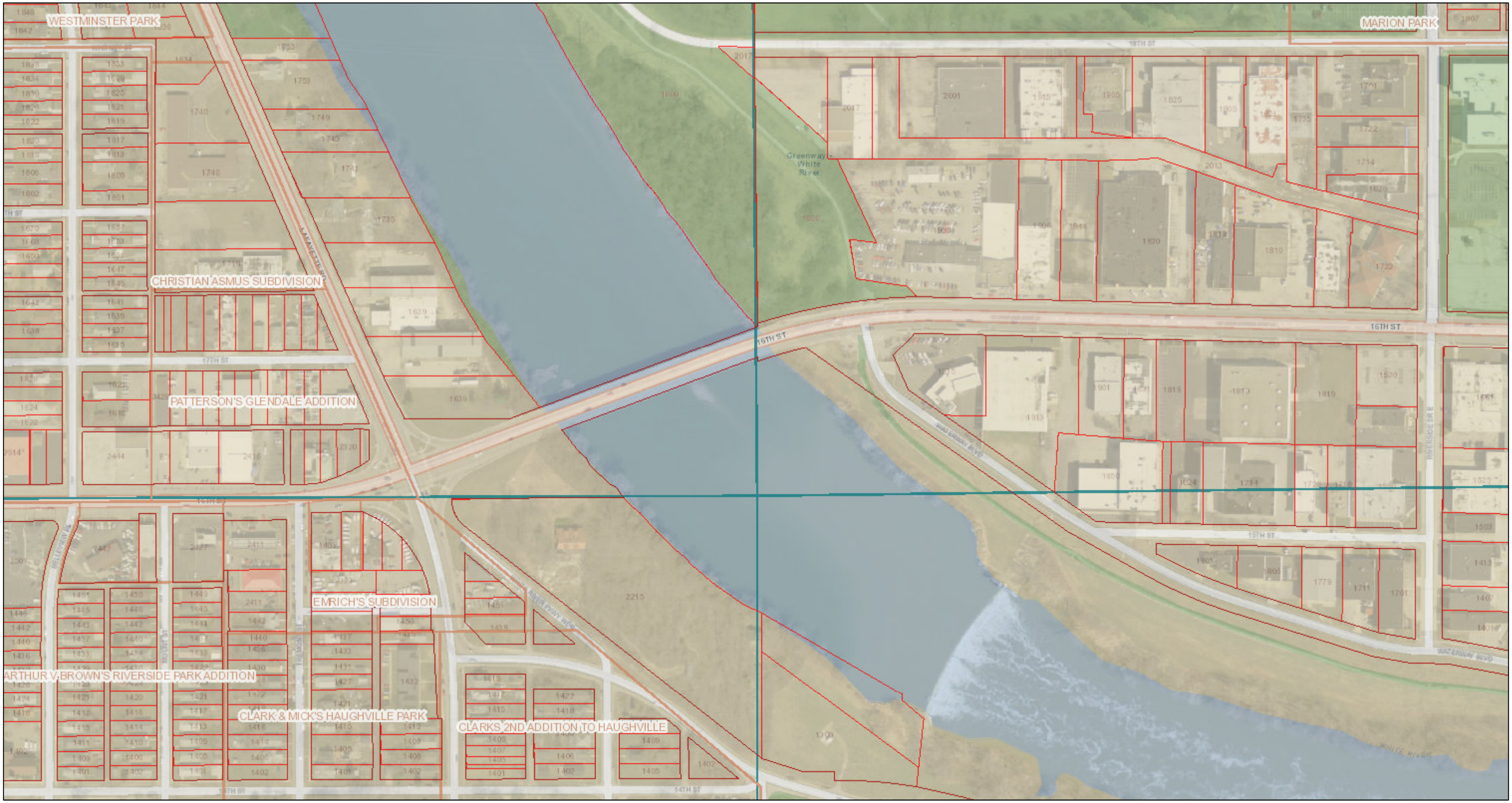
https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A0JE

Critical Habitats

There are no critical habitats in this location

Appendix F – Right of Way Parcel Map

16TH STEET OVER WHITE RIVER



April 1, 2016

1:2,822

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

- Right of Way
- Parcel
- Subdivisions
- Survey Quarter Sections
- Interstates
- Ramps
- Thoroughfare
- Major Streets
- Streets
- Railroad
- Rivers
- Ponds
- Streams
- Parks
- Airports
- Airfields
- Schools
- Parcels

PARCELS AND ROW

Appendix G – Indiana Design Manual Figure 55-3E

	Design Element			Manual Section	Design Values (By Type of Area)		
					Suburban	Intermediate	Built-Up
Design Controls	Design Forecast Period			55-4.01	20 Years (1)	20 Years (1)	20 Years (1)
	*Design Speed, mph)(2)			55-4.01	Posted Speed Limit	Posted Speed Limit	Posted Speed Limit
	Access Control			40-5.0	Partial Control / None	None	None
	Level of Service			40-2.0	Des: B; Min: D	Des: C; Min: D	Des: C; Min: D
	On-Street Parking			45-1.0	None	Optional (3)	Optional (3)
Cross-Section Elements	Travel Lane	*Width (4)		55-4.05	Curbed: Des: 12 ft; Min: 11 ft Uncurbed: Des: 12 ft; Min: 11 ft	Curbed: Des: 12 ft; Min: 11 ft Uncurbed: Des: 12 ft; Min: 11 ft	Curbed: Des: 12 ft; Min: 10 ft
		Typical Surface Type (5)		Ch. 52	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete
	*Curb Offset (6)			55-4.05	Des: 2 ft; Min: 1 ft	Des: 2 ft; Min: 1 ft	Des: 2 ft; Min: 1 ft
	Shoulder	*Paved Width (7)		55-4.05	Curbed, Rt. Des: 10 ft; Min 1 ft Curbed, Lt. Des: 4 ft; Min 1 ft Uncurbed, Rt.: 10 ft; Lt.: 4 ft	Curbed, Rt. Des: 8 ft; Min 1 ft Curbed, Lt. Des: 3 ft; Min 2 ft Uncurbed, Rt.: 8 ft; Lt.: 3 ft	Right: 6 ft; Left: 3 ft
		Typical Surface Type (5)		Ch. 304	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete
	Cross Slope	*Travel Lane (8)		55-4.05	2% - 3%	2% - 3%	2% - 3%
		Shoulder (9)		55-4.05	Rt.: 4% - 6%; Lt.: 2% - 3%	Paved Width ≤ 4 ft: 2%-3%; Paved Width > 4 ft: 4%-6%	Paved Width ≤ 4 ft: 2%-3%; Paved Width > 4 ft: 4%-6%
	Auxiliary Lane	Lane Width		55-4.05	Des: 12 ft; Min: 11 ft	Des: 12 ft; Min: 10 ft	Des: 12 ft; Min: 10 ft
		Curb Offset			Des: 1 ft; Min: 0 ft	Des: 1 ft; Min: 0 ft	Des: 1 ft; Min: 0 ft
		Shoulder Width			Des: 10 ft; Min: 2 ft	Des: 8 ft; Min: 2 ft	Des: 6 ft; Min: 2 ft
		Typical Surface Type (5)		Ch. 304	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete
	TWLTL Width			46-5.0	Des: 16 ft; Min. 14 ft	Des: 16 ft; Min: 12 ft	Des: 14 ft; Min: 11 ft
	Parking-Lane Width			45-1.04	N/A	Des: 10 ft; Min: 8 ft (10)	Des: 10 ft; Min: 8 ft (10)
	Median Width	Depressed		55-4.05	Existing	Existing	N/A
		Raised Island			Des: 16 ft.; Min: 2 ft	Des: 16 ft; Min: 2 ft	Des: 16 ft; Min: 2 ft
		Flush / Corrugated			Des: 16 ft.; Min: 2 ft	Des: 16 ft; Min: 2 ft	Des: 16 ft; Min: 2 ft
	Sidewalk Width (11)			55-4.05	4 ft with 5 ft Buffer (Des)	Des: 6 ft. Min: 4 ft	Des: 6 ft; Min: 4 ft
	Bicycle-Lane Width (12)			51-7.0	Curbed: 5 ft Uncurbed: Shld. Width +4 ft	Curbed: 5 ft Uncurbed: Shld. Width +4 ft	Curbed: 5 ft
	Obstruction-Free-Zone Width			55-5.02	See Section 55-5.02	See Section 55-5.02	See Section 55-5.02
	Typical Curbing Type, where used (13)			55-4.05	Vertical / Sloping	Vertical / Sloping	Vertical / Sloping
	Side Slopes, Uncurbed	Cut	Foreslope	55-4.05	2:1 or Flatter	2:1 or Flatter (14)	N/A
			Ditch Width		(14)	(14)	N/A
			Backslope		2:1 or Flatter (14)	2:1 or Flatter (14)	N/A
		Fill			2:1 or Flatter (14)	2:1 or Flatter (14)	N/A
	Side Slopes, Curbed	Cut, Backslope		55-4.05	(15)	(15)	(15)
		Fill			2:1 or Flatter (14)	2:1 or Flatter (14)	2:1 or Flatter (14)
	Median Slopes, Depressed			55-4.05	Desirable: 8:1; Maximum: 4:1	Desirable: 8:1; Maximum: 4:1	Desirable: 8:1; Maximum: 4:1

Des: Desirable; Min: Minimum

* Level One controlling criterion, see page 2 of 4.

GEOMETRIC DESIGN CRITERIA FOR URBAN ARTERIAL, FOUR OR MORE LANES, 3R PROJECT

Figure 55-3E (Page 1 of 4)

Back

Design Element			Manual Section	Design Values (By Type of Area)				
				Suburban	Intermediate	Built-Up		
Bridges	New or Reconstructed Bridge	*Structural Capacity (16)	Ch. 403	HL-93				
		*Clear Roadway Width(17)	55-6.03	Curbed: Full Approach Curb-to-Curb Width Uncurbed: Full Approach Width				
	Existing Bridge to Remain in Place	*Structural Capacity	Ch. 72	HS-20				
		*Clear-Roadway Width	55-6.02	Curbed: Full Approach Curb-to-Curb Width; Uncurbed: Travelway Plus 2 ft. on Each Side				
	*Vertical Clearance, Arterial Under	New or Replaced Overpassing Bridge (18a & 18c)	55-6.0	16.5 ft	16.5 ft (18b)	16.5 ft (18b)		
		Existing Overpassing Bridge (19)		14.0 ft	14.0 ft	14.0 ft		
		Sign Truss / Pedestrian Bridge (18a & 18c)		New: 17.5 ft; Existing: 17.0 ft	New: 17.5 ft; Existing: 17.0 ft	New: 17.5 ft; Existing: 17.0 ft		
	Vertical Clearance, Arterial over Railroad (20)		Ch. 402-6.01	23.0 ft.				
Alignment Elements	Design Speed			30 mph	35 mph	45 mph	50 mph	55 mph
	*Stopping Sight Distance, Desirable		55-4.02	200 ft	250 ft	360 ft	425 ft	495 ft
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	U: 620 ft SU: 535 ft	U: 720 ft SU: 625 ft	U: 930 ft SU: 800 ft	U: 1030 ft SU: 890 ft	U: 1135 ft SU: 980 ft
		Stop Maneuver		490 ft	590 ft	800 ft	910 ft	1030 ft
	Intersection Sight Distance, -3% to +3% (21)		55-4.06	P: 355 ft SUT: 450 ft	P: 415 ft SUT: 525 ft	P: 530 ft SUT: 675 ft	P: 665 ft SUT: 825 ft	P: 770 ft SUT: 950 ft
	*Minimum Radius		55-4.03	See Section 55-4.03				
	*Superelevation Rate		55-4.03	See Section 55-4.03				
	*Horizontal Sight Distance		55-4.03	See Section 55-4.03				
	*Vertical Curvature, K-value	Crest	55-4.04	See Section 55-4.04				
		Sag		See Section 55-4.04				
	*Maximum Grade	Level	55-4.04	10%	9%	8.5%	8%	7%
		Rolling		11%	10%	9.5%	9%	8%
	Minimum Grade		44-1.03	Curbed Des: 0.5%; Curbed Min: 0.3% Uncurbed: 0.0%				

SU: Suburban. U: Urban.

* Level One controlling criterion. Except as noted in this chapter, the values shown in AASHTO's *A Policy on Geometric Design of Highways and Streets* (the *Green Book*) may be used as minimum values if they are lower than similar values shown herein. A controlling criterion that does not meet the minimum value is a design exception and is subject to approval. A streamlined design exception may be used for 3R projects. See Section 40-8.0.

GEOMETRIC DESIGN CRITERIA FOR URBAN ARTERIAL, FOUR OR MORE LANES, 3R PROJECT
Figure 55-3E (Page 2 of 4)

Back

(1) Design Forecast Period. For a partial 3R project, the pavement should be designed for at least a 10-year design life.

(2) Design Speed. The minimum design speed should equal the anticipated posted speed limit after construction or the legal speed limit on a non-posted highway. This is 30 mph, but with an engineering study it may be raised to a maximum of 55 mph.

(3) On-Street Parking. In general, on-street parking is discouraged.

(4) Travel Lane, Width. For an arterial on the National Truck Network, the right lane must be 12 ft in width. For a non-National-Truck-Network route, a minimum 11 ft travel lane should be used where truck volume exceeds 200 trucks per day. See Section 55-4.05.

(5) Surface Type. The pavement type selection will be determined by the Office of Pavement Engineering or by the local jurisdiction.

(6) Curb Offset. Vertical curbs which are either continuous or introduced intermittently may be offset 1 ft.

(7) Shoulder Width. The value applies to paved-shoulder width. The following will also apply:

a. For an uncurbed section, the shoulder is paved to the face of guardrail. The desirable guardrail offset is 2 ft from the usable-shoulder width. See Section 49-4.0 for more information.

b. For an uncurbed section, a desirable additional 1 ft of compacted aggregate will be provided.

c. If guardrail is present, the minimum offset from E.T.L. to face of guardrail should desirably be equal to the shy-line offset distance, but not less than 4 ft (see Section 49-4.0 for shy-line offsets). In a restrictive situation, the guardrail offset may be 0 ft from the usable-shoulder width.

d. For a curbed section, the curb offset is included in the paved-shoulder width.

(8) Cross Slope, Travel Lane. Cross slopes of 1.5% are acceptable on an existing bridge to remain in place.

(9) Cross Slope, Shoulder. Value is for a tangent section. See Figure 45-1A(1) or Figure 45-1A(2) for more-specific information. See Figure 43-3M or Figure 43-3N for shoulder cross slope on a horizontal curve.

(10) Parking Lane Width. The following will apply:

a. Where the parking lane will be used as a travel lane during peak hours or may be converted to a travel lane in the future, the width should be equal to the travel lane width plus the curb offset width (if present).

b. A parking lane for residential usage may be 7 ft narrower.

c. The cross slope for a parking lane is typically 1% steeper than that of the adjacent travel lane.

(11) Sidewalk Width. Value is for the installation of a new sidewalk. An existing sidewalk width of 3 ft or greater (with or without a buffer) may be retained. A buffer strip of 4 ft or more is desirable.

(12) Bicycle-Lane Width. The value is in addition to the width of a parking lane, if present. See Section 51-7.0 for additional details.

GEOMETRIC DESIGN CRITERIA FOR URBAN ARTERIAL, FOUR OR MORE LANES, 3R PROJECT
Figure 55-3E (Page 3 of 4)

Back

(13) Curbing Type. Vertical curbs may only be used with design speed lower than 50 mph.

(14) Side Slopes. Section 55-4.05 provides additional information for side slope criteria.

(15) Side Slope, Curbed, Cut. A shelf or sidewalk will be present immediately behind the curb before the toe of the backslope. The minimum width of a shelf desirably should be 6 ft. Where a sidewalk is present, the toe of the backslope will be 1 ft beyond the edge of sidewalk. See Section 45-3.0 for more information.

(16) Structural Capacity, New or Reconstructed Bridge. The following will apply:

a. Each State-highway bridge within 15 mi of a Toll-Road gate must be designed for Toll-Road loading.

b. Each bridge on an Extra-Heavy-Duty Highway must be designed for the Michigan Train truck loading configuration.

(17) Width, New or Reconstructed Bridge. See Section 402-6.02(01) for more information. The clear-roadway width is the algebraic sum of the following:

a. the approach traveled way width;

b. the approach usable shoulder width without guardrail; and

c. a bridge-railing offset (see Figure 402-6H).

(18) Vertical Clearance, Arterial Under Railroad. The following will apply:

a. Value includes an additional 6 in. allowance for a future pavement overlay.

b. In a highly-urbanized area, a minimum clearance of 14.0 ft may be provided if there is at least one route with a 16.0-ft clearance.

c. Vertical clearance applies from usable edge to usable edge of shoulder.

(19) Vertical Clearance, Existing Bridge. See Section 55-6.02 for additional information on minimum allowable vertical clearance.

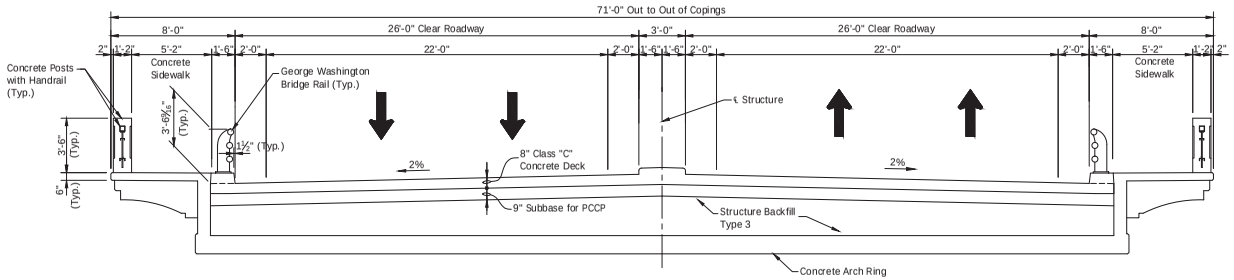
(20) Vertical Clearance, Arterial Over Railroad. See Section 402-6.01(03) for additional information on railroad clearance under a highway.

(21) Intersection Sight Distance. For left turn onto a two-way, 4-lane undivided roadway. P = Passenger car; SUT = single unit truck. See Figure 46-10G for value for a combination truck.

GEOMETRIC DESIGN CRITERIA FOR URBAN ARTERIAL, FOUR OR MORE LANES, 3R PROJECT
Figure 55-3E (Page 4 of 4)

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Appendix H – Typical Section



TYPICAL SECTION
PROPOSED STRUCTURE
BRIDGE NO. 2408F

	RECOMMENDED FOR APPROVAL: _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: AS NOTED; VERTICAL SCALE: AS NOTED	BRIDGE FILE: ; DESIGNATION:
	DESIGNED: K. SHERGALIS DRAWN: D. SHEETZ CHECKED: M. EICHENAUER CHECKED: K. SHERGALIS	TYPICAL SECTION 16TH STREET OVER WHITE RIVER	SURVEY BOOK: ; SHEET: ---- OF ; CONTRACT: ; PROJECT:	BRS NO. 0383.0202

H:\0383\0202 – 16th St. over White River\ProjDevelopment\Design\Drawings\0383B0202.dwg Kaitlyn Shergalis Plot:4/4/2016 2:12 PM Screen:4/4/2016 2:10 PM

Appendix I – Marion County Thoroughfare Plan

OFFICIAL THOROUGHFARE PLAN
MARION COUNTY, INDIANA

As amended by Resolution 02-CPS-R-010

June 19, 2002

A Segment of the Comprehensive Plan of Marion County, Indiana as Amended

City of Indianapolis
Department of Metropolitan Development
Division of Planning
Phone: 327-5151

The preparation of this report was financed in part by grants from the Federal Transit Administration and the Federal Highway Administration, U.S. Department of Transportation

TABLE 1
Typical Right-of-Way (R-O-W) Standards

Classification	R-O-W (feet)	Section Reference Number
Freeway:		
10 Lanes	300	1A
8 Lanes	300	1
6 Lanes	300	2
4 Lanes	300	3
Expressway:		
6 Lanes	200	4
4 Lanes	200	5
Two-Way Primary Arterial:		
6 Lanes:		
Area 1	120	6A
Area 2	140	6B
Area 3	160	6C
4 Lanes:		
Area 1	100	7A
Area 2	120	7B
Area 3	140	7C
One-Way Primary Arterial		
3 Lanes:		
Area 1	70	8A.1
Area 2	90	8A.2
Area 3	100	8A.3
4 Lanes:		
Area 1	80	8B.1
Area 2	100	8B.2
Area 3	120	8B.3

TABLE 1 (Continued)

Classification	R-O-W (feet)	Section Reference Number
One-way Primary Arterial Continued:		
5 Lanes:		
Area 1	100	8C.1
Area 2	120	8C.2
Area 3	140	8C.3
Two-Way Secondary Arterial:		
4 Lanes:		
Area 1	100	9A
Area 2	120	9B
Area 3	140	9C
2 Lanes:		
Area 1	80	10A
Area 2	80	10B
Area 3	80	10C
One-Way Secondary Arterial:		
3 Lanes:		
Area 1	70	11A
Area 2	90	11B
Area 3	110	11C
Collector:	70	

Notes:

1 - See Map 5 on page 9 for area boundaries
2 - See Figures 1 through 4 for Typical Roadway Cross-Sections
3 - See text on page 16 for explanation of Section Reference Number

STREET & SEGMENT	DEV. AREA LOCATION (1)	EXISTING R.O.W. (in feet)	EXISTING PAVEMENT (in feet)	PROPOSED R.O.W. (in feet)	PROPOSED PAVEMENT (in feet)	LENGTH (in miles)	SECTION REFERENCE (2)	COST ESTIMATE	PRIORITY(3)
1. INTERSTATE 465 EAST LEG (SEE I-465 NORTH LEG)									
A. I-69 - 56TH ST	**3**	**200**	**36-36**	**300**	**48-48**	**2.80**	**F-2**	**$650,000**	**A**
B. 56TH ST INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**-**	**$46,000,000**	**A**
C. 56TH ST - PENDLETON PIKE	**2**	**200**	**36-36**	**300**	**60-60**	**1.70**	**F-2**	**$42,993,224**	**A**
D. PENDLETON PIKE - I-70	**2**	**200**	**36-36**	**300**	**60-60**	**2.35**	**F-2**	**$54,000,000**	**A**
E. I-70 - WASHINGTON ST	**2**	**200**	**36-36**	**300**	**48-48**	**1.85**	**F-2**	**$36,693,861**	**A**
F. WASHINGTON ST - BROOKVILLE RD	**3**	**200**	**36-36**	**300**	**48-48**	**1.54**	**G-2**	**$11,206,800**	**D**
G. BROOKVILLE RD INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**-**	**$5,900,000**	**A**
H. BROOKVILLE RD - SHADELAND AV	**3**	**200**	**24-24**	**300**	**24-24**	**0.90**	**G-3**	**$6,724,080**	**D**
I. SHADELAND AV INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**-**	**$6,400,000**	**A**
J. SHADELAND AV - I-74	**3**	**200**	**36-36**	**300**	**48-48**	**0.78**	**F-2**	**$5,603,400**	**D**
K. I-74 INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**-**	**$19,000,000**	**A**
(SEE I-465 SOUTH LEG)									
2. INTERSTATE 465 NORTH LEG									
A. I-865 - MICHIGAN RD	**3**	**200**	**36-36**	**300**	**60-60**	**2.00**	**F-2**	**$26,126,667**	**B**
B. MICHIGAN RD - MERIDIAN ST	**3**	**200**	**36-36**	**300**	**48-48**	**3.83**	**F-2**	**$85,089,308**	**B**
C. MERIDIAN ST - KEYSTONE AV	**3**	**200**	**36-36**	**300**	**60-60**	**2.00**	**F-2**	**$95,320,250**	**B**
D. KEYSTONE AV - ALLISONVILLE RD	**3**	**200**	**36-36**	**300**	**48-48**	**2.02**	**F-2**	**$51,916,346**	**B**
E. ALLISONVILLE RD - I-69	**3**	**200**	**36-36**	**300**	**48-48**	**1.55**	**F-2**	**$40,289,248**	**B**
(SEE I-465 EAST LEG)									
3. INTERSTATE 465 SOUTH LEG (SEE I-465 WEST LEG)									
A. KENTUCKY AV - MANN RD	**3**	**200**	**36-36**	**300**	**48-48**	**1.14**	**F-2**	**$8,333,635**	**D**
B. MANN RD INTERCHANGE	3	-	-	-	-	-	C-2		
C. MANN RD - HARDING ST	**3**	**200**	**36-36**	**300**	**48-48**	**2.11**	**F-2**	**"**	**D**
D. HARDING ST INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**-**	**F-2**	**$12,000,000**	**A**
E. HARDING ST - EAST ST	**2**	**200**	**36-36**	**300**	**48-48**	**2.16**	**F-2**	**$47,634,365**	**D**
F. EAST ST - I-65	**2**	**200**	**36-36**	**300**	**48-48**	**2.25**	**F-2**	**"**	**D**
G. I-65 - EMERSON AV	**3**	**200**	**36-36**	**300**	**48-48**	**1.39**	**F-2**	**$10,086,120**	**D**
H. EMERSON AV - I-74	**3**	**200**	**36-36**	**300**	**48-48**	**3.20**	**F-2**	**$22,973,940**	**D**
(SEE I-465 EAST LEG)									
4. INTERSTATE 465 WEST LEG									
A. 96TH ST - 86TH ST	**3**	**200**	**36-36**	**300**	**60-60**	**1.30**	**F-2**	**$13,063,333**	**B**
B. 86TH ST INTERCHNAGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**E-2**	**$5,100,000**	**A**
C. 86TH ST - 71ST ST	**3**	**200**	**36-36**	**300**	**60-60**	**1.95**	**F-2**	**$24,506,667**	**B**
D. 71ST ST INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**E-2**	**$7,525,000**	**A**
E. 71ST ST - I-65	**3**	**200**	**36-36**	**300**	**60-60**	**1.20**	**F-2**	**$12,253,333**	**B**
F. I-65 - 56TH ST	**3**	**200**	**36-36**	**300**	**60-60**	**0.74**	**F-2**	**$15,000,000**	**B**
G. 56TH ST INTERCHANGE	**3**	**-**	**-**	**-**	**-**	**-**	**C-3**		**B**
H. 56TH ST - 38TH ST	**3**	**200**	**36-36**	**250**	**60-60**	**2.07**	**F-2**	**$15,000,000**	**B**
I. 38TH ST - I-74	**3**	**200**	**36-36**	**300**	**60-60**	**1.24**	**F-2**	**$15,000,000**	**A**
J. I-74 - 10TH ST	**2**	**200**	**36-36**	**300**	**60-60**	**1.90**	**F-2**	**$47,000,000**	**A**
K. 10TH ST - ROCKVILLE RD W / INTERCHANGE MODIFICATION	**2**	**200**	**36-36**	**300**	**60-60**	**1.03**	**F-2**	**$36,000,000**	**C**
L. ROCKVILLE RD - WASHINGTON ST	**2**	**200**	**36-36**	**300**	**60-60**	**1.21**	**F-2**	**$22,000,000**	**A**
M. WASHINGTON ST - AIRPORT EXWY	**3**	**200**	**36-36**	**300**	**60-60**	**1.27**	**G-2**	**$32,641,702**	**B**
N. AIRPORT EXWY - I-70	**3**	**200**	**36-36**	**300**	**60-60**	**1.22**	**F-2**	**$31,361,636**	**B**
O. I-70 - KENTUCKY AV	**3**	**200**	**36-36**	**300**	**36-36**	**0.81**	**F-2**	**$69,728,449**	**B**
(SEE I-465 SOUTH LEG)									
5. INTERSTATE 65 NORTH LEG									
A. I-865 - 71ST ST	**3**	**200**	**24-24**	**300**	**36-36**	**5.70**	**F-3**	**$11,550,000**	**B**
B. 71ST ST - I-465	**3**	**200**	**24-24**	**300**	**36-36**	**1.00**	**F-3**	**$36,760,000**	**B**
C. I-465 - LAFAYETTE RD	3	200	36-36	300	36-36	2.42	G-3		
D. LAFAYETTE RD - 38TH ST	3	200	36-36	300	36-36	1.90	G-3		
E. 38TH ST - DR M.L. KING JR ST	**1**	**200**	**36-36**	**200**	**48-48**	**1.80**	**F-3**	**$75,000,000**	**D**
F. DR M.L. KING JR ST - 30TH ST	**1**	**200**	**36-36**	**200**	**48-48**	**0.40**	**F-2**	**"**	**D**
G. 30TH ST - 21ST ST	**1**	**200**	**36-36**	**200**	**48-48**	**1.06**	**F-2**	**"**	**D**
H. 21ST ST - WEST ST	**1**	**200**	**36-36**	**200**	**48-48**	**0.80**	**F-2**	**"**	**D**
I. WEST ST - I-70	**1**	**200**	**36-36**	**200**	**60-60**	**1.30**	**F-2**	**"**	**D**
(SEE I-65 - I-70 NORTH)									
6. INTERSTATE 65/70 NORTH (SEE I-65 NORTH)									
A. I-70 - MARKET ST	**1**	**200**	**36-36**	**200**	**48-48**	**1.00**	**F-2**	**$1,743,000**	**A**
B. MARKET ST - WASHINGTON ST	**1**	**200**	**36-36**	**200**	**48-48**	**0.10**	**F-2**	**$125,000,000**	**B**
C. WASHINGTON ST - MORRIS ST	**1**	**200**	**36-36**	**200**	**48-48**	**1.03**	**F-2**	**"**	**B**
7. INTERSTATE 65 SOUTH LEG									
A. I-70 WEST - RAYMOND ST	**1**	**200**	**36-36**	**200**	**48-48**	**1.14**	**F-2**	**$42,900,000**	**B**
B. RAYMOND ST - KEYSTONE AV	**2**	**200**	**36-36**	**300**	**48-48**	**2.00**	**F-2**	**"**	**B**
C. KEYSTONE AV - I-465	**2**	**200**	**36-36**	**300**	**48-48**	**1.11**	**F-2**	**"**	**B**

(1)See Map 5, pg. 9.
(2)See text, pg. 17.
(3)Priorities:"A" to "C", pg. 18

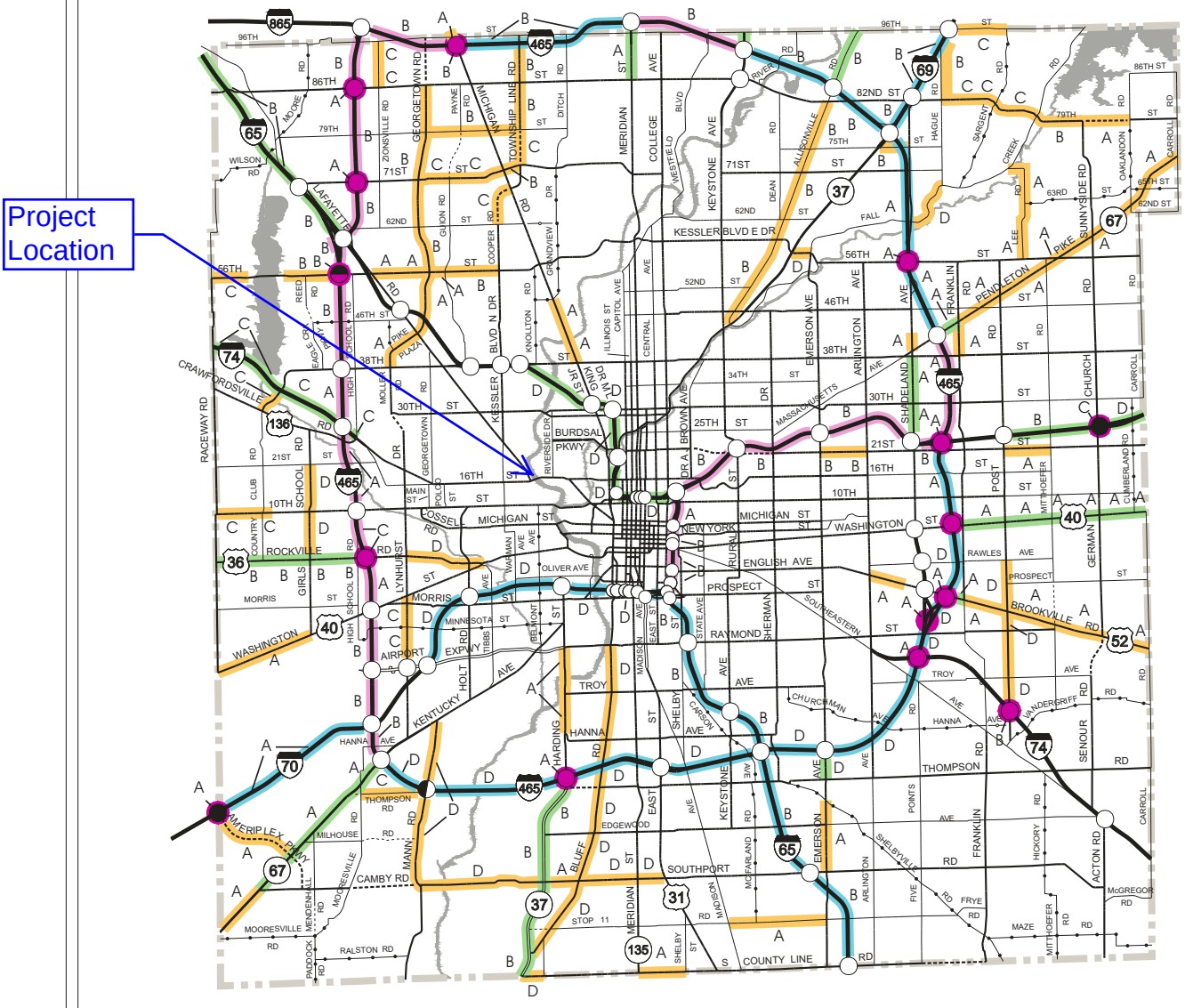
"-"-data not applicable/available
v-variable
-x- 2 lane offset
(#) - Plan Supplement

STREET & SEGMENT	DEV. AREA LOCATION (1)	EXISTING R.O.W. (in feet)	EXISTING PAVEMENT (in feet)	PROPOSED R.O.W. (in feet)	PROPOSED PAVEMENT (in feet)	LENGTH (in miles)	SECTION REFERENCE (2)	COST ESTIMATE	PRIORITY(3)
D. I-465 - SOUTHPORT RD	**3**	**200**	**36-36**	**300**	**48-48**	**2.90**	**F-2**	**$25,650,000**	**B**
E. SOUTHPORT RD - COUNTY LINE S RD	**3**	**200**	**36-36**	**300**	**48-48**	**2.34**	**F-2**	**$49,370,370**	**B**
8. INTERSTATE 69									
A. 96TH ST - 82ND ST	**3**	**200**	**36-36**	**300**	**48-48**	**1.75**	**F-2**	**$37,033,640**	**B**
B. 82ND ST - I-465	**3**	**200**	**36-36**	**300**	**48-48**	**0.82**	**F-2**	**"**	**B**
(SEE BINFORD BLVD)									
9. INTERSTATE 70 EAST LEG									
A. I-65 - KEYSTONE AV	**1**	**200**	**60-60**	**200**	**72-72**	**1.50**	**E-1**	**$75,000,000**	**B**
B. KEYSTONE AV - EMERSON AV	**2**	**200**	**48-48**	**300**	**60-60**	**1.90**	**F-2**	**"**	**B**
C. EMERSON AV - SHADELAND AV	**2**	**200**	**48-48**	**300**	**60-60**	**2.30**	**F-2**	**"**	**B**
D. SHADELAND AV - I-465	**2**	**200**	**48-48**	**300**	**60-60**	**0.60**	**G-1**	**$30,000,000**	**B**
E. I-465 - POST RD	2	200	36-36	300	**48-48**	1.30	G-2		
F. POST RD - GERMAN CHURCH RD	**3**	**200**	**24-24**	**300**	**36-36**	**2.00**	**F-3**	**$11,895,444**	**B**
G. GERMAN CHURCH RD INTERCHANGE	**3**	**-**	**-**	**-**	**-**	**0**	**C-2**	**$4,071,186**	**C**
H. GERMAN CHURCH RD - E CARROLL RD	**3**	**200**	**24-24**	**300**	**36-36**	**1.00**	**F-3**	**$59,477,722**	**D**
10. INTERSTATE 70 WEST LEG									
A. SIX POINTS RD / AIRPORT INTERCHANGE	**3**	**-**	**-**	**-**	**-**	**0**	**C-3**	**$31,724,502**	**A**
B. SIX POINTS RD/AIRPORT INTERCHANGE - I-465	**3**	**200**	**36-36**	**300**	**60-60**	**3.45**	**F-2**	**$61,500,000**	**A**
C. I-465 - AIRPORT EXWY	3	200	36-36	300	36-36	1.75	G-2		
D. AIRPORT EXWY - HOLT RD	**2**	**200**	**36-36**	**300**	**48-48**	**1.82**	**F-2**	**$75,000,000**	**D**
E. HOLT RD - HARDING ST	**2**	**200**	**36-36**	**300**	**48-48**	**2.00**	**F-2**	**"**	**D**
F. HARDING ST - BLUFF RD	**1**	**200**	**36-36**	**200**	**48-48**	**1.00**	**F-2**	**"**	**D**
G. BLUFF RD - MERIDIAN ST	**1**	**200**	**36-36**	**200**	**48-48**	**0.45**	**F-2**		**D**
11. INTERSTATE 74 WEST LEG									
A. RACEWAY RD - DANDY TRAIL	**3**	**200**	**24-24**	**300**	**36-36**	**1.76**	**F-3**	**$47,200,000**	**C**
B. DANDY TRAIL - I-465	**3**	**200**	**24-24**	**300**	**36-36**	**1.55**	**F-3**	**"**	**C**
C. I-465 - CRAWFORDSVILLE RD	**2**	**200**	**24-24**	**300**	**36-36**	**0.38**	**F-3**	**"**	**C**
12. INTERSTATE 74 EAST LEG									
A. SOUTHEASTERN AV - I-465	3	200	24-24	300	24-24	0.80	G-3		
B. I-465 - POST RD	3	200	24-24	300	24-24	2.20	G-3		
C. POST RD INTERCHANGE MODIFICATION	**3**	**-**	**-**	**-**	**-**	**0**	**E-3**	**4,071,186**	**B**
D. POST RD - ACTON RD	3	200	24-24	300	24-24	3.00	G-3		
13. INTERSTATE 865									
A. I-65 - I-465	3	200	36-36	300	36-36	3.50	G-2		

(1)See Map 5, pg. 9.
(2)See text, pg. 17.
(3)Priorities:"A" to "C", pg. 18

"-"-data not applicable/available
v-variable
-x- 2 lane offset
(#) - Plan Supplement

MAP 6
RECOMMENDED THOROUGHFARE PRIORITY IMPROVEMENTS



	EXISTING	PROPOSED
FREEWAYS	———	- - - - -
EXPRESSWAYS	———	·····
PRIMARY ARTERIALS	———	- - - - -
SECONDARY ARTERIALS	———	- - - - -
SECONDARY ARTERIALS (2 LANE)	———	- - - - -
INTERCHANGES	○ ○	● ●

RECOMMENDED IMPLEMENTATION	
1998 - 2006	A
2007 - 2015	B
2016 - 2020	C
2021 - 2025	D

PRIORITY PROJECTS	
INTERCHANGES	●
2 LANES TO 4 LANES	
4 LANES TO 6 LANES	
6 LANES TO 8 LANES	
8 LANES TO 10 LANES	

MILES

0 1 2 3 4 5

CITY OF INDIANAPOLIS
DIVISION OF PLANNING
DEPARTMENT OF METROPOLITAN DEVELOPMENT

JUNE, 2002

Appendix J – Opinion of Probable Cost and Quantities

Butler Fairman Seufert
CIVIL ENGINEERS

Job : 5839.0202 - 16th Street over White River DES KMS DATE 4/4/2016
Item : Opinion of Probable Cost CKD BW DATE 4/20/2016

Pay Item #	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost
105-06845	Construction Engineering	1	LS	$100,000	$100,000
110-01001	Mobilization and Demobilization	1	LS	$250,000	$250,000
201-52370	Clearing Right of Way	1	LS	$20,000	$20,000
202-51328	Present Structure, Remove Portions	1	LS	$300,000	$300,000
203-04523	Dewatering	1	LS	$30,000	$30,000
205-06937	Temporary Silt Fence	800	LFT	$5	$4,000
205-09543	No. 2 Stone	100	TONS	$35	$3,500
206-51235	Cofferdam	1	LS	$100,000	$100,000
211-09266	Structural Backfill, Type 3	13,000	CYS	$40	$520,000
302-06464	Subbase for PCCP	1,150	CYS	$45	$51,750
306-08043	Milling Transition	1,200	SYS	$20	$24,000
401-07329	QC/QA - HMA, 4, 70, Surface, 9.5 mm	110	TONS	$175	$19,250
406-05521	Asphalt for Tack Coat	1,200	SYS	$2	$1,800
601-01522	Guardrail, Transition, TGB	2	EACH	$2,250	$4,500
601-02241	Guadrail, Remove	200	LFT	$15	$3,000
601-06035	Guardrail, Reset	150	LFT	$40	$6,000
601-94689	Guadrail, End Treatment, OS	2	EACH	$2,500	$5,000
601-99105	Guardrail, W-Beam, 6FT-3IN Spacing	200	LFT	$30	$6,000
616-02320	Geotextiles	2,500	SYS	$5	$12,500
616-05688	Riprap, Class 1	3,500	TONS	$60	$210,000
621-01004	Mobilization and Demobilization for Seeding	1	LS	$750	$750
621-06560	Mulched Seeding, U	500	SYS	$3	$1,500
628-09401	Field Office, A	18	MOS	$1,800	$32,400
702-02925	Waterproofing Membrane System	38,500	SFT	$7	$269,500
702-12076	Grates, Basins, and Fittings	12	EACH	$5,000	$60,000
702-51863	Field Drilled Holes in Concrete	1,400	EACH	$25	$35,000
703-06029	Reinforcing Bars, Epoxy Coated	310,000	LBS	$1	$310,000
703-08427	Embedded Galvonic Anode	2,000	EACH	$50	$100,000
704-51002	Concrete, C, Superstructure	1,700	CYS	$850	$1,445,000
706-04683	Railing Steel, 3-Tube	1,380	LFT	$150	$207,000
706-51020	Railing, Concrete, C	50	CYS	$1,200	$60,000
709-51821	Surface Seal	1	LS	$60,000	$60,000
710-09158	Patching Concrete Structures	5,400	SFT	$100	$540,000
711-51035	Structural Steel	50,000	LBS	$3	$150,000
713-04331	Temporary Causeway	1	LS	$200,000	$200,000

Job : 5839.0202 - 16th Street over White River DES KMS DATE 4/4/2016

Item : Opinion of Probable Cost CKD BW DATE 4/20/2016

715-05407	Pipe, End Bent Drain, 6 IN	1,750	LFT	$20	$35,000
715-10238	Pipe, Roadway Drain Casting Extension	12	EACH	$150	$1,800
801-04308	Road Closure Sign Assembly	8	EACH	$300	$2,400
801-06625	Detour Route Marker Assembly	20	EACH	$100	$2,000
801-06640	Construction Sign, A	20	EACH	$100	$2,000
801-06775	Maintaining Traffic	1	LS	$30,000	$30,000
801-06775	Maintaining Traffic Waterway	1	LS	$30,000	$30,000
801-07118	Barricade, III-A	96	LFT	$15	$1,440
801-11642	Portable Changeable Message Sign	2	EACH	$6,000	$12,000
805-08214	Conduit PVC 2 IN Schedule 40	850	LFT	$30	$25,500
807-03802	Light Standards	4	EACH	$15,000	$60,000

Estimated Construction Cost = $5,344,590

Estimated Construction Cost with 20 Percent Contingency = $6,413,508

Use $6,500,000

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CIVIL ENGINEERS

JOB 5839.0202 - 16th st over White River DES. KMS DATE 4-1-16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

105-06845	USE 1LS
Construction Engineering	
110-01001	USE 1LS
Mobilization and Demobilization	
201-52370	USE 1LS
Clearing Right of way	
202-51328	USE 1LS
Present Structure, Remove Portions	
801-06775	USE 1LS
maintaining traffic	
628-09401	USE 18MOS
Field Office, A	
801-11642	USE 2EACH
Portable changeable message sign	
801-06640	USE 20EACH
Construction Sign, A	

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/1/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

801-06625 USE 20 EACH

Detour Route Marker Assembly

801-04308 USE 8 EACH

Road Closure Sign Assembly

801-07118 USE 96 LFT

Barricade, III-A

401-07329 USE 110 TONS

QC/QA-HMA, 4, 70, Surface, 9.5mm

Assume 90' wedge and level on both sides of bridge will be required. Depth ≈ 1.5"

Area = (≈60')(90')(2 sides)(1/9) = 1200 sys

Tonage = (165 lbs/sys)(1200 sys)(1/2000 lb)

tonage = 99 TONS → use 110 TONS

306-08043 USE 1200 SYS

Milling Transitions

406-05521 USE 1200 SYS

Asphalt for Tack Coat

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/1/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

706-51020 USE 50cys

Railing, Concrete, C

Railing will be replaced in kind use quantities from existing plans

Concrete = 2.2 + 6.5 + 2.2 + 2.2 + 2.2 + 6.5 + 4.2 + 4.2 + 4.2 + 4.2 + 4.2 = 42.8 cys

use 50cys

711-51035 USE 50,000LBS

Structural Steel

For replacing handrail, from existing plans

LBS of Steel = 45,503 LBS → use 50,000 LBS

706-04683 USE 1380LFT

Railing Steel, 3-Tube

For George Washington Parkway memorial Railing

Length = (688')(2) = 1376 LFT

USE 1380LFT

713-04331 USE 1LS

Temporary Causeway

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/4/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

702-02925 USE 38,500SFT

Waterproofing Membrane System

Width of Arch = 58 ft

Length of Arches (Total) ≈ 105' + 6' + 110' + 6' + 120' + 6' + 110' + 6' + 105' = 574 ft ⇒ say 600 ft

use a 1.10 Slope Factor to account for curvature in arch

Area = (58')(600')(1.10) = 38,280 SFT

USE 38,500SFT

211-09266 USE 13,000 CYS

Structure Backfill, Type 3

Width of Arch = 58 ft

Length of Arch ≈ 600 ft (See above)

Ave. Height of Fill ≈ 10 ft (From Existing Plans)

Volume of Fill = (58')(600')(10')(1/27) = 12,888.9 cys

Use 13,000 CYS

715-05407 USE 1750 LFT

Pipe, End Bent Drain, 6IN

Add drainage to arch to extend life of historic structure

Add pipe longitudinally along both sides and transverely along low point of arch

Length = (600 ft)(2 sides)(1.10 (slope factor)) + (58' + 10')(6)

Length = 1728 LFT ⇒ use 1750 LFT

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JOB 5839 - 16th St. over White River DES. KMS DATE 4/4/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

702-12076 USE 12EACH

Grates, Basins, and Fittings

There is existing drains on bridge deck
since vertical curve grade is only 1%
add 6 drains on each side of bridge
Total = 12 EACH

715-10238 USE 12EACH

Pipe, Roadway Drain Casting Extension

to extend beyond arch
Use 12EACH

302-06464 USE 1150cys

Subbase for PCCP

9" below concrete deck
width = 58ft
Length ≈ 687 ft
Volume = (58')(687')(0.75')(1/27) = 1107 cys
Use 1150 cys

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JOB 5839.0202 - 16th St. over White River DES. KMJ DATE 4/4/16
ITEM Prelim. Quantities CK. BW DATE 4/20/16

704-51002 USE 1700cys

Concrete, C, Superstructure

Deck = (8"/12")(58')(687')(1/27) = 983.9cys
Raised median curb = (0.5')(687')(3')(1/27) = 38.2cys
Railing curb = (0.66')(1.5')(687')(2sides)(1/27) = 50.9cys
Sidewalk (Existing Plans) = (14.9 + 1.4 + 1.4 + 1.4 + 1.4 + 13.7 + 25.5 + 26.7 + 29.1 + 26.7 + 25.8) = 168cys
cut spandral wall 5ft and rebuild to allow for placement of new sidewalk and corbels
spandrel wall = (1.5')(5')(687')(2sides)(1/27) = 381.7cys
Total = 1622.7 cys use 1700cys

702-51863 USE 1400EACH

Field Drilled Holes in Concrete

used to connect new spandrel wall to old
Assume 12" spacing
# of Holes = 687 + 1 + 687 + 1 = 1376 EACH
use 1400 EACH

709-51821 USE 1LS

Surface Seal

Deck + Sidewalk = (687')(71 ft) = 48,777 SFT
spandrel wall = (687')(5')(2) = 6870 SFT
Total = 55,647 SFT
use $60,000 for cost

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/4/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

703 - 06029 USE 310,000LBS

Reinforcing Bars, Epoxy Coated

Assume 175lb/cys for reinforcing steel

Reinforcing = (175lb/cys)(1750cys)

Reinforcing = 306,250 LBS

USE 310,000 LBS

710 - 09158 USE 5400SFT

Patching Concrete Structures

Patching for Arch, piers, and spandrel walls

Arch Area ≈ (58')(600')(1.10) = 38,200ft²

spandrel walls = (687')(5')(2sides) = 6870 ft²

Piers = (11.25' + 11.25' + 9.5' + 9.5')(10')(4piers) = 6940 ft²

Area = 52,010 ft²

Assume 10% patching for structure

Area = (52,010 ft²)(0.10) = 5,201 sft

Use 5400SFT

601 - 06035 USE 150 LFT

Guardrail, Reset

Length = 150 ft in SE Quad.

601 - 02241 USE 200LFT

Guardrail, Remove

Length = 200 ft in NE Quad

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/4/16
ITEM Prelim. Quantities CK. BW DATE 4/20/16

601-01522 USE 2EACH

Guardrail, Transition, Type TGB
Use in NE and SW Quad
Total = 2EACH

601-99105 USE 200LFT

Guardrail, W-Beam, 6FT-3IN spacing
say 100LFT required in NE and SW Quad
Total = 200LFT

601-94689 USE 2EACH

Guardrail, End Treatment, OS
USE in NE and SE Quad
Total = 2EACH

206-51235 USE 1LS

Cofferdam
Likely required for concrete patching @ piers, since some deterioration is below water level

203-04523 USE 1LS

Dewatering
used to dewater cofferdam

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/4/16

ITEM Prelim Quantities CK. BW DATE 4/20/16

Due to the scour depth at the bridge being unknown, assume INDOT will consider bridge scour critical. Assume Class 1 Riprap over Geotextile will be required.

616-05688 USE 3500TONS

Riprap, Class 1

Area @ Piers = (9.5)(2)(115.25)(2) + (19')(9.5)(2) =

Area @ Piers = 4740.5 (4 piers) = 18,962 ft²

use 10ft around abutments since water depth is shallow

Area @ Abutments = (90')(10')(2 abutments) = 1800 ft²

Riprap tonage = [(18,962 ft²)(3') + (1800 ft²)(2')](1/27)(1.5 T/cy

Riprap = 3360.3 TONS

USE 3500 TONS

616-02320 USE 2500 sys

Geotextiles

Area from Above = [18,962 + 1800] ft² = 20,762 ft²

Area = 20,762 ft² / 9 ft²/yd² = 2306.9 sys

USE 2500 sys

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JOB 5839.0202 - 16th St. over White River DES. KMS DATE 4/4/2016

ITEM Prelim. Quantities CK. BW DATE 4/20/16

807-03802 USE 4 EACH

Light Standards

Assume historical agencies will want lighting back on bridge. use 4 EACH

805-08214 USE 850LFT

Conduit PVC 2IN schedule 40

Length = 688 + 60' + 60' + ≈100' = 808 LFT

USE 850LFT

205-06937 USE 800LFT

Temporary Silt Fence

say 200LFT in each quadrant

Length = (200')(4') = 800LFT

205-09543 USE 100TONS

No. 2 Stone

Use 100 TONS for a stable construction entrance

621-06560 USE 500 SYS

mulched seeding II

say 500sys for any ground disturbed during construction

621-01004 USE 1 EACH

Mobilization and Demobilization for seeding

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JOB 5839.0202 - 16th St. Over White River DES. KMS DATE 4/4/16

ITEM Prelim. Quantities CK. BW DATE 4/20/16

801-06775 USE 1LS

Maintaining traffic waterway

703-08247 USE 2000EACH

Embedded Galvonic Anode

Assume 2000EACH, place in patching area to prevent further corrosion

Appendix K – Hydraulic References

StreamStats Version 3.0

Flow Statistics Ungaged Site Report

Date: Fri Apr 1, 2016 9:21:36 AM GMT-4
Study Area: Indiana
NAD 1983 Latitude: 39.7889 (39 47 20)
NAD 1983 Longitude: -86.1977 (-86 11 52)
Drainage Area: 1288.603 mi2

Coordinated Reach

ID: 639
Basin: WEST FORK WHITE RIVER
Stream Name: West Fork White River
Begin Drainage Area: 1200.01
End Drainage Area: 1650

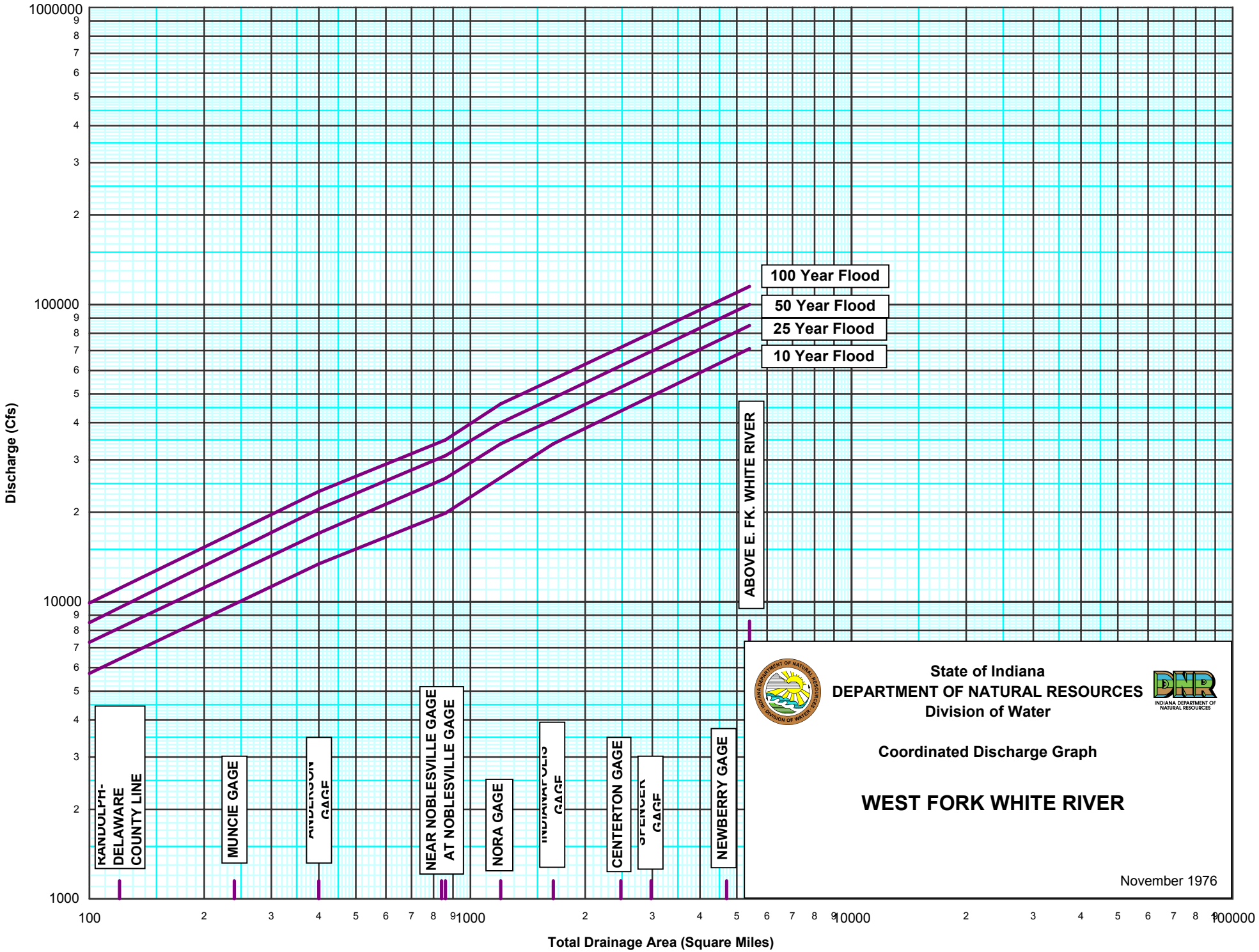
Bankfull Basin Characteristics			
Region number=1566			
100% Bankfull Central Till Plain Region 2013 5078 (1290 mi2)			
Parameter	**Value**	**Regression Equation Valid Range**	
		Min	**Max**
Drainage Area (square miles)	1290 (above max value 812)	0.04	812

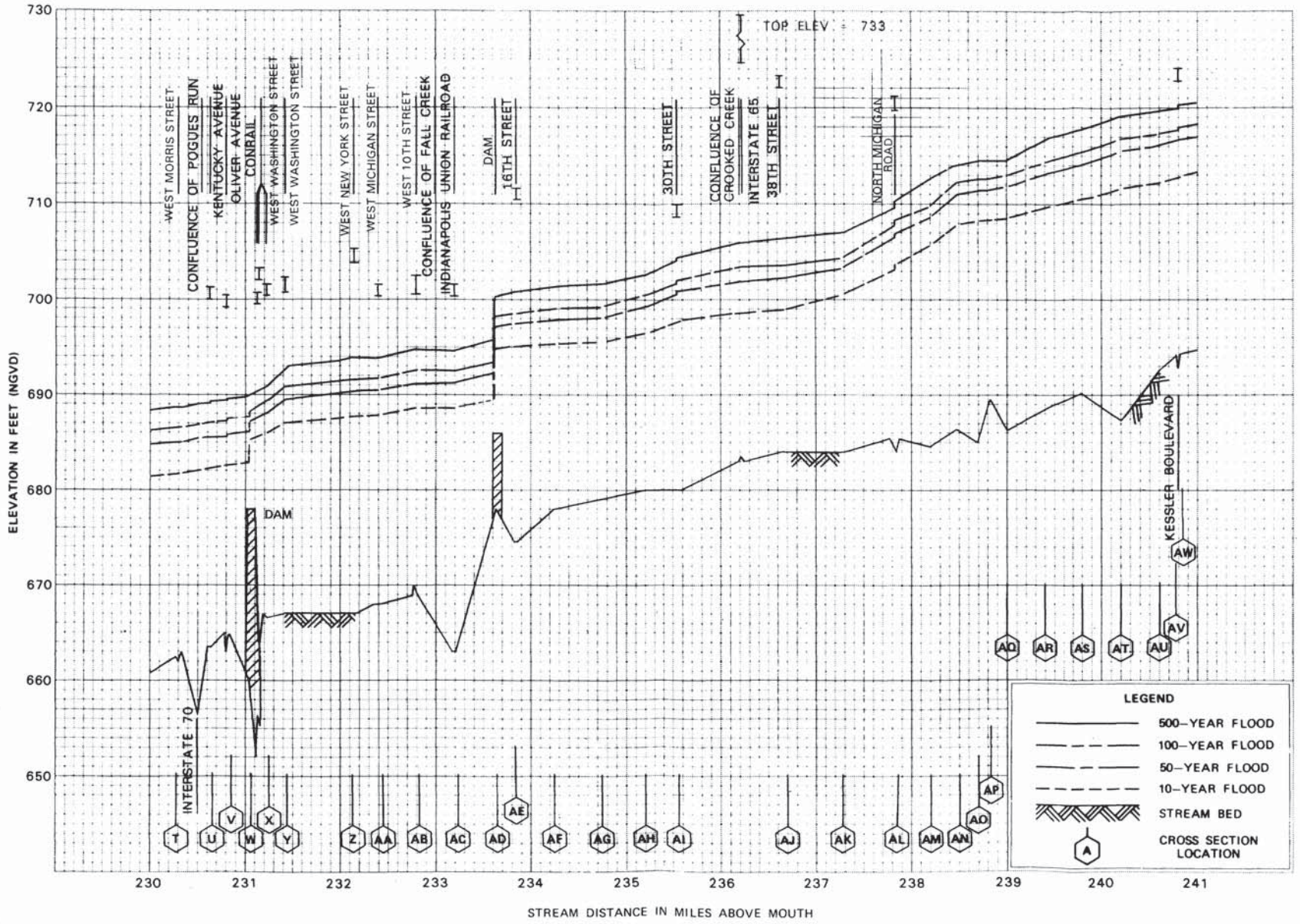
Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flow Statistics using Coordinated Reach			
Statistic	**Flow(ft3/s)**	**a coef**	**b coef**
Q10	27700	75.719309	0.824331
Q25	35500	526.380602	0.587877
Q50	41800	548.230932	0.605062
Q100	48300	670.520383	0.597292

Bankfull Statistics						
Statistic	**Value**	**Unit**	**Prediction Error (percent)**	**Equivalent years of record**	**90-Percent Prediction Interval**	
					Min	**Max**
BFWDTH	189	ft				
BFDPTH	5	ft				
BFAREA	942	ft2				

http://pubs.usgs.gov/sir/2013/5078/ (http://pubs.usgs.gov/sir/2013/5078/)
Robinson_ B.A._ 2013_ Regional bankfull-channel dimensions of non-urban wadeable streams in Indiana: U.S. Geological Survey_ Scientific Investigations Report 2013-5078_ 33 p.


Discharge (Cfs)
1000000
100000
10000
1000
100
1000
10000
100000
Total Drainage Area (Square Miles)
100 Year Flood
50 Year Flood
25 Year Flood
10 Year Flood
ABOVE E. FK. WHITE RIVER
RANDOLPH-DELAWARE COUNTY LINE
MUNCIE GAGE
ANDERSON GAGE
NEAR NOBLESVILLE GAGE
AT NOBLESVILLE GAGE
NORA GAGE
INDIANAPOLIS GAGE
CENTERTON GAGE
SPENCER GAGE
NEWBERRY GAGE
State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Coordinated Discharge Graph
WEST FORK WHITE RIVER
November 1976



FLOOD PROFILES

WHITE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARION COUNTY, IN

(ALL JURISDICTIONS)

92P

Appendix L – Asbestos Report

Asbestos Investigation Report

16th Street over White River (2408F)

Indianapolis, Indiana
ATC Project No. 086.00481.0254, Task 00009

February 22, 2011

Prepared by:

ATC Associates Inc.
7988 Centerpoint Drive, Suite 100
Indianapolis, Indiana 46256
Phone: (317) 849-4990
Fax: (317) 849-4278

Prepared for:

American Structurepoint, Inc.
7260 Shadeland Station
Indianapolis, Indiana 46256

Attn: Mr. Michael H. Wenning

7988 Centerpoint Drive, Suite 100
Indianapolis, Indiana 46256
www.atcassociates.com
TEL: 317.849.4990
FAX: 317.849.4278

February 22, 2011

Mr. Michael H. Wenning
American Structurepoint, Inc.
7260 Shadeland Station
Indianapolis, Indiana 46256

Re: Asbestos Consulting Services
16th Street over White River (2408F)
Indianapolis, Indiana
ATC Project No. 086.00481.0254, Task 00009

Dear Mr. Wenning:

ATC Associates Inc. (ATC) is pleased to submit the enclosed Asbestos Consulting Service Report for the above referenced site. This investigation took place at your request and in accordance with ATC Proposal Number 086-2011-0002, dated January 4th, 2011. This investigation was conducted on February 8th, 2011. Results of this investigation did not indicate the presence of regulated asbestos containing materials (RACMs) that would require special removal prior to renovating or demolishing the bridge.

INTRODUCTION

ATC Associates Inc. (ATC) performed an asbestos investigation on February 8th, 2011, of the bridge located on 16th Street over White River (2408F) in Indianapolis, Indiana. This bridge consists of four (4) asphalt traffic lanes and is a concrete span structure of six (6) arches. White River was observed to run underneath this structure. This bridge has a total of thirty-four (34) expansion joints. Concrete and metal guardrails and sidewalks were along both sides of the structure. Due to snow and ice present on the bridge, the inlets for surface drains were not observed; however, drain outlets were observed on the underside of the bridge at the apex of the arches. Based on the number of arches, ATC assumes that six (6) surface drains are present along each side of the bridge. Four (4) street lights and a cross walk warning sign with flashers were observed to be mounted on the south side of the bridge. A non-insulated vertical PVC pipe was observed on the south side of bridge that

terminated at a box with markings that indicated it is owned by the City of Indianapolis and was observed to have a solar panel attached to it. A non-insulated pipe runs the length of the north side of the bridge. Additionally, the bridge had angled grass, tree/foliage covered embankments on both sides of the structure. It should be noted that at the time of the investigation, snow and ice was present on the bridge and observation of the sidewalk surfaces along the guard rails were limited.

DEFINITIONS

This report may contain abbreviations and terms that may not be familiar to the reader. These terms are defined below:

Asbestos-Containing Material (ACM): Any material that contains more than one percent asbestos.

Category I Non-Friable ACM: Packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos.

Category II Non-Friable ACM: Any material other than those designated as Category I Non-Friable ACMs that contains more than one percent asbestos and that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

Friable Asbestos Material: Any ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Non-friable ACM can become friable after sustaining damage.

Homogeneous Area (HA): An area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.

Indiana Department of Environmental Management (IDEM): The governing body that oversees the requirements for licensing, demolition, notification, emission control, and disposal.

Miscellaneous Material: Any building material on structural components, structural members or fixtures, such as floor and ceiling tiles, excluding surfacing materials or thermal system insulations. Abbreviated "M" in the Material Type columns of the tables in this removal plan.

Presumed Asbestos-Containing Material: Thermal system insulation and surfacing material found in buildings constructed no later than 1980.

Regulated Asbestos-Containing Material (RACM):

1. Friable ACM
2. Category I Non-Friable ACM that has become friable
3. Category I Non-Friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading

4. Category II Non-Friable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the ACM in the course of demolition or renovation operations

Surfacing Material: Material that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes. Abbreviated "S" in the Material Type columns of the tables in this removal plan.

Thermal System Insulation: Material applied to pipes, fittings, boilers, breaching, tanks, ducts, or other structural components to prevent heat loss or gain, or water condensation, or for other purposes. Abbreviated "T" in the Material Type columns of the tables in this removal plan.

METHODOLOGY

Based on observations made at the time of the site investigation, it was determined that suspect asbestos-containing materials (ACMs) were present at the bridge that required sampling. The black vibration insulation was in fair condition and could become friable during demolition activities at the bridge. A total of two (2) bulk samples were collected from the suspect asbestos material and submitted for laboratory analysis. AHERA Building Inspectors, Mr. Michael A. Yergin, (Indiana Certification No. 19A003355, expiring September 30th, 2011) and Ms. Emily Montgomery, (Indiana Certification No. 19A003320, expiring September 15th, 2011) performed this investigation.

SUMMARY AND CONCLUSIONS

ATC conducted an asbestos survey of the bridge located on 16th Street over White River per the request of American Structurepoint, Inc. This bridge is located in Indianapolis, Indiana. Laboratory analysis indicated the samples analyzed were not identified with asbestos concentrations greater than one percent (>1 %). Visual reconnaissance did not indicate the presence of additional suspect, friable ACM or presumed, non-friable ACM.

No assumed or known RACMs were identified associated with the bridge located on 16th Street over White River (2408F). However, even though no regulated asbestos was found where the demolition activities will occur, the owner and/or operator must still properly notify IDEM prior to demolition activity. The notification form to be used is the Notification of Demolition and

Renovation Operations State Form 44593 (R2/8-99) prior to beginning any renovation or demolition projects on this structure.

QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of industrial hygiene and engineering. This statement is in lieu of other statements either expressed or implied. ATC is not responsible for the independent conclusions, opinions or recommendations made by others based on the observations presented in this report.

Environmental evaluations are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. Moreover, the inspection was limited to accessible areas and did not include areas below grade. Should suspect asbestos containing materials be unearthed during demolition activities, work should be stopped, and an Indiana licensed asbestos inspector called to the site. This inspector should make the determination if any such materials are asbestos containing. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made.

The results, findings, conclusions and recommendations expressed in this report are based only on conditions that were observed during ATC's inspection of the bridge on 16th Street over White River (2408F) located in Indianapolis, Indiana on February 8th, 2011.

This report is intended for the sole use of American Structurepoint, Inc. and is designed to aid the owner, architect, construction manager, general contractors and potential asbestos abatement contractors in locating ACM. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and the use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

Sincerely,

ATC ASSOCIATES INC.

Emily M. Montgomery, EIT
Staff Industrial Hygienist

Jaclyn A. Sigmon
Industrial Hygiene Department Manager

ATTACHMENT I

Certifications/Accreditations

Indiana Department of Environmental Management
100 N. Senate Avenue
Mail Code 61-52 IGCN 1003
Indianapolis, IN 46204-2251

September 15, 2010

Emily M. Montgomery
ATC Associates Inc
7988 Centerpoint Dr Ste 100
Indianapolis IN 46256

Re: Asbestos Inspector # 19A003320

Based upon the review of your license application, the Office of Air Quality has determined that you have fulfilled the requirements of 326 IAC 18 and are eligible for licensing in the following discipline:

Asbestos Inspector

Your Asbestos Inspector license is attached below. The license is waterproof and tear resistant. Please sign your license and do not laminate or alter your license in anyway. Your license must be available for review at all times while implementing an asbestos project. This license may be revoked, pursuant to 326 IAC 18-1-7, if you:

(1) Violate any requirements of these rules (326 IAC 18), 326 IAC 14-10, or any requirement of the Asbestos-Containing Materials in Schools Rule or any other federal, state, or local regulation pertaining to asbestos in buildings or to asbestos projects.
(2) Falsify information on your application for licensing.
(3) Fail to meet any qualifications specified in 326-IAC 18-1-4.
(4) Conduct asbestos project, or related asbestos handling activity, in a manner which is hazardous to the public health.

Your license is valid effective 09/15/2010, and will expire on 09/15/2011, as indicated on your card. We suggest that you attend the required training and submit an application for license renewal early to insure your license does not lapse. NOTE: 326 IAC 18-1-4(h) and 326 IAC 18-1-6(e) require that any individual who has an eighteen (18) month lapse between any two training courses of the same discipline to attend an initial training course for the discipline in which they are seeking a license. In order to avoid re-taking the initial training course you must have attended a refresher in the discipline you are seeking a license within eighteen (18) months from the date of issuance of your last training course certificate.

Office of Air Quality, Asbestos Licensing Section (317) 233-3861

Indiana Dept. of Environmental Management

Emily M. Montgomery

Asbestos Inspector License #: 19A003320

Effective: **09/15/2010**
Birth Date: **02/28/1977**
Height: **5-02**
Weight: **110**

Expiration: **09/15/2011**
Gender: **F**
Eye Color: **GRN**
Hair Color: **BRO**

Signature:

WWW.IN.GOV

SF 49124

NVLAP® **National Voluntary Laboratory Accreditation Program**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
2001 E. 52nd Street
Indianapolis, IN 46205-1405
Mr. Richard Harding
Phone: 317-803-2997 Fax: 317-803-3047
E-Mail: rharding@emsl.com
URL: http://www.emsl.com

BULK ASBESTOS FIBER ANALYSIS (PLM) **NVLAP LAB CODE 200188-0**

NVLAP Code	*Designation / Description*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

2010-04-01 through 2011-03-31
Effective dates

For the National Institute of Standards and Technology

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200188-0

EMSL Analytical, Inc.

Indianapolis, IN

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2010-04-01 through 2011-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)

ATTACHMENT II

Photographs



16th Street over White River (2408F)



White River and Concrete Arch Supports



View of exposed rebar and deteriorated concrete along an arch support



Non-insulated pipe located along the north side of the bridge

ATTACHMENT III

Laboratory Results

61101830

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Chain of Custody

EMSL Order Number (*Lab Use Only*): 161101830

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Company: ATC Associates	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments** Third Party Billing requires written authorization from third party
Street: 5988 Centerpoint Dr.	
City: Indianapolis **State/Province:** IN	**Zip/Postal Code:** **Country:**
Report To (Name): Jaclyn Sigmon	**Fax #:**
Telephone #: on file	**Email Address:** jaclyn.sigmon@atcassociates.com
Project Name/Number: American Structurepoint	
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order:** **U.S. State Samples Taken:**

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ☒ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

**For RUSH TAT's Please Call Ahead to Confirm Lab Hours and Availability. Not all TAT options are valid for every test. Materials Science and IAQ TATs are in Business Days rather than Hours (i.e. 24 Hour = End of Next Business Day)*

Asbestos

PCM - Air
☐ NIOSH 7400
☐ w/ 8hr. TWA

TEM– Air ☐ 4-4.5hr TAT (AHERA ONLY)
☐ AHERA 40 CFR, Part 763
☐ NIOSH 7402
☐ EPA Level II
☐ ISO 10312

TEM - Water
Fibers ≥10µm ☐ Waste ☐ Drinking
All Fiber Sizes ☐ Waste ☐ Drinking

PLM - Bulk
☒ PLM EPA 600/R-93/116
☐ PLM EPA NOB (<1%)
☐ NYS 198.1 (friable-NY)
☐ NYS 198.6 (non-friable-NY)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
Point Count w/ Gravimetric
☐ 400 (<0.25%) ☐ 1000 (<0.1%)

TEM - Dust
☐ Microvac – ASTM D 5755
☐ Wipe-ASTM D6480

TEM - Bulk
☐ TEM EPA NOB
☐ NYS NOB 198.4 (non-friable-NY)
☐ Chatfield SOP

Soil/Rock/Vermiculite
☐ PLM CARB 435 – A (0.25% sensitivity)
☐ PLM CARB 435 – B (0.1% sensitivity)
☐ TEM CARB 435 – B (0.1% sensitivity)
☐ EPA Reg. 1 Screening Protocol (Qualitative)

Other:

Lead (Pb)

Flame Atomic Absorption
☐ Chips SW846-7000B or AOAC 974.02
☐ Soil SW846-7000B/7420
☐ Air NIOSH 7082
☐ Wastewater SM3111B or SW846-7000B/7420
☐ ASTM Wipe SW846-7000B/7420
☐ non ASTM Wipe SW846-7000B/7420
☐ TCLP SW846-1311/7420/SM 3111B

ICP
☐ Air NIOSH 7300 Modified
☐ non ASTM Wipe SW846-6010B or C
☐ ASTM Wipe SW846-6010B or C
☐ Soil SW846-6010 B or C
☐ Waste Water SW846-6010B or C
☐ TCLP SW846-6010B or C

Graphite Furnace Atomic Absorption
☐ Soil SW846-7421 ☐ Wastewater EPA 200.9
☐ Air NIOSH 7105 ☐ Drinking Water EPA 200.9

Other: ☐

Materials Science

☐ Common Particle ID (large particles)
☐ Full Particle ID (environmental dust)
☐ Basic Material ID (solids)
☐ Advanced Material ID
☐ Physical Testing (Tensile, Compression)
☐ Combustion-by-products (soot, char, etc.)
☐ X-Ray Fluorescence (elem. analysis)
☐ X-Ray Diffraction (Crystalline Part.)
☐ MMVF's (Fibrous glass, RCF's)
☐ Particle Size (sieve/microscopy/laser)
☐ Combustible Dust
☐ Petrographic Examination
Other: ☐

Microbiology

Wipe and Bulk Samples
☐ Mold & Fungi – Direct Examination
☐ Mold & Fungi Culture (Genus Only)
☐ Mold & Fungi Culture (Genus & Species)
☐ Bacterial Count & ID (Up to Three Types)
☐ Bacterial Count & ID (Up to Five Types)
☐ MRSA
☐ *Pseudomonas aeruginosa*

Water Samples
☐ Total Coliform & E.coli (P/A)
☐ Fecal Coliform (SM 9222D)
☐ Sewage Screen
☐ Heterotrophic Plate Count (SM 9215)

Air Samples
☐ Mold & Fungi (Spore Trap)
☐ Mold & Fungi Culture (Genus Only)
☐ Mold & Fungi (Genus & Species)
☐ Bacterial Culture & ID (Up to Three Types)
☐ Bacterial Culture & ID (Up to Five Types)
☐ Endotoxin Testing

Real Time Q-PCR (See Analytical Guide for Code)
Code:

Legionella
☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4

Other: ☐

IAQ

Nuisance Dust NIOSH ☐ 0500 ☐ 0600
Airborne Dust ☐ PM10 ☐ TSP
Silica Analysis: ☐ All Species
Silica Analysis – Single Species
☐ Alpha Quartz ☐ Cristobalite ☐ Tridymite
☐ HVAC Efficiency
☐ Carbon Black
☐ Airborne Oil Mist
Radon Testing: Call for Kit and COC
Other: ☐

****Comments/Special Instructions:**

Client Sample #'s	- 020811-01 to 020811-03	**Total # of Samples:**	3
Relinquished (Client): Michael Yeager	**Date:** 2/8/11	**Time:**	
~~**Received (Lab):**~~	**Date:** 2-9-11	**Time:**	8:02

Analysis Completed in Accordance with EMSL's Terms and Conditions located in the Analytical Price Guide

Rec: NLucas 2/9 8:02AM

51101830

1830

VATC ASSOCIATES INC.
Environmental, Geotechnical and Materials Professionals

ASBESTOS SAMPLE CHAIN OF CUSTODY

Page ___ of ___

Project No. : American Structurepoint
Site:
Address:

Date of Sampling: 2/8/11

SAMPLED MATERIAL DESCRIPTION	SAMPLE LOCATION	FLOOR & AREA NO.	BULK SAMPLE NO.	HA NO.	LAB RESULTS
Expansion joint	16th St. over White River S side	-	020811-01		
" "	16th St. over White River N side	-	020811-02		
" "	10th St. over White Lick Creek	-	020811-03		
		-			
		-			
		-			
		-			
		-			
		-			
		-			
		-			
		-			
		-			
		-			
		-			

Samples Collected By: Michael Young
Samples Delivered By:
Received at Lab By: NLUCAS

Accreditation No. _____
Expiration Date: _____

EMSL Analytical, Inc.
2001 East 52nd St., Indianapolis, IN 46205
Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislab@emsl.com

Attn: **Jaclyn Sigmon**
ATC Associates
7988 Center Point Drive Suite 100
Indianapolis, IN 46256

Fax: (317) 849-4278 Phone: (317) 849-4990
Project: **AMERICAN STRUCTUREPOINT**

Customer ID: ATEC57
Customer PO:
Received: 02/09/11 8:02 AM
EMSL Order: 161101830

EMSL Proj:
Analysis Date: 2/9/2011

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Description**	**Appearance**	**%**	**Fibrous**	**%**	**Non-Fibrous**	**% Type**
020811-01 *161101830-0001*		Black Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
020811-02 *161101830-0002*		Black Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**
020811-03 *161101830-0003*		Black Non-Fibrous Homogeneous	5%	Cellulose	95%	Non-fibrous (other)	**None Detected**

Initial report from 02/09/2011 15:58:11

Analyst(s)

Morgan Nastav (2)
Melissa Wilson (1)

Richard Harding, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc. 2001 East 52nd St., Indianapolis IN NVLAP Lab Code 200188-0, AZ0939, CA 2575, CO AL-15132, TX 300262

THIS IS THE LAST PAGE OF THE REPORT.